

2012 IWA Project  
Innovation Award –  
Planning Projects

# Happy Valley Underground Stormwater Storage Scheme



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## 1. EXECUTIVE SUMMARY

*Happy Valley Underground Stormwater Storage Scheme (HVUSSS) – Hong Kong's first application of movable crest weir system with Supervisory Control And Data Acquisition (SCADA) to provide a drainage solution that works with nature in a time of climatic uncertainty.*

Climate change, increasing urbanization and limited supplies of urban spaces are putting additional pressures on cities throughout the world to find new ways to alleviate flooding problems. The Drainage Services Department (DSD) of the Government of the Hong Kong Special Administrative Region was keen to identify a sustainable alternative to simply just “throwing more drains at the flooding problem”.

At the heart of this sustainable solution is an underground storage tank with a movable crest weir system. It is designed to incorporate a new approach to flood alleviation, and also actively monitor and work alongside nature's forces. During rainstorm events, the storage tank will temporarily store part of the stormwater collected from the local catchment to attenuate peak flows in the existing downstream drainage systems. The ingenuity of the scheme comes from the SCADA real-time monitoring of water and tide levels, which allows the control of weir crest level in a real-time manner, to ensure that the filling of the storage tank would start at the most optimal time to prevent pre-mature or late overspill of stormwater into the storage tank. Reprovision of sports pitches with a state-of-the-art turfing surface, and other greening elements, are aimed to enhance quality of living. Water reuse options are being explored to further benefit the community.

This project is one Hong Kong's first examples of applying state-of-the-art integrated 1-dimensional (1-D), 2-dimensional (2-D) and 3-dimensional (3-D) hydraulic modeling techniques to flood alleviation design. With the use of 3-D Computational Fluid Dynamics (CFD) modeling technique, hydraulic performance of the entire storage scheme has been greatly enhanced.

The construction of HVUSSS commenced in October 2011 for completion in two phases. Phase 1 is programmed for completion by early 2015, and Phase 2 by early 2018. Estimated cost of the project is HK\$1 billion.

## 2. PROJECT DESCRIPTIONS



Photomontage of Happy Valley Underground Stormwater Storage Scheme

### a. Roles of entrant's firms in the project

DSD is one of the works departments of the Hong Kong Special Administrative Region Government tasked to provide world-class wastewater and stormwater drainage services in Hong Kong. After the technical feasibility study was endorsed by the Development Bureau in August 2009, DSD continued to carry out planning and design of this flood alleviation scheme of Happy Valley catchment.

Black & Veatch Hong Kong Limited (B&V) was commissioned by DSD in July 2010 to carry out surveys, investigations and hydraulic modeling analysis to assess the flooding susceptibility of the Happy Valley catchment. The hydraulic design of the HVUSSS is optimized to meet the flood protection standard.

### b. Roles of other consultants participating in the project

Hydraulic Advisor – Prof. Joseph H.W. Lee, The University of Hong Kong

Hydraulic Independent Checker – RED Hydraulics Consultants Limited

Architectural Designer - Ivanho Architect Limited

NEC Contract Advisor - EC Harris (Hong Kong) Limited

Traffic Consultant - Ho Wang SPB Ltd

### c. Brief descriptions of the entrant's contribution of the project

#### i. Introduction

Happy Valley is an urban area located in the hinterland of the Wan Chai District in the northern part of Hong Kong Island. The drainage catchment is characterized by hilly terrain on its perimeter whereas areas at its centre are low-lying. Stormwater runoff discharges to the Victoria Harbour via a decked nullah. During heavy rainstorms in August 2000, April 2006 and June 2008, severe flooding occurred in Happy



Valley and its adjacent areas, which includes Happy Valley Recreation Ground (HVRG), Hong Kong Jockey Club (HKJC) racecourse, Morrison Hill Road and Wong Nai Chung Road. To implement flood alleviation measures by means of minimal public and environmental disturbance, flood detention in the Happy Valley catchment comes into consideration. The HVRG, located in the central part of the Happy Valley catchment, is considered to be the most appropriate site to develop this flood detention scheme from the viewpoints of land availability and minimizing impact to the public. In order to retain the existing above ground facilities in the HVRG, an underground flood detention scheme with a storage tank was proposed, to temporarily store the stormwater during rainstorms.

ii. Happy Valley Underground Stormwater Storage Scheme (HVUSSS)

The objective of the HVUSSS is to provide off-line flood retention in the Happy Valley catchment to withstand a 1-in-50 year rainstorm event. Major components include an inlet structure, twin cells diversion box culvert with overflow side weir system, an underground storage tank of 60,000m<sup>3</sup> and a pump house with a pumping rate of 5,400 m<sup>3</sup>/hr. The construction of HVUSSS commenced in October 2011. Upon completion of Phase 1 in early 2015, residents of Happy Valley and areas in its vicinity would be able to benefit from an enhanced level of flood protection. And upon completion of the remaining works under Phase 2 in early 2018, the flood protection level would be further enhanced to the ultimate design level. The estimated cost of the project is HK\$1 billion.

iii. Innovative and Sustainable Considerations of the Flood Alleviation Solution - Underground Stormwater Storage Tank with Movable Weir

Underground Stormwater Storage Tank

On-line pipe upgrading is the most popular option for alleviating flood risk. However, as Happy Valley is situated in the low-lying area of the drainage catchment, pipe upgrading in the downstream catchment cannot effectively lower the flooding risk. Moreover, on-line upgrading of the existing drains underneath a carriageway that experience very heavy traffic flows will bring huge disruptions and be a public nuisance and therefore considered not preferable. Hence, an innovative flood protection scheme through off-line flood retention by means of an underground stormwater storage tank is considered to be the most

appropriate solution. During heavy rainstorms, excess runoff in the diversion box culvert will enter the storage tank via the overflow weir system. After the rainstorm, the storage tank will be emptied to prepare for other rainstorm events to come.

### Movable Weir

When the water level in the box culvert rises, excess flow enters into the storage tank over the overflow side weir system. The overflow depends on the crest level of the weir penstocks, and the amount of discharge is a function of the hydraulic head above the weir crest, discharge coefficient and the weir configuration. The shortcoming of using a fixed weir design is that the crest level cannot be conveniently adjusted during operation which may result in pre-mature or late overspill.

After deliberation and taking into account evolving climatic considerations, a more innovative solution by using a “movable” crest weir as the overflow side weir system is adopted. 13 unobstructed type weir penstocks will be installed with two additional penstocks to be made operational to cater for emergency conditions. With the aid of real-time monitoring of runoff and tidal levels by level sensors to be installed inside storage tank as well as the upstream and downstream of diversion box culvert, a stepped approach is adopted for adjusting the weir crest level of the weir penstocks to control the overflow.

The adoption of this movable overflow weir system would ensure the filling of the storage tank at the most optimal time, and pre-mature or late overspill could be avoided. Hence, the design capacity of the storage tank can be reduced by as much as 30%. It achieves design friendliness to the environment by minimizing the amount of excavation and the volume of materials required for construction. This innovative design element not only shortens the total construction time by approximately one year, it also reduces the construction costs considerably.

Economical and sustainable design considerations were taken into account throughout the design. In this project, energy consumption during operation in particular was a critical consideration. With the adoption of “movable” overflow side weir system, energy consumption could be minimized and a more environmental-friendly design could be achieved. After a rainstorm event and the water level in the diversion box culvert has fallen, the “movable” weirs will be lowered to facilitate gravity draining of stored

water in the filled storage tank to the box culvert. Contrary to the traditional approach of solely emptying the tank by pumping, this design can allow over two-thirds of the stored stormwater to be discharged by gravity and only the remaining to be emptied by pumping. Moreover this shallow tank design significantly reduces the pump head required, thus optimizes the energy consumption required in the operation stage and achieves sustainability.

The weir crest is movable and its control level can be adjusted. During dry days, the weir penstock will be fully closed to prevent odour from entering and accumulated in the tank. The application of a movable crest weir system with SCADA enables future adjustments of the scheme to overcome the challenges from climate change and future developments in the catchment without the need for any modification works. This allowance for factor resulting from climate change established in this project sets a good example for engineers to incorporate natural environment variations in the design to further achieve sustainability.

#### iv. Integrated Advanced Modeling Technique

The hydraulic design was undertaken to meet the latest flood protection standards. State-of-the-art hydraulic modeling techniques were applied including 1-D and 2-D hydraulic models for the drainage network and overland flow, as well as a 3-D CFD model for analyzing and understanding hydraulic performance of particular structures. This is one of the first examples integrated 1-D, 2-D, and 3-D hydraulic modeling techniques were used for flood alleviation design in Hong Kong.

The 1-D Network Modeling module was adopted to examine the performance and adequacy of the existing drainage system. The 2-D Ground Model module, which models the overland flow surface, was used for assessing the flow pattern of floodwater as overland flows under complex geometries with different flow directions.

To avoid extensive modification of the existing box culvert underneath Wong Nai Chung Road, by which nuisance to the traffic could be prevented, an additional inlet structure is proposed beneath Crescent Garden, a public leisure park. This inlet structure was designed as a stilling basin, trapping silt and providing an even flow distribution into the downstream twin cells diversion box culverts with a low velocity jetting flow. In order to achieve these requirements, CFD models had been developed to simulate the flow

in the steep inlet channels, stilling basin and twin cells box culverts. The adoption of CFD models provides a timely and cost effective means to simulate the hydraulic performance and allows flexibility in adapting to changes and fine-tunings to the configuration for optimization of design. The simulation results allow for any part of the CFD model to be viewed in detail and be presented in any desirable way. For instance, the existing decked nullah with columns and utility intrusions was modeled to determine more accurate headloss coefficients for the 1-D hydraulic model, and the overflow side weir system was modeled to study the behaviour of the flood flows into the storage tank. With the use of 3-D CFD modeling technique, hydraulic performance could be greatly enhanced.

v. More than Merely Engineering Works

After completion of the storage tank, the sports pitches will be reprovisioned at the recreation ground with a state-of-the-art turfing surface. The appearance of the pump house has been designed to seamlessly blend with the prevailing adjacent environment for the enjoyment of the public. A naturally sloping green is designed to cover the pump house to provide ground for public amenity and to raise its aesthetic value. Upon completion of the works, the appearance and value of the HVRG will be greatly enhanced and exceeding the public expectation of having just a flood protection facility.



In addition, to further promote sustainability, water reuse options are being explored. Reusing the stored stormwater for flushing at the existing public toilet facilities within the HVRG is being considered and liaison with maintenance authority of the public toilet is under way.

vi. Conclusions

A good engineer balances options and needs. Traditional techniques for upgrading drainage systems may not be the only solution of all problems. In this HVUSSS, an innovative, sustainable, cost-effective and environmentally friendly solution was developed to alleviate flooding within Happy Valley. It is believed that the adoption of the real-time controlled movable weir system in the underground stormwater storage tank sets an example for future sustainable drainage measures. And the adoption of integrated advanced modeling techniques has greatly enhanced the accuracy of the analyses and hydraulic performance of the system.

### 3. RELEASE LETTER

Release Letter from the person/organization for whom the work was performed permitting entry and publication of the project without qualification.

<p>政府總部 發展局 工務科 香港添馬添美道 2 號 政府總部西翼</p> <p>本局網址 Our Website: <a href="http://www.devb.gov.hk">http://www.devb.gov.hk</a> 本局檔號 Our Ref.: () in DEVB(W) 4160/CD 來函檔號 Your Ref.:</p>		<p><b>Works Branch Development Bureau Government Secretariat</b> West Wing, Central Government Offices, 2 Tim Mei Avenue, Tamar, Hong Kong</p> <p>電話 Tel No.: 3509 8335 傳真 Fax No.: 2524 9308 電郵 E-mail: <a href="mailto:michaelfong@devb.gov.hk">michaelfong@devb.gov.hk</a></p>
<p>Director of Drainage Services Drainage Services Department 43/F., Revenue Tower 5 Gloucester Road Wan Chai Hong Kong</p>		<p>13<sup>th</sup> January 2012</p>
<p>Dear Sir,</p>		
<p><b>Happy Valley Underground Stormwater Storage Scheme</b></p> <p><b><u>International Water Association (IWA) – 2012 Project Innovation Awards Submission</u></b></p>		
<p>Referring to the application for IWA 2012 Project Innovation Awards submission from Drainage Services Department, we have no objection to the person/organization for whom the work was performed permitting entry and publication of the “Happy Valley Underground Stormwater Storage Scheme” project without qualification.</p>		
<p>Should you have any further enquiry, please contact the undersigned at Tel No. 3509 8335.</p>		
<p>Yours faithfully,</p>  <p>( Michael FONG ) for Secretary for Development</p>		
<p><small>L:\WPU\AS\WP\4\letter\2012\letter_20120113.DOC</small></p>		

#### 4. TESTIMONIAL LETTERS

Testimonial Letters from the projects primary beneficiary that describes the degree of satisfaction with the work performed. The letters will address the technical quality of the work, adherence to project schedule requirements, quality of service, etc.



香港賽馬會  
The Hong Kong Jockey Club

Our Ref: DM/PC/PL/01001/12

4 January 2012

Mr. Chan Chi-chiu,  
Director of Drainage Services  
Drainage Services Department  
43/F., Revenue Tower, 5 Gloucester Road  
Wan Chai, Hong Kong

Dear Mr. Chan,

**Happy Valley Underground Stormwater Storage Scheme  
Letter of Support**

We would like to express our wholehearted support for the “Happy Valley Underground Stormwater Storage Scheme” project and our appreciation for the high professionalism and good partnership spirit demonstrated by your Department in working with us during the planning and design of the project in the mid-field of the Happy Valley Racecourse.

Indeed, the Drainage Services Department (DSD) has developed an innovative and environmentally friendly stormwater storage scheme, which not only optimizes the required storage volume but also minimizes the construction period. Despite the extreme complexity of implementing the project in this very congested metropolis, DSD has demonstrated high professionalism in fully addressing the needs of the Hong Kong Jockey Club, which is one of the key stakeholders at Happy Valley District. Through good partnership with us, DSD has addressed all our key concerns for the smooth operation of the Happy Valley Racecourse together with its horse-racing events through strict restrictions of working periods, the adoption of an underground conveyor belt system for muck shifting and sightline considerations in the permanent design of the pump house.

We sincerely appreciate the extremely good work of DSD in the planning and design of the engineering works that were conducted. On behalf of the Hong Kong Jockey Club, we would like to wish DSD all the best on the construction of this important drainage project, which will benefit not only us and but also the whole community of the Happy Valley District.

Yours faithfully  
For and on behalf of  
The Hong Kong Jockey Club



Dr. Philip Chen  
Executive Manager, Property Development Management

PC/il

香港跑馬地體育道壹號  
One Sports Road, Happy Valley, Hong Kong. Tel: (852) 2966 8111 Fax: (852) 2577 9036  
根據公司條例註冊成立之保證有限公司 INCORPORATED UNDER THE COMPANIES ORDINANCE AND LIMITED BY GUARANTEE

## HONG KONG RUGBY FOOTBALL UNION

香港欖球總會

Members : ARFU, IRB, SF&OC of Hong Kong, China



January 2012

Mr. Chan Chi-chiu

Director of Drainage Services

Drainage Services Department

43/F., Revenue Tower

5 Gloucester Road

Wan Chai, Hong Kong

Dear Mr. Chan,

### **Happy Valley Underground Stormwater Storage Scheme**

#### **Letter of Support and Appreciation**

I write on behalf of the Hong Kong Rugby Football Union to express our support and appreciation to your Department for implementing the "Happy Valley Underground Stormwater Storage Scheme" project.

The Hong Kong Rugby Football Union is a registered Sports Association and the leading body in developing rugby in Hong Kong. The Happy Valley Recreation Ground provides the Union with an important dedicated pitch for rugby training and domestic league fixture. Serious flooding in the past has prevented us in using the facility from time to time during rainy season. We therefore fully support the implementation of the flood storage scheme by DSD which would provide a long term solution to the flooding problem. We also appreciate the planning and design efforts which DSD has put in to minimize disruption to the use of the rugby pitch in the Recreation Ground in the course of constructing the flood storage scheme and to enhance the rugby field to better quality turfing surface upon completion of the works.

We anxiously look forward to the successful completion of this project which would in turn resulting in a flood free Happy Valley Recreation Ground.

Yours sincerely,

Daniel Fan

Facilities Manager

Room 2001, Olympic House, 1 Stadium Path, So Kon Po, Causeway Bay, Hong Kong

Tel 電話: (852) 2504 8311 Fax 傳真: (852) 2576 7237 E-mail 電郵: info@hkrugby.com Website 網址: <http://www.hkrugby.com>

香港銅鑼灣掃桿埔大球場徑一號奧運大樓二〇〇一室

A Limited Company (by Guarantee)





香港特別行政區



灣仔區議會

伍婉婷議員辦事處

電話：35291062

傳真：30057609

電郵：[airvolanda@yahoo.com.hk](mailto:airvolanda@yahoo.com.hk)

地址：銅鑼灣謝斐道 506 號聯成商業中心 1001 室

致：渠務署陳志超署長

您好！來函為表達居民對「跑馬地地下蓄洪池」計劃之意見，並對 貴署同工在推動落實有關工程之努力表示謝意。

每逢雨季，本區居民深受水浸困擾，情況持續多時，修建地下蓄洪池實有迫切性需要。喜見 貴署同工對有關工程審慎規劃，並重視公眾諮詢，使之成為真正利民、便民以及有市民共同參與的社區工程。

特此函達，祈 未來繼續得見 貴署同工有更多具前瞻性、重視民間智慧、惠及社群的成績；並 期望繼續與 貴署同工同心合力建設社區。

即頌 時祺

## English Translation of Testimonial Letter from District Council Member Ms. Yolanda Ng

30 January 2012

To: Mr. Chan Chi-chiu,  
Director of Drainage Services

On behalf of the Wan Chai residents, I am writing to express my support and gratitude to the Department for the hard work in the implementation of the "Happy Valley Underground Stormwater Storage Scheme".

Residents of Happy Valley have for a long time been suffering from the flooding problem during rainy seasons, and there is therefore a desperate need to construct the underground storage tank for resolving the flooding problem. I am pleased to note the meticulous planning of the flood alleviation project by your Department, with serious considerations of public opinions and concerns, to make the scheme a community-engaging project for the benefit of the public.

I sincerely looking forward to the continued good work by your Department in bringing together more new ideas of vision for enhancing the quality of living of the district. Let's work together to build a better community.

All the Best!

Yours faithfully,

Yolanda Ng  
Member of Wan Chai District Council

灣仔區議員



伍婉婷



李均頤 議員  
LEE KWUN YEE KENNY

灣仔區議會

Wan Chai District Councillor

Mr. Chan Chi-chiu  
Director of Drainage Services  
Drainage Services Department  
43/F., Revenue Tower  
5 Gloucester Road  
Wan Chai, Hong Kong

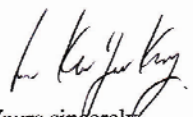
Dear Mr. Chan,

**Happy Valley Underground Stormwater Storage Scheme (HVUSSH)**  
**Letter of Support**

I write to express my full support of the HVUSSH project and appreciation for the good performance of DSD on this project.

I am pleased to see that DSD has developed this innovative and effective flood storage scheme for alleviating the flooding problem in Happy Valley region - a problem which has threatened the well-being of residents of Wan Chai for many years. Furthermore, DSD has also professionally planned proper mitigation measures to mitigate any adverse impact to the public, in particular the traffic impact to the Wong Nai Chung Road, during construction stage. The design also incorporated green and sustainable elements to enhance the living quality of Happy Valley upon completion of the project.

I would like to take this opportunity to wish DSD all the best on your future endeavours in this major drainage project.

  
Yours sincerely,  
Lee Kwun Yee Kenny  
Wanchai District Councillor

香港灣仔莊士頓道68號互信大廈8字樓A室  
Flat A, 8/F, Trust Tower, 68 Johnston Road, Wanchai, H.K.  
Tel: 2866 0901 Fax: 2866 0191 Email: kwunye@netvigator.com

中華人民共和國香港特別行政區  
Hong Kong Special Administrative Region of the People's Republic of China

灣仔區議會  
Wan Chai District Council

李碧儀議員辦事處 Office of Peggy Lee, Wan Chai District Councillor

香港灣仔 告士打道 5 號  
稅務大樓 45 樓  
渠務署  
排水工程部

支持「跑馬地地下蓄洪計劃」

本人得悉渠務署正在灣仔及跑馬地一帶改善防洪系統，並計劃在馬場下興建大型蓄洪池，本人特來函表示支持。期望 貴署的「跑馬地地下蓄洪計劃」完成後，可使跑馬地及灣仔一帶免受水浸之威脅，並希望工程能盡快完成，造福居民。

敬祝  
工程順利！

李碧儀  
灣仔區議員 謹啟

13樓A室  
1 Road, Wan Chai, Hong Kong  
Email: leepikyee@yahoo.com.hk

### English Translation of Testimonial Letter from District Councillor Ms. Peggy Lee

2 February 2012

To: Drainage Projects Division,  
Drainage Services Department,  
45/F, Revenue Tower,  
5 Gloucester Road,  
Wan Chai, Hong Kong

#### Letter of Support for "Happy Valley Underground Stormwater Storage Scheme"


I am writing to show my support of the construction of the large-scale underground storage tank under Happy Valley Recreation Ground and other drainage improvement works at Wan Chai and Happy Valley districts by your department. I sincerely look forward to the completion of this "Happy Valley Underground Stormwater Storage Scheme" as soon as possible in order to alleviate the risk of flooding in Wan Chai and Happy Valley districts and improve the quality of living of the local residents.

Best Regards,

Peggy Lee  
Wan Chai District Councillor

- 2 -  
We sincerely appreciate the extreme works of the DSD on the planning and the design of the engineering work for this important drainage improvement project which will benefit the residents and road users in Happy Valley District.

Yours faithfully,

  
(Michael FONG)  
for Secretary for Development

II

政府總部  
發展局  
工務科  
香港灣仔香港道2號  
政府總部西翼



本局網址 Our Website: <http://www.devb.gov.hk>  
本局傳真 Our Ref.: 0 DEVB(W) 4160/CD  
來函編號 Your Ref.:

Works Branch  
Development Bureau  
Government Secretariat  
West Wing, Central Government Offices,  
2 Tin Mei Avenue, Tamar, Hong Kong  
電話 Tel No.: 3509 8335  
傳真 Fax No.: 2524 9308  
電郵 E-mail: [michael.fong@devb.gov.hk](mailto:michael.fong@devb.gov.hk)

13<sup>th</sup> January 2012

Director of Drainage Services  
Drainage Services Department  
43/F., Revenue Tower  
5 Gloucester Road  
Wan Chai  
Hong Kong

Dear Sir,

**Happy Valley Underground Stormwater Storage Scheme**  
**Letter of Support**

We wish to express our full support for the excellent planning and design of the "Happy Valley Underground Stormwater Storage Scheme" project carried out by the Drainage Services Department (DSD).

Indeed, the DSD has developed an innovative and environmentally friendly stormwater storage scheme in this metropolitan city. On top of the benefits in complying with the need for providing adequate flood protection, the proposed scheme also overcomes the scarcity of land in Happy Valley District and addresses the public interests on environmental protection and greening in Hong Kong.



康樂及文化事務署  
Leisure and Cultural Services Department

電話 TEL : 2601 8851  
圖文傳真 FAX NO : 2586 1935  
本署檔號 OUR REF : ( 14 ) in LCS LS(Wch) 148/62  
來函檔號 YOUR REF :

30 January 2012

Mr. Chan Chi-chiu  
Director of Drainage Services  
Drainage Services Department  
43/F., Revenue Tower  
5 Gloucester Road  
Wan Chai, Hong Kong

Dear Mr. Chan,

**Happy Valley Underground Stormwater Storage Scheme (HVUSSS)**

**Letter of Appreciation**

On behalf of the Leisure and Cultural Services Department, I write to express our full support of the HVUSSS project and appreciation of the excellent planning and design work executed by Drainage Services Department (DSD) in taking the project forward.

The Happy Valley Recreation Ground (HVRG), under the management of this Department, with its eleven sports pitches and associated recreation facilities is a very popular sports ground enjoyed by many key sports associations and the public. However, serious flooding at the HVRG has prevented its proper use during rainy season. We therefore are most excited to note that DSD has brought forth this innovative and sustainable HVUSSS project for alleviating the flooding problem at the HVRG. Throughout the planning and design stage, DSD has not just ensured that an effective flood prevention scheme is in place, they have also professionally and conscientiously devised proper measures to mitigate any adverse impact to the public during construction, and incorporated environmentally friendly and green measures for enhancing the quality and value of the HVRG upon completion of the project.

We would like to thank DSD for their efforts in implementing the HVUSSS project which would benefit ten of thousands of HVRG users and wish DSD every success in the construction of this very important drainage project.

Yours sincerely,

(Miss Winnie LEE)  
Chief Leisure Manager (Hong Kong East)  
for Director of Leisure and Cultural Services

灣仔區康樂事務辦事處 Wan Chai District Leisure Services Office  
香港灣仔軒尼詩道225號駱克道市政大廈9字樓  
9/F, Lockhart Road Municipal Services Building, 225 Hennessy Road, Wan Chai, Hong Kong

## 5. MEDIA

The names, contact person and email address (max 15) of hometown newspapers, TV stations, and radio stations in Excel format.

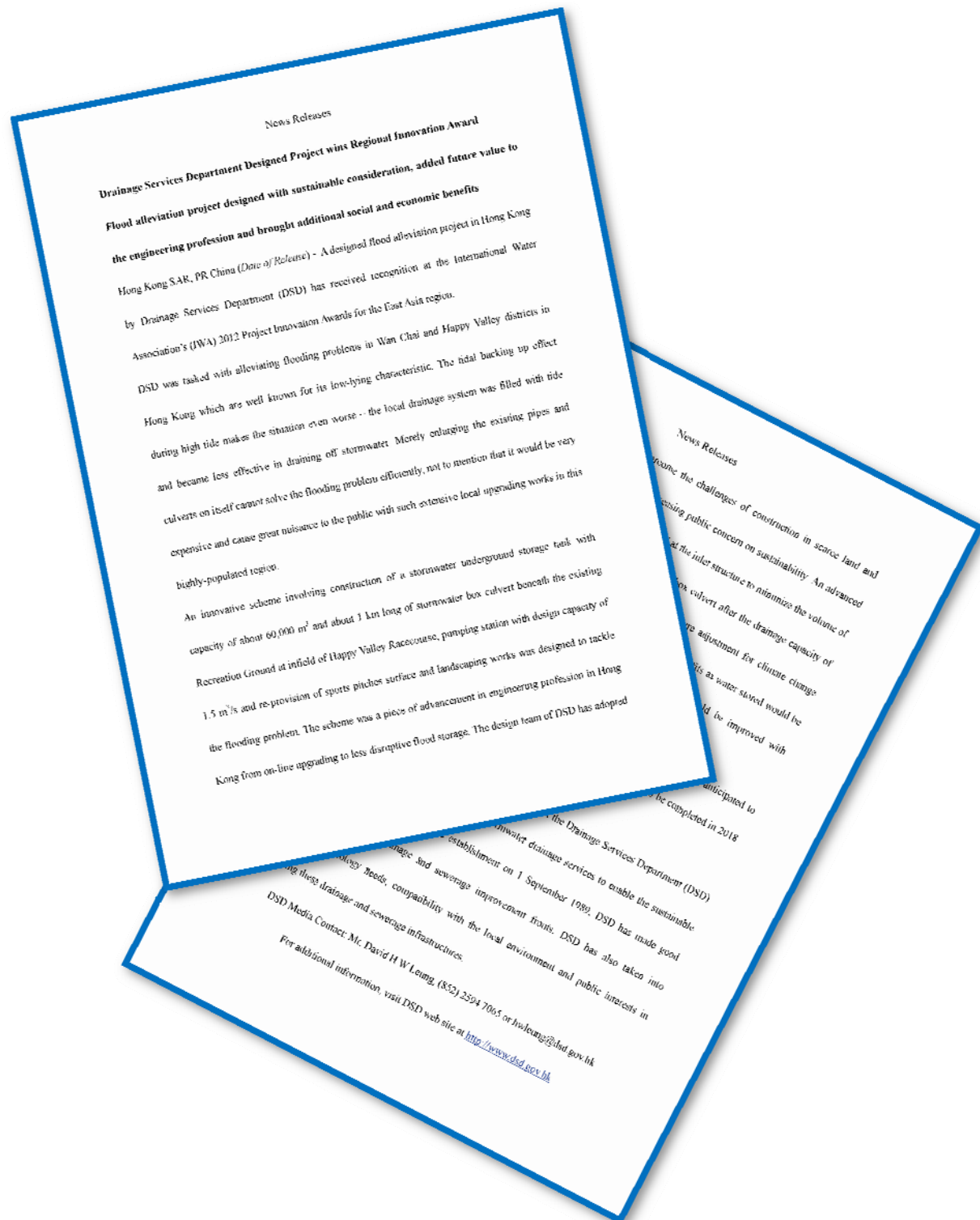
*Excel file is contained in the zip file.*

Name of Media	Email Address
Apple Daily (Chinese)	adnews@appledaily.com
Oriental Daily (Chinese)	news@oriental.com.hk
South China Morning Post	letters@scmp.com
Hong Kong Economic Times (Chinese)	secdept@hket.com
Sing Tao Daily (Chinese)	info@singtao.com
Ming Pao (Chinese)	mingpao@mingpao.com
Ta Kung Pao (Chinese)	tkppub@takungpao.com
Wen Wei Po (Chinese)	netcenter@wenhuibao.com.hk
Metropolis Hong Kong (Chinese)	news@metrohk.com.hk
HK Headline (Chinese)	web_info@hkheadline.com
AM730 (Chinese)	news@am730.com.hk
RTHK Broadcasting	webmaster@rthk.org.hk
Commercial Radio	karenf@crhk.com.hk
Metro Radio	webmaster@metroradio.com.hk
Hong Kong Engineer (HKIE Journal)	a.tam@animail.net

## 6. NEWS RELEASE

A news release (max 2 –page; A4 (or 8.5"x 11") with 2.5 cm side margins; double spaced; 12 pt. type) clearly describing the project, entrants role, relationship to judging criteria and any local significance. This draft news release may be used in the case of a winning submission.

*News Release is contained in the zip file.*





Entries for the applied research category must include a supplemental report describing the research findings together with the graphs or charts. This report may be used in lieu of the photos required in item (3). - *No Research Report is required in this submission.*

*Entry Fee was paid by Bank Transfer on 6 September 2011. Copy of transfer enclosed as below.*

