Proposed Mitigation using Silt Curtains

1. Overview

The results of the unmitigated scenario for both Year 2016 and 2017 showed exceedance of the compliance criteria at a few WSRs, hence specific mitigation measures are required. Given that only a small number of WSRs are affected, and these are located immediately adjacent to the eastern boundary of the project area, it would be more effective to provide mitigation for the 'target' works areas that are creating adverse water quality impacts.

2. Review of Hydrodynamic Regime

Based on a review of the hydrodynamic regime, the project is located at a 'tidal divide', whereby ebb currents, upon reaching the project area, splits into two main streams; one stream heads in a south-westerly direction and the other heads in a south-easterly direction (see **Figure 1**). These diverging currents essentially split the project area into two zones; the western zone of the project area is governed by the north-easterly/south-westerly tidal regime while the eastern zone of the project area is governed by the north-westerly/south-easterly tidal regime.

During flood tides, the two current streams converge at the north of the project area before joining with the main flow stream at Urmston Road (see **Figure 2**). This means that when considering the effects of tidal currents on sediment plume dispersion from the project, it is possible to make a distinction between which project works areas affect which WSRs.

Figure 1 Example of ebb current patterns in Year 2016 (dry season)

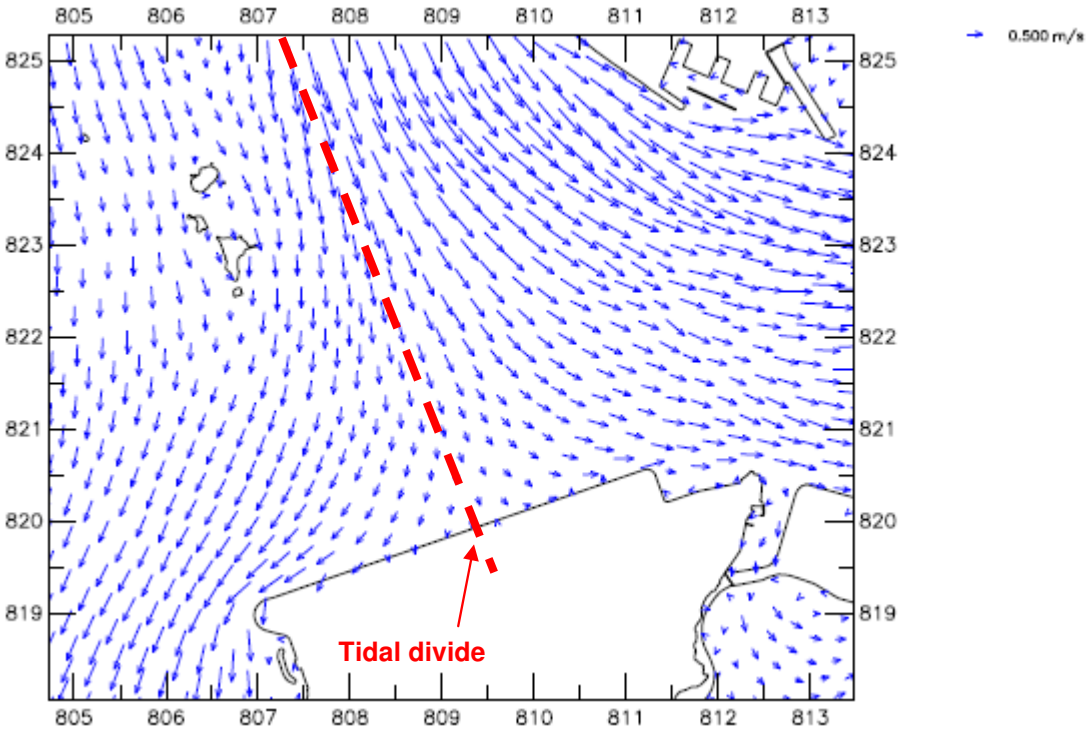
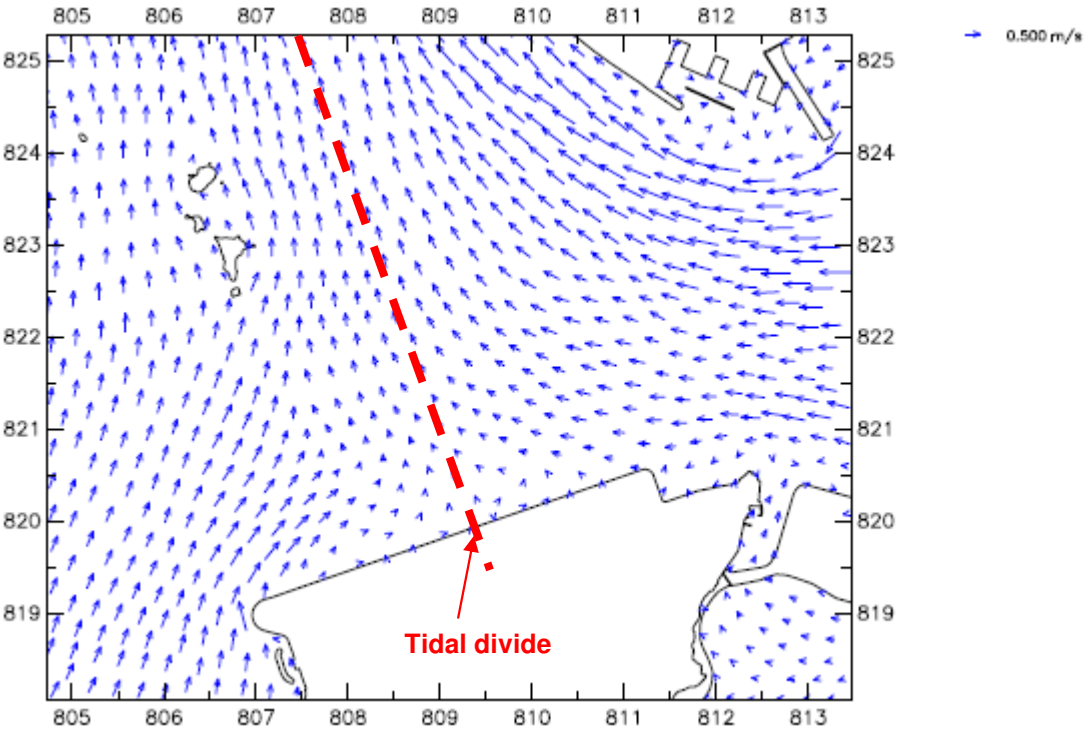


Figure 2 Example of flood current patterns in Year 2016 (dry season)



Year 2016 Scenario

In Year 2016, adverse water quality impacts occur at a few WSRs located immediately east of the project. These WSRs are affected during ebb tides when sediment plumes are transported in a south-easterly direction by the currents. During flood tides, current velocities are generally smaller and the sediment plume dispersion is more limited, hence WSRs are generally not affected during flood tides.

Based on the tidal divide and the active works areas as shown in **Drawing No. MCL/P132/EIA/8-004**, it can be deduced that the works areas that are causing the SS exceedances are those located at the south-eastern side of the project (i.e. works areas 2-06, 2-07A and 2-07B). Works areas 2-03B and 2-04 may also have a minor contribution, as they are partially located within the north-westerly/south-easterly tidal regime. Mitigation measures in Year 2016 should thus focus on these works areas.

Year 2017 Scenario

In Year 2017, the presence of the partially completed seawall provides an effective barrier to limiting sediment plume dispersion, however, the WSRs located immediately east of the project are affected by SS release during ebb tides. Flood tides generally do not result in adverse SS impacts at WSRs. The active works areas (as shown in **Drawing No. MCL/P132/EIA/8-005**) that are causing the SS exceedances are likely to be those works areas that are conducting sand blanket laying or sand filling at the south-eastern side of the project (i.e. works areas 2-02B, 2-05B, 2-06, 2-07A, 2-07B and 3-01A). Mitigation should thus focus at the 'openings' at either side of the partially completed eastern seawall area.

Western works areas of the project do not appear to contribute significant SS release outside of the partially completed western seawall, except at the south-western opening. While there are no specific WSRs located in this area that are affected by the project, this 'gap' in the seawall is associated with notable sediment plume release and it is considered prudent to minimise such releases as far as possible.

3. Proposed Mitigation for Construction Phase SS Release

Consideration of Construction Activities

Mitigation can be applied in the form of optimising the construction programme, or implementation of sediment plume reduction measures (i.e. silt curtains). In terms of the construction programme, the construction plants and daily productivities have already been optimised to achieve a balance between construction intensity and total duration, and hence impact due to the sediment plume would be limited to only a small number of WSRs located in close proximity of the project area. It is anticipated that there would be virtually no room for further reduction of the construction intensity without significant prolongation of the construction programme and the associated disturbance to marine environment. Hence further refinement of the construction programme is not considered to be practicable.

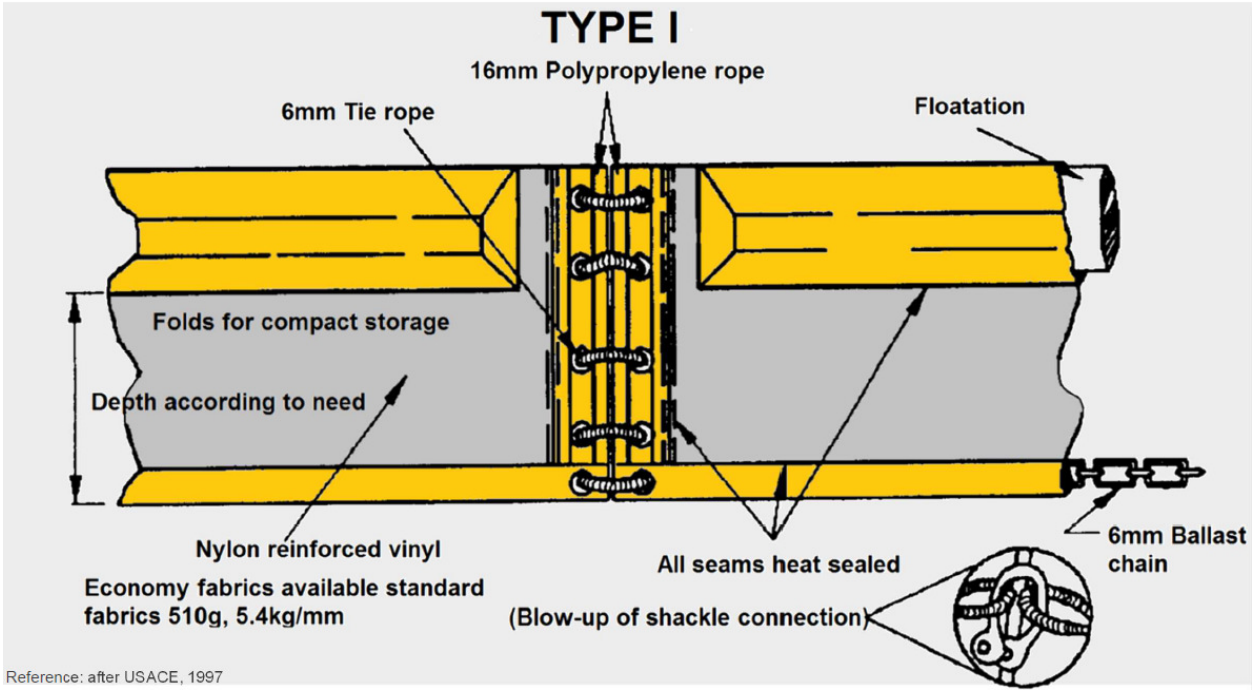
Consideration of Silt Curtains

In the absence of practicable measures to further minimise sediment loss due to construction activities, mitigation in the form of silt curtain deployment would be required.

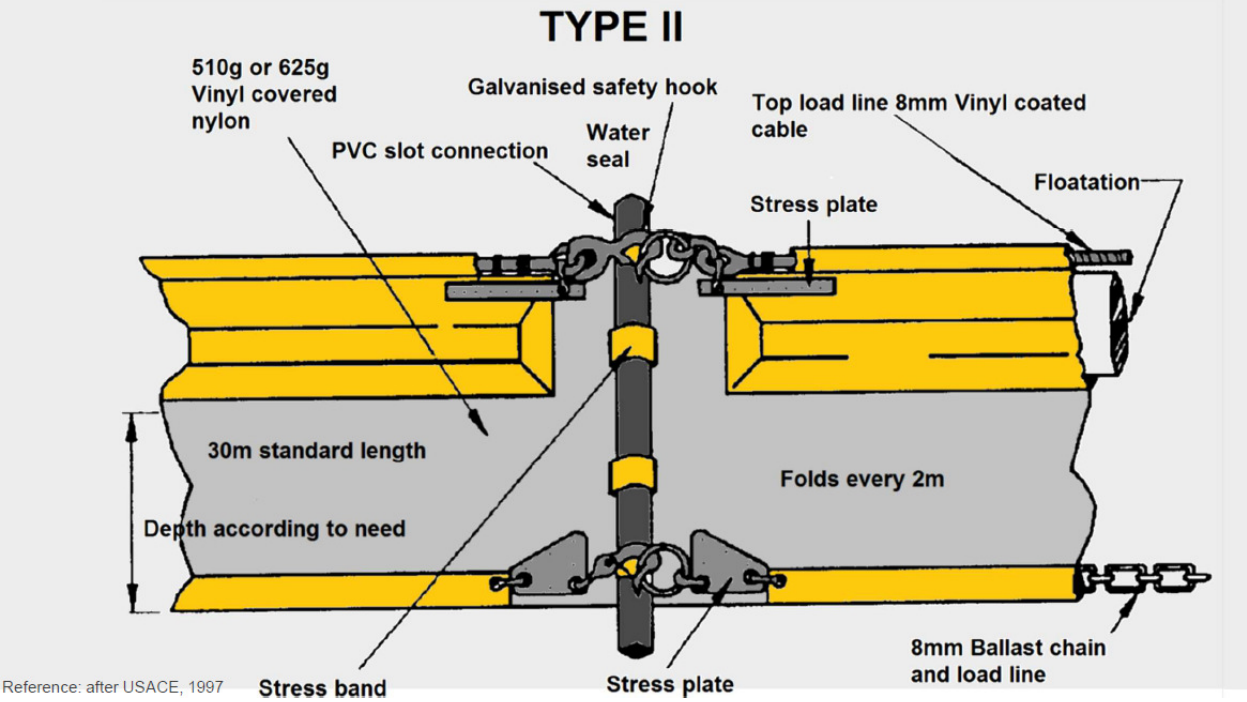
Silt curtains are a common and well-established method for containing and minimising sediment plume spread, and when properly deployed, are an effective measure for mitigating adverse impacts due to SS release. The United States Army Corporation of Engineers (USACE) has outlined a silt curtain classification

system that describes three main types of silt curtains according to the prevailing hydrodynamic and metocean conditions at they are suitable for. The three types are shown in **Figure 3**.

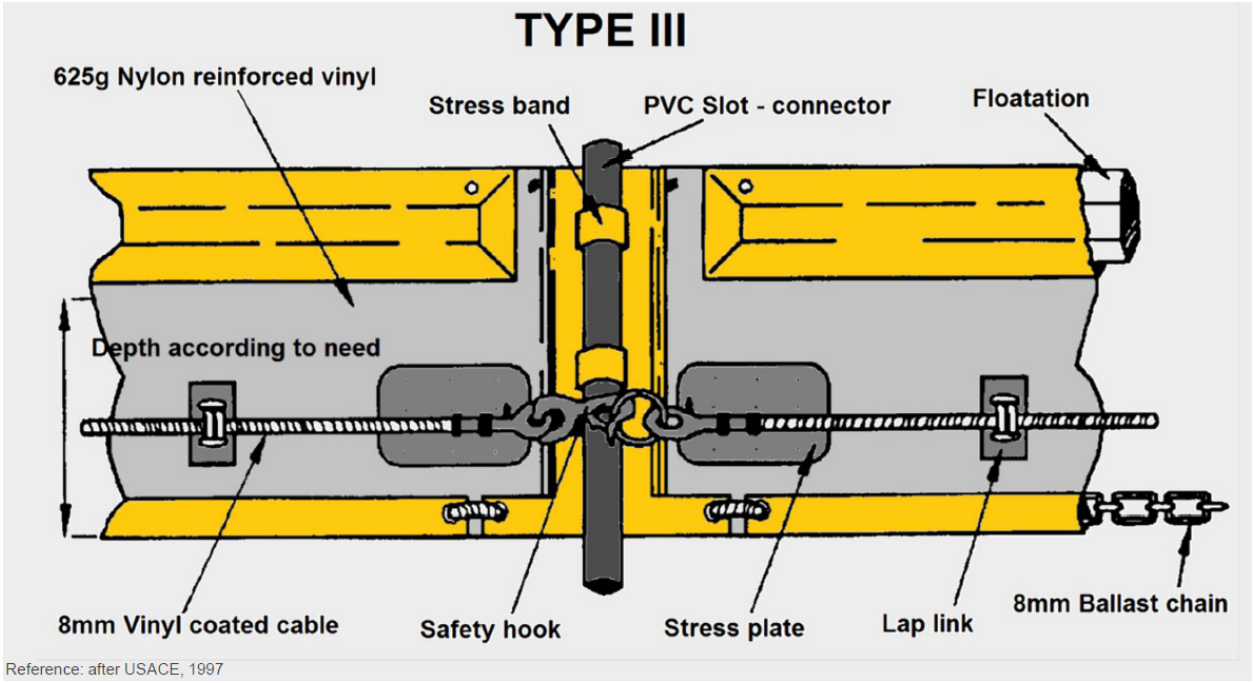
Figure 3 Silt Curtain Types



Type I - Designed for use in lower energy environments where there are no currents and deployment location is sheltered from any wind and waves.



Type II – Suited to sites where there is only a small to moderate current of up to about 1 m/s. Wind and wave action can be present but not considered major force.

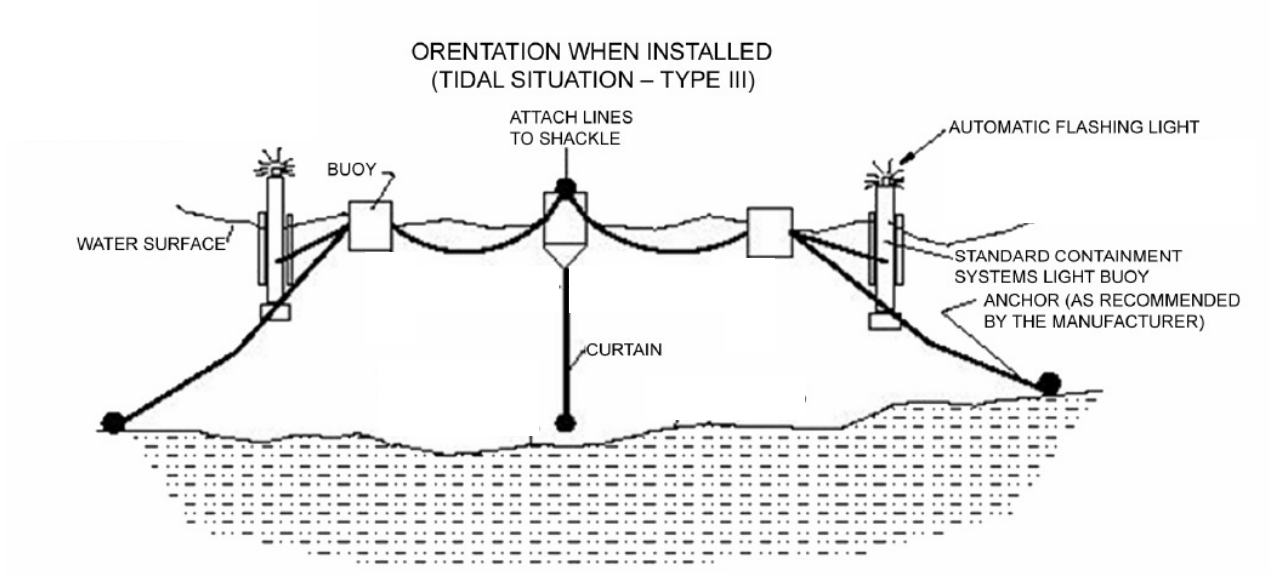


Type III – For sites with higher energy environments, with currents in excess of 1.5 m/s. Curtains can be deployed in a tidal region and be subject to wind and wave action.

Based on the hydrodynamic outputs from the Year 2016 scenario (see **Annex A**), the peak flow speeds at the eastern works areas to be mitigated may reach up to 0.8 m/s. Average water depth in this area is approx. 5 m. Based on the USACE classification, the Type II and III silt curtains would be feasible for the current speeds that are expected within the project area, however the Type II may not be sufficiently adequate to withstand the local wind and wave conditions. Therefore, the Type III would be required. By Year 2017, the partially completed seawall may significantly reduce tidal and wave conditions in the project area such that Type II silt curtains may also be deployed in place of the Type III.

As shown in **Figure 3**, Type III silt curtains are a heavy duty standard that are designed for higher energy environments. These typically comprise of reinforced poly-vinyl chloride (PVC) or similar geotextile materials with metal plates / chain fittings and anchoring. Depending on the manufacturer, specifications for deployment of Type III silt curtains are generally within the current speed range of 0.7 – 1.5 m/s. Examples of manufacturer specifications for Type III silt curtains are provided in **Annex B**. As the silt curtains would need to be deployed at the navigable waters north of the existing HKIA, yellow marker buoys fitted with yellow flashing lights would be laid to mark the extent of the silt curtain and warn marine vessels away from the silt curtain boundaries. An indicative layout of the silt curtain is shown in **Figure 4**.

Figure 4 Indicative Layout for the 'Type III' Silt Curtain



Source: USACE, 1997

Sediment Loss Reduction Factor

The sediment loss reduction efficiency of silt curtains are highly dependent on the local hydrodynamic and metocean conditions at the site of deployment, hence there is no standard reference on the efficiencies that can be achieved by different types of silt curtains. Past approved EIAs have quoted loss reduction factors between 60 – 75 % for single layer silt curtains[1]. However, the HKBCF EIA (which is located in the same

[1] References: EIA for Reclamation of Yau Tong Bay (EIA-069/2001), Liquefied Natural Gas (LNG) Receiving Terminal and Associated Facilities (EIA-125/2006) and Dredging Works for Proposed Cruise Terminal at Kai Tak (EIA-138/2007).

general area as the project) adopted a more conservative loss reduction factor of 45 % for filling activities using a single floating silt curtain, and a cumulative loss reduction factor of 61 % with application of a second floating silt curtain when used in combination with the first. The HKBCF EIA did not specify the silt curtain requirements, though the example manufacturer specification provided in Appendix 9D6 of the HKBCF EIA suggests that a Type I silt curtain is being referred.

Hydrodynamic conditions (for the eastern works areas of the project) are similar to that experienced by the HKBCF project area, however the water depth at the HKBCF area can reach down to 10 m. It is generally considered that the main factors affecting silt curtain efficiency are water depth and current speeds. The relatively shallower water depth at the project area (approx. 5 m) is well within the deployment range of silt curtains such that efficiency reductions associated with depth increase is generally not expected. With the recommended deployment of Type III silt curtains for the project, the current conditions at the project area would be within the tolerance limit of the silt curtain, hence the relatively higher current speeds (up to 0.8 m/s) are not expected to lead to significant deterioration of the effectiveness of the Type III silt curtains. The assumed loss reduction factor of 45 % for single layer silt curtain and 61 % for double layer silt curtain is thus considered to be appropriate for representing the cumulative loss reduction that can be achieved in the project area. Silt curtain monitoring would be required during construction phase to ensure its effectiveness.

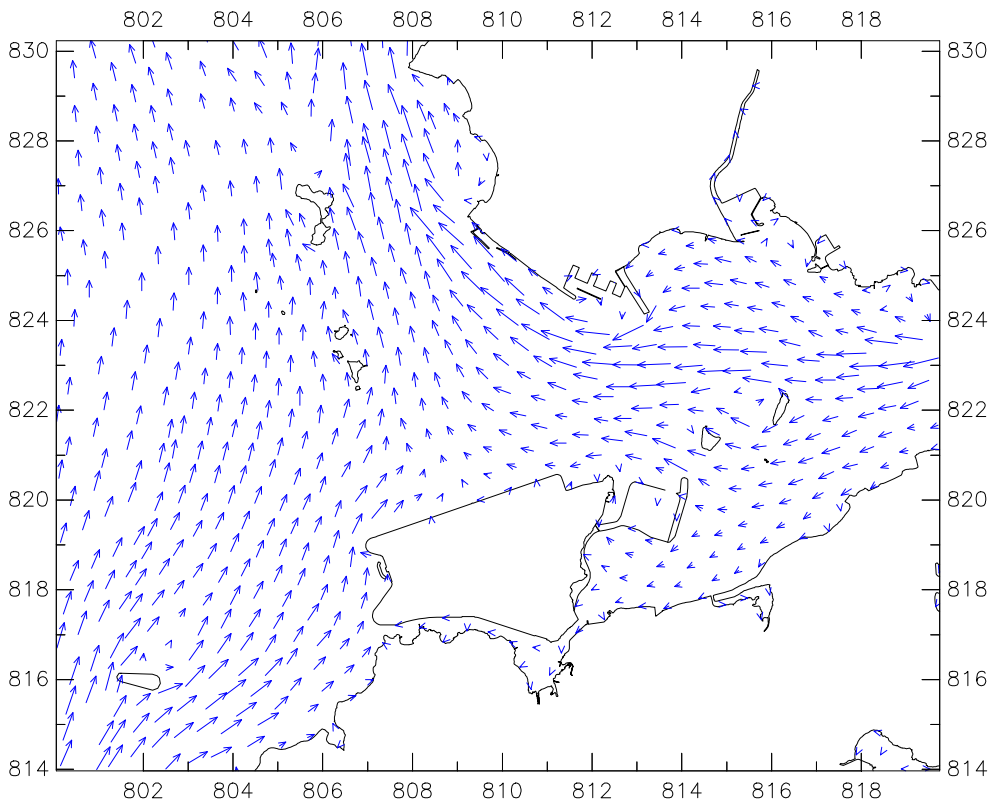
Proposed Arrangement for Year 2016 Scenario

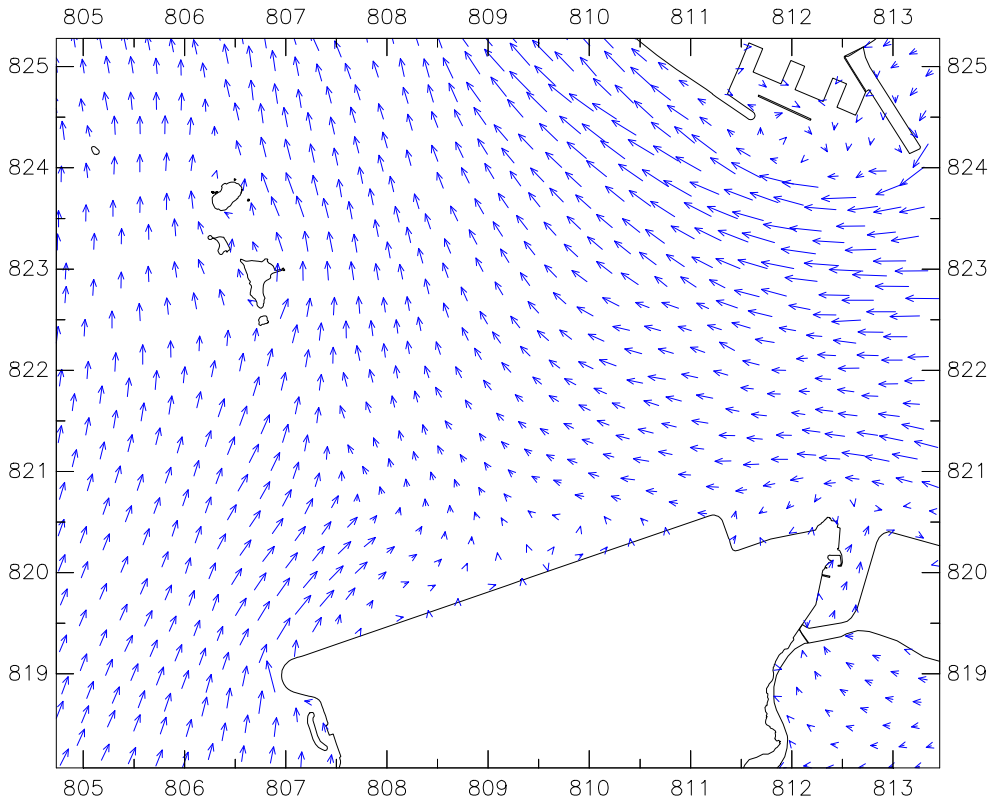
The Year 2016 scenario generally covers construction activities occurring between Year 2016 Q1 and Q3, when sand blanket laying / ground improvement activities dominate (before commencement of marine filling activities) and there is limited to no partial seawall constructed. The results of the unmitigated Year 2016 scenario has shown that only WSRs located at the eastern side of the project area will be affected by SS release due to the project. A review of the hydrodynamic regime shows that due to the tidal divide, only works areas located at the eastern side of the project area would have significant contribution to the SS impacts at the affected WSRs. Therefore, only works areas located east of the tidal divide needs to be mitigated under the Year 2016 scenario. Double silt curtains are proposed to be deployed to cover the active works areas along the eastern side. The indicative arrangement of the silt curtains is shown in **Annex C**. Due to the need to maintain access for construction vessels, overlapping silt curtains in a semi-open configuration is proposed. Adjustments to the location and configuration of the silt curtains would likely be required to suit the actual site conditions including on-site constraints such as marine traffic requirements, the construction sequencing and the contractor's working methods as construction activities progress and other works areas along the eastern side of the project become active.

Proposed Arrangement for Year 2017 Scenario

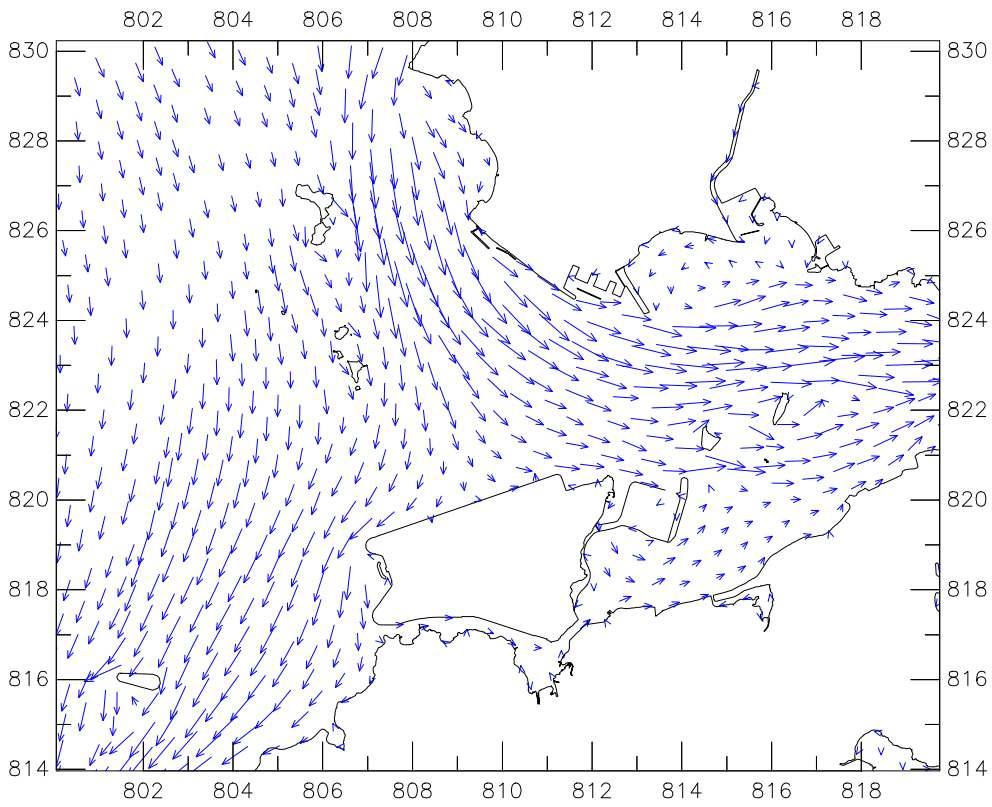
The Year 2017 scenario generally covers construction activities occurring between Year 2016 Q4 and Year 2017 Q3, when ground improvement / marine filling activities dominate, and there is partial seawall constructed. Under this scenario, the partially completed seawalls provide substantial current speed reductions at most of the project area, and silt curtains can be effectively deployed to cover all active works areas along the north and eastern openings inbetween partially completed seawalls. The indicative arrangement of the silt curtains is shown in **Annex C**. The location and configuration of the silt curtains will be modified as construction activities progress and the remaining seawall openings are reduced.

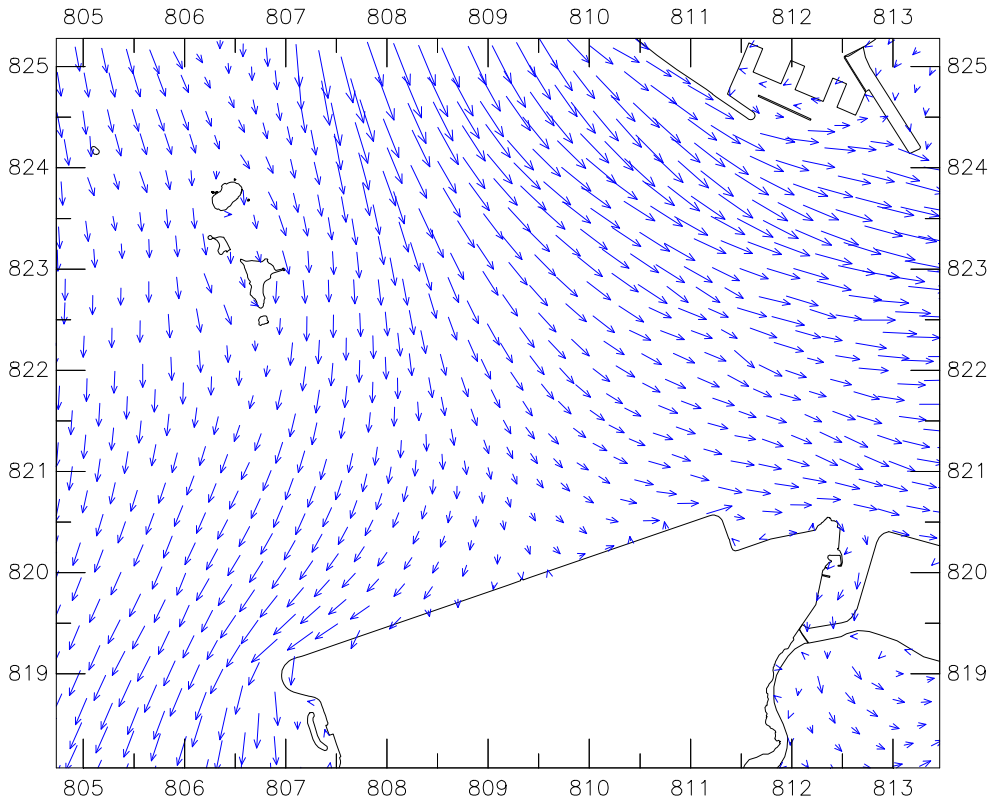
Annex A – Flow Results for Year 2016 and 2017 Scenario





Year 2016 Peak Flow Vector (m/s), Dry Season, Surface Flood Tide	Sep 2013	Figure 001
	02 Aug 23:00	
Mott MacDonald Hong Kong Limited		





Year 2016 Peak Flow Vector (m/s), Dry Season, Surface Ebb Tide	Sep 2013	Figure 002
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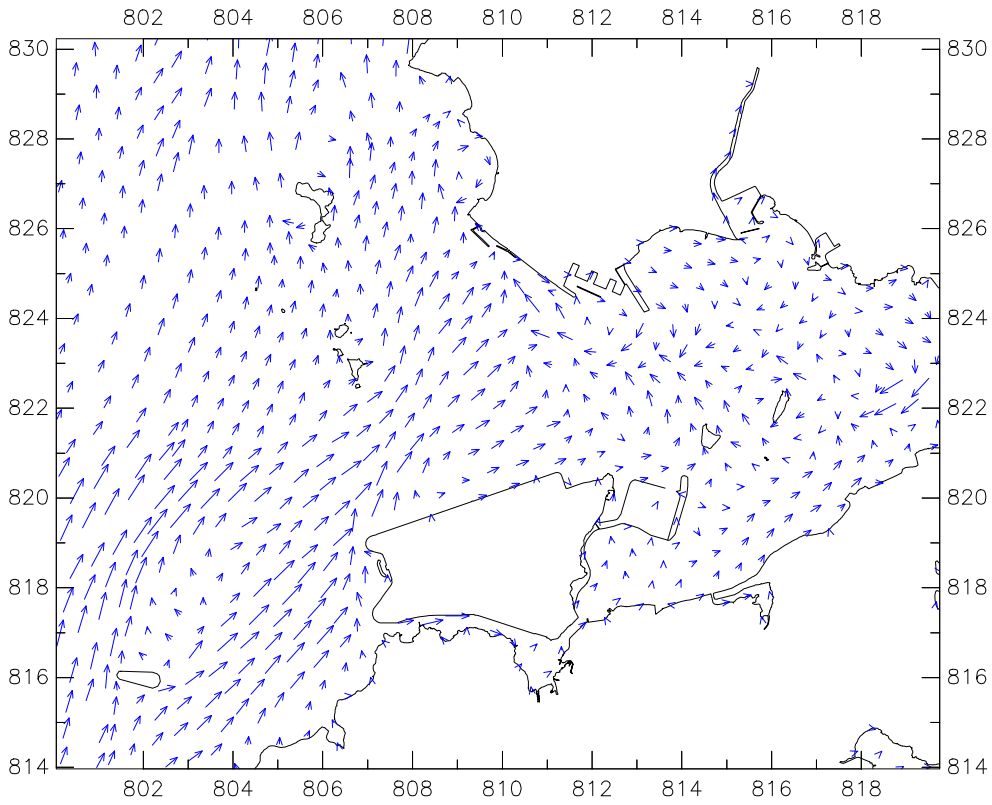
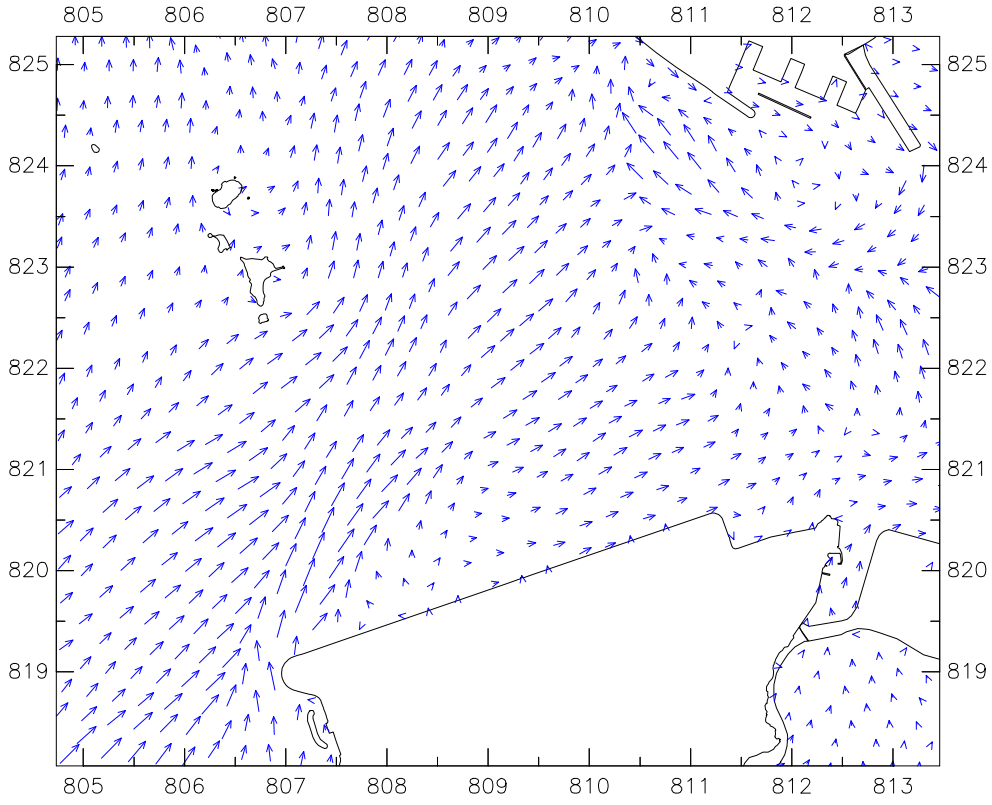
Mott MacDonald Hong Kong Limited		





Year 2016 Peak Flow Vector (m/s), Wet Season, Surface Flood Tide	Dec 2013	Figure 003
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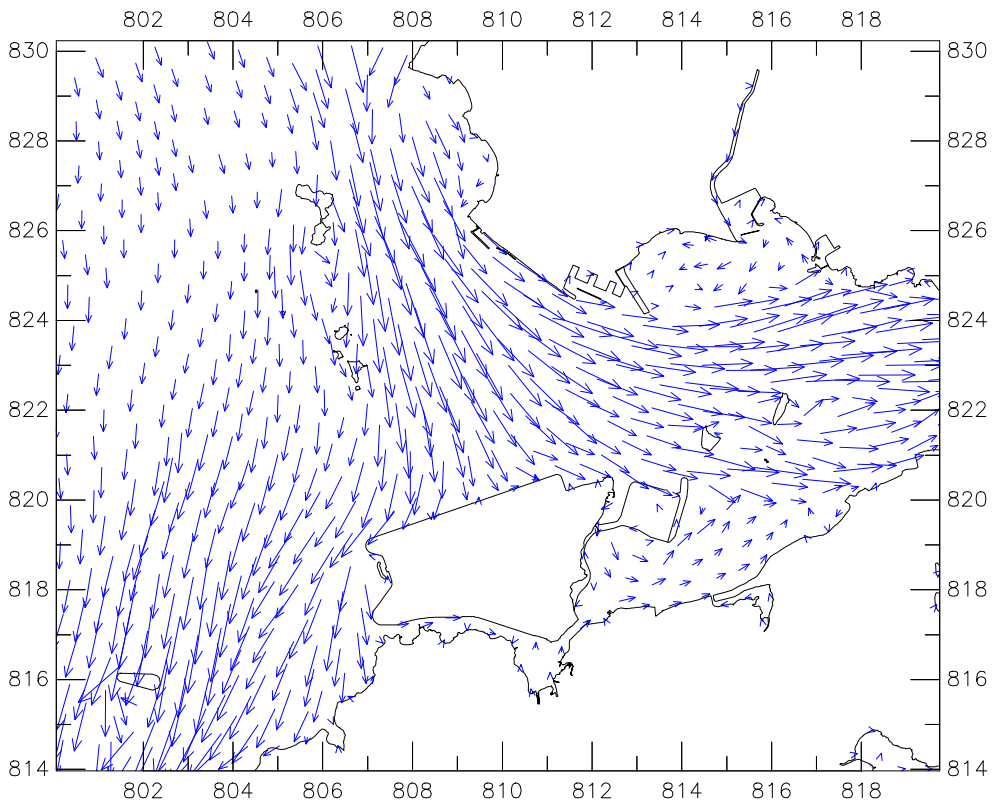
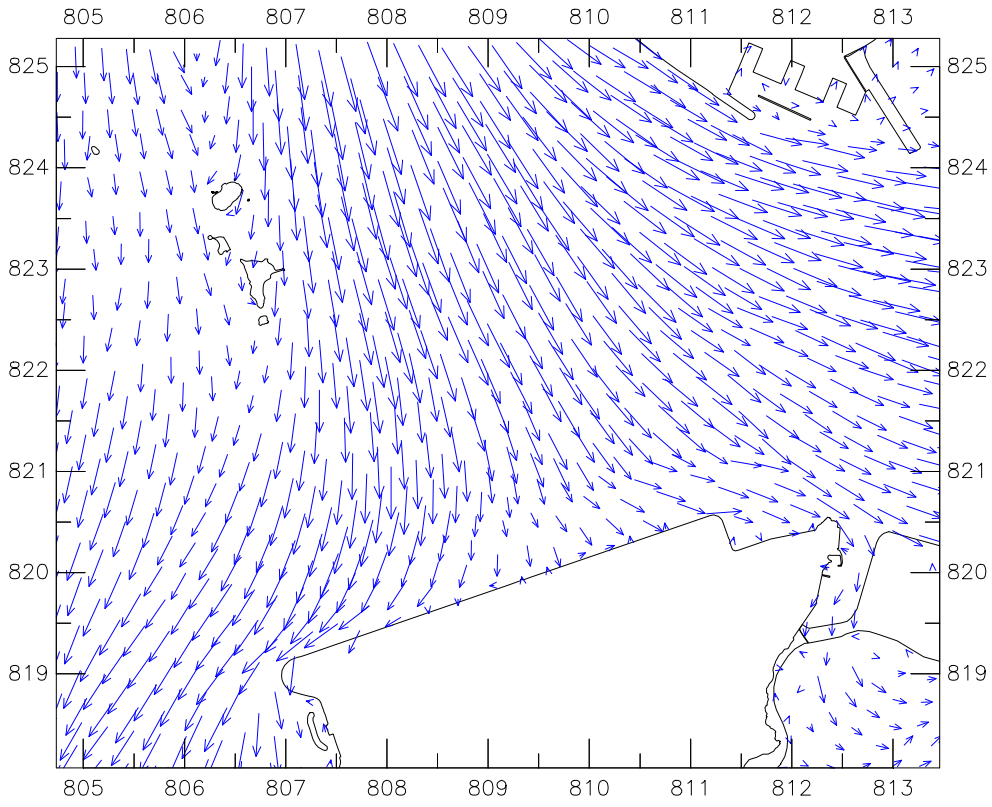
Mott MacDonald Hong Kong Limited		





Year 2016 Peak Flow Vector (m/s), Wet Season, Surface Ebb Tide	Dec 2013	Figure 004
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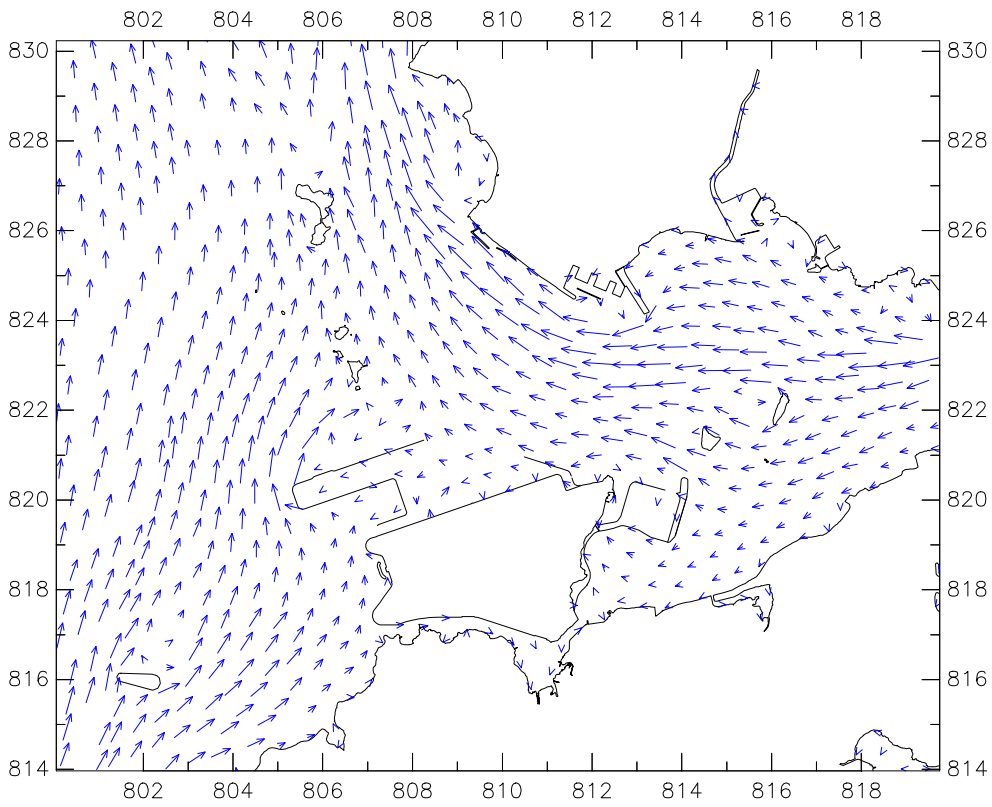

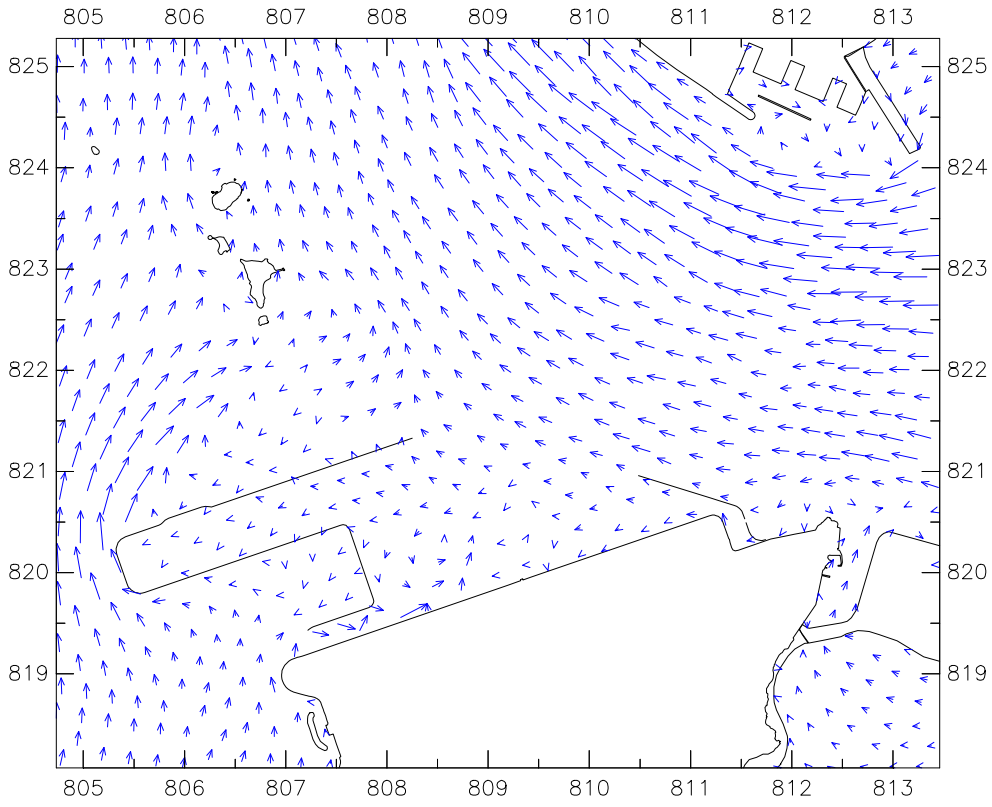

Year 2017 Peak Flow Vector (m/s), Dry Season, Surface Flood Tide	Dec 2013	Figure 005
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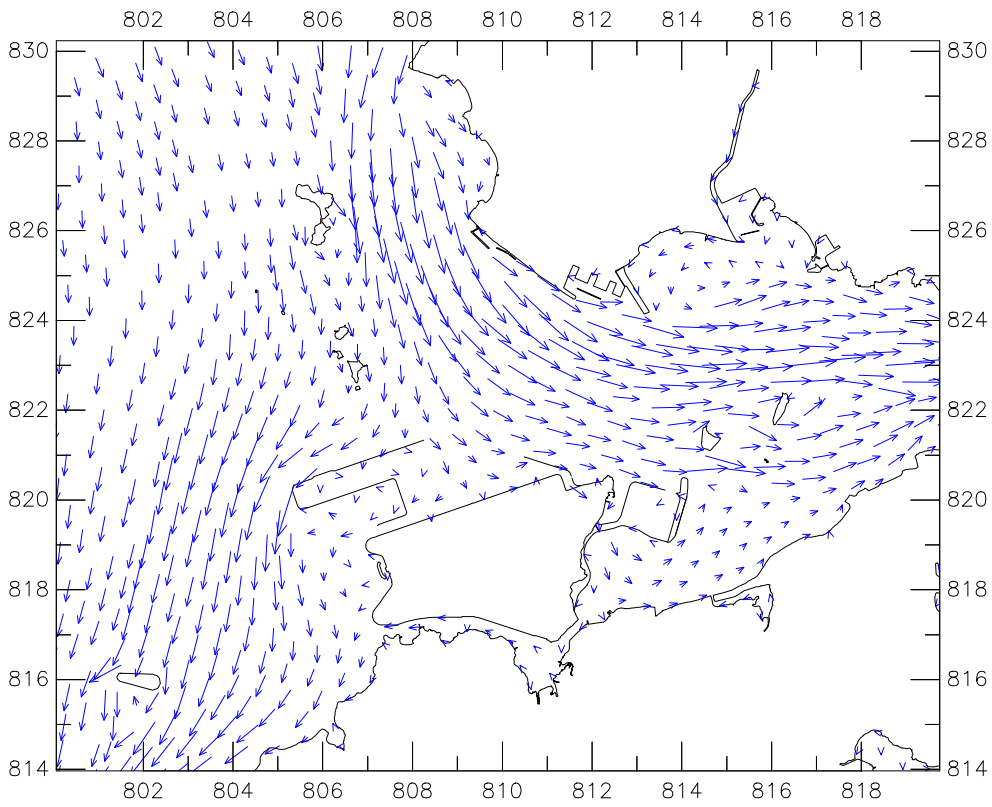

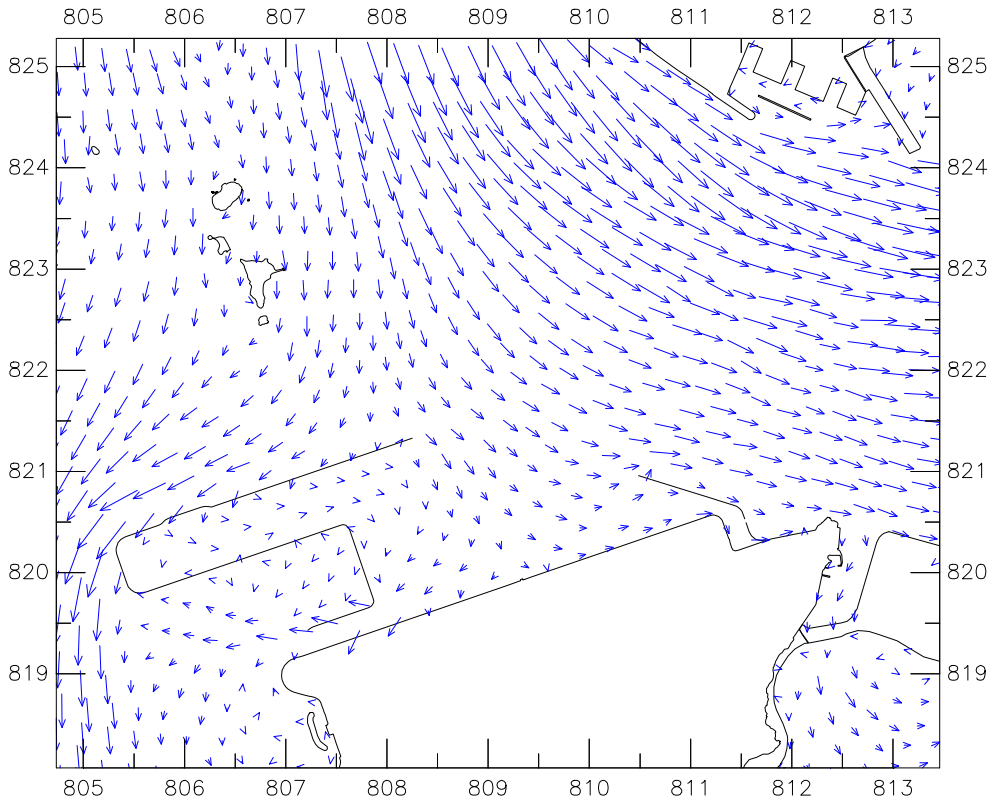

Year 2017 Peak Flow Vector (m/s), Dry Season, Surface Ebb Tide	Dec 2013	Figure 006
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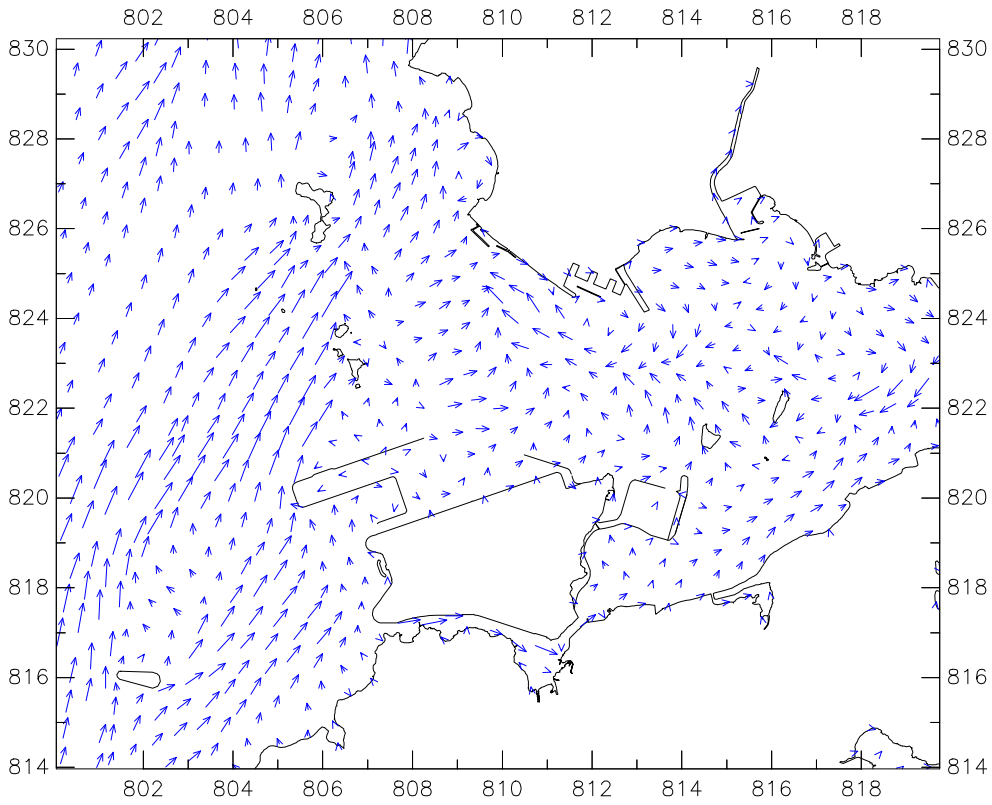

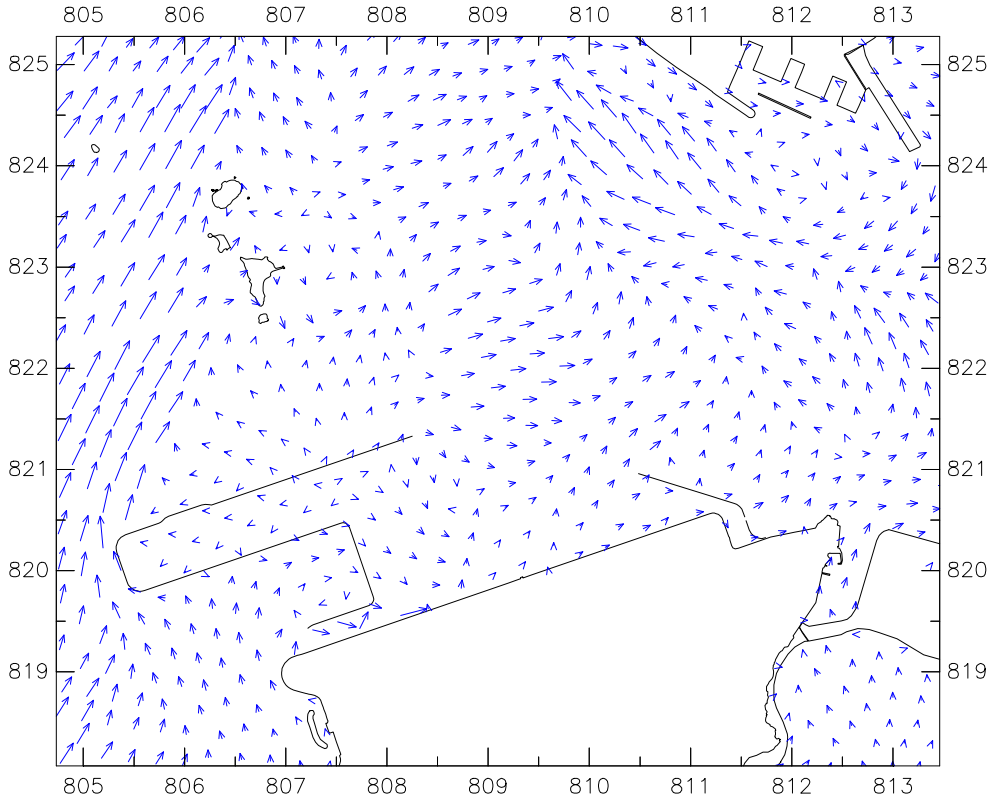

Year 2017 Peak Flow Vector (m/s), Wet Season, Surface Flood Tide	Dec 2013	Figure 007
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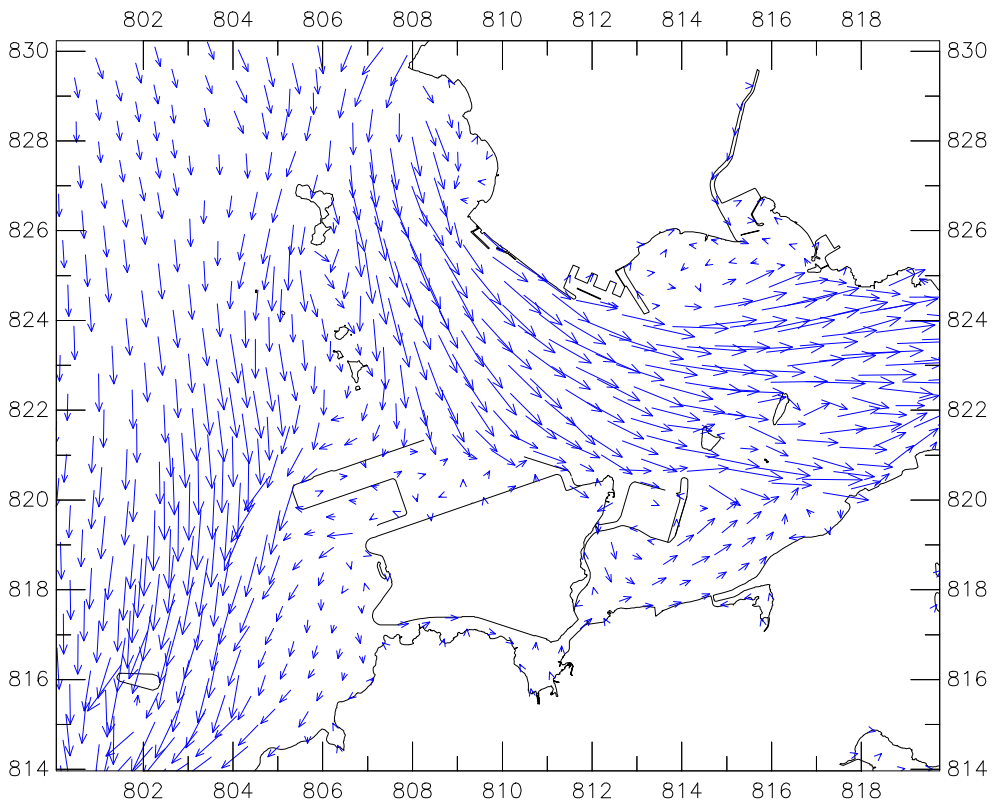

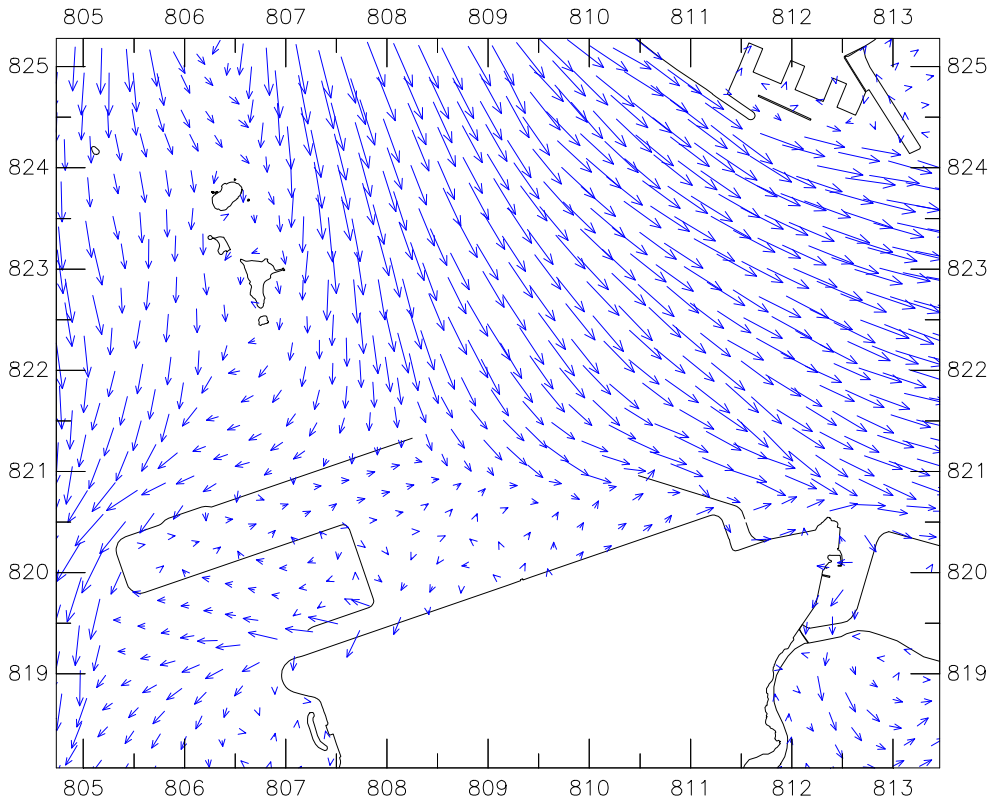

Year 2017 Peak Flow Vector (m/s), Wet Season, Surface Ebb Tide	Dec 2013	Figure 008
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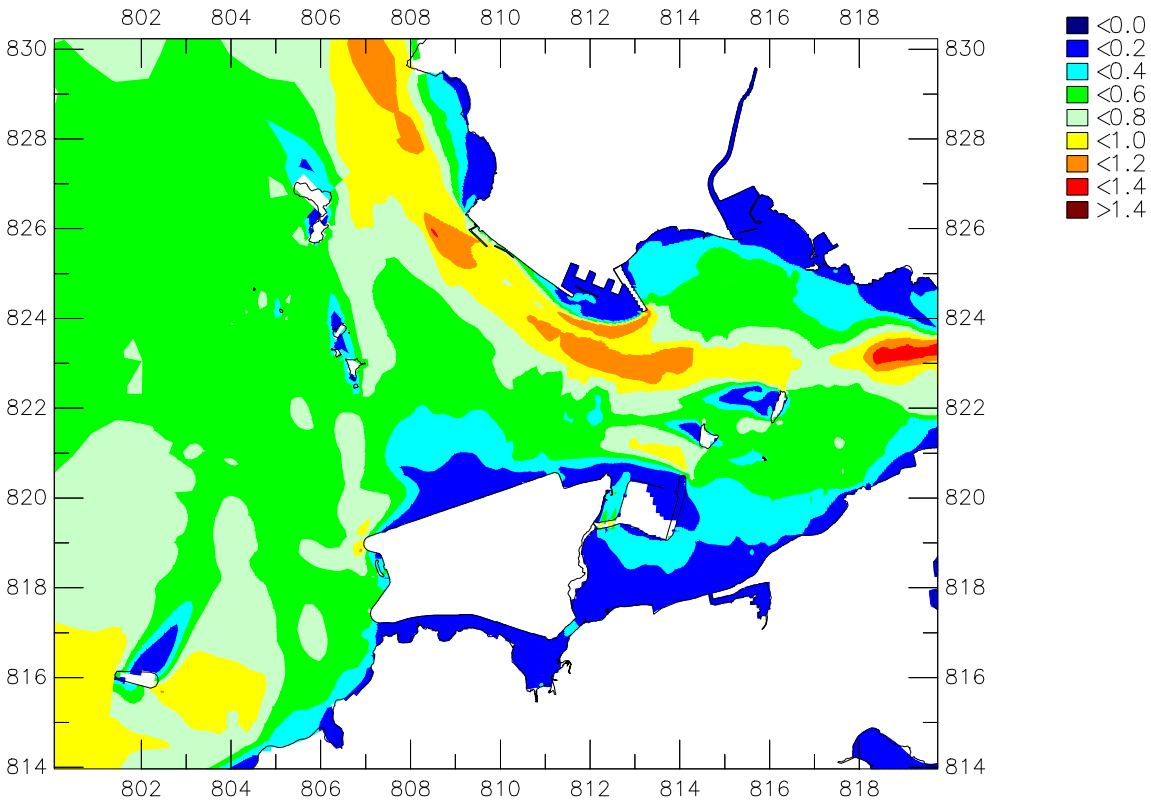
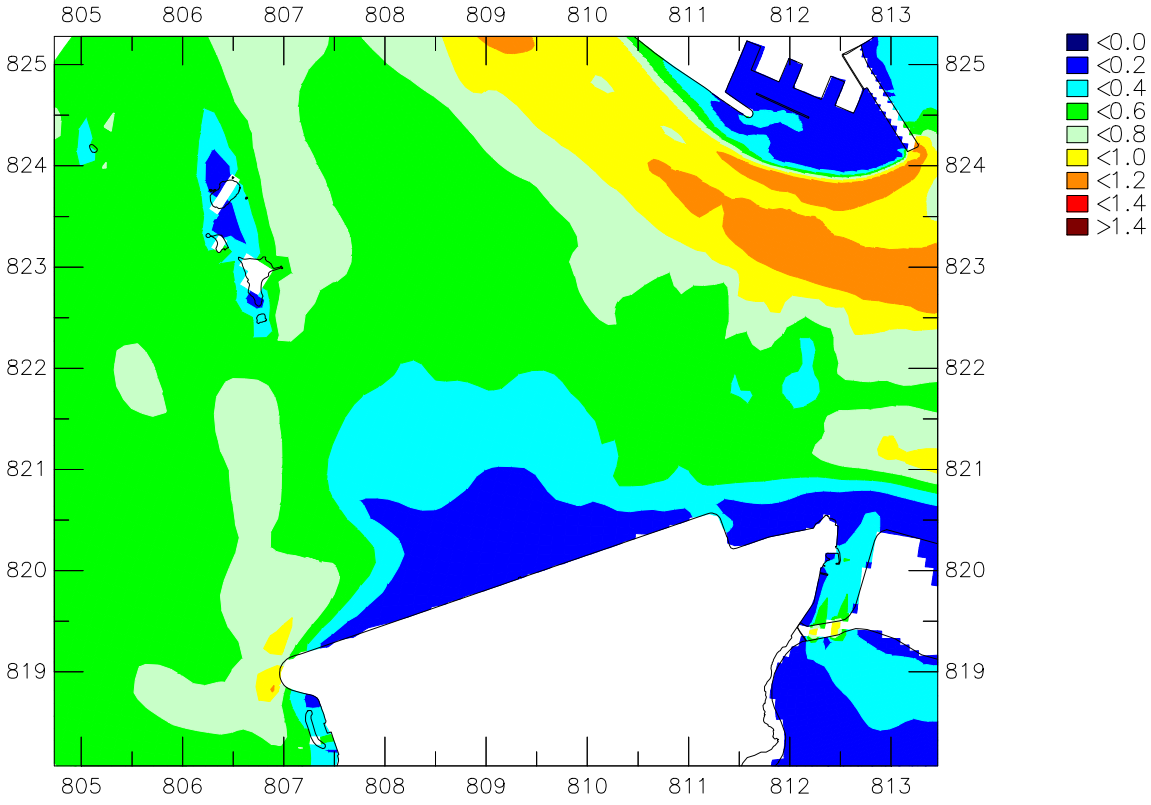
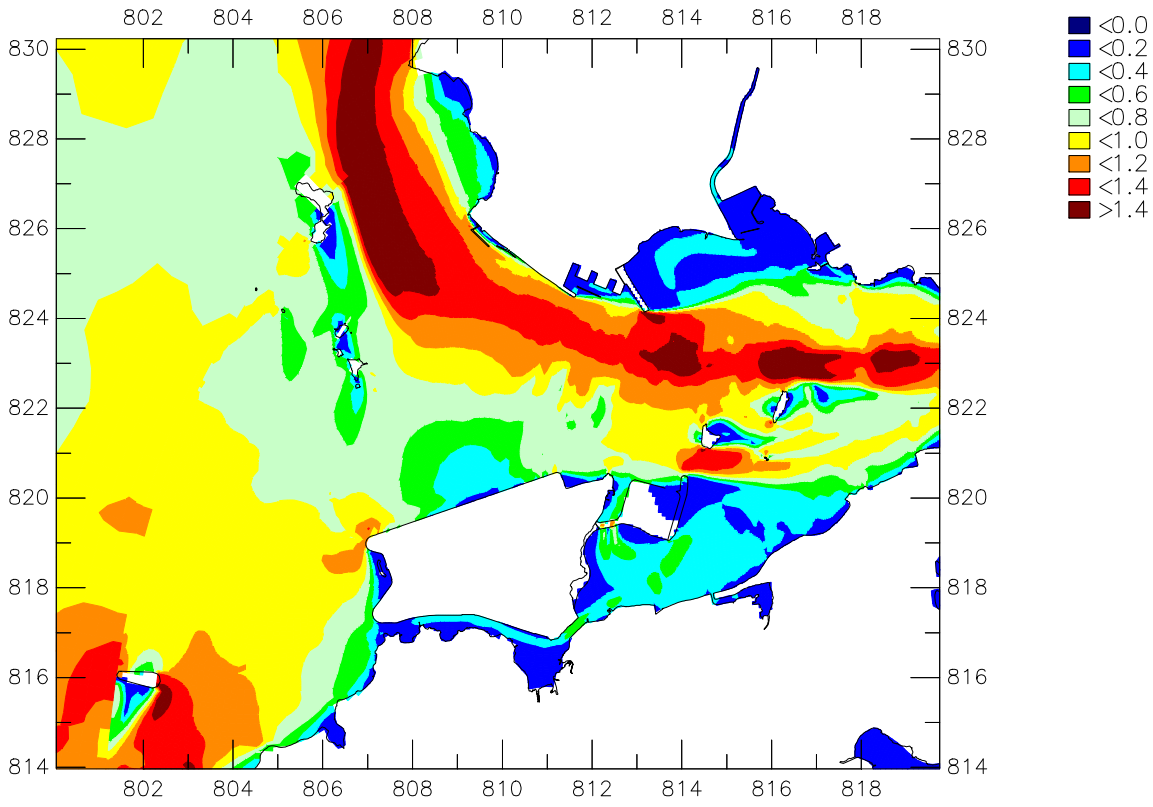
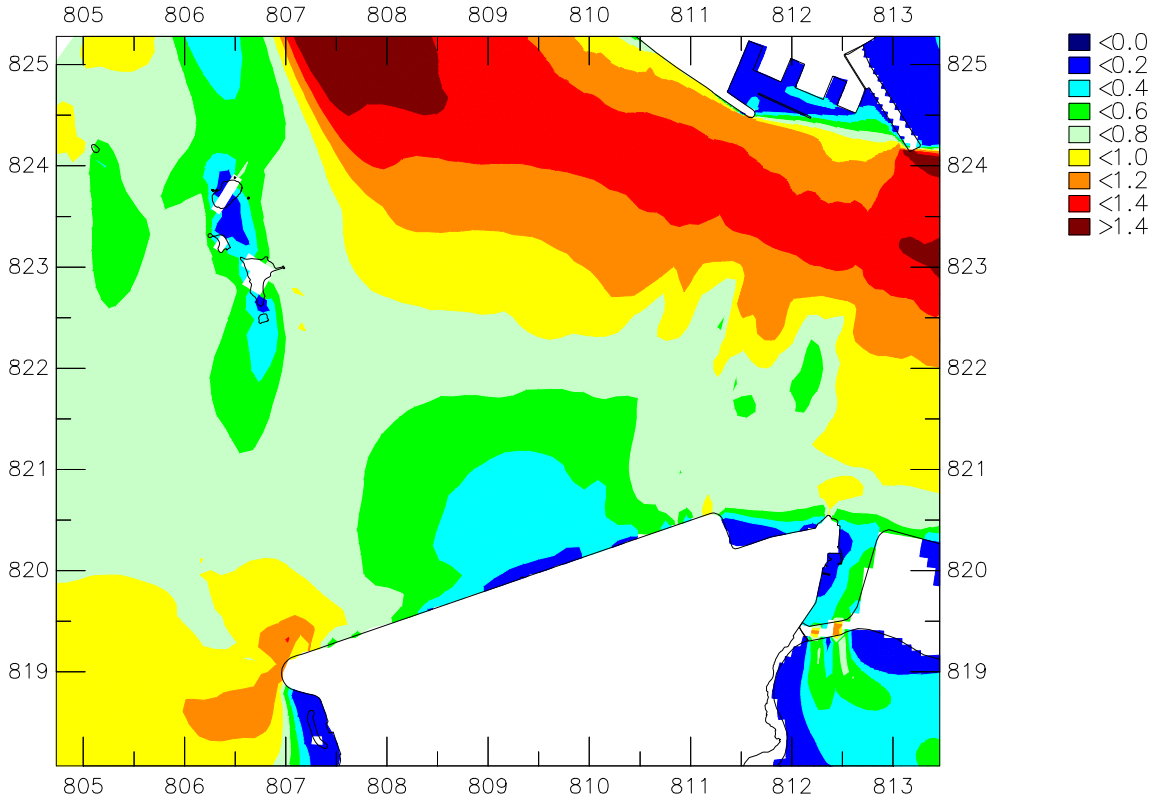
Mott MacDonald Hong Kong Limited		



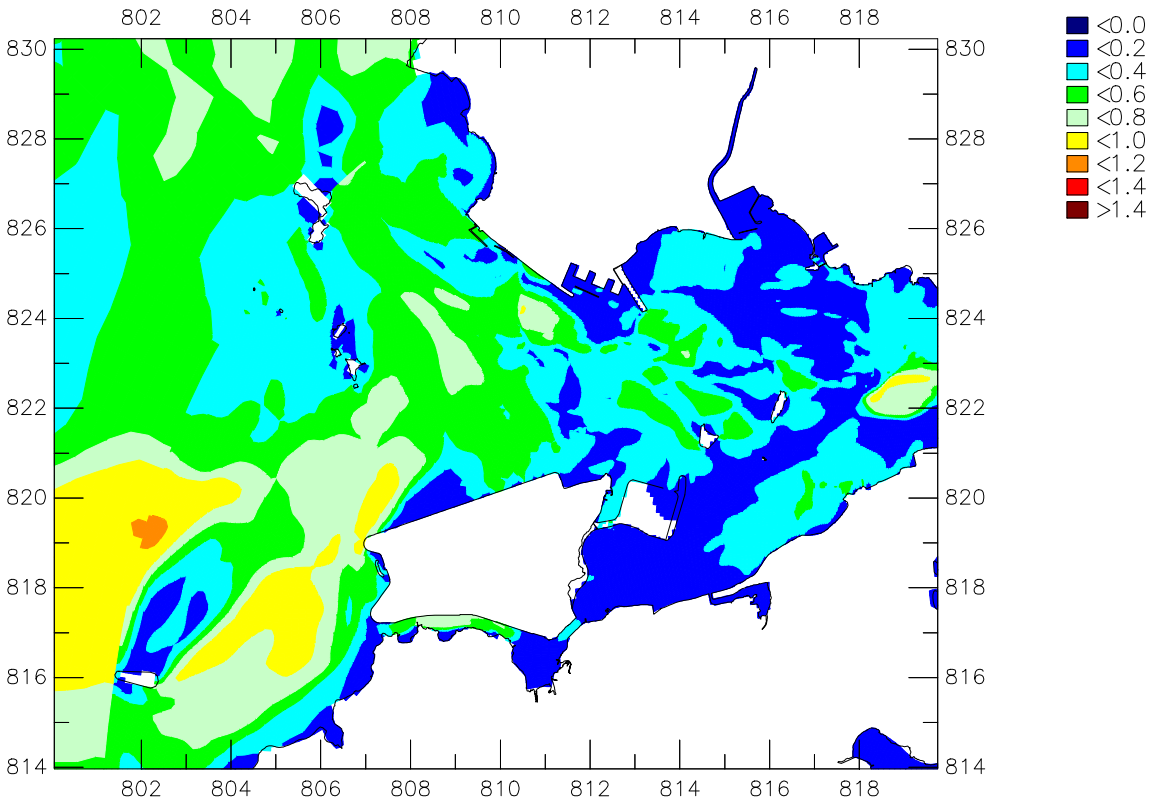


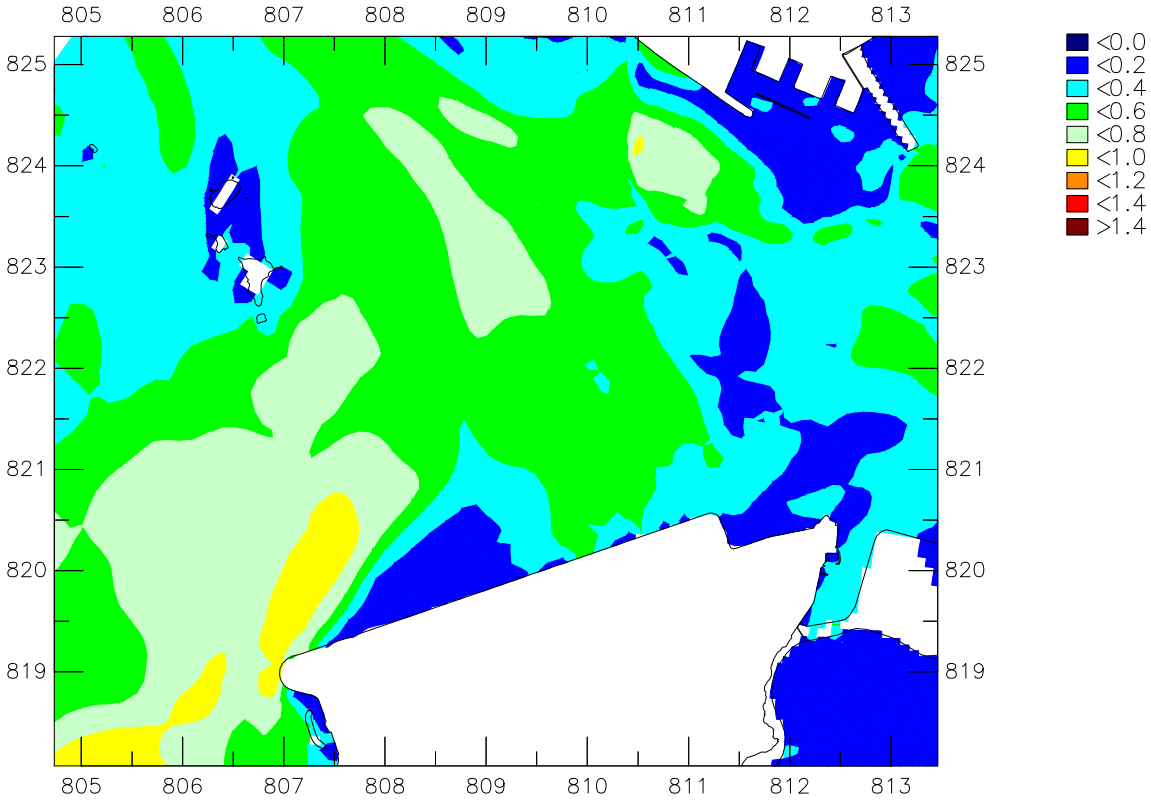
Year 2016 Current Magnitude Contour (m/s), Dry Season, Surface Peak Flow in Flood Tide	Sep 2013	Figure 009
	02 Aug 23:00	
Mott MacDonald Hong Kong Limited		





Year 2016 Current Magnitude Contour (m/s), Dry Season, Surface Peak Flow in Ebb Tide	Sep 2013	Figure 010
	31 Jul 14:45	
Mott MacDonald Hong Kong Limited		





Year 2016 Current Magnitude Contour (m/s), Wet Season, Surface Peak Flow in Flood Tide	Dec 2013	Figure 011
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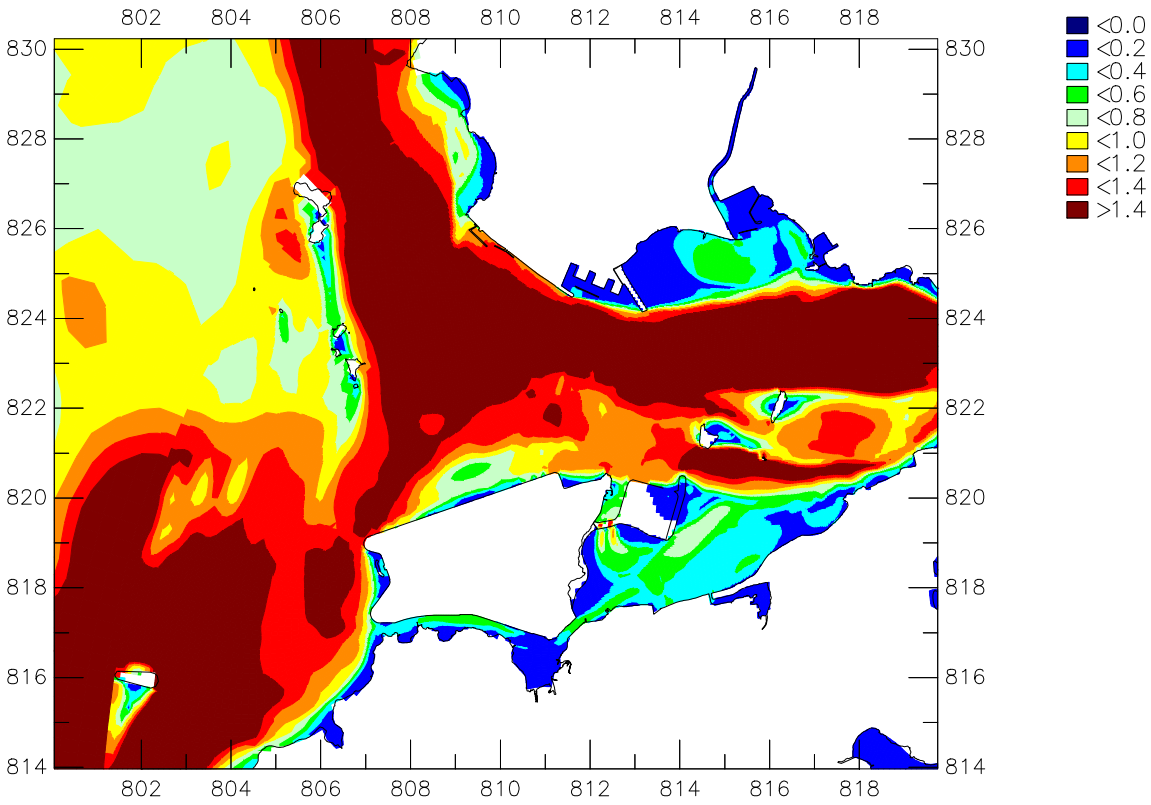

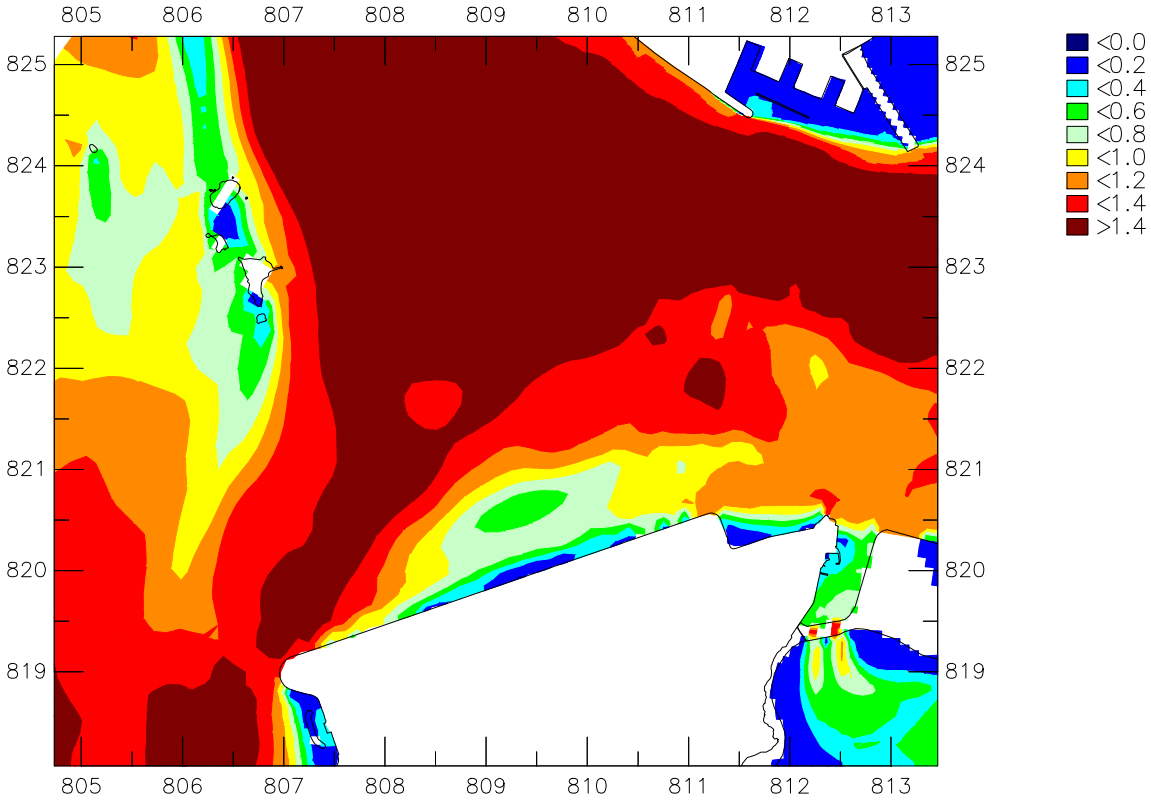

Year 2016 Current Magnitude Contour (m/s), Wet Season, Surface Peak Flow in Ebb Tide	Dec 2013	Figure 012
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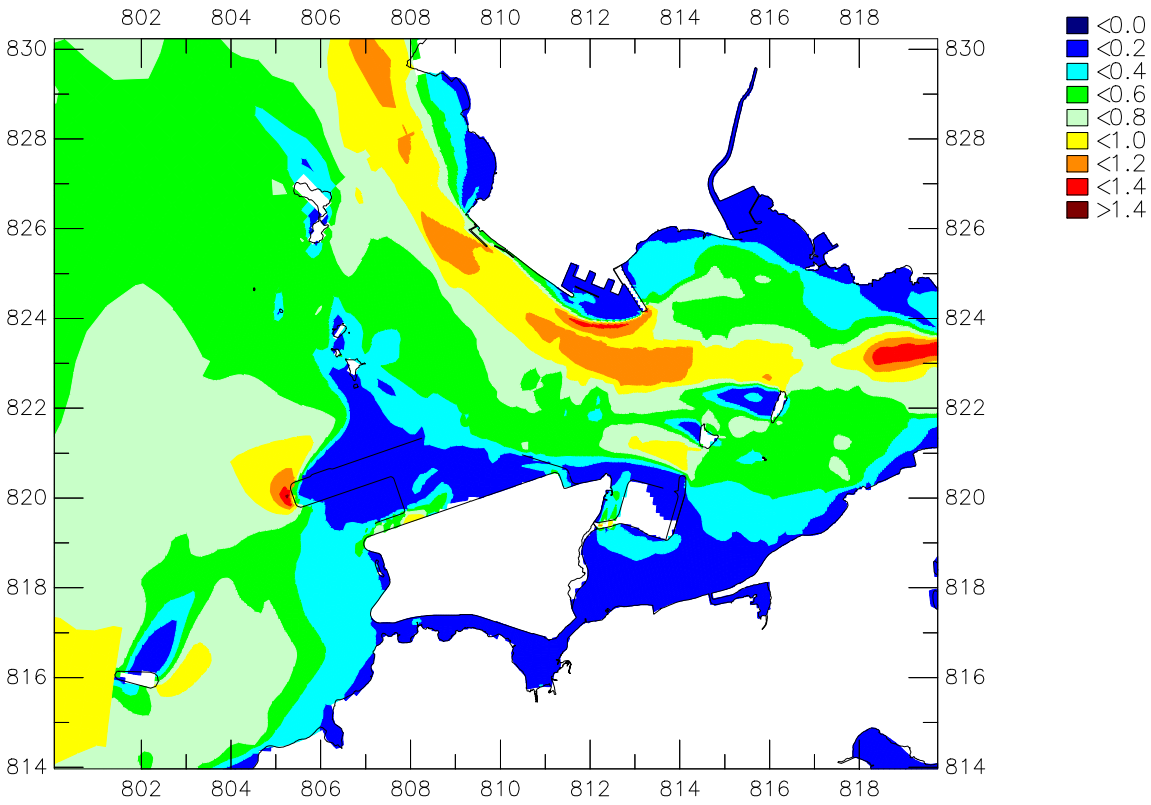
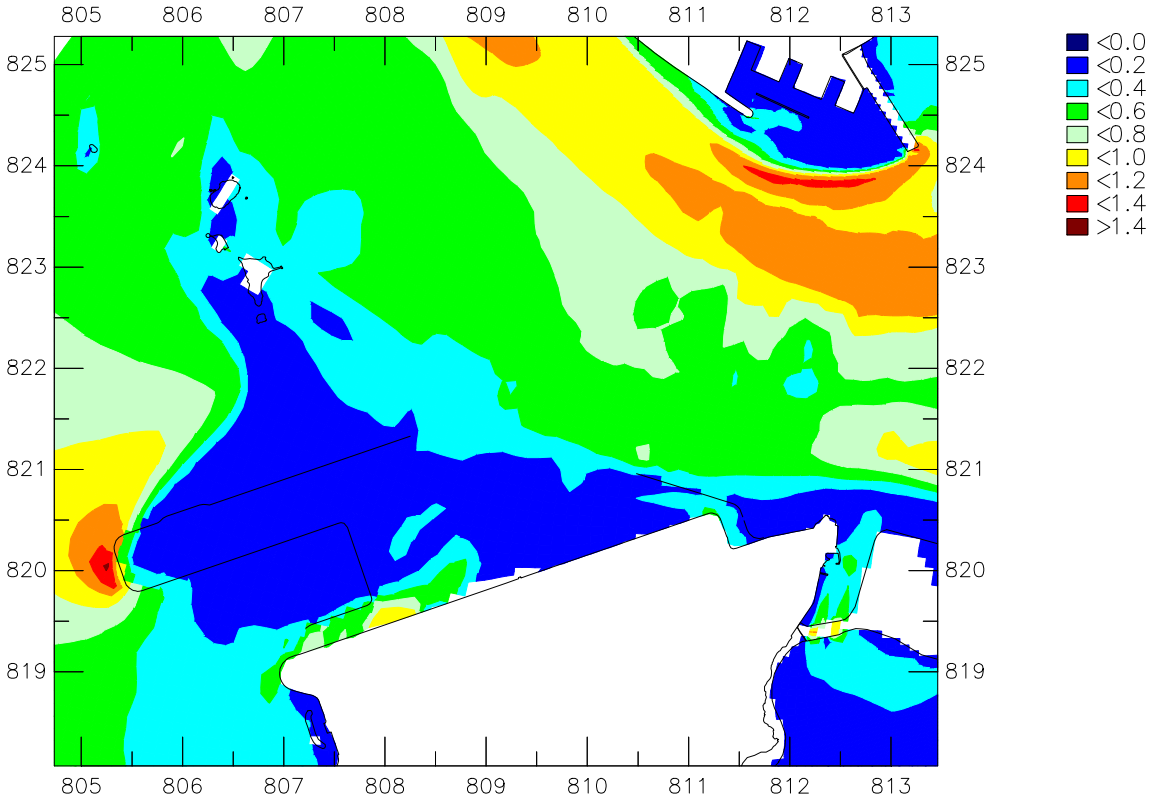
Mott MacDonald Hong Kong Limited		





Year 2017 Current Magnitude Contour (m/s), Dry Season, Surface Peak Flow in Flood Tide	Dec 2013	Figure 013
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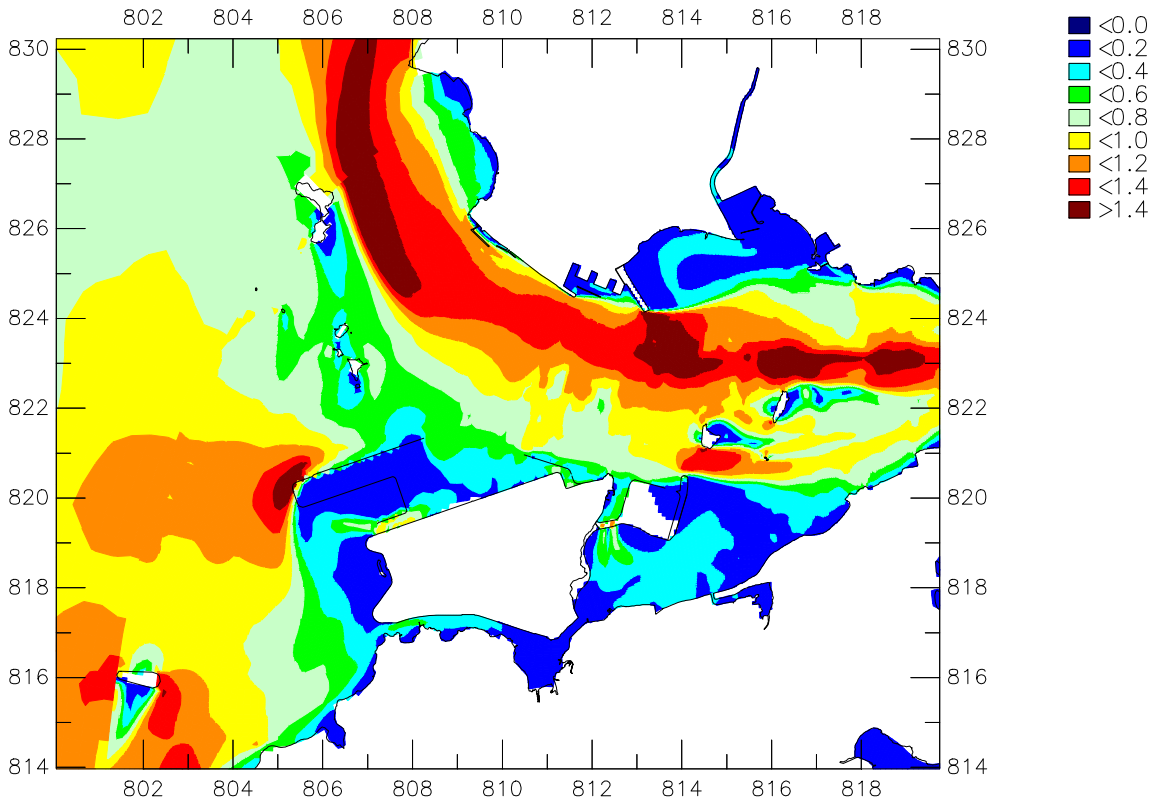

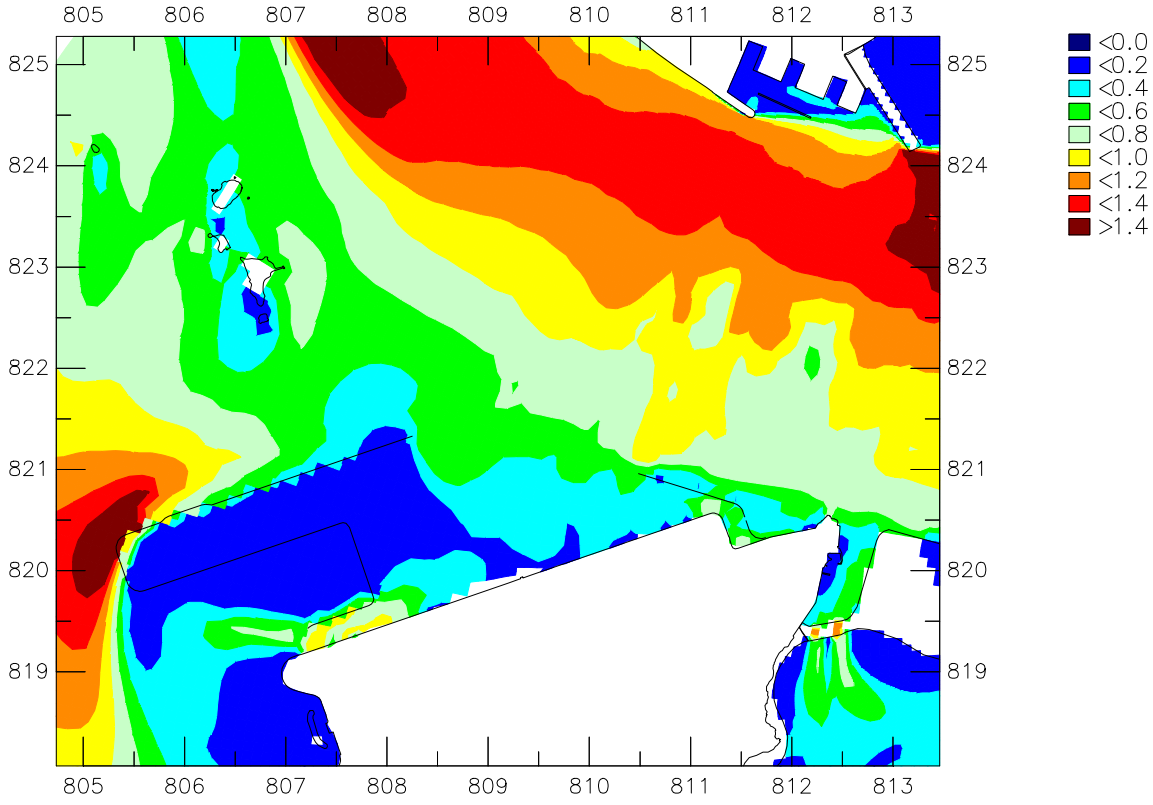

Year 2017 Current Magnitude Contour (m/s), Dry Season, Surface Peak Flow in Ebb Tide	Dec 2013	Figure 014
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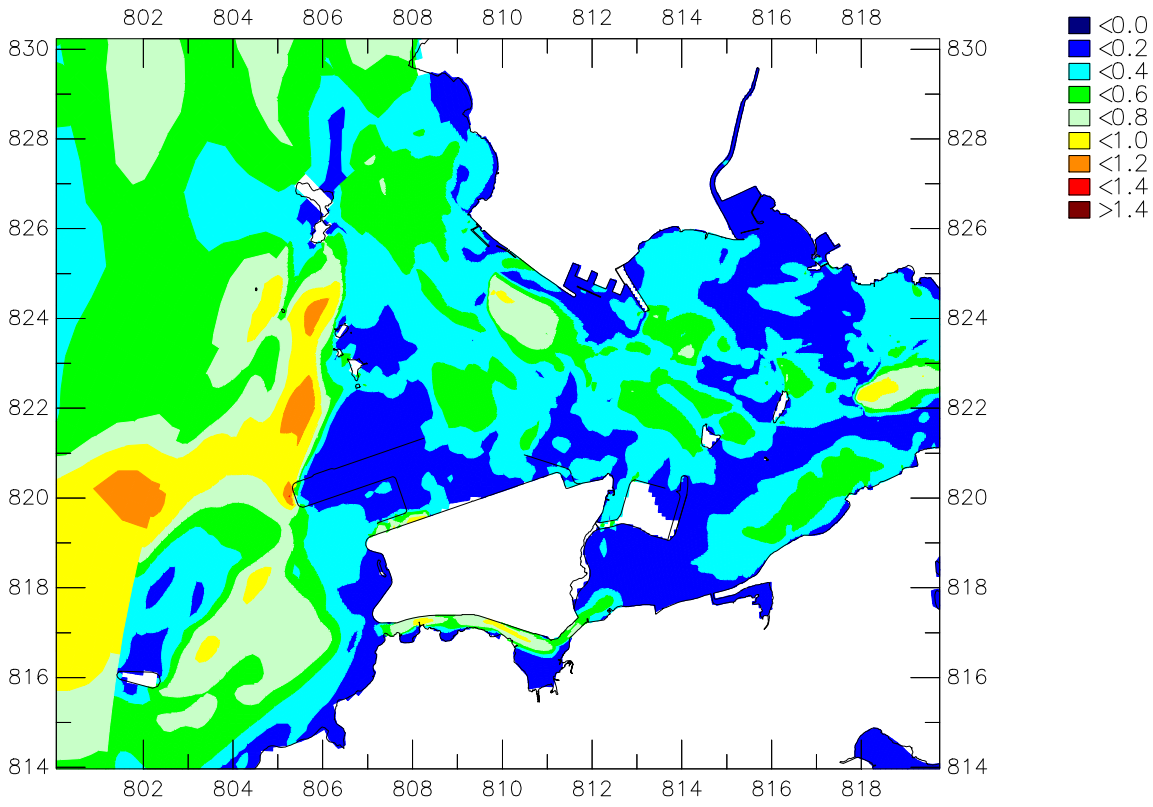

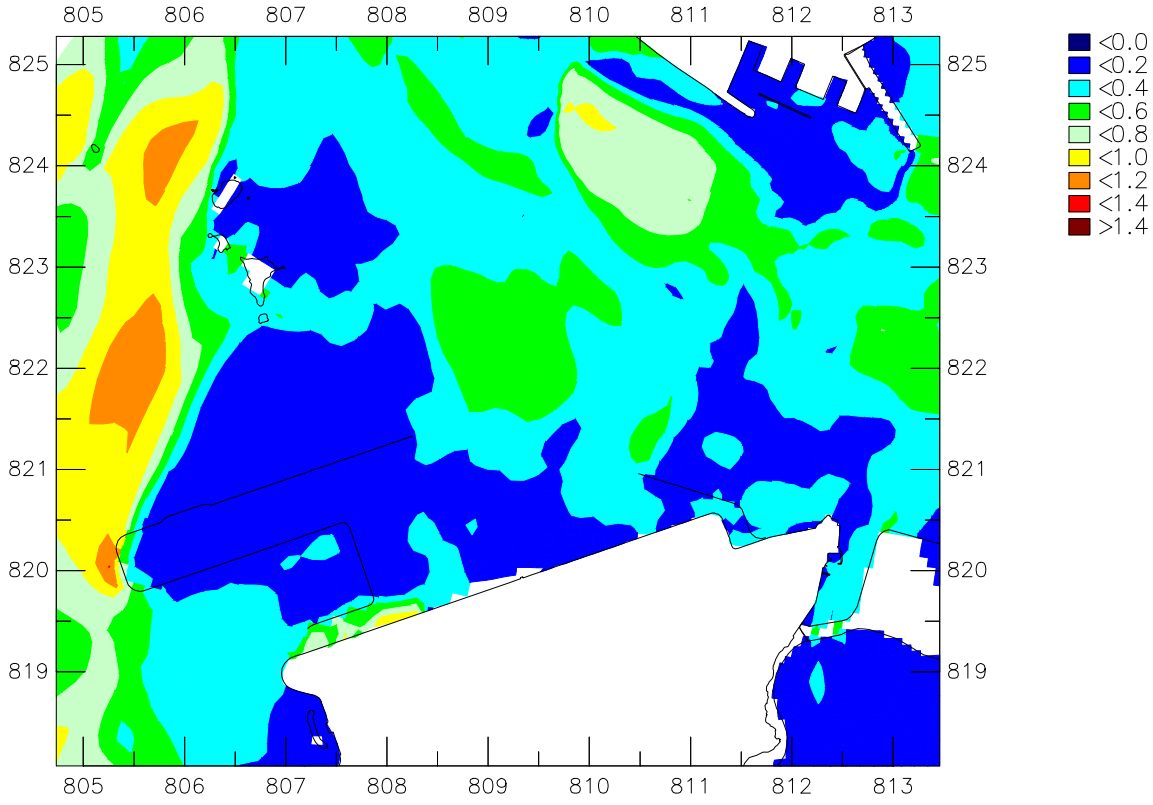

Year 2017 Current Magnitude Contour (m/s), Wet Season, Surface Peak Flow in Flood Tide	Dec 2013	Figure 015
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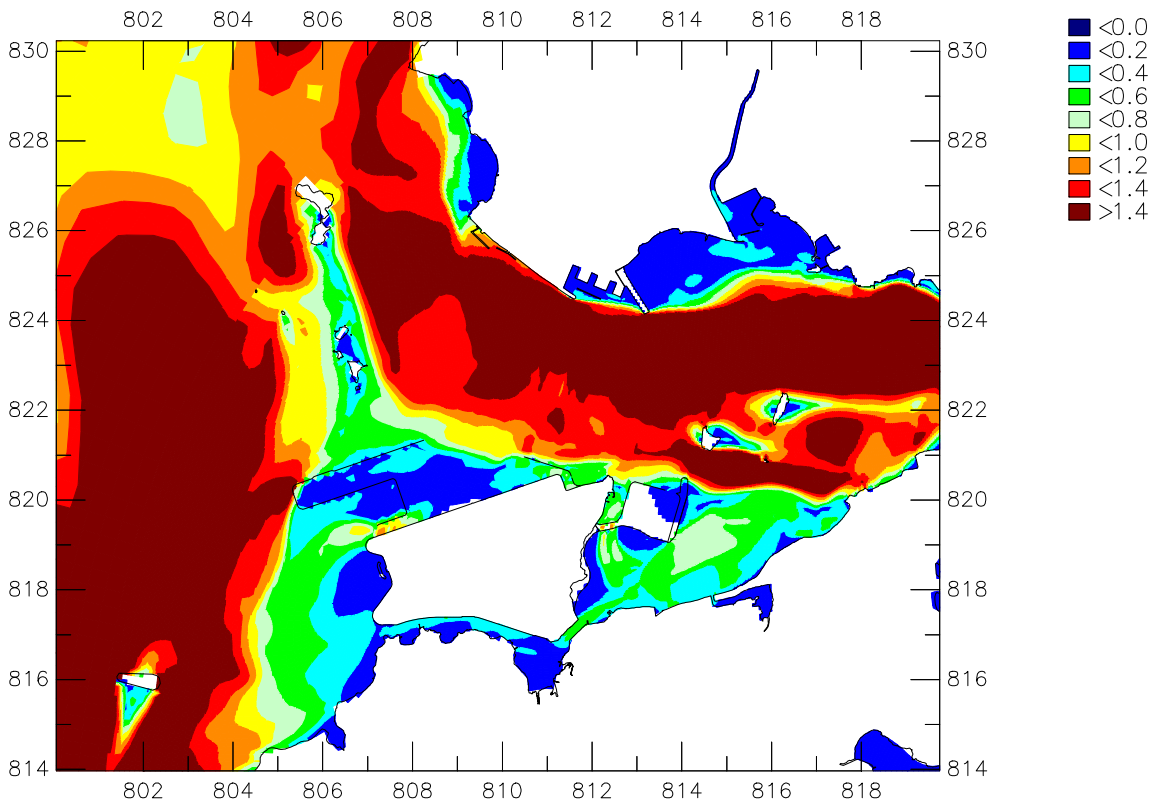
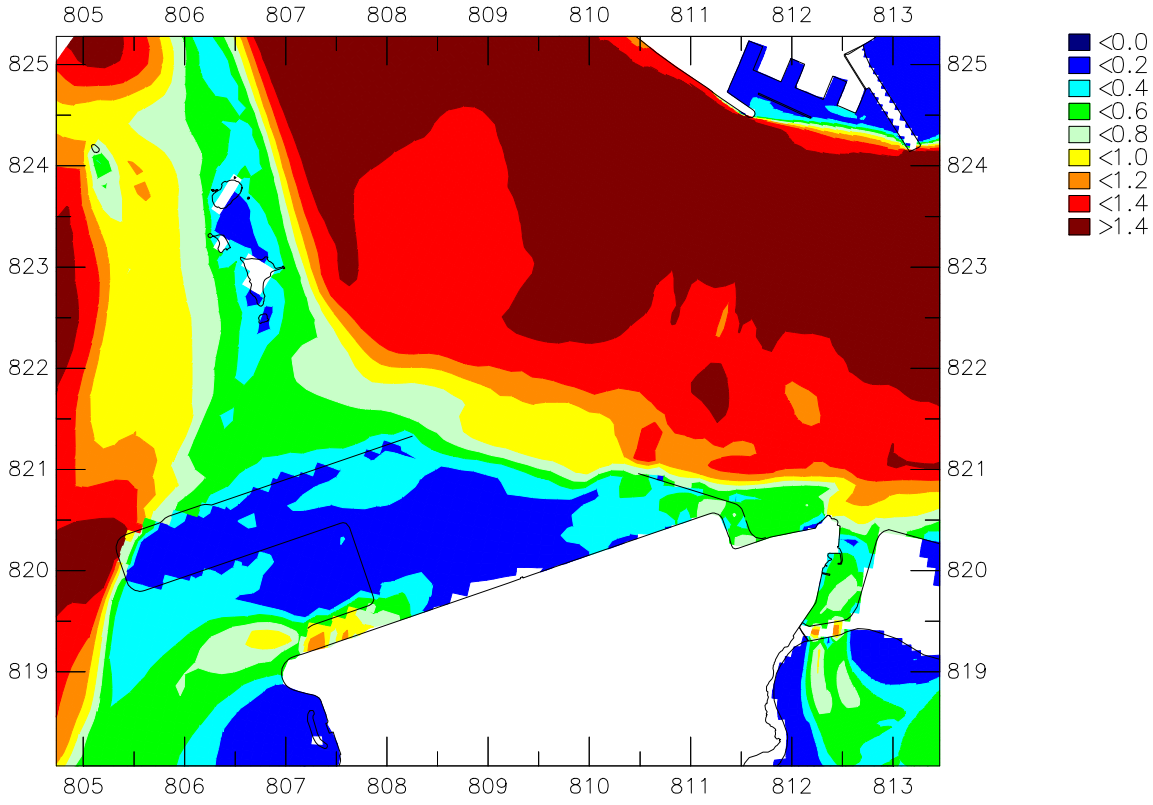
Mott MacDonald Hong Kong Limited		





Year 2017 Current Magnitude Contour (m/s), Wet Season, Surface Peak Flow in Ebb Tide	Dec 2013	Figure 016
	01 Aug 14:30	
Mott MacDonald Hong Kong Limited		

Annex B – Examples of Manufacturer Specifications for Type III Silt Curtains

GRANITE environmental

Type 3 Heavy Duty Silt Barrier

The Type 3 Heavy Duty Silt Barrier is the strongest barrier offered and is designed for moving water applications no more than 1.5 knots, 2 foot waves, and 30 mph winds. Rugged, strong, and reliable, these turbidity curtains meet most state DOT regulations and can be rapidly deployed to your location.

Perfect for use in:

- Tidal Zones
- Bays
- Rivers
- Dredging Projects
- Demolitions
- Rivers
- Harbors
- Inter-coastal Waterways

Typical Barrier Specifications
(other sizes, materials, etc. available)

Flotation	Fabric	Section Connectors	Bottom Chain	Standard Length	Freeboard	Draft	Options
12” Marine Grade Material (depending on skirt depth)	22 oz. PVC Fabric	Universal Slide Bulk Connectors	3/8” Steel Ballast Chain	50’ or 100’	8”-12” Depend-ing on Skirt Depth	3’ - 100’	Optional Skirt Filter Panel & Furling Lines Available

P.O. Box 780928 Sebastian, FL 32978 Toll Free: (1) 888.703.9889 Fax: (+1) 772.589.3343 Int: (+1) 772.646.0597 info@GraniteEnvironmental.com
www.GraniteEnvironmental.com

GRANITE environmental

Type 3 Heavy Duty Silt Barrier

Description: Granite Type 3 Heavy Duty Silt Barrier is manufactured in two designs:

1. Silt Barrier with permeable silt filter panels.
2. Silt Barrier with impermeable silt blocking skirts. This model comes with marine grade floats seamed into heavy duty coated reinforced PVC membrane, 2 each steel load bearing cable, and a heavy ballast chain to assist in keeping skirt vertical and lower tension member.

Floatation Element: 12” diameter marine quality floats placed end to end and dielectrically sealed into coated membrane sleeve along the top of the barrier. These have joints between floats to allow folding for shipment, storage and more importantly for conformance to wave action.

Membrane: 22 ounce per square yard vinyl coated nylon or polyester or a combination with geotextile filter panel depending on application.

Base: 22 oz PVC fabric International Safety Yellow 500 x 550 Lbs/square inch tensile strength *(specification sheet available on request)*

Filter Panel: W-70 @ 6% with vertical flow of 70gpm (*Spec sheet available)*

Tension Cable: 2 each 5/16 inch vinyl coated galvanized steel cable, one on each side of the skirt 20 inches below the flotation. These cables are secured to each end connector of the curtain section and clipped together with lap links and grommets every 30 inches for superior performance in current.

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Type 3 Heavy Duty Silt Barrier

Lower Tension Ballast is provided by a 3/8 inch galvanized steel chain sheathed in 22 oz membrane along the bottom edge of the skirt. This acts as a lower tension member by terminating stainless steel stress plates on each skirt corner and bolted with no fewer than 4 stainless steel bolts allowing minimum load transfer of 5000 lbs of tensile from membrane.

Section Connector: Sections connect by sliding together the two halves of Universal slide bulk connectors that extend from the top of the flotation down a minimum of 20". The skirts are joined by ties between reinforced steel grommets on the two opposing silt barriers. The ballast connect via galvanized steel snap hook and galvanized ring make the joint complete from top to bottom. This is a tool free connection.

Furling System: Built to raise and lower the curtain skirt (Optional)

Accessories:

- Oil Spill Equipment
- Marker Buoys
- Anchor System
- Repair Kits
- Debris Boom
- Geotextile Sludge Tubes
- Navigational Warning Lights

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PSI PARKER SYSTEMS, Inc.
THE ENVIRONMENTAL EQUIPMENT SUPPLY HOUSE

Printer Friendly Page

Name - SiltMaster Type III Turbidity Curtain

SiltMaster TYPE III - Should be used in areas where considerable current (up to 3 knots or 5 feet per second) may be present, where tidal action may be present, and/or where the curtain is potentially subject to wind and wave action.

Turbidity curtain can be manufactured several different ways to suit your needs.

Impervious - 100% solid material (22 oz. PVC coated polyester fabric). All orange or yellow in color.

Impervious top and Pervious bottom - solid material top (22 oz. coated polyester fabric) over floatation and geotextile material skirt. Orange/Yellow top & black bottom.

Pervious - 100% geotextile material (Our standard is Beltech 200 - but other varieties are also available). All black in color.

'SiltMaster Type III Turbidity Curtain' Part Numbers and Details:

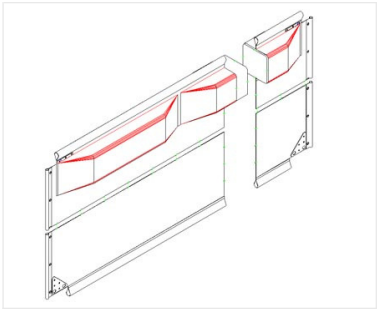
Part #		
Different skirt size	50ft Section	22 oz. PVC Fabric
Different skirt size	50ft Section	All Geotextile
Different skirt size	50ft Section	PVC top Geo skirt
Different skirt size	100ft Section	All Geotextile
Different skirt size	100ft Section	PVC top Geo skirt
Different skirt size	100ft Section	22 oz. PVC Fabric

Erosion and Sediment Control

Turbidity Barriers & Curtains

Product Description

Our floating turbidity curtain's are pre-assembled devices including floatation units, geotextile/geomembrane, load lines, bottom ballast and other hardware to connect the curtain ends. These devices may be deployed in areas where sediment discharge to a stream is unavoidable. They are commonly used with in water body in the vicinity of marine environments to protect the sediment migration from construction area into the rest of the water body. Our Turbidity Curtains are designed to effectively deflect and contain sediment within a limited area and to provide sufficient retention time for the sediment particles to settle in the bottom of the reservoir. Curtains are suspended vertically in a body of water, with floats at the top and a ballast chain in the bottom to hold the curtain in a vertical position. Our Type 1, 2 and 3 floating turbidity curtains conform to the US Army Corps of Engineer specifications.

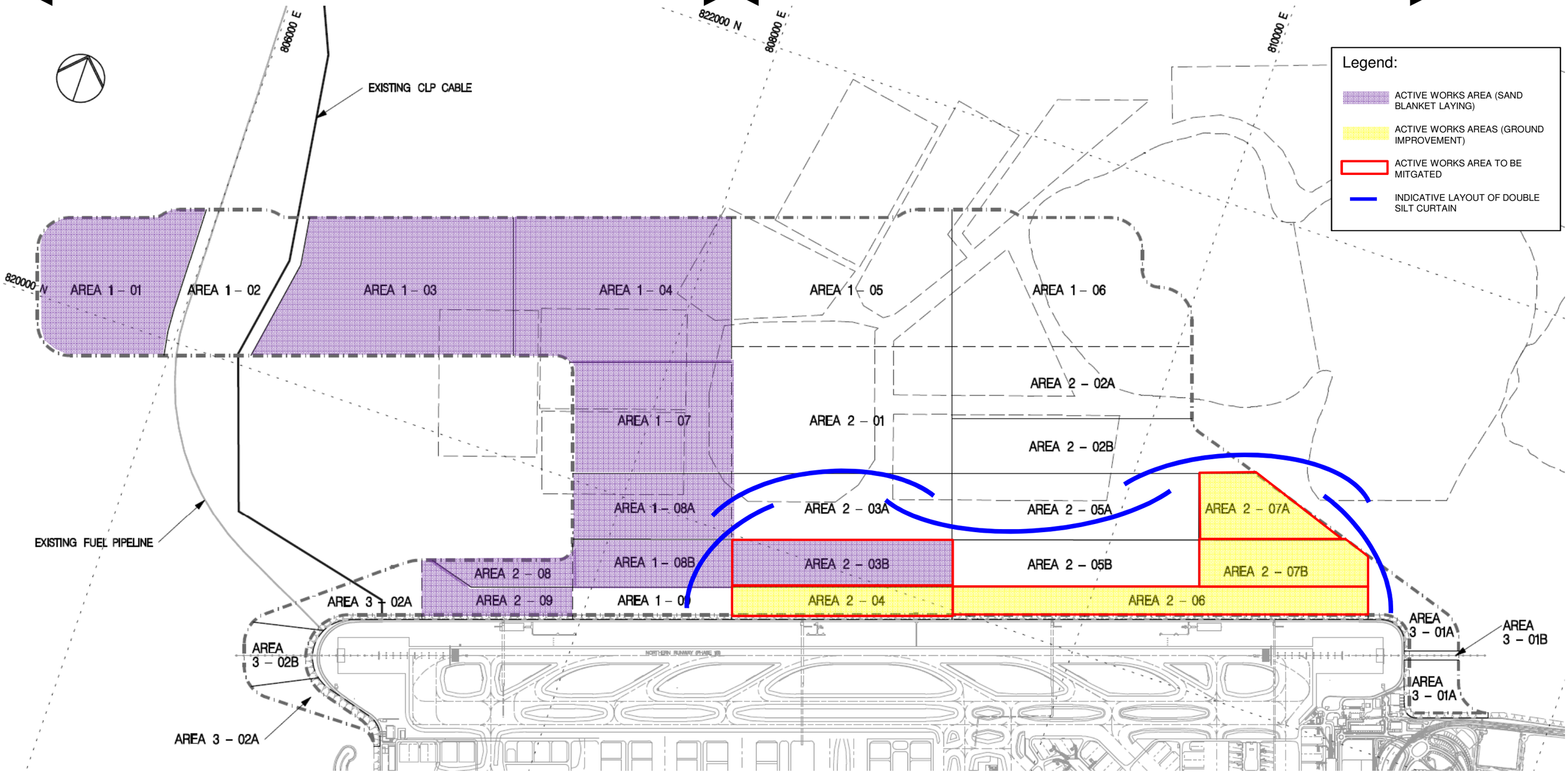


Material Properties

17 Mar 2011	Turbidity Curtains				
	Type 1 EcoPlan	**Type 1 DOT**	**Type 2 EcoPlan**	**Type 2 DOT**	**Type 3 DOT**
Flow Rates	Standing or slow moving water	up to 1 ft/sec velocity	up to 2 ft/sec velocity	up to 3 ft/sec velocity	up to 5 ft/sec velocity
Float Size	4" x 4"	6" x 6"	6" x 6"	8" x 8"	8" x 8"
Buoyancy	7 lbs/ft	13.5 lbs/ft	13.5 lbs/ft	26.7 lbs/ft	26.7 lbs/ft
Float Covers	10 oz yellow	18 oz yellow	14 oz yellow	18 oz yellow	22 oz yellow
Top Load Line	None	None	1/4" Cable	5/16" Cable	5/16" Cable
Body Fabric	10 oz yellow	18 oz yellow	14 oz yellow	18 oz yellow	18 oz yellow/ Monofilament geotextile*
- Grab Tensile	105 lb	410 lb	370 x 250 lb	410 lb	370 x 250 lb
- Tear Strength	23 lb	100 lb	100 x 60 lb	100 lb	100 x 60 lb
- Hydrostatic	Not tested	600 psi	450 psi	600 psi	450 psi
- AOS (Sieve)	Impermeable	Impermeable	Impermeable	Impermeable	70 Sieve
Stress Plates	No	No	Yes	Yes	Yes
Bottom Chain	1/4"	1/4"	1/4"	5/16"	5/16"
Chain Weight	65 lb/100ft	65 lb/100ft	65 lb/100ft	100 lb/100 ft	100 lb/100 ft
Standard Sizes	5' x 50'	3' x 50'	5' x 50'	5' x 50'	5' x 50'
	10' x 50'	5' x 50'	10' x 50'	10' x 50'	10' x 50'
	-	10' x 50'	-	15' x 50"	15' x 50'
Durability	Reusable	Reusable	Reusable	Reusable	Reusable
Seaming	Heat Sealed	Heat Sealed	Heat Sealed	Heat Sealed	Heat Sealed

* The fabric specs presented for Type 3 DOT barrier is for the monofilament geotextile which forms approximately 1/3rd of the curtain body.

Annex C - Indicative Arrangement of Silt Curtains for Mitigation of Construction Phase Impacts



Description

Based on Year 2016 Q1 results, adverse SS impacts not expected at WSRs located to the west of the project , thus silt curtain deployment should focus on south-eastern works areas during sand blanket laying activities.

Note:

- The gaps between overlapping silt curtains are approx. 100m wide (to enable marine vessel access) with an overlapping length of at least 150m.
- The proposed silt curtain arrangement is indicative and subject to adjustment to suit the actual construction sequence, site conditions, marine traffic considerations, and the contractor's working methods.

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EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No.
Figure 1

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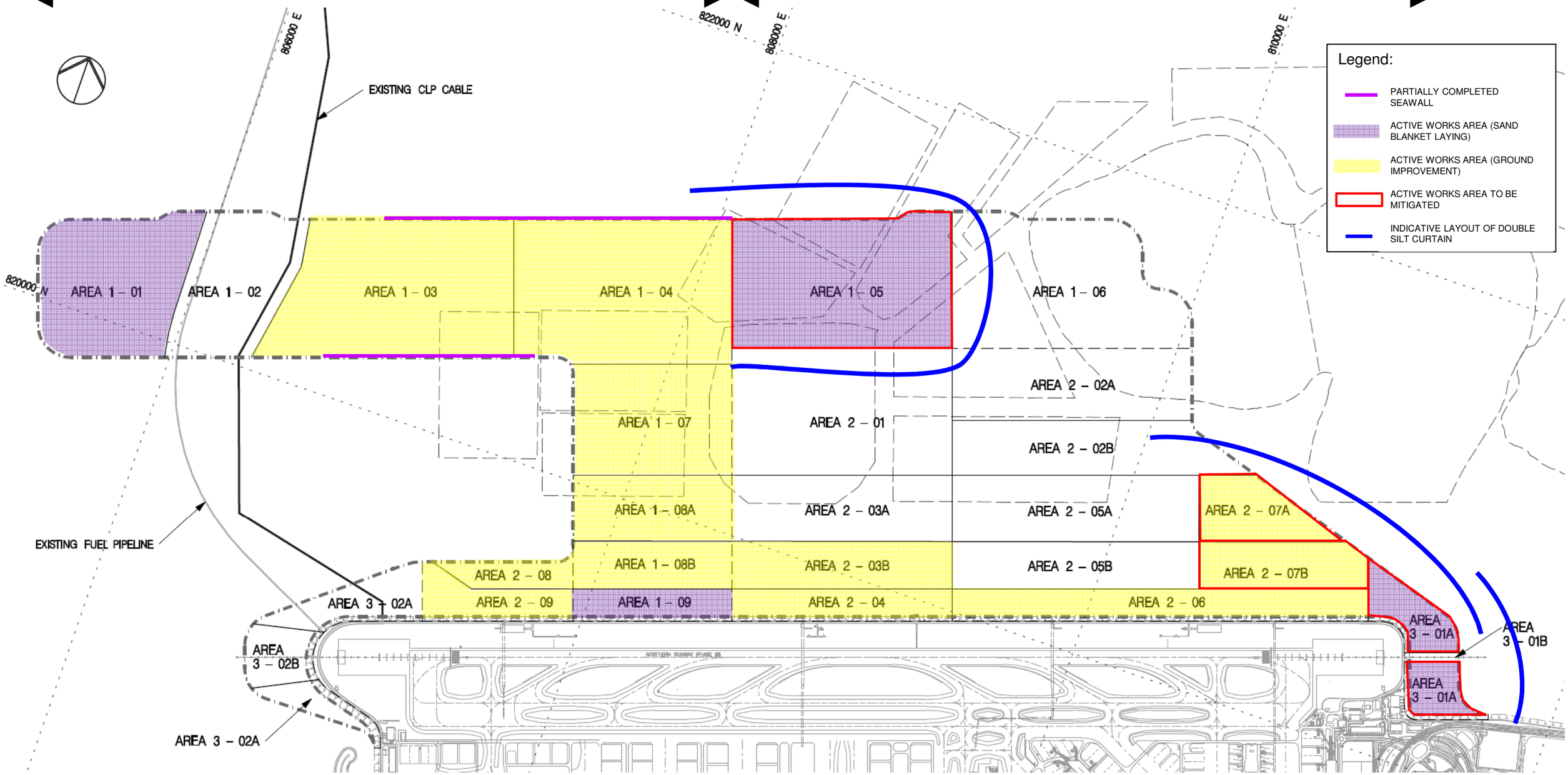

Description

Specific mitigation not required for ground improvement activities. Based on Year 2016 Q1 results, adverse SS impacts not expected at WSRs located to the west of the project, thus silt curtain deployment focus on sand blanket laying activities near the eastern side of the project boundary (at works area 1-05 and 3-01A). Additional silt curtain covering works areas 2-07A and 2-07B proposed as a precautionary measure. Due to the large extent of the works areas and the multiple works fronts, deployment of silt curtains to completely surround the works areas is not feasible. Hence silt curtain arrangement should target mitigation of potential SS impacts to WSRs located to the east and northeast of the project.

Note:

- The gaps between overlapping silt curtains are approx. 100m wide (to enable marine vessel access) with an overlapping length of at least 150m.
- The proposed silt curtain arrangement is indicative and subject to adjustment to suit the actual construction sequence, site conditions, marine traffic considerations, and the contractor's working methods.

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EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No. Figure 2

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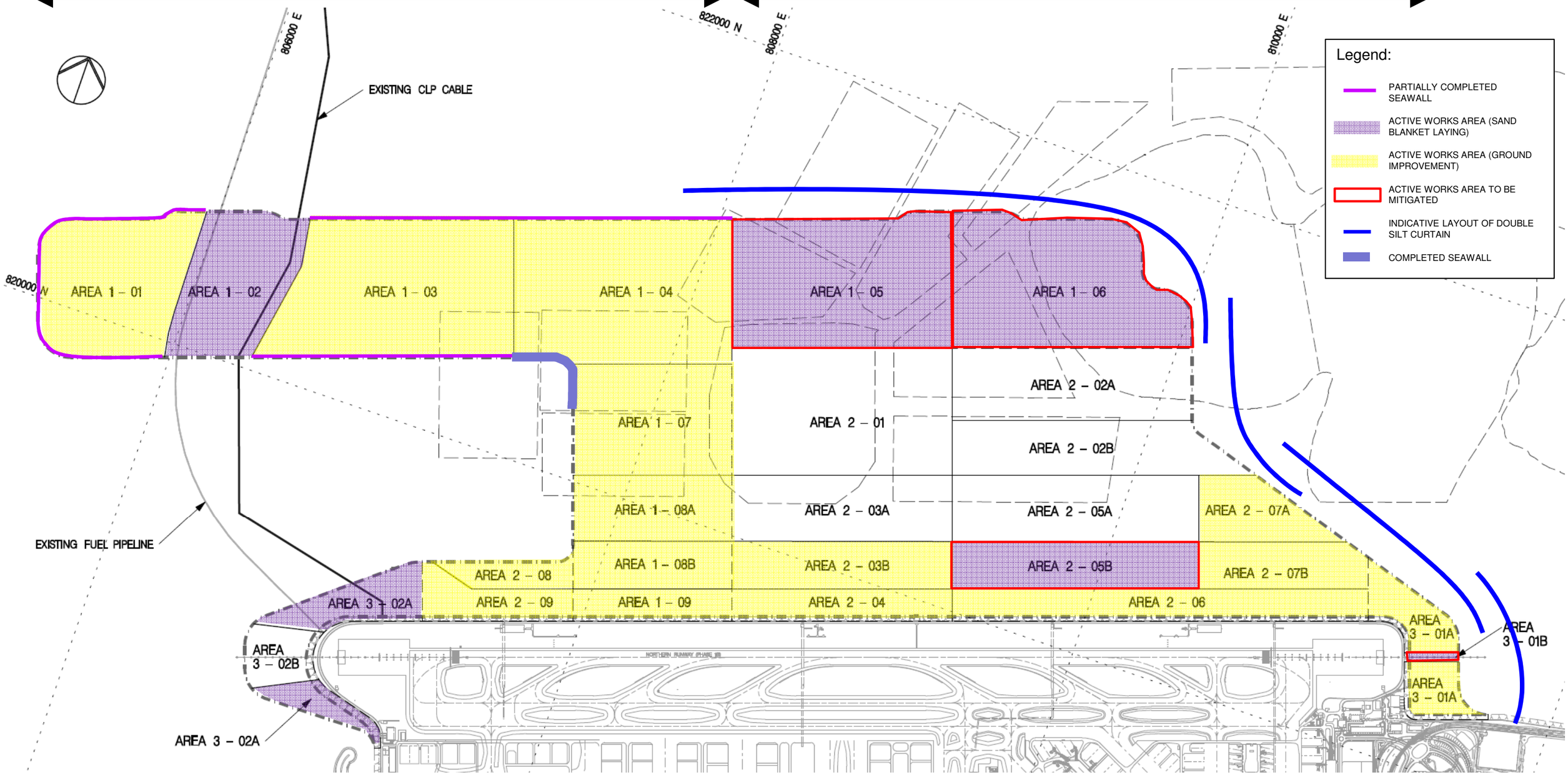

Description

Specific mitigation not required for ground improvement activities. Based on Year 2016 Q1 results, adverse SS impacts not expected at WSRs located to the west of the project, thus silt curtain deployment focus on sand blanket laying activities near the eastern side of the project boundary (at works area 1-05, 1-06, 2-05B and 3-01B). Silt curtain covering works areas 2-07A and 2-07B retained to further minimise SS release at the eastern works areas. Due to the large extent of the works areas and the multiple works fronts, deployment of silt curtains to completely surround the works areas is not feasible. Hence silt curtain arrangement should target mitigation of potential SS impacts to WSRs located to the east and northeast of the project.

Note:

- The gaps between overlapping silt curtains are approx. 100m wide (to enable marine vessel access) with an overlapping length of at least 150m.
- The proposed silt curtain arrangement is indicative and subject to adjustment to suit the actual construction sequence, site conditions, marine traffic considerations, and the contractor's working methods.

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Drawing No.: Figure 3

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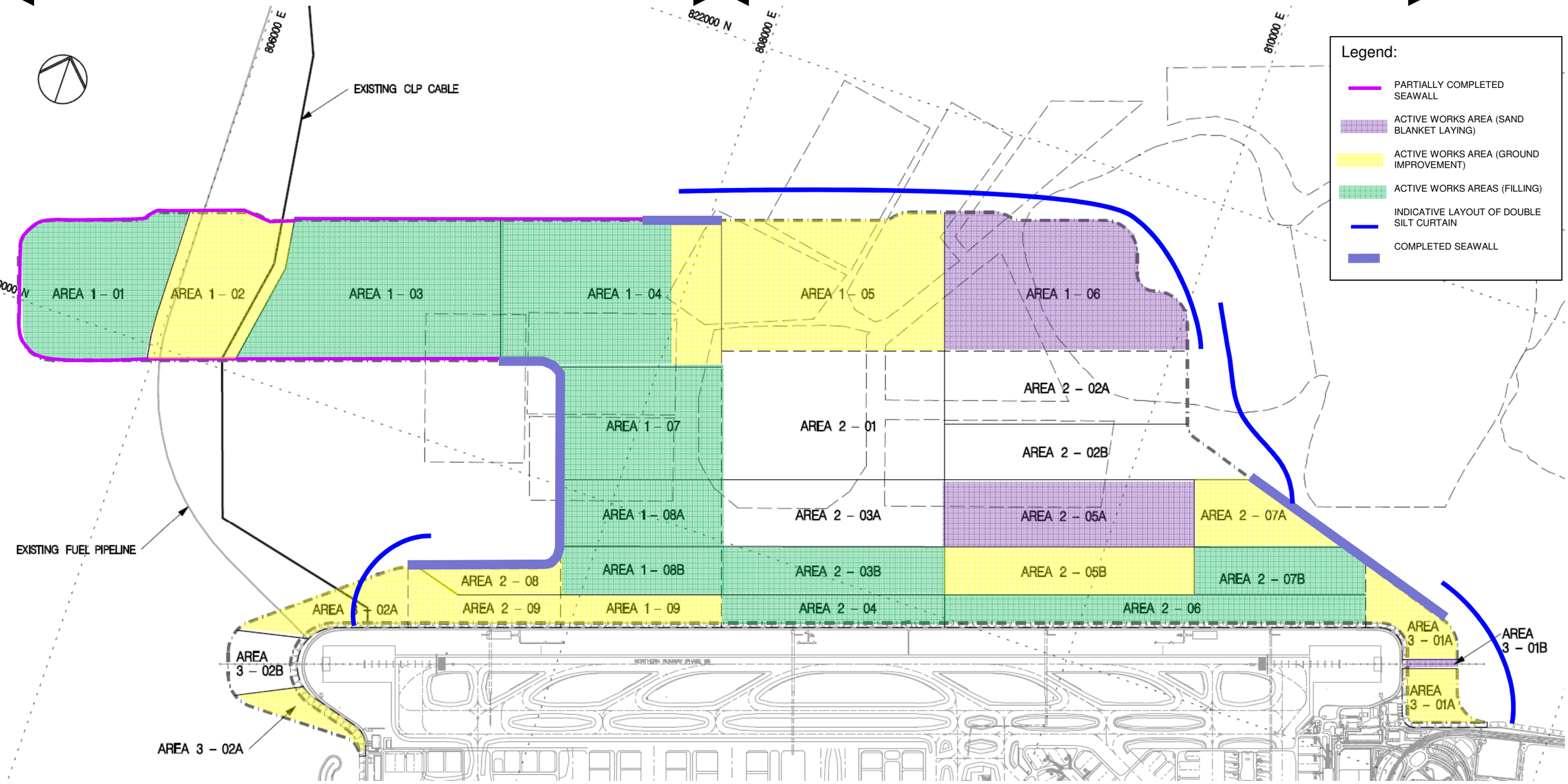

Description

Specific mitigation not required for ground improvement activities. With partial completion of the seawall, silt curtains can be more effectively deployed around all remaining seawall gaps to minimise SS release. Therefore, all active works areas (except works area 3-02A) would be mitigated.

Note:

- The gaps between overlapping silt curtains are approx. 100m wide (to enable marine vessel access) with an overlapping length of at least 150m.
- The proposed silt curtain arrangement is indicative and subject to adjustment to suit the actual construction sequence, site conditions, marine traffic considerations, and the contractor's working methods.

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Drawing No. Figure 4

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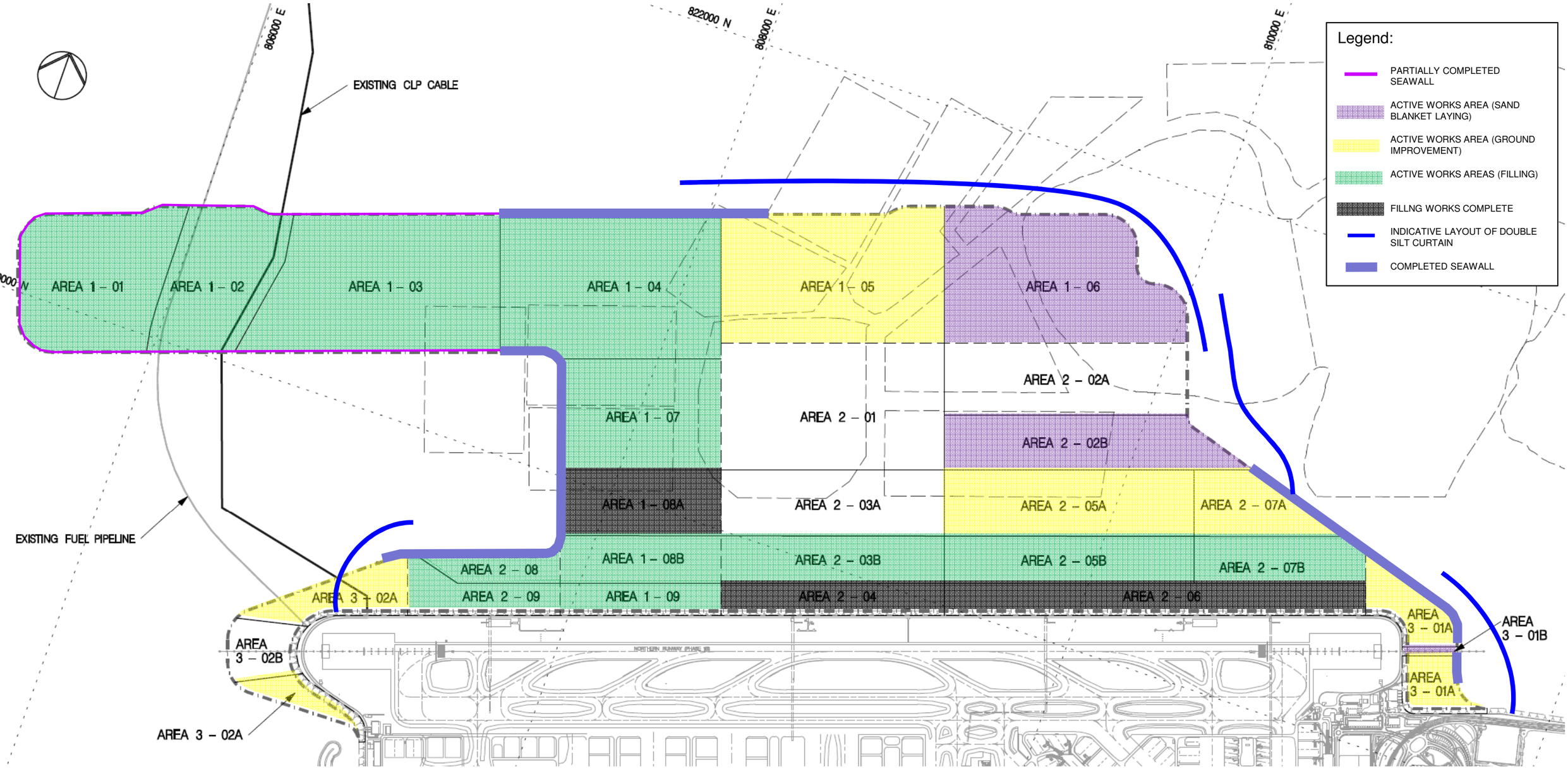

Description

Specific mitigation not required for ground improvement activities. With partial completion of the seawall, silt curtains can be more effectively deployed around all remaining seawall gaps to minimise SS release. Therefore, all active works areas (except works area 3-02A) would be mitigated.

Note:

- The gaps between overlapping silt curtains are approx. 100m wide (to enable marine vessel access) with an overlapping length of at least 150m.
- The proposed silt curtain arrangement is indicative and subject to adjustment to suit the actual construction sequence, site conditions, marine traffic considerations, and the contractor's working methods.

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Drawing No.: Figure 5

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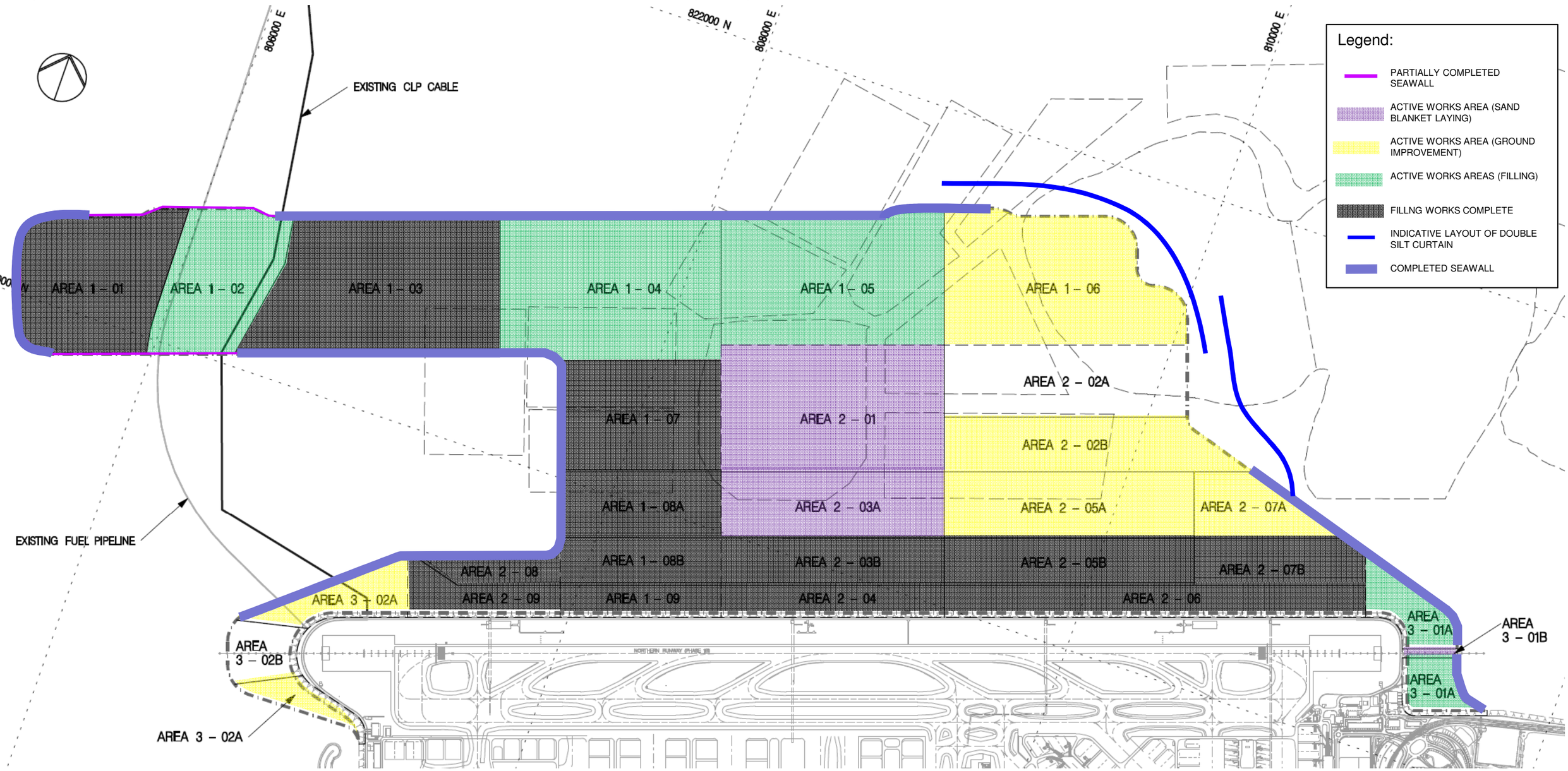

Description

Specific mitigation not required for ground improvement activities. With substantial completion of the seawall, silt curtains should be deployed at the main remaining seawall opening along the north-eastern side of the project area to minimise SS release. The smaller gaps located at the south-western and south-eastern tips would be largely closed off to dominant tidal flows, hence are not expected to contribute significant SS release.

Note:

- The gaps between overlapping silt curtains are approx. 100m wide (to enable marine vessel access) with an overlapping length of at least 150m.
- The proposed silt curtain arrangement is indicative and subject to adjustment to suit the actual construction sequence, site conditions, marine traffic considerations, and the contractor's working methods.

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EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No.: Figure 6

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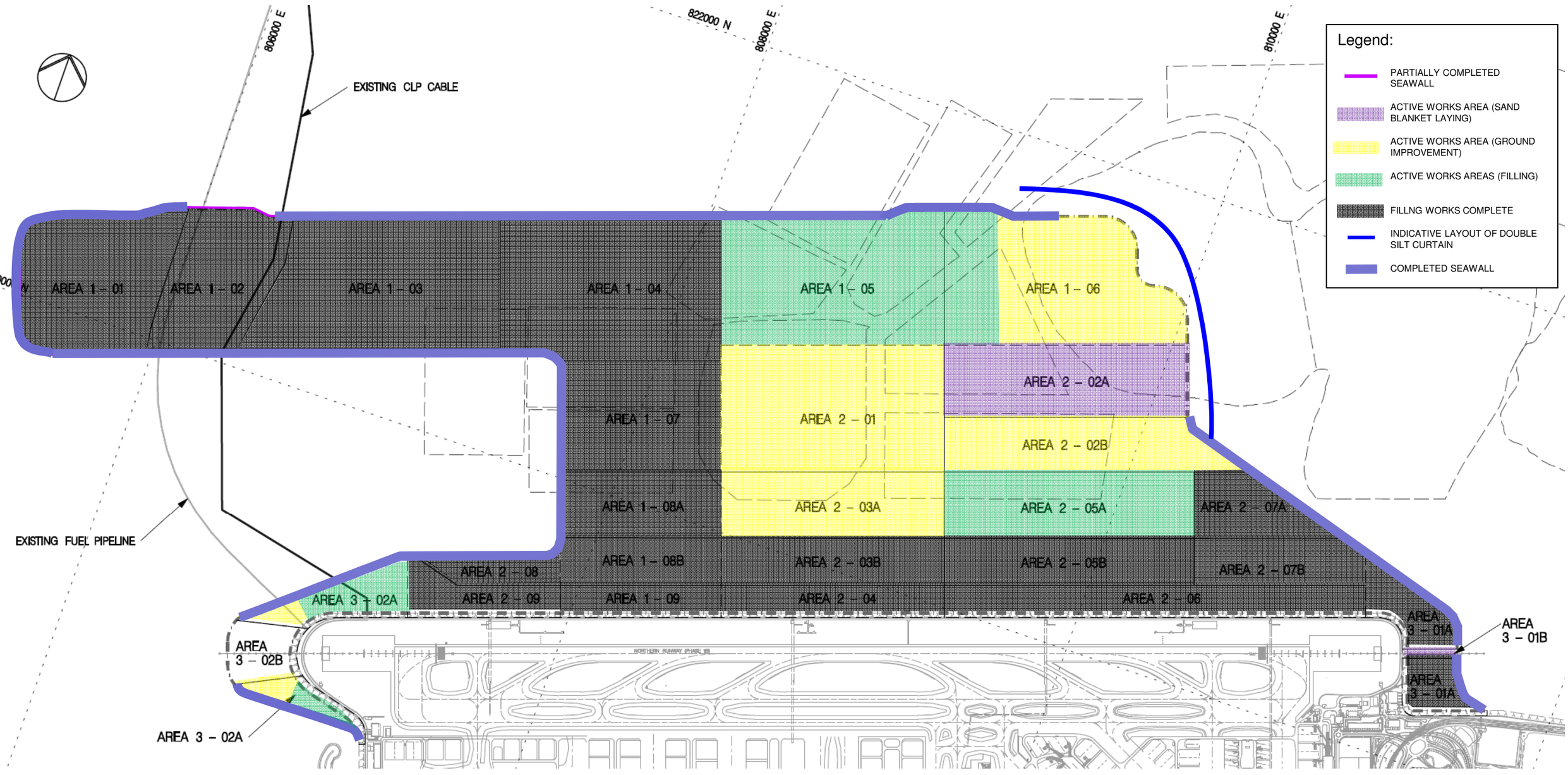

Description

Specific mitigation not required for ground improvement activities. With substantial completion of the seawall, silt curtains would be deployed at the main remaining seawall opening along the north-eastern side of the project area to minimise SS release. The smaller gaps located at the south-western and south-eastern tips would be closed off to dominant tidal flows, hence are not expected to contribute significant SS release.

Note:

- The gaps between overlapping silt curtains are approx. 100m wide (to enable marine vessel access) with an overlapping length of at least 150m.
- The proposed silt curtain arrangement is indicative and subject to adjustment to suit the actual construction sequence, site conditions, marine traffic considerations, and the contractor's working methods.

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EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No. Figure 7

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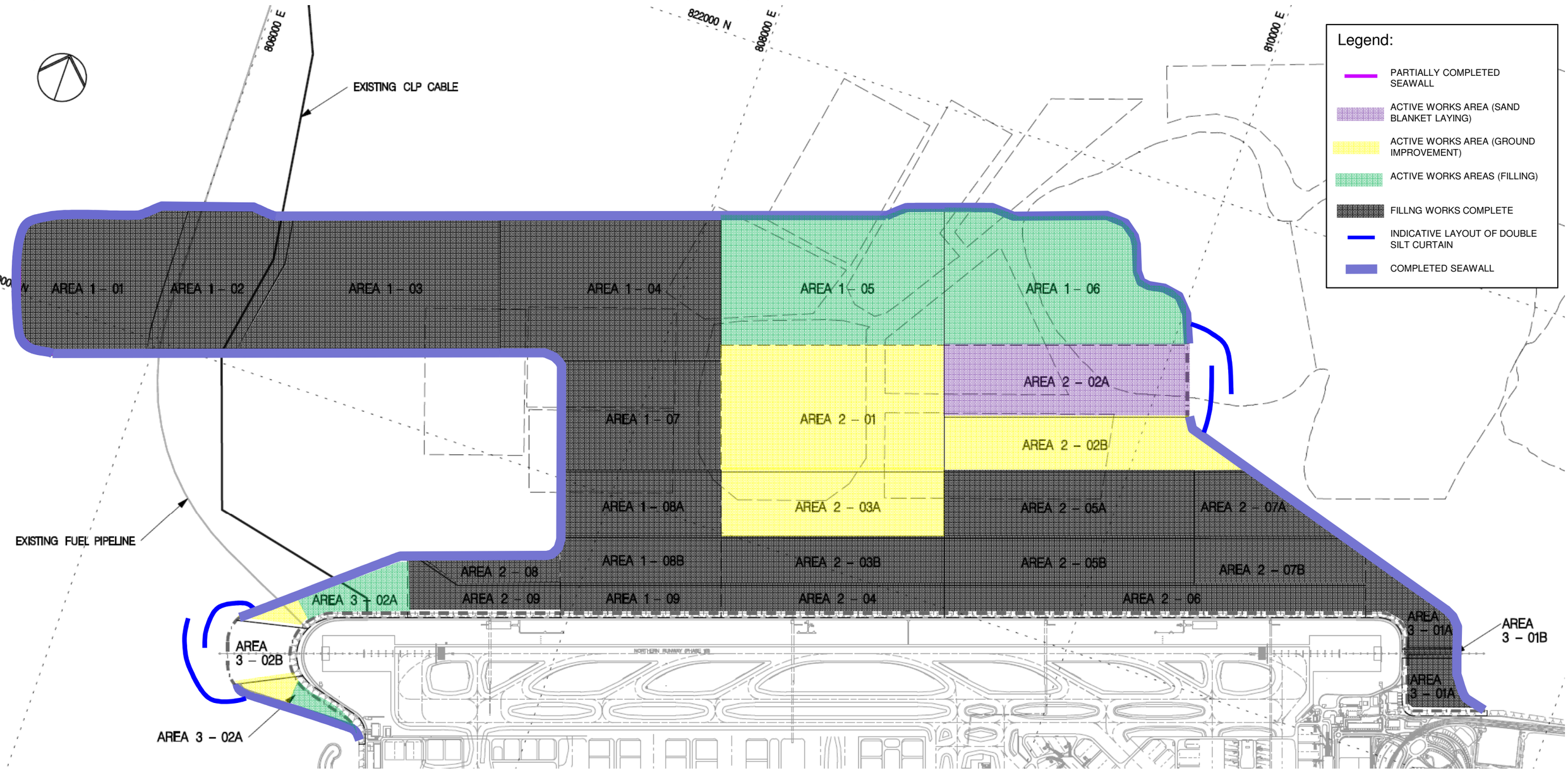

Description

Specific mitigation not required for ground improvement activities. With substantial completion of the seawall, silt curtains would be deployed at the remaining seawall opening along the eastern side of the project area to minimise SS release. With commencement of marine filling activities at works area 3-02A, silt curtains should also be deployed at this location as a precautionary measure to minimise SS release.

Note:

- The gaps between overlapping silt curtains are approx. 100m wide (to enable marine vessel access) with an overlapping length of at least 150m.
- The proposed silt curtain arrangement is indicative and subject to adjustment to suit the actual construction sequence, site conditions, marine traffic considerations, and the contractor's working methods.

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EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No. Figure 8

Scale at A3 1:17500

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