FORM
5

Application No. :
Reference No. :
(For official use)

FORM 5
ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE
(CHAPTER 499)
SECTION 13(1)

Application for Variation of an Environmental Permit

PART A PREVIOUS APPLICATIONS

☐ No previous application for variation of an environmental permit.

☑ The environmental permit was previously amended.

Application No. : VEP-603/2021

PART B DETAILS OF APPLICANT

B1. Name : (person or company)

Civil Engineering and Development Department

[Note : In accordance with section 13(1) of the Ordinance, the person holding an environmental permit or a person who assumes responsibility for the designated project may apply for variation of the environmental permit.]

B2. Business Registration No. : (if applicable) [redacted]

B3. Correspondence Address : [redacted]

B4. Name of Contact Person : [redacted]

B5. Position of Contact Person : [redacted]

B6. Telephone No. : [redacted]

B7. Fax No. : [redacted]

B8. E-mail Address : (if any) [redacted]

PART C DETAILS OF CURRENT ENVIRONMENTAL PERMIT

C1. Name of the Current Environmental Permit Holder :

Civil Engineering and Development Department

C2. Application No. of the Current Environmental Permit : VEP-603/2021 (EP-134/2002/O)

C3. The Current Environmental Permit was Issued in : month / year

1 1 / 2 0 2 1

Important Notes : Please submit the application together with

(a) 3 copies of this completed form; and

(b) appropriate fee as stipulated in the Environmental Impact Assessment (Fees) Regulation

to the Environmental Protection Department at the following address :

The EIA Ordinance Register Office,
27th floor, Southorn Centre,130 Hennessy Road,
Wan Chai, Hong Kong.

RECEIVED
20 JAN 2023
EIAO Register Office, E.P.D.

☐ Tick (✓) the appropriate box

PART D PROPOSED VARIATIONS TO THE CONDITIONS IN CURRENT ENVIRONMENTAL PERMIT

D1. Condition(s) in the Current Environmental Permit :	D2. Proposed Variation(s) :	D3. Reason for Variation(s) :	D4. Describe the environmental changes arising from the proposed variation(s) :	D5. Describe how the environment and the community might be affected by the proposed variation(s) :	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected :	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process :
Part B, Scale and Scope of the Designated Project, Item 3: stockpiling of 6 million m^3 of public fill	Part B: Scale and Scope of the Designated Project, Item 3: stockpiling of 12 million m^3 of public fill	The beneficial use of public fill provides an economical source of fill materials for reclamation and earth-filling projects. A temporary public fill reception facility is currently located at Tseung Kwan O Area 137 for temporary stockpiling of surplus construction and demolition waste generated from various construction projects for subsequent beneficial reuse. Reusing of the public fill could minimise the disposal of public fill to landfills, hence, reducing the quantity of waste delivered to landfills. It is anticipated that more fill materials will be generated from infrastructural works and development projects and the stockpiling volume would reach its maximum under the permit condition in the following years. It is proposed to increase the maximum stockpiling volume of public fill at the Fill Bank at Tseung Kwan O Area 137 (TKOFB) from the existing 6 million m3 to 12 million m3 and the maximum stockpiling height from the existing +35.2mPD to +65.2mPD for expanding the temporary storage capacity of public fill in the Territory. This will save our valuable resources and minimise the potential impact to the environment and community by making beneficial use of the surplus construction and demolition materials from various projects.	In view of the increase in stockpiling height by 30m, it is anticipated that there would be negligible to moderate impacts on some visually sensitive receivers in the vicinity. However, they could be alleviated with the implementation of mitigation measures within the TKOFB that have been recommended in the previously approved EIA report. No further environmental changes were identified from the proposed variations.	It is anticipated that visual impact will be imposed on some visually sensitive receivers in the vicinity. To alleviate the visual impacts, appropriate mitigation measures would be provided on site. With the continuous promotion of marine delivery of public fill, daily road traffic flow to and from the TKOFB during and after the progress of increase in stockpiling height would be similar to the current situation. Besides, the proposed variations will not have adverse effects on the environment and the community.	The environmental performance requirements set out in the approved EIA report will not be exceeded and violated.	The measures recommended in the previously approved EIA report will be adopted to mitigate the potential visual impact on the sensitive receivers in the vicinity due to the proposed variations. No additional measures are required.
Part C, Condition 2.31: The maximum stockpiling height at the fill bank shall be limited to a maximum of +35.2 mPD.	Part C, Condition 2.31: The maximum stockpiling height at the fill bank shall be limited to a maximum of +65.2 mPD.					

PART E DECLARATION BY APPLICANT

E1. I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand the environmental permit may be suspended, varied or cancelled if any information given above is false, misleading, wrong or incomplete.

[redacted] [redacted] [redacted]

Signature of Applicant | Full Name in Block Letters | Position

on behalf of Civil Engineering and Development Department | 18 January 2023

Company Name and Chop (as appropriate) | Date

NOTES :

1. A person who constructs or operates a designated project in Part I of Schedule 2 of the Ordinance or decommissions a designated project listed in Part II of Schedule 2 of the Ordinance without an environmental permit or contrary to the permit conditions commits an offence under the Ordinance and is liable to a maximum fine of $5,000,000 and to a maximum imprisonment for 2 years.

2. A person for whom a designated project is constructed, operated or decommissioned and who permits the carrying out of the designated project in contravention of the Ordinance commits an offence and is liable to a maximum fine of $5,000,000 and to a maximum imprisonment for 2 years.

Agreement No. FM 05/2020

Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137 – Investigation

Environmental Review Report for Increase in Maximum Stockpiling Height and Capacity

Prepared by:

Acuity Sustainability Consulting Limited

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1. INTRODUCTION

1.1 Project Background

1.1.1 The Fill Bank at Tseung Kwan O Area 137 (TKOFB) has been commissioned since 2002. It is a designated waste disposal facility under the Waste Disposal (Designated Waste Disposal Facility) Regulation to receive and temporarily store public fill generated from the local construction industry for beneficial use in the future.

1.1.2 The TKOFB is a designated project by virtue of C.11 of Schedule 2, Part I of the Environmental Impact Assessment Ordinance (EIAO), which specifies that a public dumping area not less than 2 ha in size is a designated project. An Environmental Permit (EP) is currently held by the Civil Engineering and Development Department (CEDD) for the TKOFB (No. EP-134/2002/O).

1.1.3 The operation of TKOFB is proposed to increase the maximum stockpiling height and capacity. Acuity Sustainability Consulting Limited (ASCL) has been appointed by the CEDD to review any material change to the environmental impact associated with the proposal.

1.2 Purpose of this Report

1.2.1 According to Section 7.6 of "A Guide to the EIA Ordinance" issued by the Environmental Protection Department (EPD), a variation of the environmental permit (VEP) would be issued without the need for an Environmental Impact Assessment (EIA) report if the Director of Environment is satisfied that there is no material change to the environmental impact of the designated project with mitigation measures in place and the designated project complies with the requirements in the Technical Memorandum on EIA Process. This Environmental Review (ER) Report is prepared to demonstrate that there is no material change to the environmental impact associated with the operation of the TKOFB following the increase in maximum stockpiling height and capacity. It will be used as a supporting document for the application of VEP under the EIAO as mentioned in **Section 1.1.2**.

2. PROPOSED VARIATIONS AND ASSOCIATED ENVIRONMENTAL CHANGES

2.1 Proposed Changes of Scope and Conditions under the Environmental Permit

2.1.1 In contrast to the current Environmental Permit (No. EP-134/2002/O), variations to the scope and conditions for the operation of the TKOFB are proposed (**Table 2.1**) to cope with the need for increasing the temporary storage capacity of public fill in the Territory. However, the scope and extent of the operation of the TKOFB would remain unchanged after the proposed variations. The area of the stockpile would also remain unchanged.

Table 2.1 Proposed Variations of the current Environmental Permit

Condition No.	Current conditions	Proposed conditions after variation
Part B: Scale and Scope of the Designated Project, Item 3.	Stockpiling of 6 million m^3 of public fill.	Stockpiling of 12 million m^3 of public fill.
Part C: Condition 2.31	The maximum stockpiling height at the fill bank shall be limited to a maximum of +35.2mPD.	The maximum stockpiling height at the fill bank shall be limited to a maximum of +65.2mPD.

2.1.2 Considering the proposed variations shown in **Table 2.1**, the environmental aspects which require further review for the extended period of TKOFB include visual impact, air quality impact, noise impact, water quality impact, landfill gas hazard, ecological impact, cultural heritage. They are presented in **Section 3** to **Section 9**, respectively.

2.2 Key Projects and Developments in the Vicinity of the TKOFB

Extension of South East New Territories (SENT) Landfill

2.2.1 The existing SENT Landfill (**Figure 2.1**) is located at the north-east to east of the TKOFB. It started receiving construction waste on 6 January 2016 and is being operated under the management of the EPD. About 14 ha of the TKOFB has been handed over to the EPD for the construction and operation of the SENT Landfill Extension in 2018. Upon commissioning of the SENT Landfill Extension ("SENTX Landfill") in November 2021, the landfilling operation has been switched from the existing SENT Landfill to the SENTX Landfill (**Figure 2.1**).

Tseung Kwan O Desalination Plant

2.2.2 The Water Supplies Department (WSD) is constructing the first stage of Tseung Kwan O Desalination Plant (**Figure 2.1**) to the south of the proposed SENTX Landfill with a site area of about 10 ha in Tseung Kwan O Area 137 (TKO137) under Contract No. 13/WSD/17. According to the construction programme presented in the

corresponding Monthly EM&A Report (August 2022), the desalination plant is scheduled for completion and commissioning in September 2023.

2.2.3 The implementation schedule of the second stage of the desalination plant is yet to be determined.

Cross Bay Link and Tseung Kwan O – Lam Tin Tunnel

2.2.4 Cross Bay Link (CBL) will connect Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) to Wan Po Road in Area 86 of Tseung Kwan O (TKO) to provide an alternative access route to the south-eastern part of TKO to cope with the anticipated traffic demand in TKO. The project includes a 1.8 km long dual two-lane carriageway with cycle track and footpath across Junk Bay mainly on viaduct. The construction commenced in July 2018. According to the construction programme presented in the corresponding Monthly EM&A Report (August 2022), the construction of CBL will be fully completed in February 2023.

2.2.5 TKO-LTT is a dual two-lane highway approximately 3.8 km long. It connects TKO at Po Shun Road in the east with the proposed Trunk Road T2 at Kai Tak Development in the west. About 2.2 km of the highway is in the form of tunnel. The construction commenced in July 2016. According to the construction programme presented in the corresponding Monthly EM&A Report (August 2022), the major works of TKO-LTT has been completed in December 2022.

3. VISUAL IMPACT ASSESSMENT

3.1 Introduction

3.1.1 The aim of this visual impact assessment (VIA) is to identify the potential impact that would occur following the potential increase in maximum stockpiling height from the existing+35.2mPD to the proposed +65.2mPD and capacity from 6 million m^3 to 12 million m^3 ('the 'proposed scheme'). The assessment reviews mitigation measures recommended in the approved EIA report and identifies any residual effects apparent after mitigation. This section also outlines any cumulative impacts that could be attributed to the TKOFB.

3.2 Legislative Requirement and Evaluation Criteria

3.2.1 The following legislation, standards and guidelines are applicable to the evaluation of the landscape and visual impacts associated with the operation of the TKOFB.

- Environmental Impact Assessment Ordinance (Cap 499, Section 16) and the Technical Memorandum on EIA Process (EIAO-TM), particularly Annexes 10, 11, 18, 20 and 21;
- EIAO Guidance Note No. 8/2010: Preparation of Landscape and Visual Impact Assessment under the Environmental Impact Assessment Ordinance;
- Hong Kong Planning Standards and Guidelines − Chapters 4, 10, 11 and 12;
- GEO Publication No. 1/2011 - Technical Guidelines on Landscape Treatment for Slopes;
- GLTM / DEVB's - Guiding Principles on Use of Native Plant Species in Public Works Project (October 2010); and
- Landscape Value Mapping Study in Hong Kong.

3.3 Visual Impact Assessment Methodology

3.3.1 The assessment of the potential impacts of the proposed scheme comprises of:

- baseline study;
- impact assessment (without mitigation measures);
- mitigation measures; and
- residual impacts (with mitigation measures).

Baseline Study – Visual

3.3.2 For the Visual Impact Assessment (VIA), the assessment area will cover the visual envelope, which includes all areas where the proposed scheme can be seen. It covers the view shed formed by natural / manmade features such as existing ridgelines, built development and woodland areas.

3.3.3 The baseline survey of all views towards the proposed scheme is undertaken by identifying:

- The visual envelope as described above, which may include both open and partial views of the proposed scheme. This will also include areas with indirect effects such as offsite construction activities; and

- The Visually Sensitive Receivers (VSRs) that represent the individuals or groups within the visual envelope whose views will be affected by the proposed scheme. The potential receivers are categorized into three groups:

  (a) Views from residences - the most sensitive receivers due to the high potential of intrusion on the visual amenity and quality of life;

  (b) View from workplaces - less sensitive receivers due to the visual amenity being less important within the work environment; and

  (c) Views from public areas - includes all areas apart from (a) and (b), e.g. public parks, recreation grounds, footpaths, roads, cultural sites, etc. Sensitivity of this group depends on the transitory nature of the receiver, e.g. sitting in a park or travelling on a highway. The degree of view or glimpsed views are also considered.

3.3.4 The assessment of sensitivity was also based on the quality and extent of the existing view. Therefore, a view from a residential property, which would normally be considered the most sensitive view, may become less sensitive if, for example, it is degraded by existing development or partially screened by intervening visual obstacles such as existing vegetation.

3.3.5 The location and direction of its view relative to the proposed scheme also influences the sensitivity of each group. Typical viewpoints within each of the visually sensitive groups are identified and their views are described. Both present and future visually sensitive receivers are considered.

3.3.6 The baseline survey will form the basis of the visual character and quality of the site. The assessment of the potential visual impacts will result from:

- identification of the sources of visual impacts and their magnitude, that would be generated during construction and operation of the proposed scheme; and,

- identification of the principal visual impacts primarily in consideration of the degree of change to the baseline conditions.

Impact Assessment – Visual

3.3.7 The impact assessment will relate to the typical viewpoints previously identified within the visual receiver groups, and their existing and potential views after the implementation of the proposed scheme. The factors affecting the magnitude of change for assessing the visual impacts include the following:

- compatibility of the project with the surrounding landscape forming the view;
- duration of impacts under the extended operation of the TKOFB;
- scale of the proposed scheme;
- reversibility of change;
- viewing distance; and
- potential blockage of the view.

3.3.8 Factors affecting the sensitivity of receivers for evaluation of visual impacts:

- value and quality of existing views;
- availability and amenity of alternative views;
- type and estimated number of receiver population;
- duration or frequency of view; and
- degree of visibility.

3.3.9 The views available to the identified VSRs are rated as low, medium or high, according to their sensitivity to change. Whilst the magnitude of change arising from the implementation of the proposed scheme is rated as negligible, small, intermediate or large. The significance threshold for visual impact is rated in a similar fashion to the landscape impact, i.e. significant, moderate, slight or negligible. The impacts may be beneficial or adverse.

Impact Assessment - Impact Significance Threshold

3.3.10 The impact is a product of the magnitude of change, which the proposals will affect the existing landscape and visual context, and ability to tolerate the change, i.e. quality and sensitivity. The significance threshold is derived from the following matrix:

Magnitude of Change caused by the Proposed Scheme	**Large**	*Moderate Impact*	*Moderate / Significant Impact*	*Significant Impact*
	Intermediate	*Slight / Moderate Impact*	*Moderate Impact*	*Moderate / Significant Impact*
	Small	*Slight Impact*	*Slight / Moderate Impact*	*Moderate Impact*
	Negligible	*Negligible*	*Negligible*	*Negligible*
		Low	**Medium**	**High**
	Sensitivity of View to Change			

3.3.11 The above matrix will apply in the assessment of the majority of situations, however, in certain cases a deviation from this may occur, e.g. the impact may be so major that a significant impact may occur to a view with a low sensitivity to change.

3.3.12 The significance threshold is considered as follows:

Negative / Beneficial Impacts			
Significant: adverse/ beneficial impact where the proposal would cause significant deterioration or improvement in existing visual quality	Moderate: adverse/ beneficial impact where the proposal would cause a noticeable deterioration or improvement in existing visual quality	Slight: adverse/ beneficial impact where the proposal would cause a barely perceptible deterioration or improvement in the existing visual quality	Negligible impact: no discernible change in the existing visual quality.

Mitigation Measures

3.3.13 The identification of the visual impacts will highlight those sources of conflict requiring design solutions or modifications to reduce the impacts and, if possible, blend the proposed scheme and associated activities in with the surrounding landscape. These mitigation measures should take into account factors including:

- Woodland, tree and shrub planting of new or disturbed slopes, amenity strips and areas, central reservations and adjacent to any new structures;
- Consideration of the contouring of new slopes to blend them in with the existing topography;
- Earth mounding and screening, structural or vegetated;
- Highlighting unacceptable impacts and considering alternative scheme proposal;
- Treatment of structural forms;
- Hard landscape, furniture and other landscape; and
- Significant landscape elements.

3.3.14 This will result in the formation of mitigation proposals, which will alleviate the previously identified visual impacts as far as possible.

Residual Impact

3.3.15 The residual impact is the impact that remains after the proposed mitigation measures have been successfully implemented.

3.3.16 As described above, the level of impact is a product of the magnitude of change and their sensitivity to change. The assessment will compare the baseline scenario, the current scheme (+35.2mPD) and the proposed scheme (+65.2mPD) with mitigation

measures and assess any residual impacts after the implementation of mitigation measures. The ability of visual amenity to tolerate the change is also considered in this assessment taking into account the beneficial effects of the proposed mitigation. The significance threshold is derived from the matrices described separately in paragraph 3.3.10 for the visual impact.

3.3.17 In accordance with Annex 10 of the EIAO-TM, an overall assessment is also made of the residual visual impact attributable to the proposed scheme. The extent of residual impact is considered as follows:

Beneficial	**Acceptable**	**Acceptable with mitigation**	**Unacceptable**	**Undetermined**
The project will complement the landscape and visual character of its setting, will follow the relevant planning objectives, and will improve overall and visual quality.	There will be no significant visual effects caused by the appearance of the project, or no interference with key views.	There will be some adverse effects, but these can be eliminated, reduced, or offset to a large extent by specific measures.	The adverse effects are considered too excessive and would not be reduced to an acceptable level by mitigation.	Significant adverse effects are likely but the extent to which they may occur or may be mitigated cannot be determined from the study. Further detailed study will be required for the specific effects in question.

3.4 Baseline Study – Visual

Visual Envelope (see Figure 3.1)

3.4.1 The visual envelope for TKO137 is largely defined by the ridgeline of the surrounding slopes. To the east, glimpses of the site can be gained from Tai Miu Wan through the gap between Tit Cham Chau and the Clear Water Bay Country Park. The envelope is formed by the ridgeline of the Clear Water Bay Country Park promontory rising to Tiu Yue Yung (High Junk Peak).

3.4.2 The northern edge of the visual envelope is formed by the high-rise buildings along the waterfront of Tseung Kwan O Bay. Large parts of this area will not have views of the site, however, as these will be blocked by the existing buildings in the Tseung Kwan O industrial estate and Fat Tong Chau. Views will be limited to the higher floors of the buildings. On the western edge, the envelope is formed by the ridgeline along Devil's Peak with possible views from the site through Lei Yue Mun Channel running between the Devil's Peak and Hong Kong Island.

3.4.3 On Hong Kong Island, the visual envelope is generally formed by the high-rises located along the coastline. Partial views are available from the slopes behind and the envelope follows the ridgeline formed by Pak Ka Shan. This links with Mt. Collinson to the east and then to Pottinger Peak before descending to the coastline at Tai Long Wan (Big Wave Bay). Views are also possible from Shek O Peak and the Shek O Country Park down to Shek O Village and Tai Tau Chau in the south.

Visually Sensitive Receivers

3.4.4 **Table 3.1** summarizes the VSRs that have been identified for the assessment of the TKOFB. For the purposes of this assessment, low rise was taken as ground to 4th floors, medium rise as 5th to 10th floors and high-rise as 11th and higher floors. Locations of representative viewpoints, and vantage points (viewpoints selected for photomontages preparation) are shown in **Figure 3.1**. The views currently experienced by VSRs are shown in **Figures 3.2a to 3.2b**.

Table 3.1 Summary of Visually Sensitive Receivers

VSR	Name / Type / Distance	Degree of Visibility OV/PV/ GV/NV	Description	Sensitivity
VSR 1	**Clearwater Bay Country Club** Recreation / 2200 m	OV/ PV	The Country Club has partial views of the site looking across Tai Miu Wan to the east. A segment of the site is visible through the gap between the Clear Water Bay Country Park and Tit Cham Chau. However, most of the site is blocked by the natural promontory of the Country Park. Views from the Country Club extend through the site to East Hong Kong. The existing views are of a high quality.	Medium
VSR 2	**Clearwater Bay Country Park** Recreational walkers / 1100 m	PV/ OV GV	Views from this VSR vary as the user moves through the Park. Generally partial views can be gained of the site but are limited at times due to either vegetation or topography. The quality of the views is generally high from the Country Park.	Medium
VSR 3	**TVB Broadcast and Production Centre** Commercial Workers/ 100 m	OV / PV	The development is immediately to the north of the site. The upper floors of the TVB Broadcast and Production Centre will enjoy open views across the site to Tathong Channel. Views of the site are blocked at street level by screening.	Medium
VSR 4	**Residential developments at Area 85** Proposed High-rise Residents / 1600 m	OV / PV / NV	Views to Fat Tong Chau (Junk Island), TKO137 and Hong Kong Island are blocked by HKCOLO Data Centre and residential developments at Area 86. Views of TKO137 will be possible from the higher levels. Views of the site are blocked at street level by screening.	Low
VSR 5	**Residential developments at Area 86** Proposed High-rise Residents / 1900 m	OV / PV / NV	Views to Fat Tong Chau (Junk Island), TKO137 is blocked by HKCOLO Data Centre. Views of TKO137 will be possible from the higher levels. Views will also be available of Tseung Kwan O Bay and Hong Kong Island. Views of the site are blocked at street level by screening hoarding.	Low
VSR 6	**Siu Sai Wan (Island Resort and Fullview Garden)**	OV	Open views along promenade of Siu Sai Wan Waterfront Park provide a direct view to the site across Tathong Channel. From this location, the site is viewed against the backdrop of the Clear Water Bay Country Park and the SENT Landfill. Fat Tong Chau is visible in the foreground.	High

VSR	Name / Type / Distance	Degree of Visibility OV/PV/ GV/NV	Description	Sensitivity
	High rise residential / 1700 m		Most of the site is viewed against existing landform except for the tip between Tit Cham Chau and the Clear Water Bay Country Park making this area more sensitive to change. High rise residents in north facing units will have panoramic views of looking out over the site.	
VSR 7	**Pottinger Peak, Shek O Country Park** Recreational walkers / 2100 m	GV / PV / OV	Partial and glimpsed views are available for recreational users in this Country Park through vegetation and past hillslopes. A direct view to the site across Tathong Channel is possible when passing through vegetation. The view looks down across Tathong Channel to the site and the two islands along with SENT landfill. Views are also possible of the Tseung Kwan O Industrial Estate and Clear Water Bay Country Park to east.	Medium
VSR 8	**Leisure boat traffic in Lam Tong Channel** Boat Users / 1500m	OV	Boat users have an open view of the site, wedged between Junk Island and Tit Cham Chau with the straight-edged reclamation jutting out into the harbour. Clearwater Bay Country Park is visible behind. Views extend through the site to Tseung Kwan O, but partially blocked by Fat Tong Chau from some vantage points. Sea barges are visible in the foreground.	Medium to Low

Key: OV - Open View; PV - Partial View; GV - Glimpsed View; NV - No View
Note:
- The viewing distance is measured from the location of Visually Sensitive Receiver to the nearest visible part of the proposed scheme.
- For the factors affecting the sensitivity of receivers for evaluation of visual impacts, see para. 3.3.8.

3.5 Impact Assessment – Visual (Before Mitigation)

3.5.1 **Table 3.2** identifies the impact anticipated to be received by each of the identified VSRs.

Table 3.2 Significance of Visual Impact anticipated to be received by VSRs

VSR	Sensit -ivity	Magnitude of Change	Primary Source of Impact	Impact Significance Threshold (Unmitigated)
		Operation		Operation
1. Clearwater Bay Country Club Recreation / 2200 m	High to medium	Intermediate	Operation: Impact from the stockpiling of fill and the loss of the visual corridor between Tit Cham Chau and the Clear Water Bay Country Park. The stockpile will visually contrast with the natural form of the surrounding landform.	Moderate Impact
2. Clear Water Bay Country Park Recreational Walkers / 1100 m	Medium	Small	Operation: Like the Country Club, impacts will arise from the loss of the channel between Tit Cham Chau and the Clear Wate Bay Country Park. Impacts will be less obtrusive however given the angle that the site will be viewed from.	Moderate Impact
3. TVB Broadcast and	Medium	Large	Operation: Impacts will be due to the increased amount of fill being stored on the site. Views at street level not impacted as the proposed work are blocked by screening. Given the	Moderate Impact

VSR	Sensit-ivity	Magnitude of Change	Primary Source of Impact	Impact Significance Threshold (Unmitigated)
		Operation		Operation
Production Centre Commercial Workers / 650 m			height of the tower block, views from upper floors of TVB Broadcast and Production Centre will largely be impacted as open views will be retained and given the existing visual quality is not high.	
4. Residential developments at Area 85 Proposed High-rise Residents / 1600 m	Low	Negligible	Operation: Views at street level are not impacted as the proposed work are blocked by screening. Therefore, the change to the visual amenity will be negligible as views from ground level of the site are not possible.	Negligible Impact
5. Residential developments at Area 86 Proposed High-rise Residents / 1900 m	Low	Negligible	Operation: Views to proposed work are not impacted as the proposed work are blocked by screening and the data centre. Therefore, the change to the visual amenity will be negligible as views from ground level of the site are not possible.	Negligible Impact
6. Siu Sai Wan (Island Resort and Fullview Garden) High rise residential / 1700 m	High	Intermediate	Operation: The height and shape of the TKOFB will contrast against the backdrop of the Clear Water Bay Country Park. At present the skyline is formed by the Country Park sloping down to Tit Cham Chau with high natural quality. Although the proposed scheme will not form the skyline, the formation of a straight edged TKOFB will have a large impact on the visual quality if it forms the skyline at any point.	Moderate Impact
7. Pottinger Peak, Shek O Country Park Recreational walkers / 2100 m	High to medium	Intermediate	Operation: Entire views of the site will be impacted as the height of the stockpile increases. However, given the increased elevation of this VSR, the proposed maximum height of the stockpile will have little impact as it is looking down onto the site.	Moderate Impact
8. Leisure boat traffic in Tathong Channel Boat Users / 1500 m	Medium to Low	Large	Operation: The increasing size of the TKOFB will be notable when looking up from the Channel and the TKOFB forms the skyline. Part of views from certain parts of the Clear Water Bay Country Park and Tit Cham Chau will be blocked by the proposed scheme during the boat trip. The design of the slopes facing the channel is important from this viewpoint.	Moderate Impact

Cumulative Impact

3.5.2 Following the approval of the VEP application (No. VEP-603/2021), the operation of TKOFB has been extended for another 5 years from 1 January 2022 to 31 December 2026. Potentially relevant interfacing projects with the proposed scheme are presented in Section 2.2 and their locations are shown in **Figure 2.1**. The cumulative

visual impacts imposed by these adjacent developments are discussed below, according to the current publicly available information.

3.5.3 The SENT Landfill Extension has been commissioned since November 2021 and the entire construction will be completed around mid-2023. Cumulative visual impact from SENT Landfill Extension and the proposed TKOFB are reflected on VSRs 3, 6 and 7. The SENT Landfill Extension is located to the immediate northeast of the site. The SENT Landfill Extension will be restored to resemble a natural hillside/ upland landscape, and will be substantially vegetated so as to mimic the patterns of natural vegetation on surrounding hills. The impact of the proposed TKOFB in this context is considered to be negligible since the nature of the SENT Landfill Extension is compatible with the operation of the proposed scheme.

3.5.4 The WSD Desalination Plant is expected to be completed and commissioning in September 2023. Upon considering the mitigation measures proposed in the approved EIA Report (EIAO Register No. AEIAR-192/2015 - Desalination Plant at Tseung Kwan O) and the acceptability of visual impacts with implemented mitigation measures of the Desalination Plant, the cumulative impact of WSD Desalination Plant is considered to be negligible.

Summary

3.5.5 Overall, the project will have a negligible to moderate impact on the visual amenity from the identified VSRs. As the TKOFB is close to the coastline, its form is the most important determinant of visual amenity. In the proposed design, the TKOFB will gradually increase in height, with the maximum height of +65.2mPD near the Clear Water Bay Country Park. This does not pose any potential visual impact as the TKOFB will not have a dominant visible outline from most of the locations except from the view of the leisure boat traffic in Tathong Channel. However, the straight edged and engineered slopes of the TKOFB will contrast against the natural landform surrounding the site. This will only have a slight visual impact to the adjacent environment. When viewed from a distance, the TKOFB will have moderate impact given its relatively low stature in comparison with the surrounding landform. During the extended operation, the TKOFB will not have any impact on the residential areas of Area 85 and Area 86 as the views are blocked by the HKCOLO Data Center. Therefore, the impact on these areas is negligible.

3.6 Mitigation Measures

Primary Mitigation Measures

3.6.1 In accordance with the EIAO-TM, the hierarchy for visual impact mitigation is avoidance of impact, minimization of impact and compensation of impact. The most effective strategy to mitigate visual impacts is avoidance. However, if it is not possible to avoid such impacts, then secondary mitigation measures must be considered in order to reduce and compensate for the anticipated adverse impacts.

3.6.2 The primary mitigation measure for the TKOFB is the siting of the fill bank which took into account site factors such as the location, area and applicable engineering and

landscape designs to the site that are key to avoidance of adverse landscape and visual impacts. These site factors are still the primary mitigation measures to the landscape and visual impacts that may result from the increased stockpiling height and capacity of the TKOFB.

Secondary Mitigation Measures

3.6.3 Secondary mitigation measures are specifically designed to alleviate the impact and where possible, to compensate for loss of visual amenity in the operation of the TKOFB.

3.6.4 Particularly for the increase in stockpiling height at the TKOFB, these mitigation measures are in the form of remedial measures such as material colour and texture as well as treatment of the stockpiling which will improve the visual aspect of the project.

3.6.5 The approved EIA report recommended visual mitigation measures are still applicable in addressing the visual impacts of the increase in stockpiling height and capacity as they are practical and effective means in treating the projected massive appearance of the stockpile. These include the design of the stockpile, sequencing/bunding, and coloured geotextile matting. The continued applicability of these mitigation measures is further explained in the following section.

Mitigation Measures -Visual Impact

Stockpile Design

3.6.6 The design of the stockpile of public fill is considered the primary mitigation measure for allowing the TKOFB to blend into the surrounding landscape.

(a) Mitigation Measure - Design of Stockpile

3.6.7 The design of the stockpile mirrors the surrounding landform and is made to appear like organic-looking layers to reduce its visual impact. The natural quality of the existing landform is strong, and the TKOFB would continue to mimic this topography. The topography of the study area consists of the ridgeline descending from High Junk Peak to the coastline close to Tit Cham Chau. At this point the quality of the topography of the study area is high as it forms the skyline. The TKOFB will form the skyline at some point. The form of the TKOFB mimics the ridgeline of the Clear Water Bay Country Park and slopes down towards the coastline naturally. With the implementation of the above, the visual impact to the Clearwater Bay Country Club's viewers is significantly reduced.

3.6.8 The final form should fit into the general formation of the surrounding land so that, once completed, the modified form appears to be a natural extension of the original landform.

3.6.9 The increase in stockpiling height and capacity will have implications on the design of the stockpile. Given the proposed additional height and capacity, the design of the stockpile must be relatively level so that the stockpile will remain stable. The design of organic-looking layers will appear natural and balanced so that they imitate the surrounding environment. By appearing to blend with the existing landforms, the

visual impact of the increased stockpile height is reduced. This shows the adaptability and applicability of the stockpile design to the proposed stockpile height and capacity.

(b) Mitigation Measure - Sequencing / Bunding

3.6.10 The stockpiling of public fill should be operated using layering with bunding being formed around the edge of each layer.

3.6.11 Sequencing or bunding provides edge protection and is a purpose-built barrier that gives a natural appearance to the stockpile edge. It also supports the stockpile surface making it stable which is needed for effective erosion control. This keeps the stockpile form intact and orderly making it appear visually acceptable and pleasant. Therefore, the use of bunding is still an effective mitigation measure for the anticipated visual impacts of the increased stockpile height and capacity.

Treatment for Slopes

3.6.12 Coloured Geo-textile Matting, as recommended in the EIA report, will be placed over the slopes of the stockpile and gabion facing to mitigate the visual impact of the TKOFB. This remains an effective mitigation measure in addressing the visual impact of the increase in volume of the stockpiling from 6 million m^3 to 12 million m^3 of public fill.

(c) Mitigation Measure - Coloured Geo-textile Matting on Slopes (see Figure 3.3)

3.6.13 Using matt (not glossy) dark green / brown non-biodegradable Geo-textile Matting to cover the slopes when there is no significant change in the stockpiling volume over a certain period is considered. If the correct colour is chosen, the matting will reduce the slope visibility greatly without increasing reflectivity. Therefore, coloured Geo-textile Matting would be preferable as the mitigation measure for the stockpile.

(d) Mitigation Measure – Coloured Geo-textile Matting on Slopes with Gabion Facing (see Figure 3.3)

3.6.14 Considering the TKOFB is one of the local reception facilities to receive surplus public fill arising from the construction industry for temporary storage for subsequent use, the public fill delivered to the TKOFB shall be entirely inert construction waste comprising of inert materials only, such as rock, rubble, etc. Taken into account the operational requirements, the implementation of vertical greening on the slopes with gabion facing might generate non-inert materials which could possibly result in the inert public fill at the TKOFB mixing with non-inert materials that is not suitable for subsequent use. Further processing would be required. Using matt (not glossy) dark green non-biodegradable Geo-textile Matting to cover the slopes with gabion facing when there is no significant change in the stockpiling volume over a certain period is thus considered. If the correct colour is chosen, the matting will reduce the gabion facing visibility greatly without increasing reflectivity. Therefore, coloured Geo-textile Matting would be preferable as the mitigation measure which could avoid generation of non-inert waste in the public fill and develop an environment blending into the surrounding.

3.6.15 The increased stockpile volume covered with the geotextile matting creates an organic form that is aligned with the stockpile design of mimicking the ridgelines of the High

Junk Peak and Clear Water Bay Country Park. The dark-green/brown geotextile matting will continue to be an applicable visual mitigation measure for the increase in stockpiling height as it will allow for the stockpile to blend with the surrounding landscape's foliage and its natural-looking matt texture complimenting the background.

Existing Vegetation

(e) Protection of Existing Vegetation

3.6.16 It is not envisaged that there will be any direct impact on the existing vegetation because of the proposed increase in stockpiling height of the TKOFB. However, the contractor shall ensure that the surrounding high-quality areas should not be disturbed by the workers or work activities during the operation of the TKOFB.

3.6.17 By effectively implementing measures that protect the existing vegetation, the stockpile will continue to blend with the natural surroundings. The preservation of the existing vegetation around the TKOFB is key in maintaining the organic environment around the project so that it will not become an eyesore to the visually sensitive receivers.

3.6.18 **Table 3.3** summarizes the EIA recommended mitigation measures to be implemented.

Table 3.3 EIA Recommended Visual Mitigation Measures to be Implemented

(a) Design of Stockpile: The design of the stockpile mirrors the surrounding landform, being constructed of irregularly shaped layers to reduce its visual impact.
(b) Sequencing/ Bunding: The stockpiling of public fill should be operated using layering with bunding being formed around the edge of each layer
(c) Treatment for Slopes: Using matt (not glossy) dark green / brown non-biodegradable Geo-textile Matting to cover the slopes
(d) Protection of Existing Vegetation
(e) Extended Application of Recommended Mitigation Measures: Coloured Geo-textile Matting to cover slopes with gabion facing
Additional Mitigation Measures
Nil

3.6.19 Upon reviewing the EIA recommended mitigation measures of the previous stockpiling height which is +35.2mPD, it can be projected that these measures will remain effective and applicable in mitigating the landscape and visual impacts of the increase in stockpiling height of +65.2mPD. Therefore, no additional mitigation measure is recommended.

3.7 Residual Visual Impacts

3.7.1 The residual impacts are those impacts that will remain once mitigation measures have been implemented. Photomontages (**Figures 3.4a - 3.4f**) have been prepared to show the existing view and the worst-case scenario with mitigation (operation).

3.7.2 **Table 3.4** outlines the residual impacts that will result from the proposed scheme related to the visual amenity of the outlined visual envelope area. The operation of the proposed scheme is assessed at the worst-case scenario, i.e. when the stockpile is at its highest point and is completed.

Table 3.4 Residual Visual Impact

VSR	Significance Threshold *without* Recommended Mitigation Measures	Recommended Mitigation Measures	Significance Threshold *with* Recommended Mitigation Measures
	Operation		Operation
1. Clearwater Bay Country Club Recreation/ 2200 m	Moderate Impact	(a) Design of stockpile (b) Sequencing / Bunding (c) Geotextile matting (d) Gabion facing with geotextile matting **and** (e) Protection of existing vegetation	Slight Impact
2. Clearwater Bay Country Park Recreational Walkers/ 1100 m	Moderate Impact	(a) Design of stockpile (b) Sequencing / Bunding (c) Geotextile matting (d) Gabion facing with geotextile matting **and** (e) Protection of existing vegetation	Slight Impact
3. TVB Broadcast and Production Centre Commercial Workers/ 650 m	Moderate Impact	(a) Design of stockpile (b) Sequencing / Bunding (c) Geotextile matting (d) Gabion facing with geotextile matting **and** (e) Protection of existing vegetation	Moderate Impact
4. Residential development at Area 85 Proposed High-rise Residents/ 1600 m	Negligible Impact	(a) Design of stockpile (b) Sequencing / Bunding (c) Geotextile matting (d) Gabion facing with geotextile matting **and** (e) Protection of existing vegetation	Negligible Impact
5. Residential developments at Area 86 Proposed High-rise Residents/ 1900 m	Negligible Impact	(a) Design of stockpile (b) Sequencing / Bunding (c) Geotextile matting (d) Gabion facing with geotextile matting **and** (e) Protection of existing vegetation	Negligible Impact
6. Siu Sai Wan (Island Resort and Fullview Garden) High rise residential/ 1700 m	Moderate Impact	(a) Design of stockpile (b) Sequencing / Bunding (c) Geotextile matting (d) Gabion facing with geotextile matting **and** (e) Protection of Existing Vegetation	Moderate to Slight Impact
7. Pottinger Peak, Shek O Country Park Recreational walkers/ 2100 m	Moderate Impact	(a) Design of stockpile (b) Sequencing / Bunding (c) Geotextile Matting (d) Gabion facing with geotextile matting **and** (e) Protection of Existing Vegetation	Moderate to Slight Impact
8. Leisure boat traffic in Tathong Channel Boat Users/ 1500 m	Moderate Impact	(a) Design of stockpile (b) Sequencing / Bunding (c) Geotextile Matting	Slight Impact

VSR	Significance Threshold *without* Recommended Mitigation Measures	Recommended Mitigation Measures	Significance Threshold *with* Recommended Mitigation Measures
	Operation		Operation
		(d) Gabion facing with geotextile matting **and** (e) Protection of Existing Vegetation	

Summary of Residual Visual Impacts

3.7.3 The residual visual impacts of the TKOFB will be reduced to 'Moderate to Slight Impact' during the extended operation. Photomontage (**Figures 3.4a – 3.4c**) for VSRs 1 - 3 shows that if the design of the stockpile is shaped such that it does not block the view between the Clear Water Bay Country Park and Tit Cham Chau and is covered in an appropriate material, the visual impact will be significantly mitigated.

3.7.4 Existing VSR view (**Figure 3.2a**) shows the proposed views from residential areas at Area 85 and 86. Considering the whole site of proposed work is blocked by HKCOLO Data Center, operational impacts from the proposed scheme will be 'Negligible'.

3.7.5 With the mitigation measures, the appearance of the TKOFB when viewed from Hong Kong Island (see Photomontage (**Figures 3.4d – 3.4f**)) and Shek O Country Park will blend with the surrounding landscape character, reducing its visual impact to 'Moderate to Slight' during the extended operation.

3.7.6 The effective and efficient implementation of the visual mitigation measures discussed in Section 3.6 will result in no unacceptable adverse residual visual impact from the increase in maximum stockpiling height of +35.2mPD to +65.2mPD and capacity from 6 million m^3 to 12 million m^3 of the TKOFB.

3.8 Conclusion

3.8.1 The Impact Significant Threshold of visual sensitive areas with recommended mitigation measures for the increase in maximum stockpiling height and capacity ranges from Negligible impact to Moderate impact. In conclusion, it is considered that the proposed scheme at TKO137 would be acceptable with the continued effectiveness and applicability of the approved EIA report recommended mitigation measures set in place for residual visual impacts. The adverse effects can be mitigated, reduced or offset to a large extent by implementing appropriate mitigation measures (**Section 3.6**).

3.8.2 This is due to the following reasons:

- For the existing low landscape quality of TKO137, the proposed scheme would have a slight to negligible impact on the Landscape Character of the area if the design of the stockpile blends with the surrounding existing natural character.
- The proposed scheme would have negligible impact on Landscape Resources.
- The mitigation for the visual impacts of the proposed scheme through stockpile design and slope treatment could form a visually unobtrusive and complimentary element in the landscape.

3.8.3 The details of the recommended landscape and visual mitigation measures will be reflected in the updated Landscape Plans that will be provided by the Permit Holder at least one month before commencement of the landscape works. As stated under Condition 2.6 of EP-134/2002/O, the Landscape Plans will include the locations, design details, implementation schedules, and drawings in the scale of 1:1000 or other appropriate scale.

4. AIR QUALITY

4.1 Air Emission Sources Associated with the Operation of the TKOFB

4.1.1 Potential key air emission sources within the TKOFB include:

- Dust emissions from the TKOFB operational activities including fill materials handling at stockpiling areas and barging points, truck movements on major haul roads, as well as wind erosion from stockpiling areas;
- Emissions from the operation of the Construction and Demolition Material Crushing Facility (C&DMCF), the Construction and Demolition Material Sorting Facilities (C&DMSFs) and diesel generators within the TKOFB;
- Vehicular emissions from internal roads within the TKOFB (incoming trucks and internal trucks); and
- Emissions from marine vessels (e.g. barges, derrick lighters, tug boats) during berthing and manoeuvring for exporting and importing fill materials.

4.1.2 Comparing with the information presented in the approved EIA Report (EIAO Register No. AEIAR-060/2002) and all relevant document submitted under the EIAO for the project, there would be no change in the operation mode during and after the progress of increase in stockpiling height and capacity. Thus, there would be no additional dust and exhaust gas emissions generated from the operation of the TKOFB.

4.1.3 As the CEDD will continue to promote marine delivery of public fill, daily road traffic flow to and from the TKOFB during the extended period would be similar to the current situation. Thus, air emissions associated with vehicle movement to and from the TKOFB would be similar to the current situation.

4.2 Identification of Material Change to the Environment Impact

4.2.1 As discussed in **Section 4.1**, there will be no change in the extent of the operation of the TKOFB during and after the progress of increase in stockpiling height in contrast with the settings presented in the approved EIA Report and all relevant document submitted under the EIAO for the project. Proper implementation of the mitigation measures as recommended in the approved EIA Report and all relevant documents submitted under the EIAO for the project will be continued. As such, no material change to the environment impact in terms of air quality is identified during and after the progress of increase in stockpiling height and capacity.

4.3 EM&A Requirements

4.3.1 An air quality (1-hour and 24-hour TSP) monitoring programme is being conducted at the site egress (TKO-A1) and the site office near Wan Po Road (TKO-A2a) under the fill bank operation contracts since 2003 (**Figure 4.1**). According to the monitoring records, there have been no project-related exceedances of the action and limit levels of air quality at these locations over the past four years (**Appendix 4.1**). Air quality monitoring at these stations will be continued during the operation of the TKOFB.

4.3.2 Two new TSP monitoring stations (TKO-A3 and TKO-A4) were proposed in the ER Report (November 2021) to be set up at the site offices of SENTX Landfill and Tseung Kwan O Desalination Plant after their commissioning. The exact locations of the proposed TKO-A3 and TKO-A4 as indicated in **Figure 4.1** are subject to review by the Environmental Team (ET) as part of the EM&A programme. The monitoring frequency and equipment used for the 1-hour and 24-hour TSP monitoring as per current EM&A programme would remain unchanged. Besides, no additional air quality monitoring is required during and after the progress of increase in stockpiling height and capacity.

5. NOISE

5.1 Noise Emission Associated with the Operation of the TKOFB

Fixed Plant Noise

5.1.1 Noise will continue to arise from the operation of powered mechanical equipment (PME) on site during the extended period, including the machineries in C&DMCF and C&DMSFs, diesel generators, activities at barging points, and movement of trucks and vehicles within the TKOFB.

5.1.2 Comparing with the approved EIA Report and all relevant document submitted under the EIAO for the project, there would be no change in the operation of the TKOFB during and after the progress of increase in stockpiling height and capacity. As the nearest identified noise sensitive receiver (NSR) at Tseung Kwan O is more than 1.5 km away from the site boundary of the TKOFB, adverse noise impact from the PME and site activities is not anticipated.

Road Traffic Noise

5.1.3 As the CEDD will continue to promote marine delivery of public fill, daily road traffic flow to and from the TKOFB during and after the progress of increase in stockpiling height and capacity would be similar to the current situation. Thus, there would be no additional road traffic noise impact on the NSRs along Wan Po Road due to vehicle movement to and from the TKOFB during the progress.

5.2 Identification of Material Change to the Environmental Impact

5.2.1 As discussed in **Section 5.1**, there will be no change in the extent of the operation of the TKOFB during and after the progress of increase in stockpiling height and capacity in contrast with the settings presented in the approved EIA Report and all relevant document submitted under the EIAO for the project. As such, no material change to the environmental impact in terms of noise is identified during and after the progress of increase in stockpiling height and capacity.

5.3 EM&A Requirements

5.3.1 A noise monitoring programme is being conducted at a monitoring station outside the site egress at Wan Po Road under the fill bank operation contracts since 2003. According to the monitoring records, there have been no project-related exceedances of the action and limit levels of operation noise at this location over the past four years (**Appendix 5.1**). Noise monitoring at this station will be continued during and after the progress of increase in stockpiling height and capacity.

6. WATER QUALITY

6.1 Water Quality Impacts Associated with the Operation of the TKOFB

6.1.1 During the operation of the TKOFB, key activities being undertaken within the site and the barging points include handling, processing, transfer and stockpiling of the fill materials. Potential water quality impacts from these site activities could be resulted from erosion of stockpiled materials, non-point source discharge of surface runoff (usually associated with rainfall) contaminated with high level of suspended solids, and accidental dropping of materials to the sea from the fill bank and/or the barges.

6.1.2 Comparing with the information presented in the approved EIA Report and all relevant document submitted under the EIAO for the project, there would be no change in the operation mode during and after the progress of increase in stockpiling height and capacity. Thus, there would be no additional water quality impact generated from the operation of the TKOFB.

6.2 Identification of Material Change to the Environmental Impact

6.2.1 As discussed in **Section 6.1**, there will be no change in the extent of the operation of the TKOFB during and after the progress of increase in stockpiling height and capacity in contrast with the settings presented in the approved EIA Report and all relevant document submitted under the EIAO for the project. As such, no material change to the environmental impact in terms of water quality is identified during and after the progress.

6.3 EM&A Requirements

6.3.1 Construction effluent discharged from the TKOFB is currently controlled via an effluent discharge licence issued by the EPD. Marine water quality monitoring programme is being conducted at Tathong Channel and Tai Miu Wan under the fill bank operation contracts. As there will be no significant changes in the activities within the TKOFB, no water quality impact on the marine waters at Tathong Channel and Tai Miu Wan is anticipated during the extended period provided the existing mitigation measures will continue to be properly implemented. According to the monitoring records, there have been no project-related exceedances of the action and limit levels of water quality at marine waters near the TKOFB over the past four years (**Appendix 6.1**).

6.3.2 In particular, the water intake of the Tseung Kwan O Desalination Plant (TKODP) will be located near Kwun Tsai at Tai Miu Wan. It is considered that the monitoring data obtained from the existing water quality monitoring stations at Tai Miu Wan could be adopted to project the potential water quality impact during the operation of the TKODP. Up to July 2022, all records of Total Suspended Solids levels at Tai Miu Wan are lower than the target limit of 40 mg/L (**Appendix 6.1**) as required by the WSD. Thus, no unacceptable water quality impact associated with the operation of the TKOFB is anticipated. As major infrastructural works such as Three-runway System of the Hong Kong International Airport will be continued, the CEDD will continue to encourage and facilitate the delivery of public fill to and from the TKOFB by barges

during the operation of the TKOFB. To prevent water pollution due to transportation of fill materials by barges, all of the existing environmental control and mitigation measures will continue to be properly implemented during the operation of the TKOFB. Good practices for handling and disposal of construction site discharges as stipulated in the EPD's ProPECC Note PN 1/94 *Construction Site Drainage* will be followed.

6.3.3 The existing water quality monitoring programme is considered effective and will remain unchanged. It is recommended that the monitoring parameters, frequency, and equipment will be maintained as the existing monitoring programme.

7. LANDFILL GAS HAZARD

7.1 Landfill Gas Hazard Associated with the Operation of the TKOFB

7.1.1 As presented in **Figure 7.1**, an area of about 21 ha at the north-eastern side of the TKOFB is located within the 250 m consultation zone of the SENT Landfill. A qualitative landfill gas assessment has been carried out and presented in the approved EIA Report (EIAO Register No. AEIAR-060/2002). The assessment concluded that the risk associated with the landfill gas migration hazard is low with the implementation of the mitigation measures currently stipulated in the EP.

7.1.2 About 14 ha of the TKOFB has been handed over to the EPD for the construction and operation of the SENTX Landfill, which were commissioned in November 2021. After the commissioning of the SENTX Landfill, about 23.1 ha of TKOFB is located within the new landfill consultation zone (**Figure 7.1**).

7.1.3 As reported in the approved EIA Report for SENTX Landfill (EIAO Register No. AEIAR-117/2008), and the Environmental Review Report supporting the VEP for SENTX Landfill (EIAO Register No. VEP-348/2011), the risk posed by the SENTX Landfill to adjacent developments ranges from very low to low depending on the nature and location of these developments. In the TKOFB, the area within the new landfill consultation zone will be occupied by open stockpiling areas, site haul roads and fixed plants for screening, crushing and sorting on site. All operation/ decommissioning works of the TKOFB within the landfill consultation zone will be carried out above ground. Only surface channels will be used for collection of surface drainage run-off and, thus, no underground drainage and sewerage systems including underground pipelines and chambers will be installed within the new landfill consultation zone. Most of the site offices for the contractor and the resident supervising staff will be located outside the new landfill consultation zone to minimize the potential risk of the landfill gas. An existing site office with an inspection platform is located at the site entrance, and the combined reception and exit office is immediate to the south of the site entrance. These buildings are located within the new landfill consultation zone. The container type office is supported by a raised hollow platform that allow natural ventilation and avoid accumulation of landfill gas, if any, beneath the office. This measure has also been recommended at various landfill sites and is considered effective to prevent landfill gas accumulation within the site office. The extent of operation of the TKOFB, and the on-site settings will not be changed during and after the progress of increase in stockpiling height and capacity. With the adoption of the precaution and safety measures recommended in the approved EIA Report (EIAO Register No. AEIAR-060/2002), the potential landfill gas hazard during the operation of the TKOFB would be low.

7.2 Identification of Material Change to the Environmental Impact

7.2.1 As discussed in **Section 7.1**, there will be no change in the extent of the operation of the TKOFB during and after the progress of increase in stockpiling height and capacity in contrast with the settings presented in the ER Report (July 2019). As such, no material change to the environmental impact in terms of landfill gas hazard is identified during and after the progress.

8. ECOLOGICAL ISSUES

8.1. Ecological Issues Associated with the Operation of the TKOFB

8.1.1 As reported in the approved EIA Report (2002)[(2)], potential impact on ecology was avoided through proper site selection. As TKO Area 137 was formed by reclamation, there are no recognised sites of conservation importance and important ecological habitats. Besides, a buffer distance of at least 10 m would be provided along the eastern boundary to separate the site from the western boundary of the Clear Water Bay Country Park.

8.1.2 Since the commission of the TKOFB, these environmental settings have been unchanged. The increase in stockpiling height and capacity at the TKOFB would not alter the environmental settings or the operation mode of the TKOFB. Thus, no issues of ecological impacts are anticipated during and after the increase in stockpiling height and capacity.

(2) CH2M Hill (China) Limited (March 2002). Agreement No. CE 57/2001 Environmental and Traffic Impact Assessment Study for Fill Bank at Tseung Kwan O Area 137, *Environmental Impact Assessment Report* (EIAO Register No. AEIAR-060/2002).

9. CULTURAL HERITAGE ISSUES

9.1. Cultural Heritage Issues Associated with the Operation of the TKOFB

9.1.1 As reported in the approved EIA Report (EIAO Register No. AEIAR-060/2002), the TKO Area 137 is a reclaimed land and there is no cultural heritage concern onsite. As stated in the approved EIA Study Brief, Junk Island House Ruin on Fat Tong Chau, i.e. the Fat Tau Chau House Ruin Site of Archaeological Interest (SAI), is located to the north of the project site. While there would not be any works associated with the establishment, operation and decommissioning of fill bank at Fat Tong Chau, a 2.4 m high site fencing have been erected and maintained along the northern site boundary abutting Fat Tong Chau to avoid any accidental disturbance of the cultural heritage site by the workers.

9.1.2 The Fat Tau Chau House Ruin SAI is located atop the mountainous area of Fat Tong Chau. From Tseung Kwan O Industrial Estate, one can reach the SAI by trekking the mountain with the help of a local guide. However, it is not easily accessible by the public as one has to go through rough terrain and steep paths which are covered with vegetation in an almost 800 m track. The elevation of the SAI is about +20.0mPD to +30mPD and lies close to the steep edge of the hill that faces Junk Bay. The distance between the SAI and the TKOFB stockpiling area is around 580 m separated by Tseung Kwan O Basin and an existing storage area. As the purpose of the report is to determine the environmental impact associated with the increase in maximum stockpiling height and capacity at TKOFB, the proximity of the SAI to the TKOFB stockpiling area is considered and have been determined to have no structural impact to the SAI. The location of the SAI in relation to TKOFB and stockpiling area is shown in **Figures 9.1** to **9.5.**

9.1.3 A site visit to TKOFB was conducted on 29 July 2022 and it was noted that the SAI has no observable foot traffic and is not easy to reach. Therefore, there will be no visual impact to the SAI. It is also located at the mountainous area separated from the fill bank through a 2.4 m high site fence, and is more than 500 m away from the stockpiling area. Thus, there will be no structural impact or disturbance to the archaeological site with regard to the proposed increase in maximum stockpiling height and capacity.

9.1.4 Since the commission of the TKOFB, the observed environmental settings have been unchanged. The increase in stockpiling height and capacity at the TKOFB would not alter the environmental settings or the operation mode of the TKOFB. Thus, no issues of cultural heritage impact are anticipated during and after the increase in stockpiling height and capacity.

Figure 9.1 Location of Fat Tau Chau House Ruin SAI and TKOFB

Figure 9.2 Adjacent Areas to Fat Tau Chau SAI and TKOFB

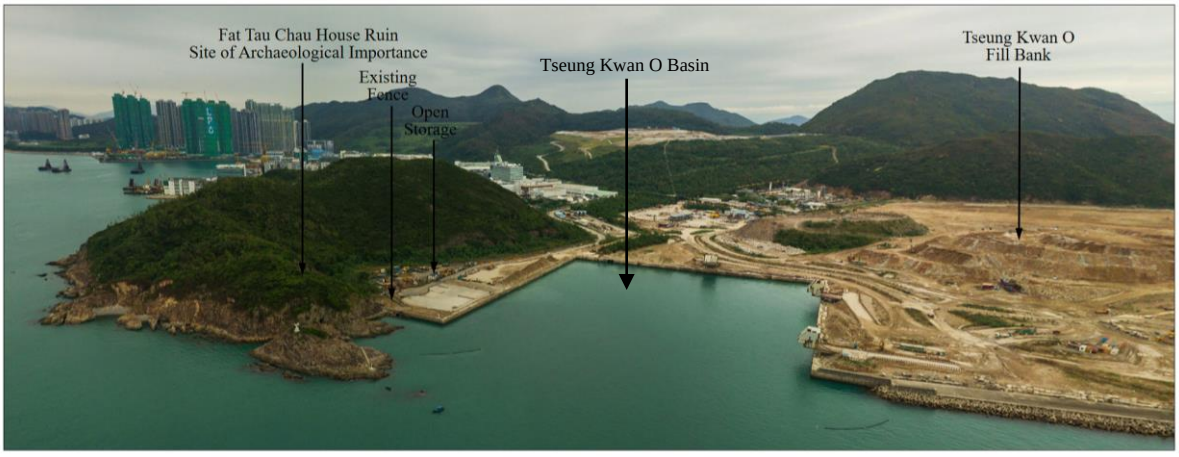


Figure 9.3 Existing Fence near TKOFB

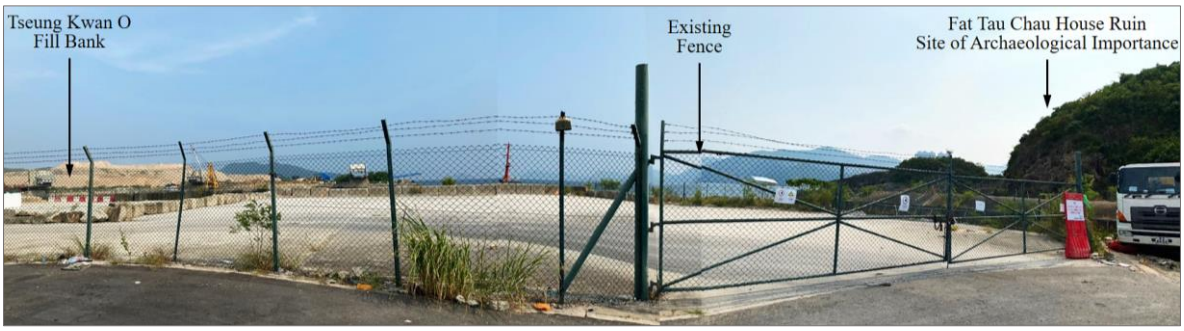


Figure 9.4 Open Storage near TKOFB

Figure 9.5 Distance between Fat Tau Chau SAI and TKOFB Stockpiling Area

10. CONCLUSION

10.1.1 To cope with the need for increasing the temporary storage capacity of public fill in the Territory, the CEDD proposes to increase the height constraint in stockpiling public fill at the TKOFB from its current limit +35.2mPD to +65.2mPD.

10.1.2 This environmental review was carried out to assess the environmental aspects associated with the operation of the TKOFB during the progress to increase in stockpiling height and capacity. Visual impact was identified as the key environmental issue, and it was concluded that, with the implementation of the proposed mitigation measures, the residual visual impact would be acceptable.

10.1.3 In contrast with the settings presented in the approved EIA Report and all relevant document submitted under the EIAO for the project, there would be no change in the extent of the operation of the TKOFB following the increase in maximum stockpiling height. With proper implementation of the mitigation measures as recommended in the approved EIA Report and all relevant documents submitted under the EIAO for the project, there would be no material change to the environment impact in terms of air quality, noise, water quality, ecology, cultural heritage and landfill gas hazard.

10.1.4 Overall, following the increase in maximum stockpiling height and capacity at the TKOFB, the environmental performance requirements set out in the approved EIA Report and all relevant document submitted under the EIAO for the project would comply with the mitigation measures in place. The proposed changes would not constitute material change to the operation of the TKOFB. Thus, it is considered that these changes could be incorporated into the EP of the TKOFB via an application of the variation of the existing EP under the EIAO.

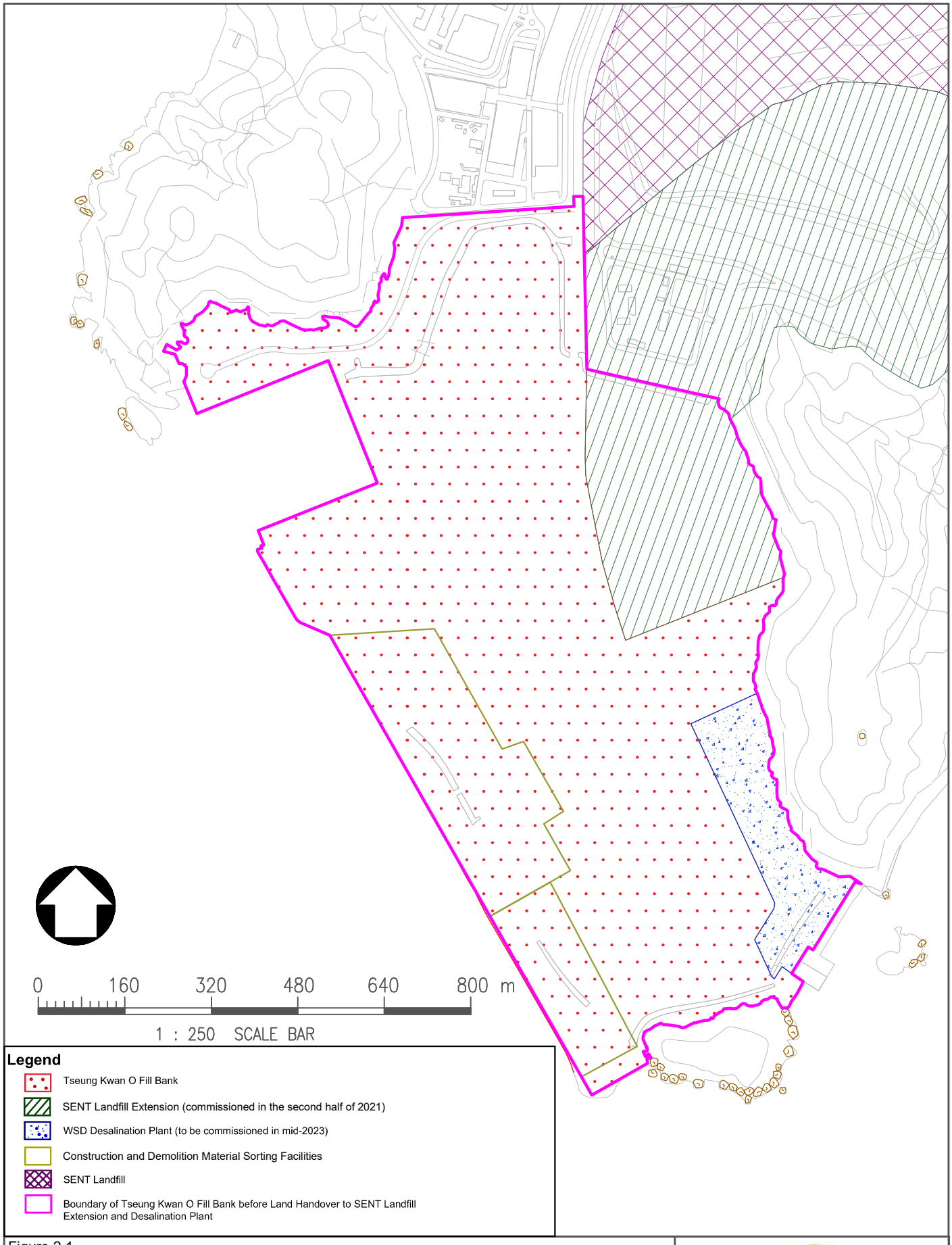
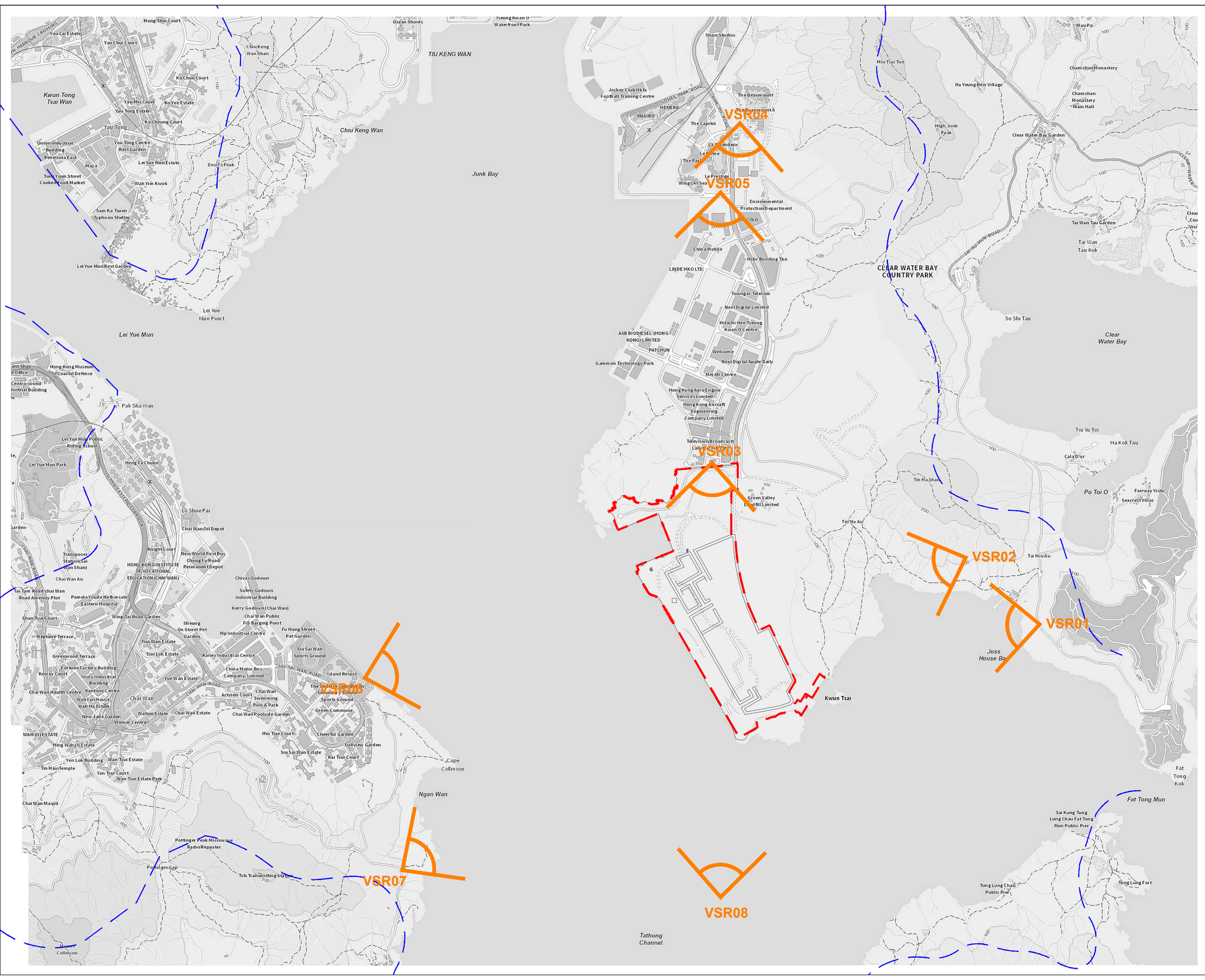


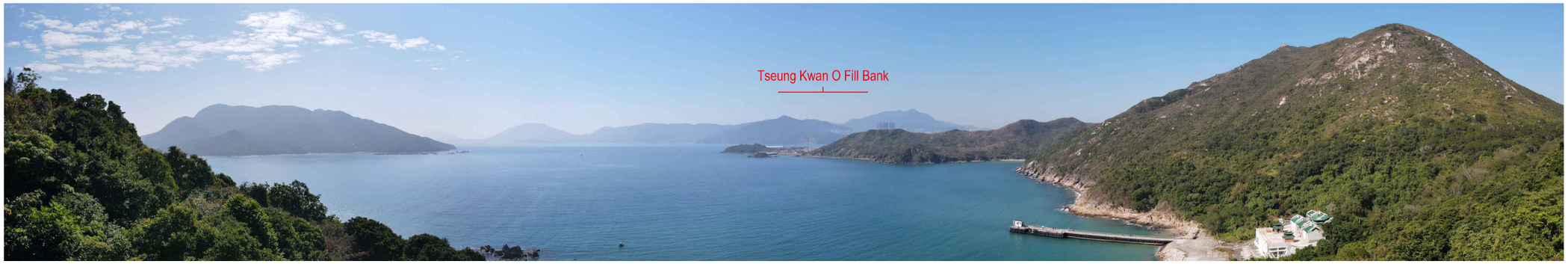
Figure 2.1

Layout Plan of the Facilities in the vicinity of the TKOFB

Date: 14/02/2022

ACUITY SUSTAINABILITY CONSULTING LIMITED


VSR04
VSR05
VSR03
VSR02
VSR01
VSR06
VSR07
VSR08
TIU KENG WAN
Junk Bay
Chiu Keng Wan
Lei Yue Mun
Kwun Tong Tsai Wan
CLEAR WATER BAY COUNTRY PARK
Clear Water Bay
Kwun Tsai
Fat Tong Mun
Ngan Wan
Tathong Channel
Cape Collinson
Hong Shui Court
Yau Lai Estate
Yau Chui Court
Chiu Keng Wan Shan
Ko Chun Court
Yau Mei Court
Ko Yee Estate
Yau Tong Estate
Ko Cheung Court
Yau Tong
Union Industrial Building
Yau Tong Centre Rest Garden
Peninsula East
Maya
Lei Yue Mun Estate
Devil's Peak
Tung Yuen Street Cooked Food Market
Wah Yim Kwok
Sam Ka Tsuen Typhoon Shelter
Lei Yue Mun Rest Garden
Lei Yue Mun Point
Ocean Shores
Tseung Kwan O Waterfront Park
Shaw Studios
Jockey Club Hkfa Football Training Centre
COHAS PARK ROAD
WAN PO ROAD
HEMERA
MALIBU
The Beaumont
The Capitol
La Splendeur
Le Prestige
Wings At Sea
Environmental Protection Department
China Mobile
Hsbc Building Tko
LINDE HKO LTD
Towngas Telecom
Next Digital Limited
Hitachi Hee Tseung Kwan O Centre
ASB BIODIESEL (HONG KONG) LIMITED
PATCHUN
Wellcome
Next Digital Apple Daily
Gammon Technology Park
Mei Ah Centre
Hong Kong Aero Engine Services Limited
Hong Kong Aircraft Engineering Company Limited
Television Broadcasts Limited
Green Valley Landfill Limited
Tin Ha Au
Tai Miu Au
Joss House Ba
Miu Tsai Tun
Ha Yeung New Village
Chamshan Monastery
Chamshan Monastery Main Hall
High Junk Peak
Clear Water Bay Garden
Tai Wan Tau Garden
Tai Wan Tau Kok
TAI AU MUN ROAD
So Shi Tau
Mau Po
Tiu Yu Toi
Ha Kok Tau
Cala D'or
Po Toi O
Fairway Vista
Seacrest Villas
Sai Kung Tung Lung Chau Fat Tong Mun Public Pier
Tung Lung Chau Public Pier
Tung Lung Fort
Fat Tong Kok
Hong Kong Museum Of Coastal Defence
Pak Sha Wan
Lei Yue Mun Public Riding School
Lei Yue Mun Park
Heng Fa Chuen
EASTERN CORRIDOR
Lo Shue Pai
Chai Wan Oil Depot
Knight Court
Transposer Station(Sai Wan Shan)
New World First Bus Chong Fu Road Permanent Depot
HONG KONG INSTITUTE OF VOCATIONAL EDUCATION (CHAI WAN)
Chai Wan Au
Tai Tam Road/chai Wan Road Amenity Plot
Pamela Youde Nethersole Eastern Hospital
Chivas Godown
Safety Godown Industrial Building
Kerry Godown (Chai Wan)
Chai Wan Public Fill Barging Point
Mp Industrial Centre
Fu Hong Street Pet Garden
Sheung On Street Pet Garden
Wing Tai Road Garden
Shan Tsui Court
Neptune Terrace
Greenwood Terrace
Fortune Factory Building
Koway Court
Glory Industrial Building
Kantone Centre
Chai Wan Health Centre
Wah Yan House
Wah Ha Estate
New Jade Garden
Winner Centre
WAH (II) ESTATE
Hing Wah (I) Estate
Yen Lok Building
Tin Hau Temple
Wan Tsui Estate
Yan Tsui Court
Wan Tsui Estate Park
Chai Wan Masjid
Tsui Wan Estate
Tsui Lok Estate
Kailey Industrial Centre
China Motor Bus Company, Limited
Yue Wan Estate
Chai Wan
Chai Wan Estate
Walton Estate
Artview Court
Chai Wan Swimming Pool & Park
Chai Wan Poolside Garden
Siu Sai Wan Sports Ground
Island Resort
The House Of Hope Secondary School Sports Ground
Green Commune
Hiu Tsui Court
Cheerful Garden
Fullview Garden
Siu Sai Wan Estate
Kai Tsui Court
Lo Shue Pai
Potinger Peak Microwave Radio Repeater
Potinger Gap
Tvb Transmitting Station
Mount Collinson
CHAI WAN ROAD
SIU SAI WAN ROAD
General Notes
LEGEND
SITE BOUNDARY
LINE OF VISUAL ENVELOP
LOVATIONS OF VSR FOR PHOTOMONTAGE
No.
Revision/Issue
Date
Drawing Title
LOCATIONS OF VISUAL ENVELOP, IEWPOINTS OR PHOTOMONTAGES
Project:
Agreement No. FM 05/2020 Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation
Sheet No.
FIGURE 3.1
Date
18 Mar 2021
Scale
1:20000 in A3
CEDD 土木工程拓展署 Civil Engineering and Development Department
ACUITY SUSTAINABILITY



VSR1 - Clearwater Bay Country Club

VSR2 - Clearwater Bay Country Park

VSR3 - TVB Broadcast and Production Centre

VSR4 - Residential developments at Area 85

General Notes

No.	Revision/Issue	Date

Drawing Title

EXISTING VSR VIEWS

Project:
Agreement No. FM 05/2020
Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation

Sheet No.
FIGURE 3.2a

Date
18 Mar 2021

Scale
N.T.S.

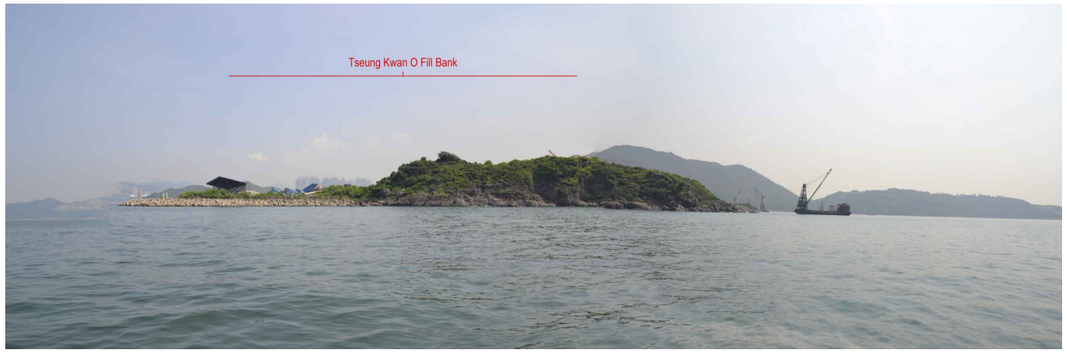
CEDD 土木工程拓展署 Civil Engineering and Development Department

ACUITY SUSTAINABILITY CONSULTING LIMITED

VSR5 - Residential developments at Area 86

VSR6 - Siu Sai Wan (Island Resort and Full view garden)

VSR7 - Pottinger Peak, Shek O Country Park



VSR8 - Leisure boat traffic in Lam Tong Hoi Hap

General Notes

No.	Revision/Issue	Date

Drawing Title

EXISTING VSR VIEWS

Project:
Agreement No. FM 05/2020
Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation

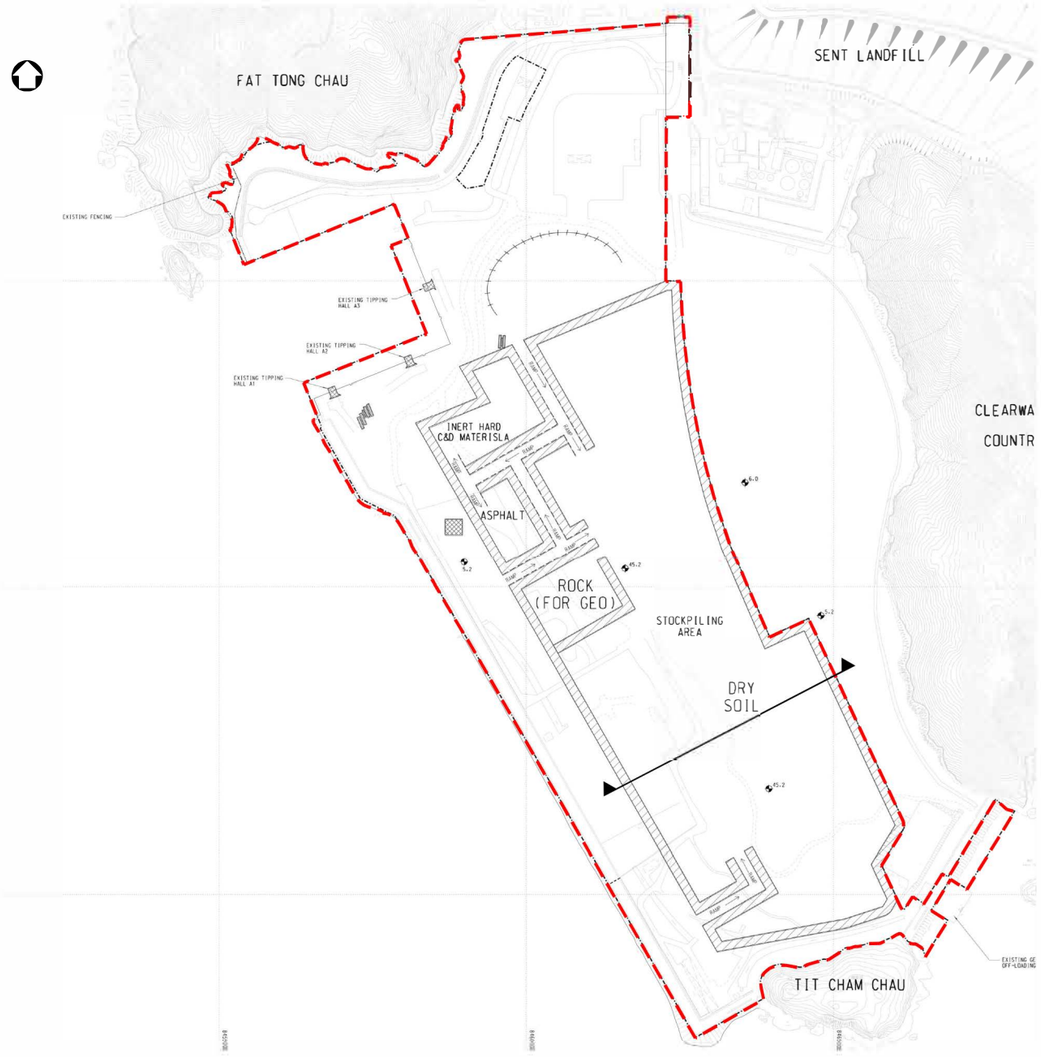
Sheet No.
FIGURE 3.2b

Date
18 Mar 2021

Scale
N.T.S.

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

ACUITY SUSTAINABILITY CONSULTING LIMITED



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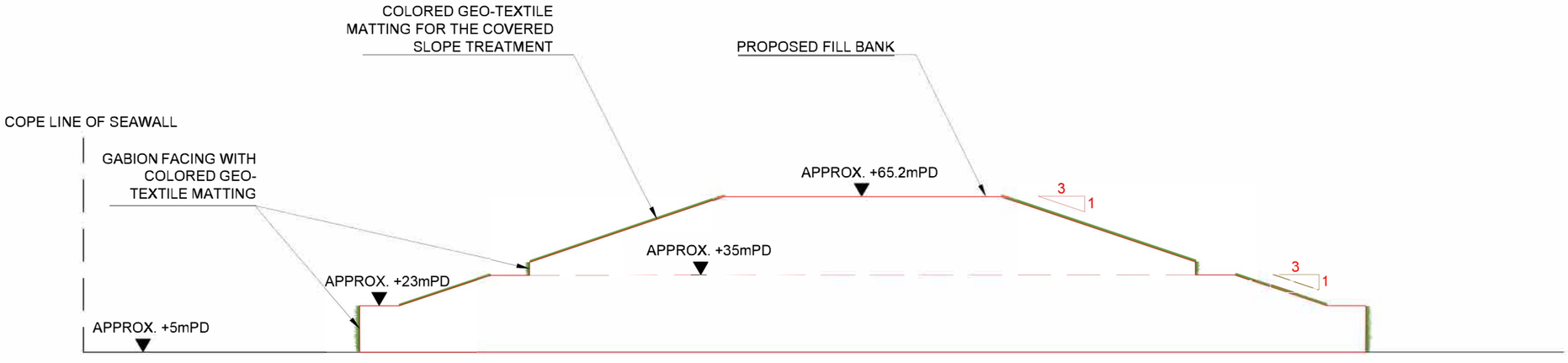


1:2000 in A3

General Notes

LEGEND

SITE BOUNDARY

No.	Revision/Issue	Date

Drawing Title

MITIGATION MEASURES
(COLORED SPRAY CONCRETE / COLORED GEO-TEXTILE MATTING)

Project:

Agreement No. FM 05/2020
Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation

Sheet No.

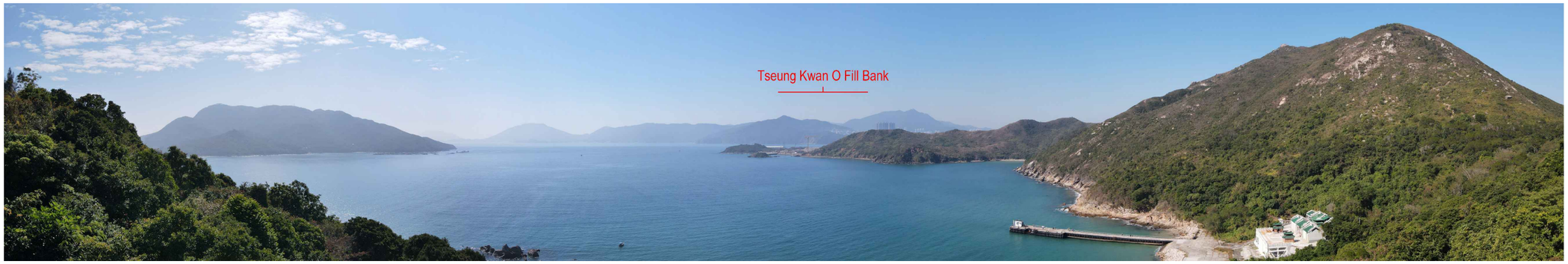
FIGURE 3.3

Date

18 Mar 2021

Scale

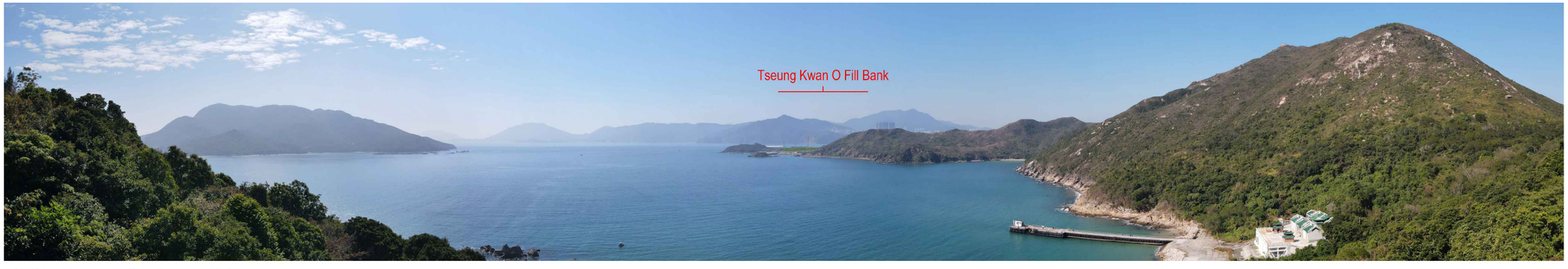
AS SHOWN



VSR1 - Clearwater Bay Country Club
(Baseline Level)

VSR1 - Clearwater Bay Country Club
(Current Scheme)

VSR1 - Clearwater Bay Country Club
(Proposed Scheme) - Without Mitigation



VSR1 - Clearwater Bay Country Club
(Proposed Scheme) - With Mitigation

General Notes

No.	Revision/Issue	Date

Drawing Title

PHOTOMONTAGE VIEW FROM VSR1

Project:
Agreement No. FM 05/2020
Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation

Sheet No.
FIGURE 3.4a

Date
18 Mar 2021

Scale
N.T.S.

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

ACUITY SUSTAINABILITY CONSULTING LIMITED

VSR2 - Clearwater Bay Country Park
(Baseline Level)

VSR2 - Clearwater Bay Country Park
(Current Scheme)

VSR2 - Clearwater Bay Country Park
(Proposed Scheme) - Without Mitigation

VSR2 - Clearwater Bay Country Park
(Proposed Scheme) - With Mitigation

General Notes

No.	Revision/Issue	Date

Drawing Title

PHOTOMONTAGE VIEW FROM VSR2

Project:
Agreement No. FM 05/2020
Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation

Sheet No.
FIGURE 3.4b

Date
18 Mar 2021

Scale
N.T.S.

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

ACUITY SUSTAINABILITY CONSULTING (HK) LTD.

VSR3 - TVB Broadcast and Production Centre
(Baseline Level)

VSR3 - TVB Broadcast and Production Centre
(Current Scheme)

VSR3 - TVB Broadcast and Production Centre
(Proposed Scheme) - Without Mitigation

VSR3 - TVB Broadcast and Production Centre
(Proposed Scheme) - With Mitigation

General Notes

No.	Revision/Issue	Date

Drawing Title

PHOTOMONTAGE VIEW FROM VSR3

Project:
Agreement No. FM 05/2020
Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation

Sheet No.
FIGURE 3.4c

Date
18 Mar 2021

Scale
N.T.S.

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

ACUITY SUSTAINABILITY CONSULTING LIMITED

VSR6 - Siu Sai Wan (Island Resort and Full view garden)
(Baseline Level)

VSR6 - Siu Sai Wan (Island Resort and Full view garden)
(Current Scheme)

VSR6 - Siu Sai Wan (Island Resort and Full view garden)
(Proposed Scheme) - Without Mitigation

VSR6 - Siu Sai Wan (Island Resort and Full view garden)
(Proposed Scheme) - With Mitigation

General Notes

No.	Revision/Issue	Date

Drawing Title

PHOTOMONTAGE VIEW FROM VSR6

Project:
Agreement No. FM 05/2020
Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation

Sheet No.
FIGURE 3.4d

Date
18 Mar 2021

Scale
N.T.S.

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

ACUITY SUSTAINABILITY CONSULTING LIMITED

VSR7 - Pottinger Peak, Shek O Country Park
(Baseline Level)

VSR7 - Pottinger Peak, Shek O Country Park
(Current Scheme)

VSR7 - Pottinger Peak, Shek O Country Park
(Proposed Scheme) - Without Mitigation

VSR7 - Pottinger Peak, Shek O Country Park
(Proposed Scheme) - With Mitigation

General Notes

No.	Revision/Issue	Date

Drawing Title

PHOTOMONTAGE VIEW FROM VSR7

Project:
Agreement No. FM 05/2020
Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation

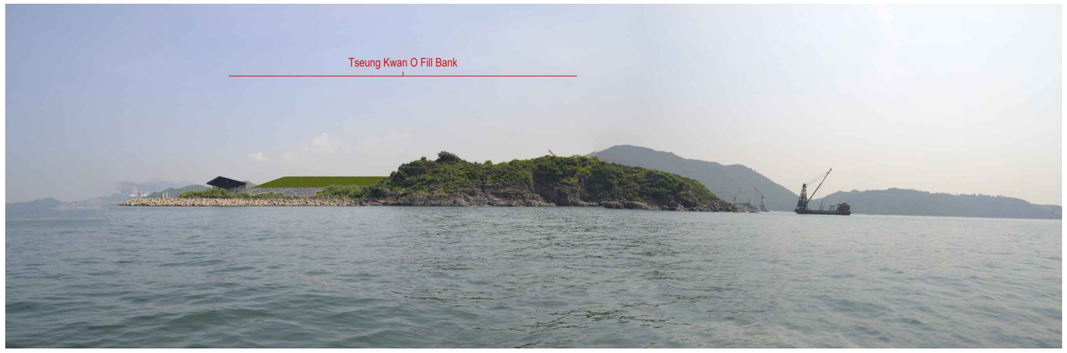
Sheet No.
FIGURE 3.4e

Date
18 Mar 2021

Scale
N.T.S.

CEDD 土木工程拓展署 Civil Engineering and Development Department
ACUITY SUSTAINABILITY CONSULTING LIMITED

VSR8 - Leisure boat traffic in Lam Tong Hoi Hap
(Baseline)



VSR8 - Leisure boat traffic in Lam Tong Hoi Hap
(Current Scheme)

VSR8 - Leisure boat traffic in Lam Tong Hoi Hap
(Proposed Scheme) - Without Mitigation

VSR8 - Leisure boat traffic in Lam Tong Hoi Hap
(Proposed Scheme) - With Mitigation

General Notes

No.	Revision/Issue	Date

Drawing Title

PHOTOMONTAGE VIEW FROM VSR8

Project:
Agreement No. FM 05/2020
Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137– Investigation

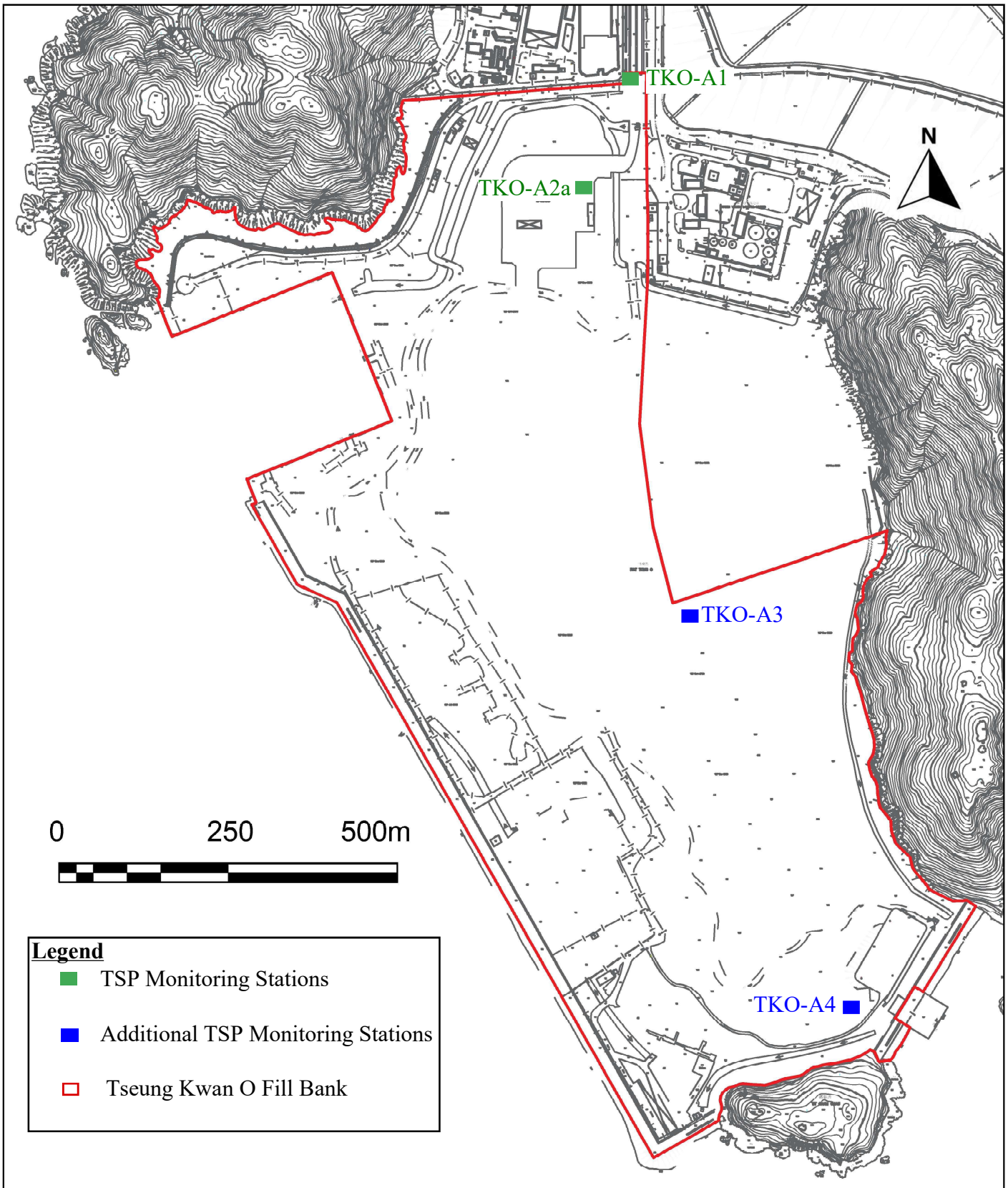
Sheet No.
FIGURE 3.4f

Date
18 Mar 2021

Scale
N.T.S.

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

ACUITY SUSTAINABILITY CONSULTING (HK) LTD.



Sheet No. Figure 4.1	Drawing Title: Locations of Air Quality Monitoring Stations at Tseung Kwan O Area 137 Fill Bank
Date: 19/Oct/2021 / Scale.	Project: Agreement No. FM 05/2020 Environmental Review and Traffic Impact Assessment for Extension of Operation of Fill Bank at Tseung Kwan O Area 137 – Investigation

No.	Revision/Issue	Date

ACUITY SUSTAINABILITY CONSULTING LIMITED

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

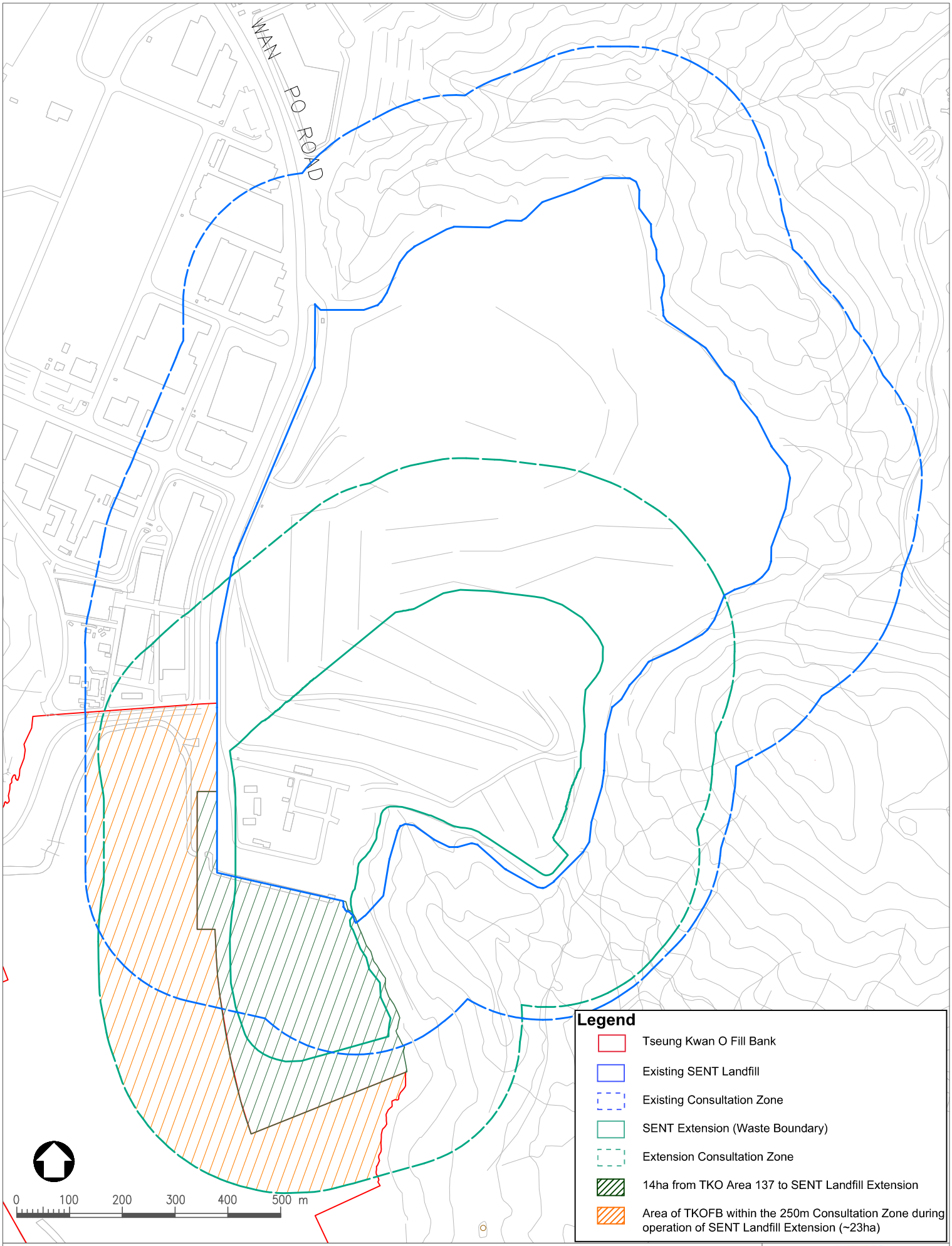


Figure 7.1

250m Consultation Zone of SENT Landfill and SENT Landfill Extension

Date: 28/5/2021

ACUITY SUSTAINABILITY CONSULTING LIMITED

Appendix 4.1 Air quality monitoring results of the TKOFB between May 2018 and July 2022

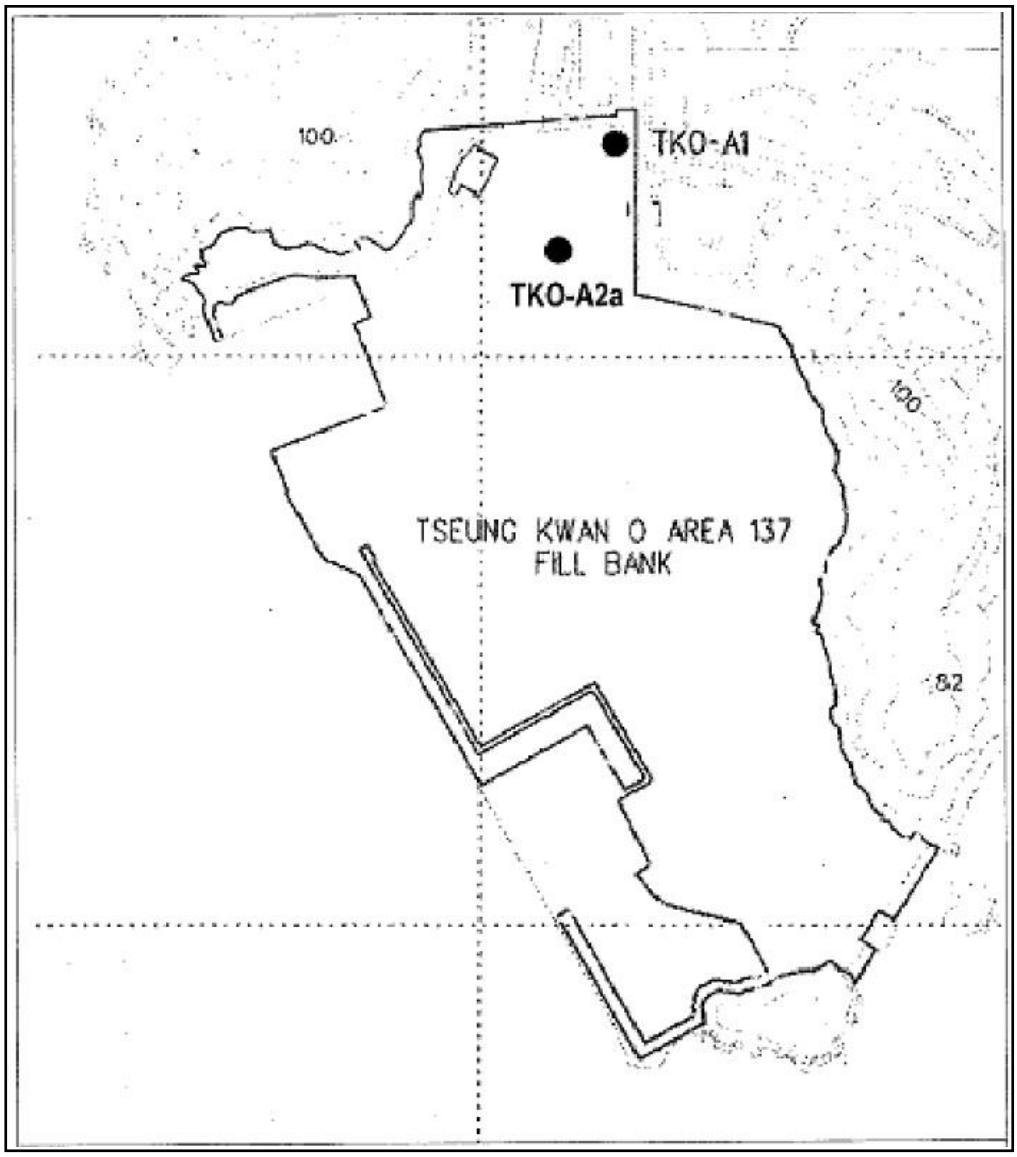
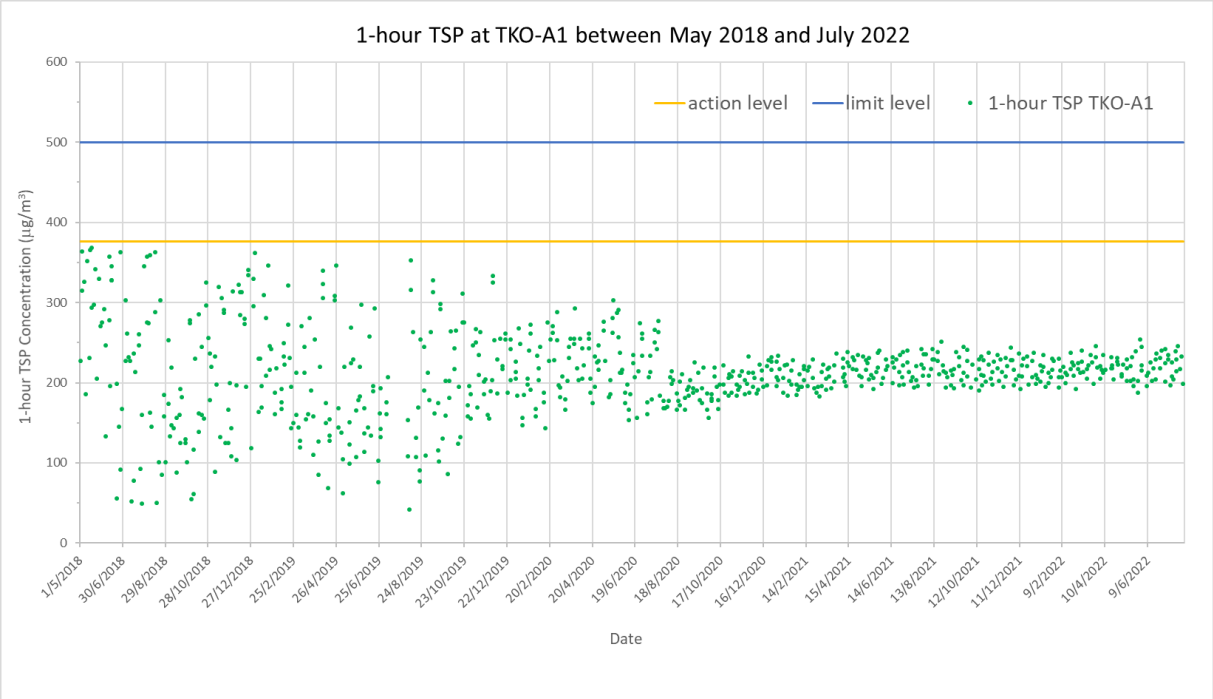
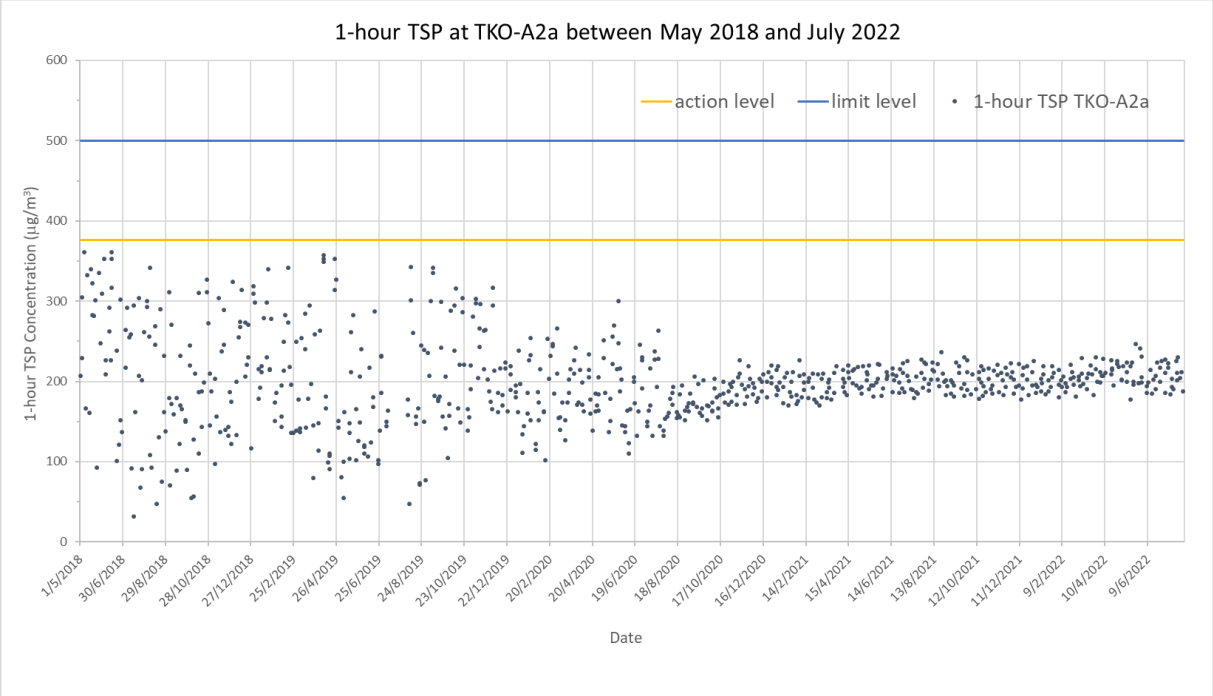
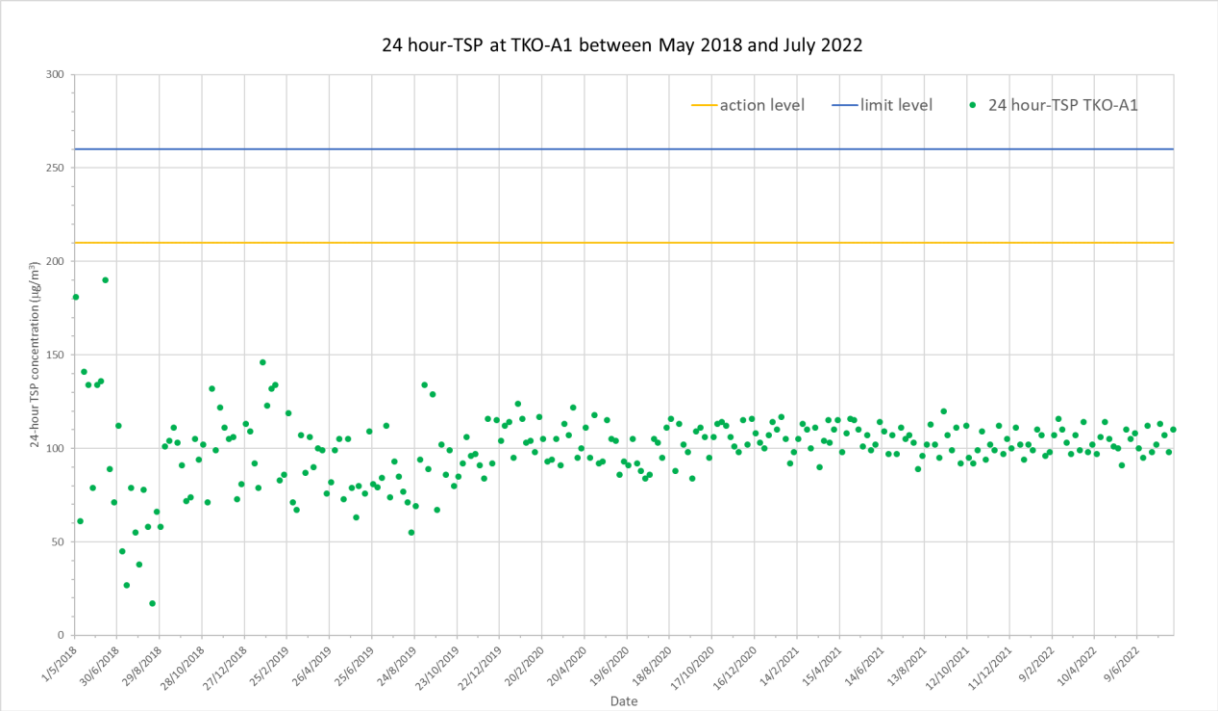


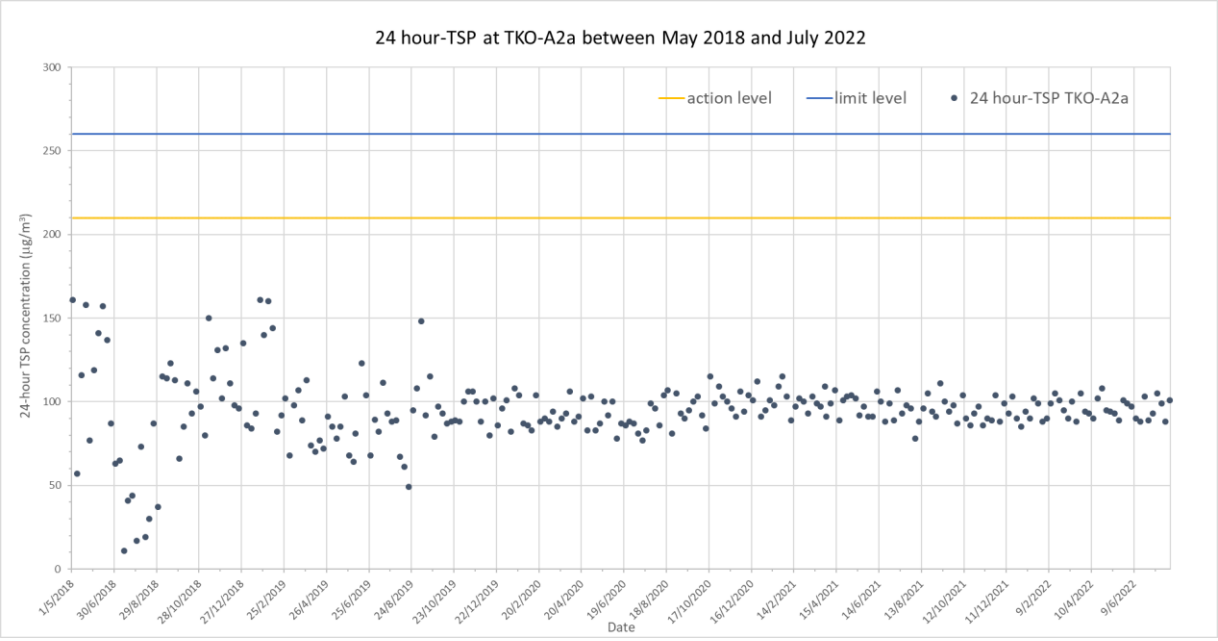
Figure A4.1 Locations of Existing Air Quality Monitoring Stations at TKOFB under the current EM&A Programme

(Source: Tseung Kwan O Area 137 Fill Bank Monthly EM&A Report No. 51 (July 2021) under Contract No.: CV/2015/07 Handling of Surplus Public Fill (2016-2018))


1-hour TSP at TKO-A1 between May 2018 and July 2022
action level
limit level
1-hour TSP TKO-A1
1-hour TSP Concentration (µg/m³)
Date


1-hour TSP at TKO-A2a between May 2018 and July 2022
action level
limit level
1-hour TSP TKO-A2a
1-hour TSP Concentration (µg/m³)
Date


24 hour-TSP at TKO-A1 between May 2018 and July 2022
action level
limit level
24 hour-TSP TKO-A1
24-hour TSP concentration (μg/m³)
Date


24 hour-TSP at TKO-A2a between May 2018 and July 2022
action level
limit level
24 hour-TSP TKO-A2a
24-hour TSP concentration (μg/m³)
Date

Appendix 5.1 Noise monitoring results of the TKOFB between May 2018 and July 2022

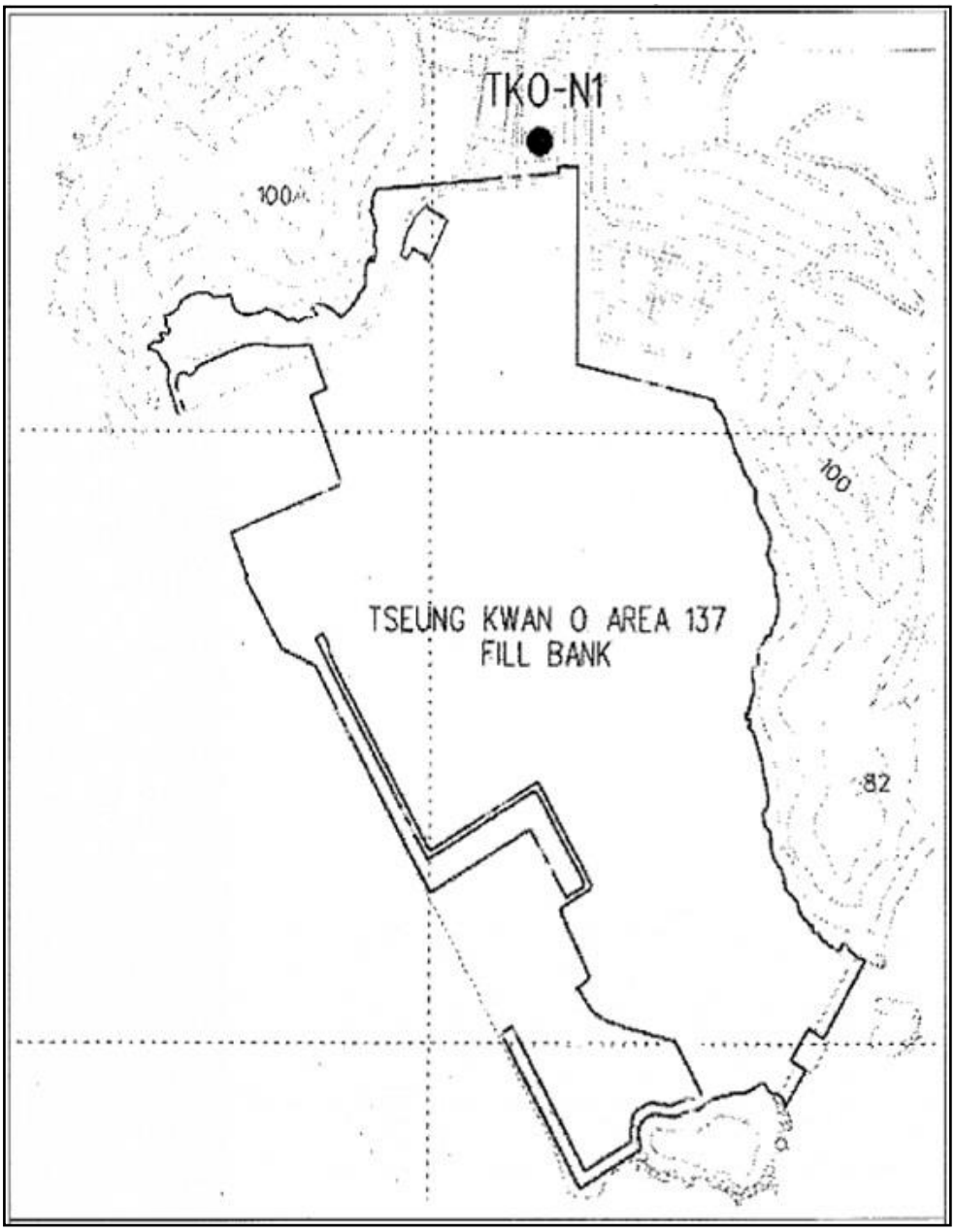
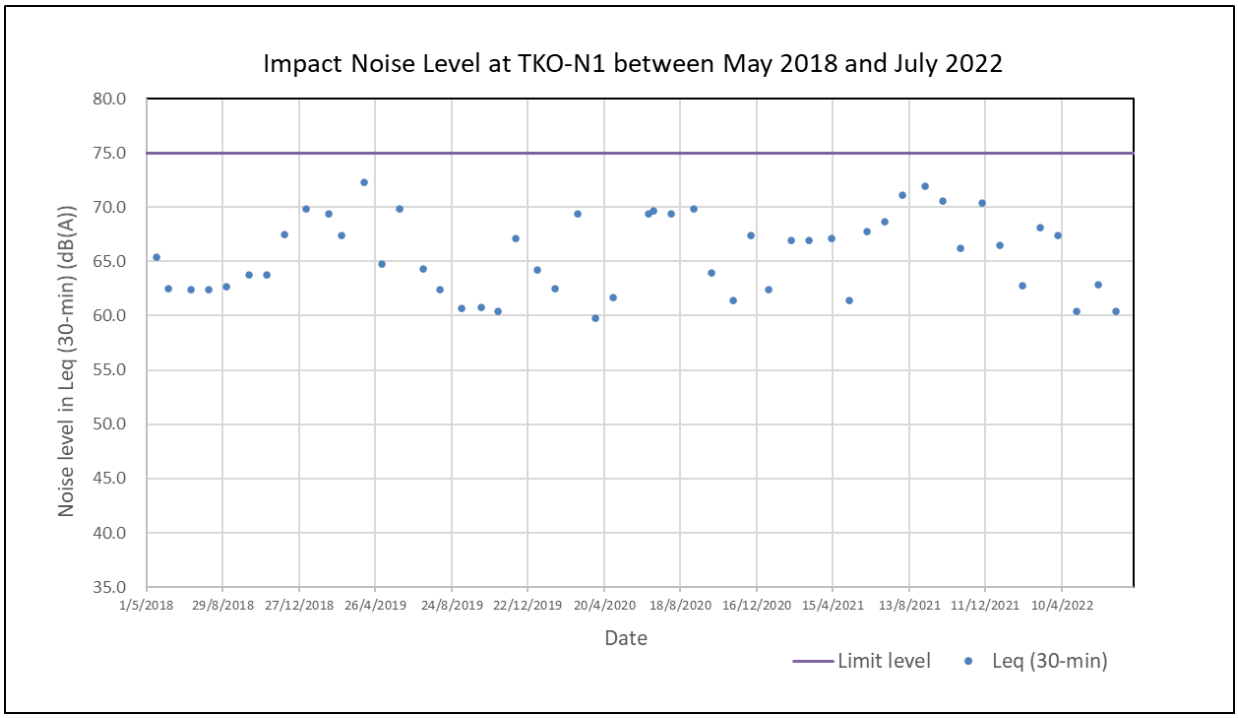
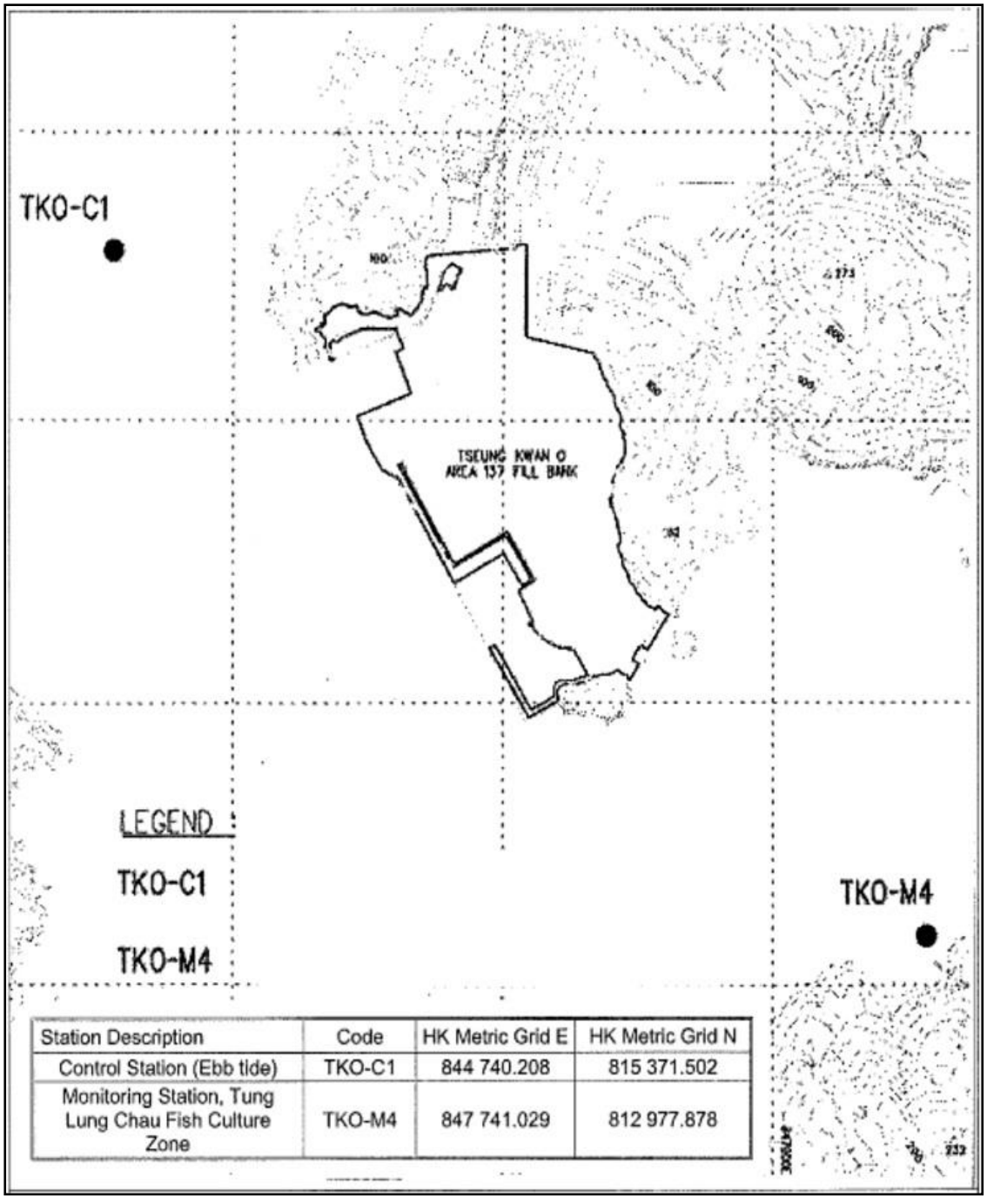


Figure A5.1 Locations of the Existing Noise Monitoring Station near the TKOFB under the current EM&A Programme

(Source: Tseung Kwan O Area 137 Fill Bank Monthly EM&A Report No. 51 (July 2021) under Contract No.: CV/2015/07 Handling of Surplus Public Fill (2016-2018))


Impact Noise Level at TKO-N1 between May 2018 and July 2022
Noise level in Leq (30-min) (dB(A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
1/5/2018
29/8/2018
27/12/2018
26/4/2019
24/8/2019
22/12/2019
20/4/2020
18/8/2020
16/12/2020
15/4/2021
13/8/2021
11/12/2021
10/4/2022
Date
Limit level
Leq (30-min)

Appendix 6.1 Marine water quality monitoring results of the TKOFB between May 2018 and July 2022



Station Description	Code	HK Metric Grid E	HK Metric Grid N
Control Station (Ebb tide)	TKO-C1	844 740.208	815 371.502
Monitoring Station, Tung Lung Chau Fish Culture Zone	TKO-M4	847 741.029	812 977.878

Figure A6.1 Locations of the existing Water Quality Monitoring Stations near the TKOFB under the current EM&A Programme

(Source: Tseung Kwan O Area 137 Fill Bank Monthly EM&A Report No. 51 (July 2021) under Contract No.: CV/2015/07 Handling of Surplus Public Fill (2016-2018))

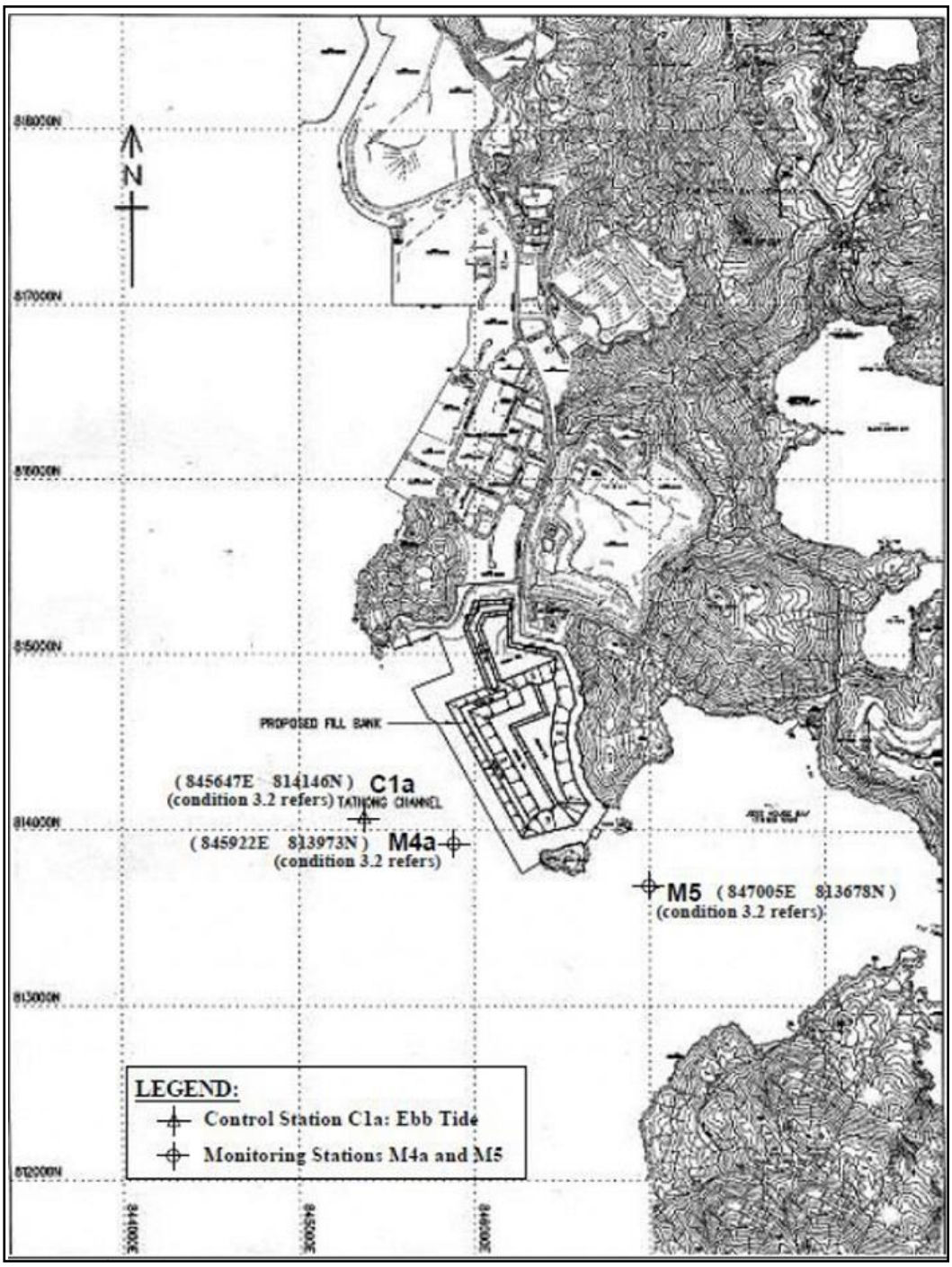
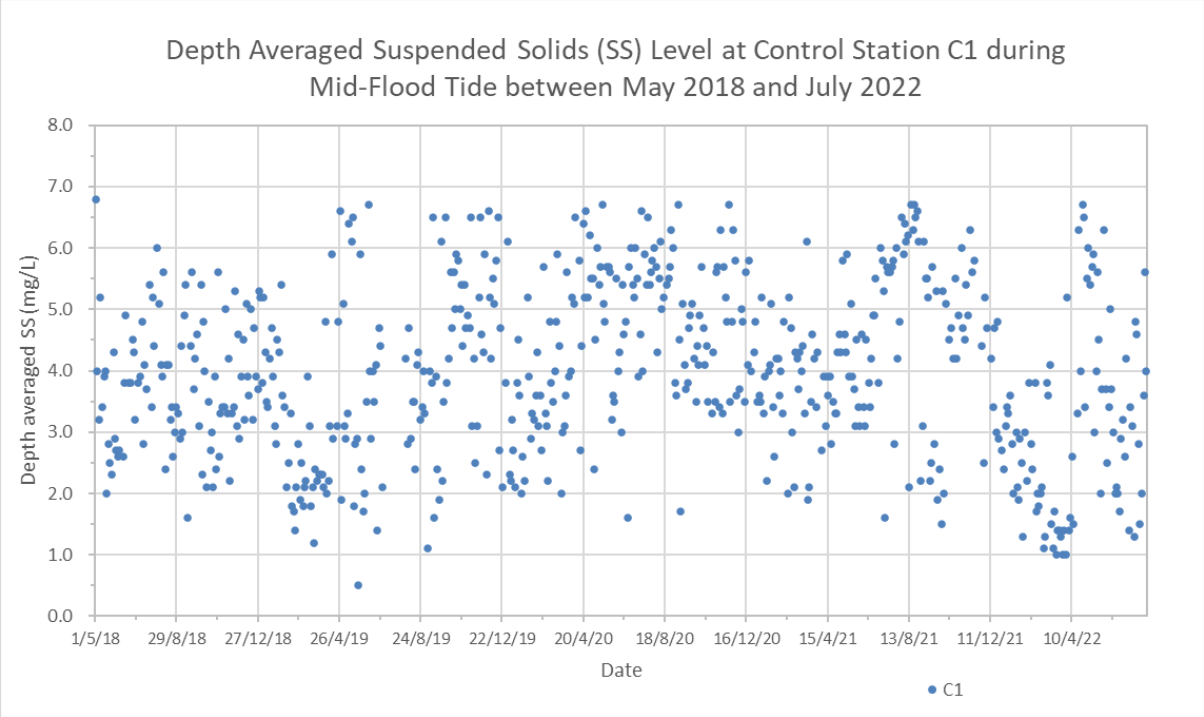
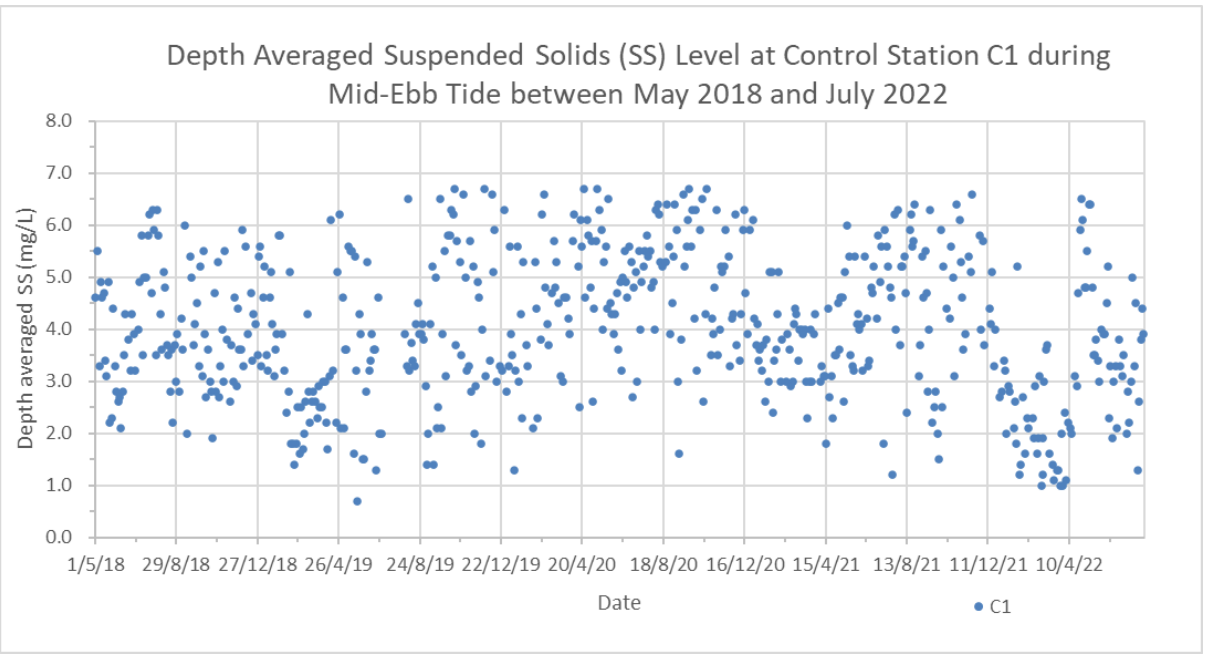
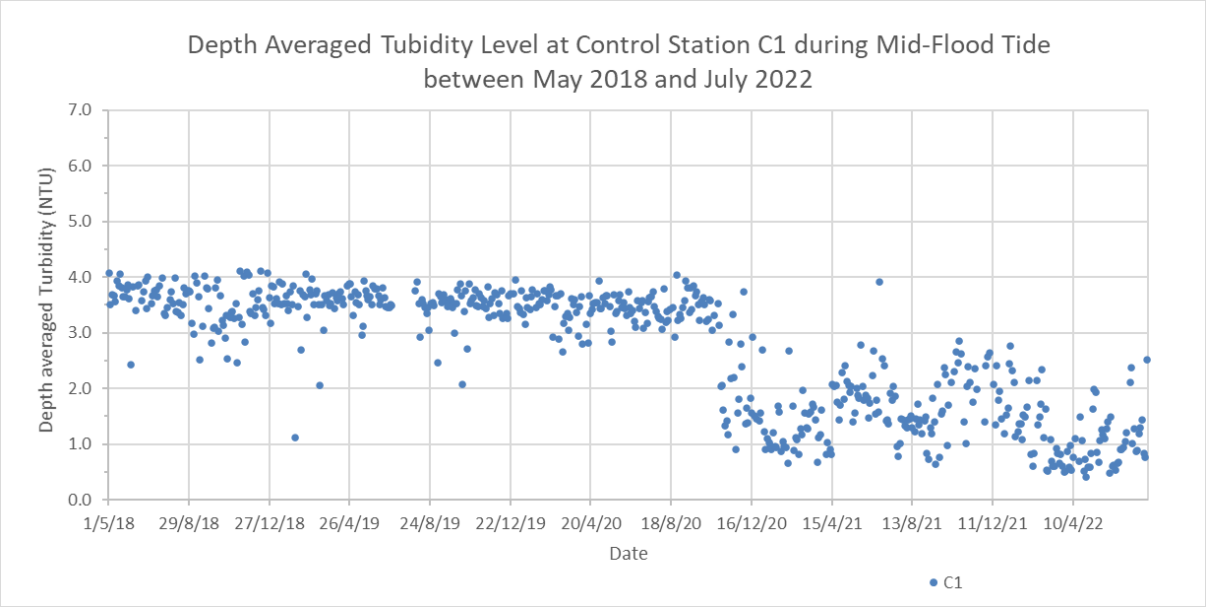


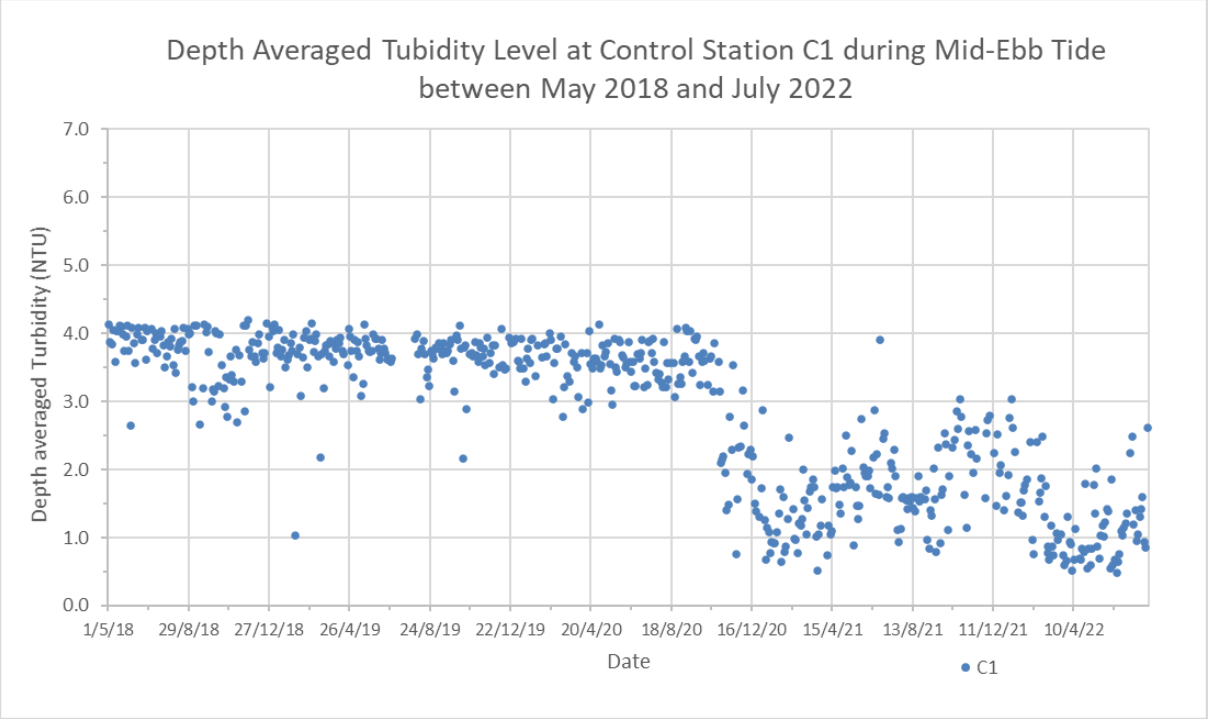
Figure A6.1 Locations of the Additional Water Quality Monitoring Stations (3RS Project) under the current EM&A Programme of the TKOFB

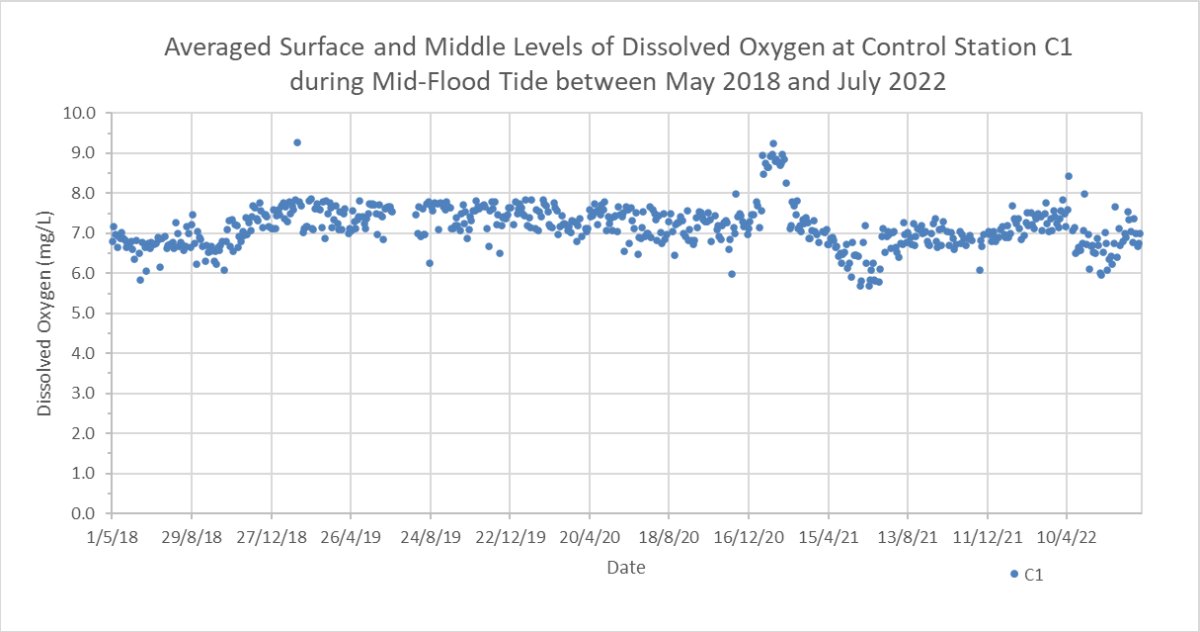
(Source: Tseung Kwan O Area 137 Fill Bank Monthly EM&A Report No. 51 (July 2021) under Contract No.: CV/2015/07 Handling of Surplus Public Fill (2016-2018))

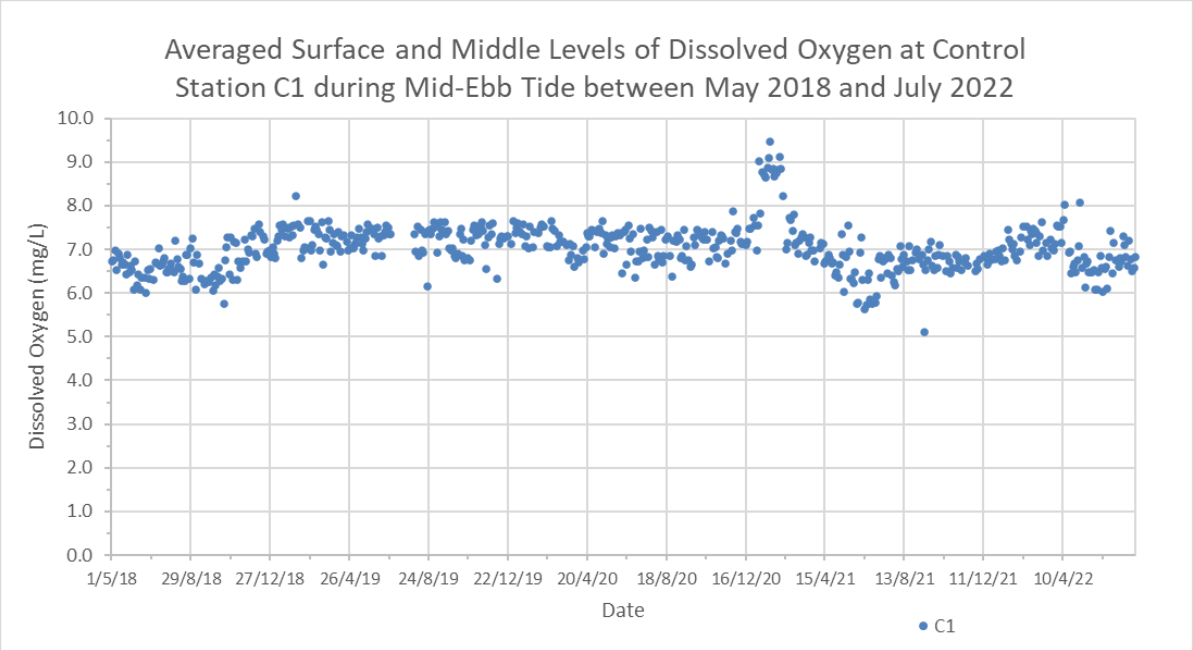

Depth Averaged Suspended Solids (SS) Level at Control Station C1 during Mid-Flood Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
C1

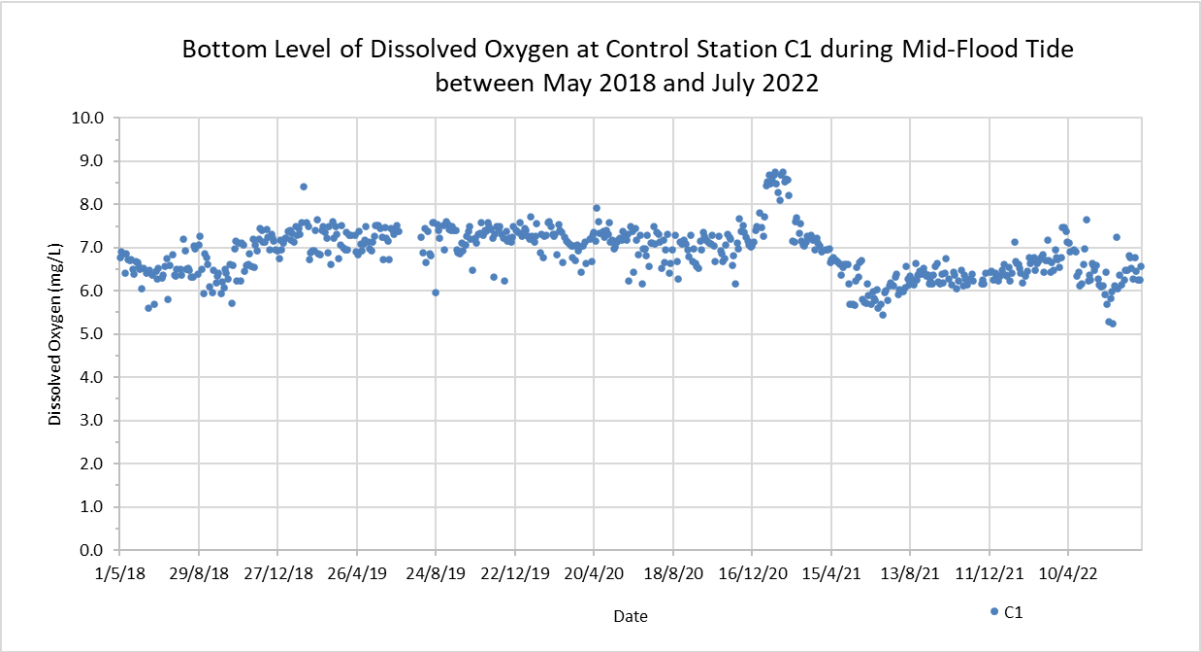

Depth Averaged Suspended Solids (SS) Level at Control Station C1 during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
C1

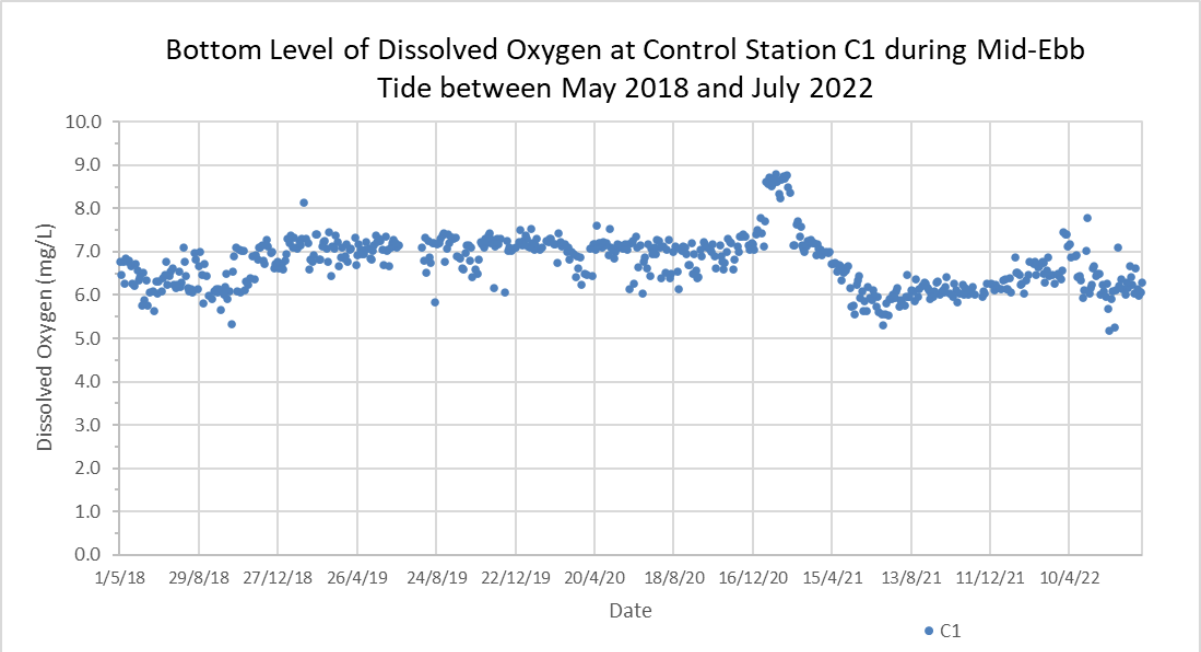

Depth Averaged Tubidity Level at Control Station C1 during Mid-Flood Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
C1

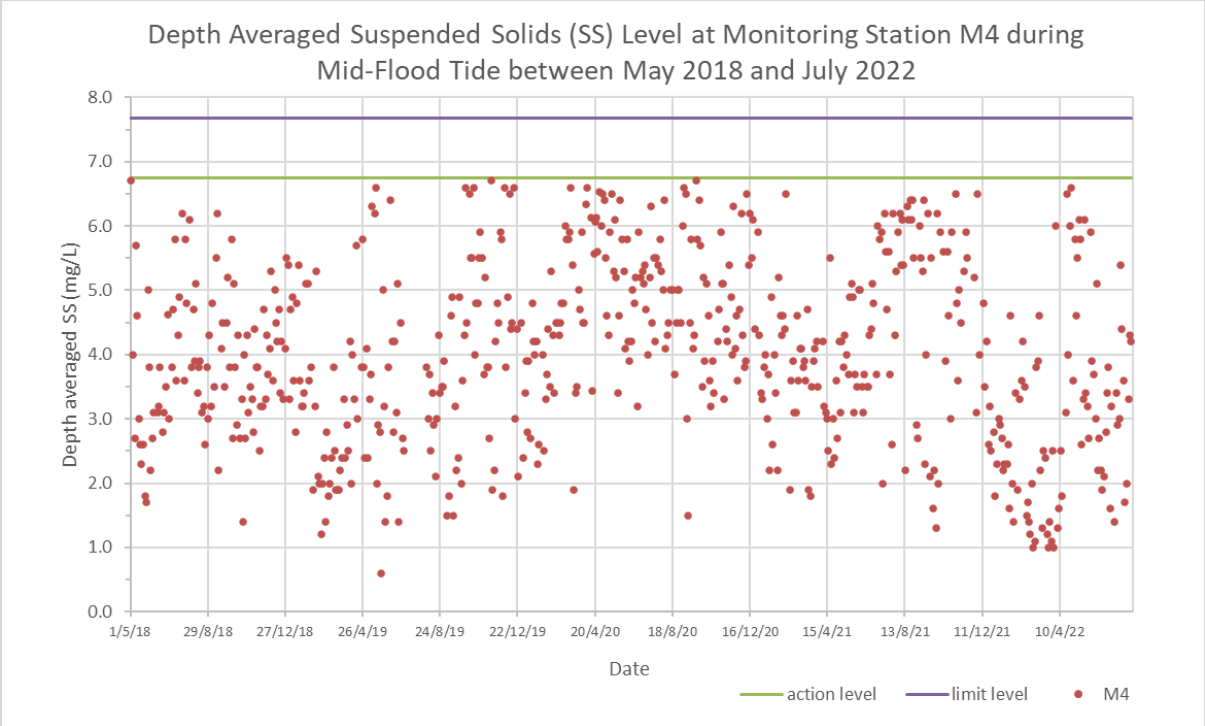

Depth Averaged Tubidity Level at Control Station C1 during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
C1

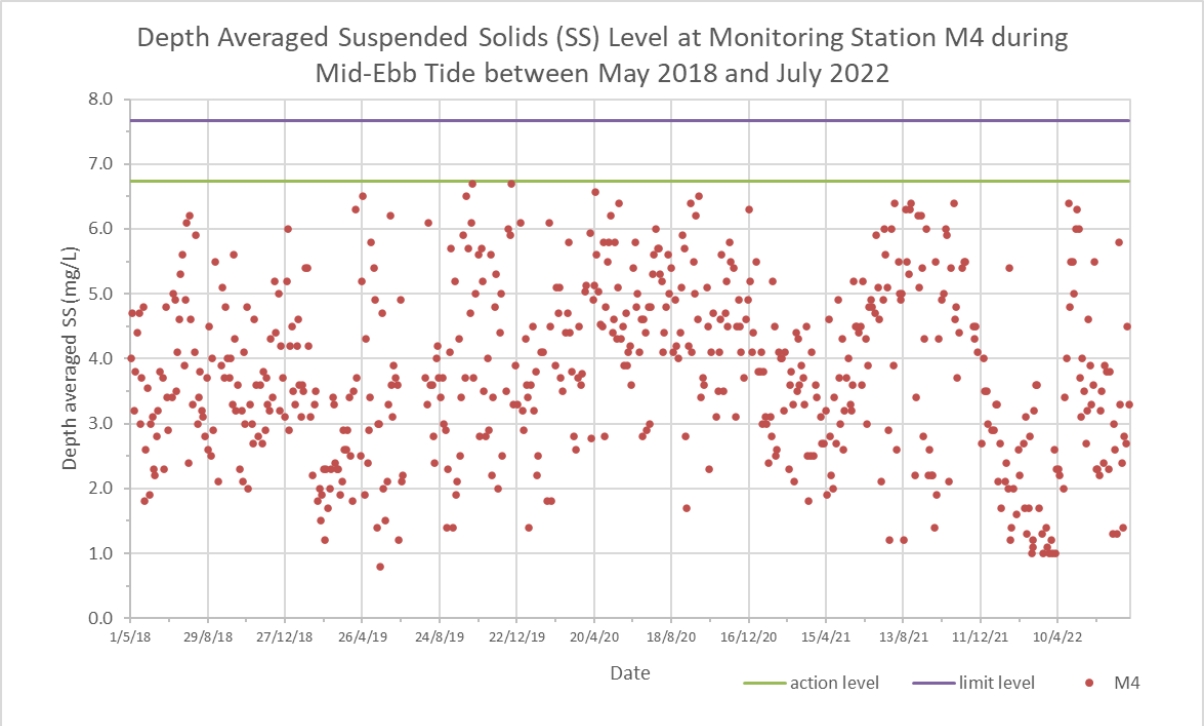

Averaged Surface and Middle Levels of Dissolved Oxygen at Control Station C1 during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
C1

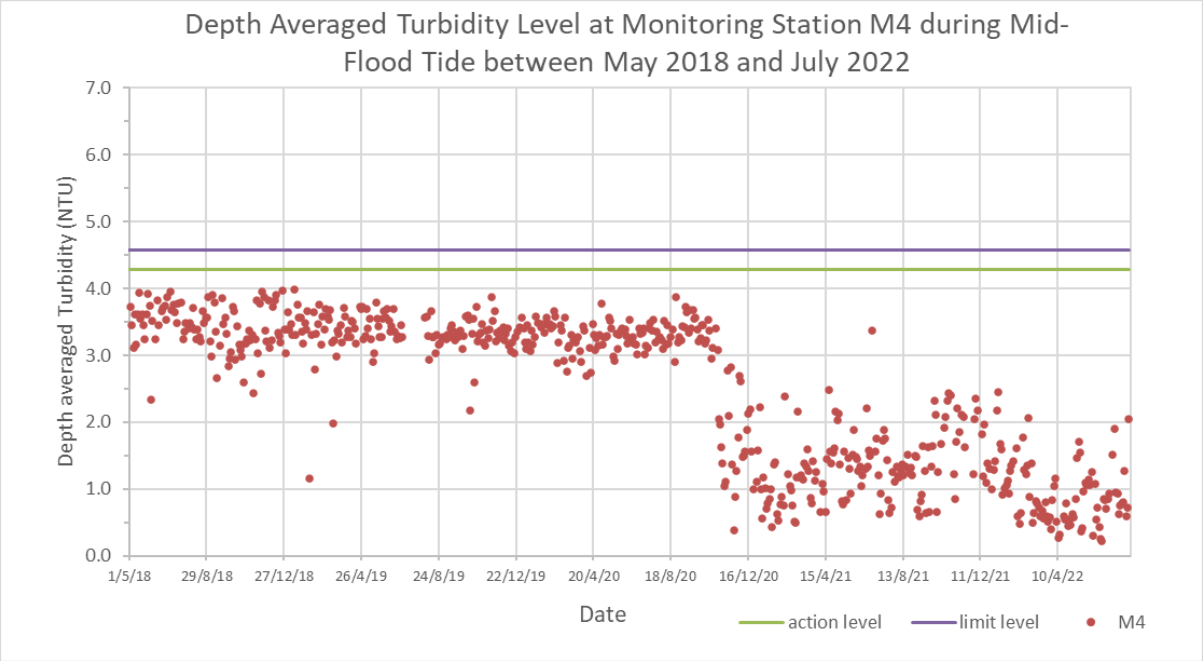

Averaged Surface and Middle Levels of Dissolved Oxygen at Control Station C1 during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
C1

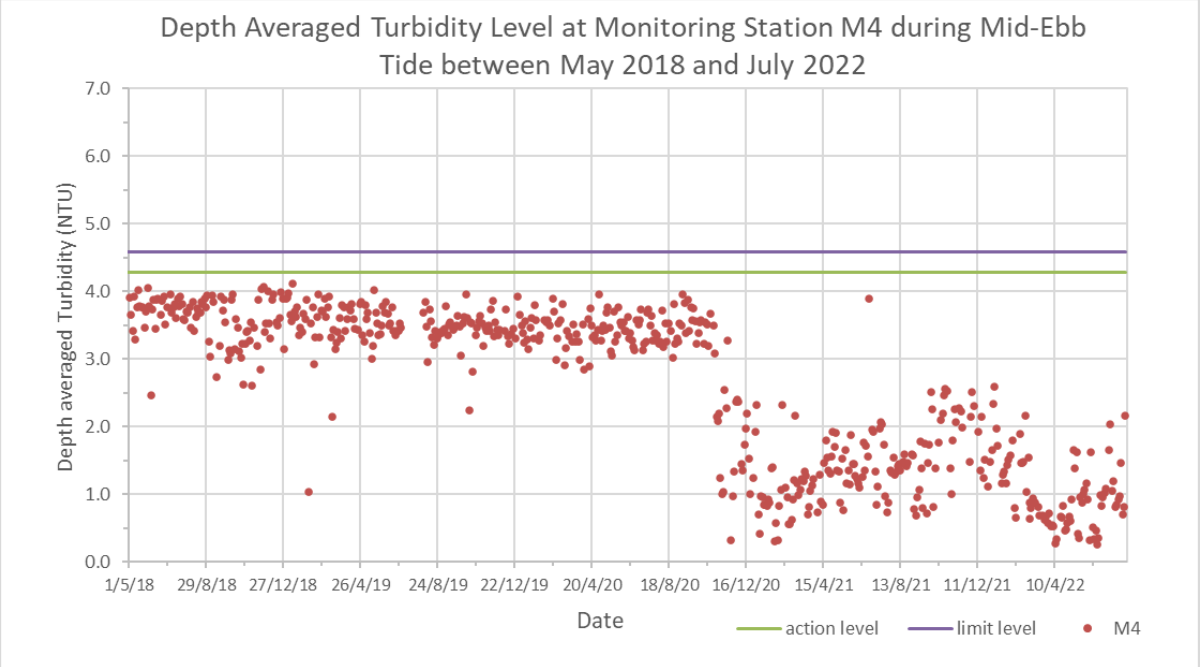

Bottom Level of Dissolved Oxygen at Control Station C1 during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
C1

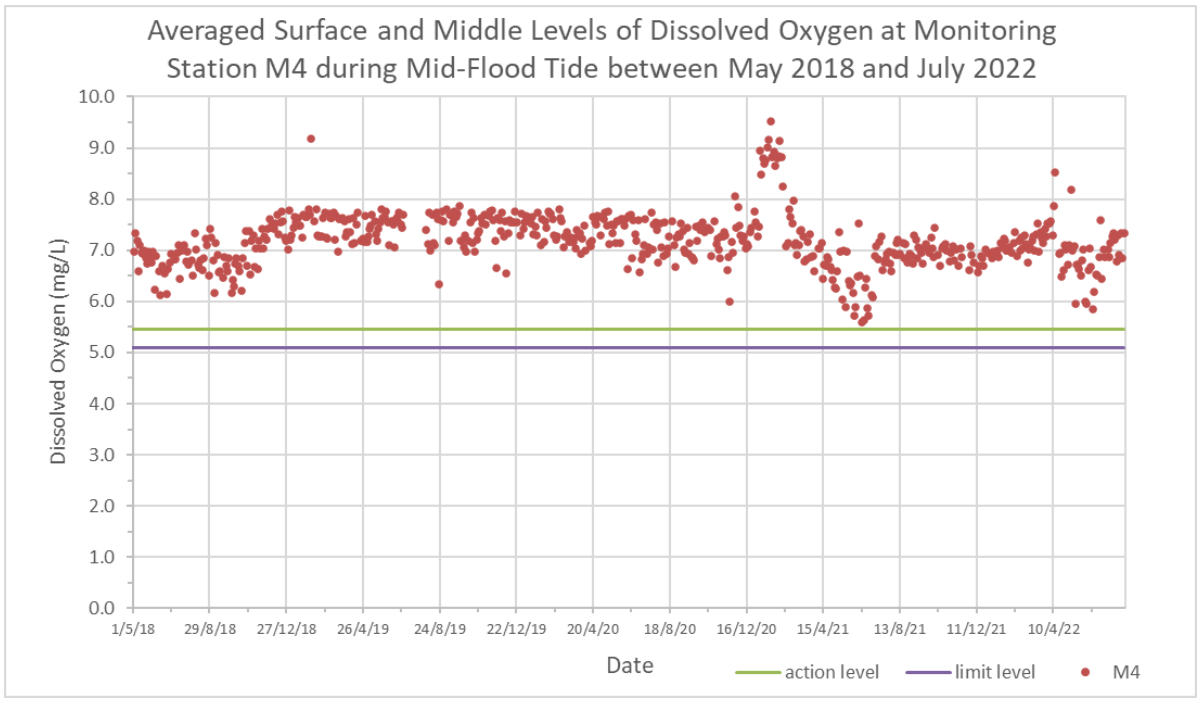

Bottom Level of Dissolved Oxygen at Control Station C1 during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
C1

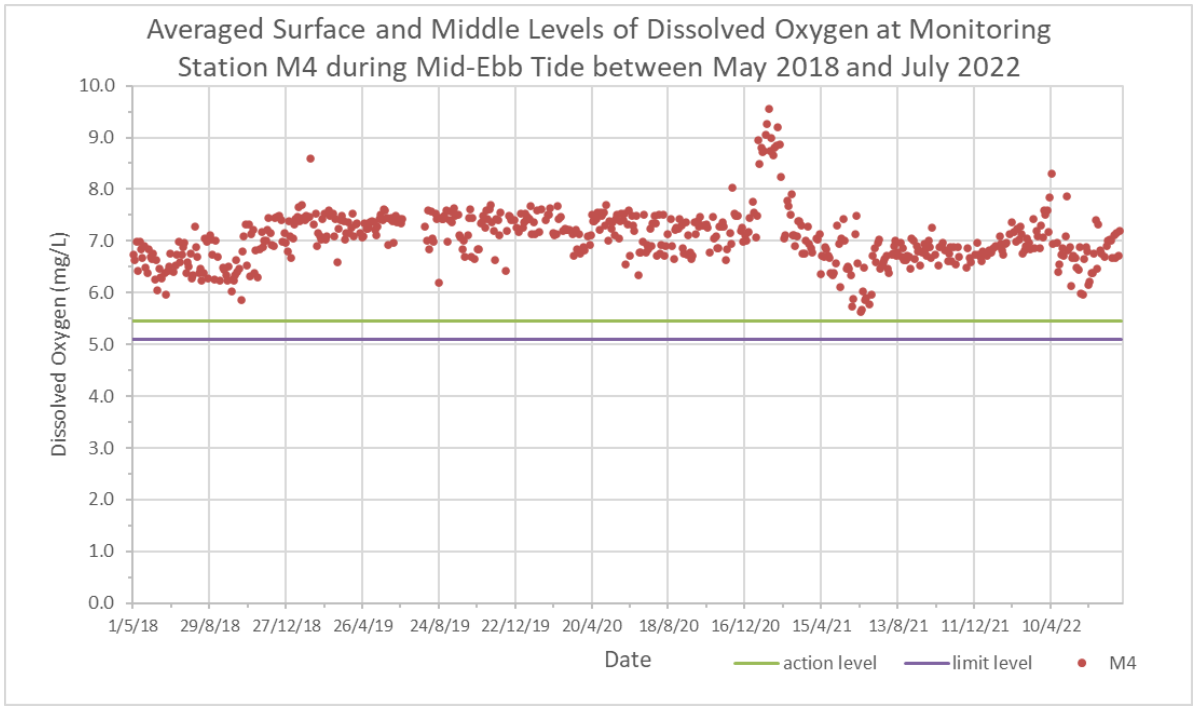

Depth Averaged Suspended Solids (SS) Level at Monitoring Station M4 during Mid-Flood Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
action level
limit level
M4

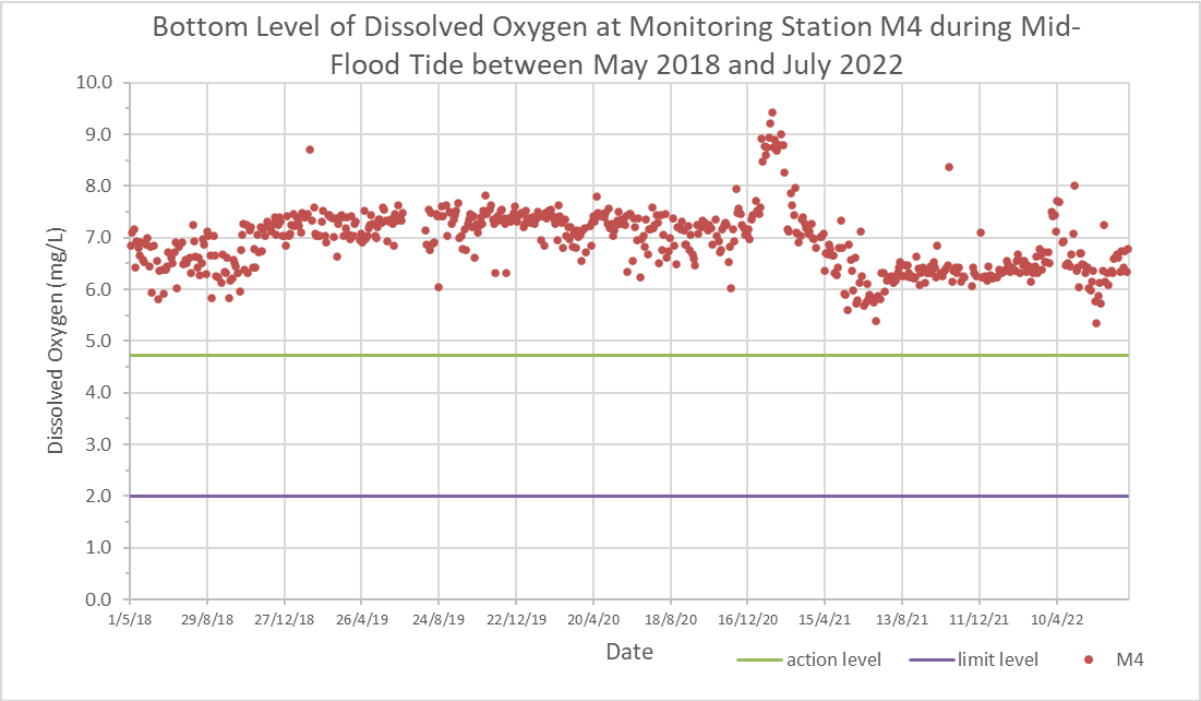

Depth Averaged Suspended Solids (SS) Level at Monitoring Station M4 during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
action level
limit level
M4

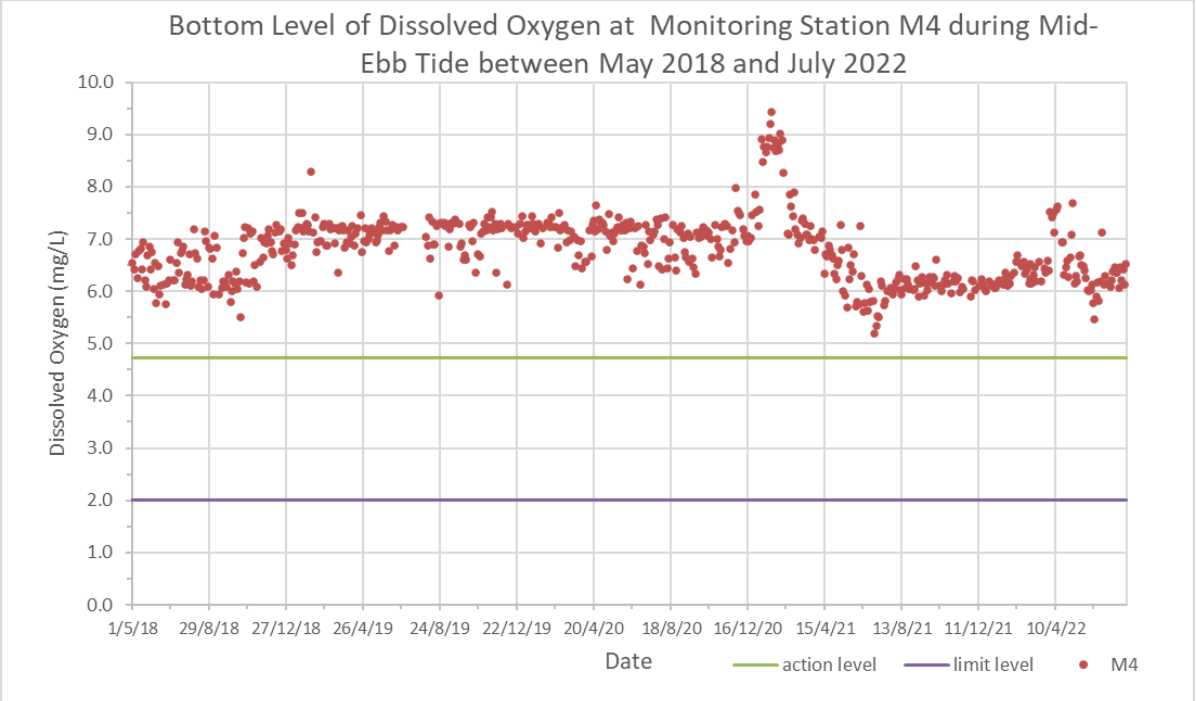

Depth Averaged Turbidity Level at Monitoring Station M4 during Mid-Flood Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
action level
limit level
M4

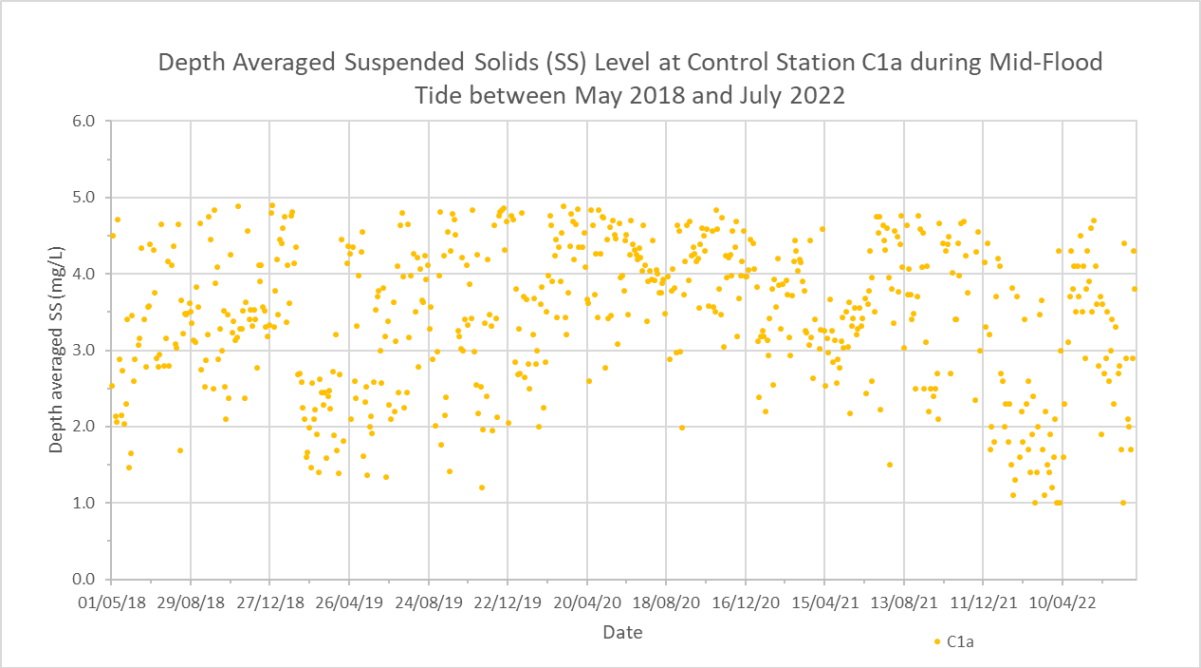

Depth Averaged Turbidity Level at Monitoring Station M4 during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
action level
limit level
M4

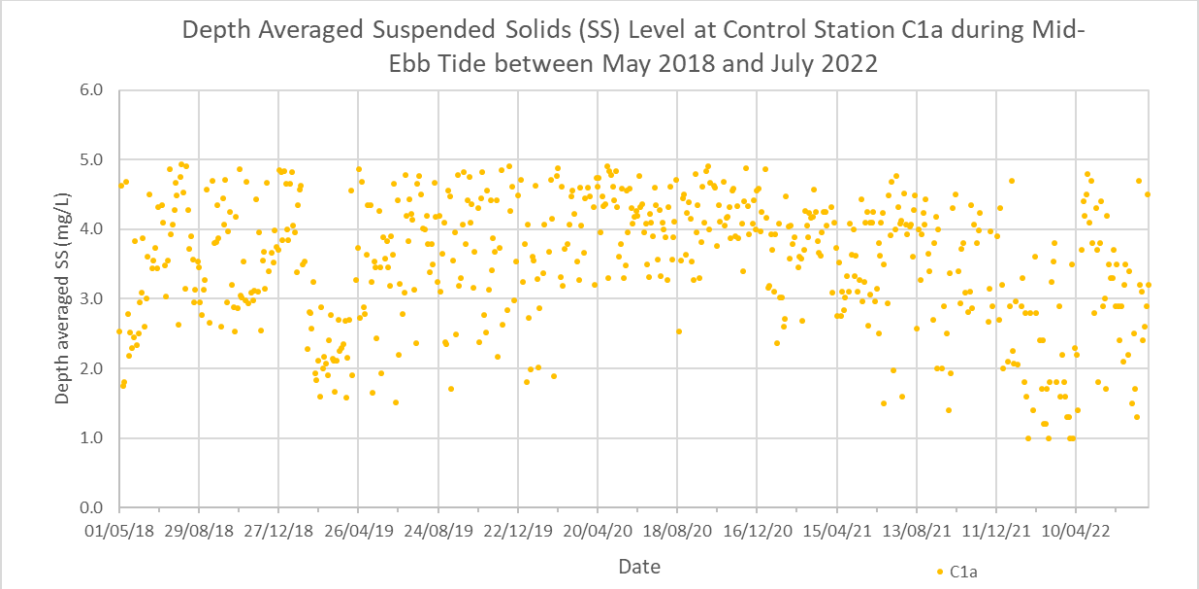

Averaged Surface and Middle Levels of Dissolved Oxygen at Monitoring Station M4 during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
action level
limit level
M4

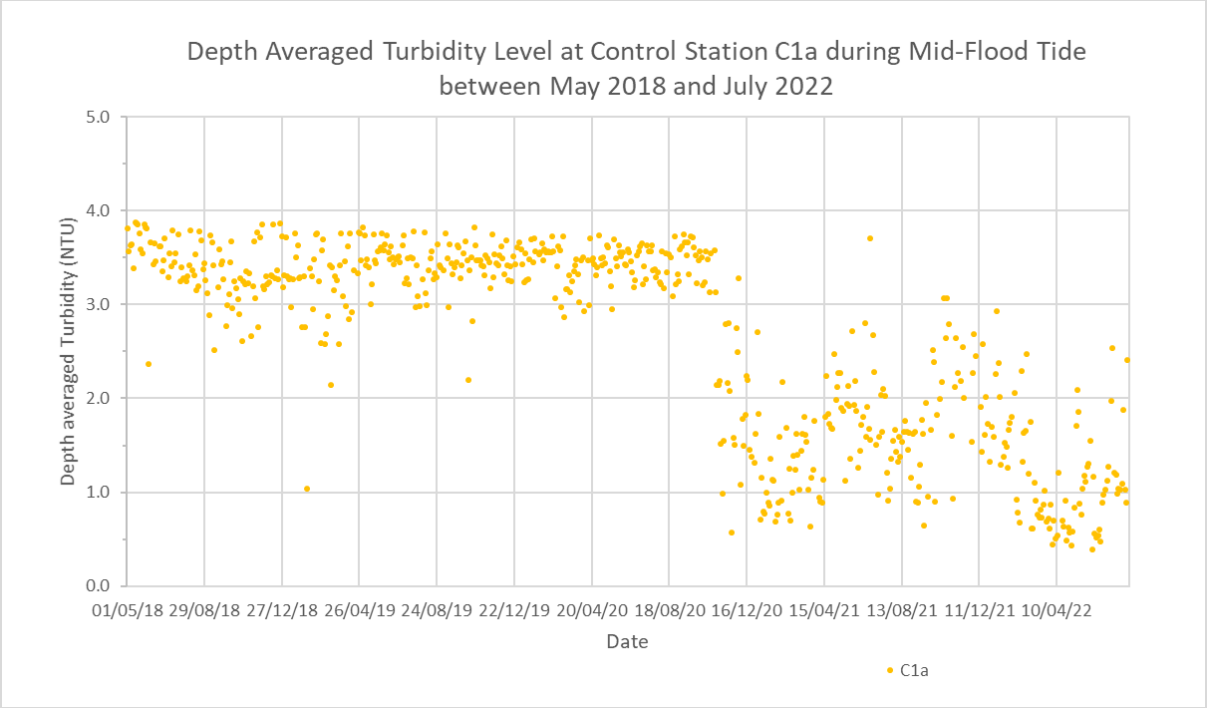

Averaged Surface and Middle Levels of Dissolved Oxygen at Monitoring Station M4 during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
action level
limit level
M4

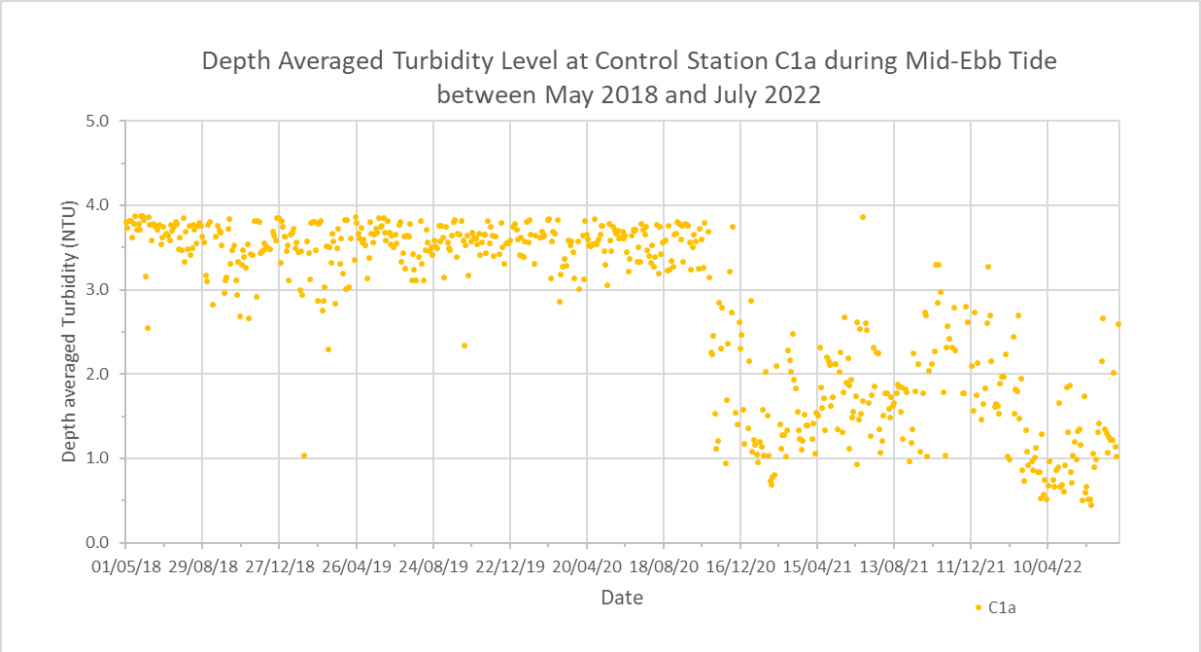

Bottom Level of Dissolved Oxygen at Monitoring Station M4 during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
action level
limit level
M4

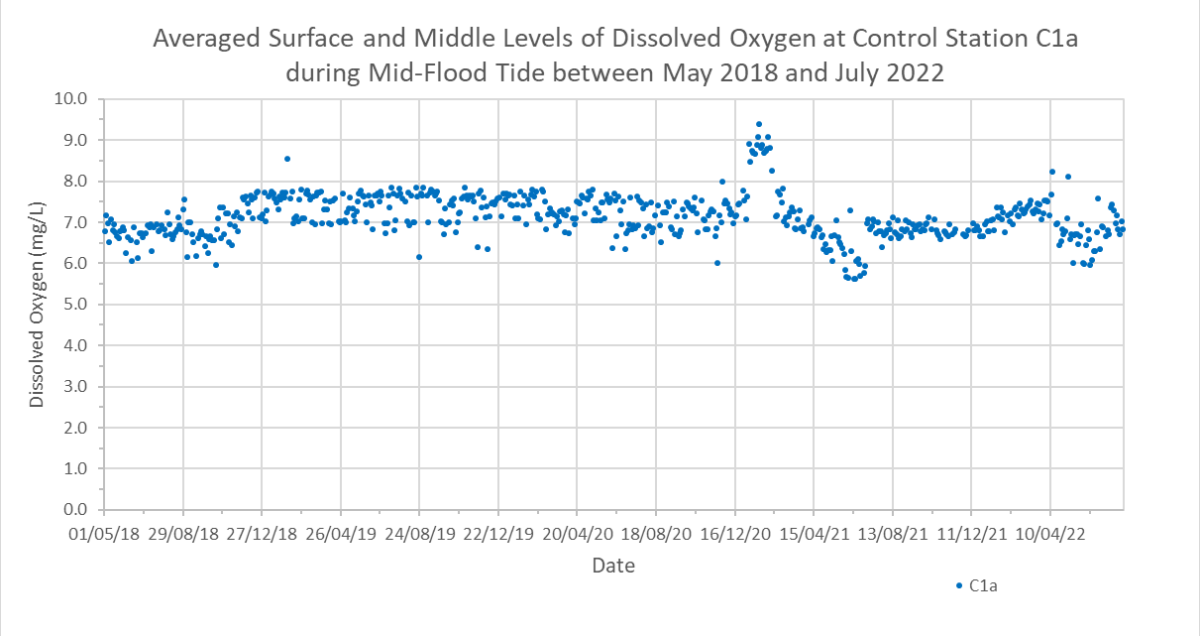

Bottom Level of Dissolved Oxygen at Monitoring Station M4 during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/5/18
29/8/18
27/12/18
26/4/19
24/8/19
22/12/19
20/4/20
18/8/20
16/12/20
15/4/21
13/8/21
11/12/21
10/4/22
Date
action level
limit level
M4

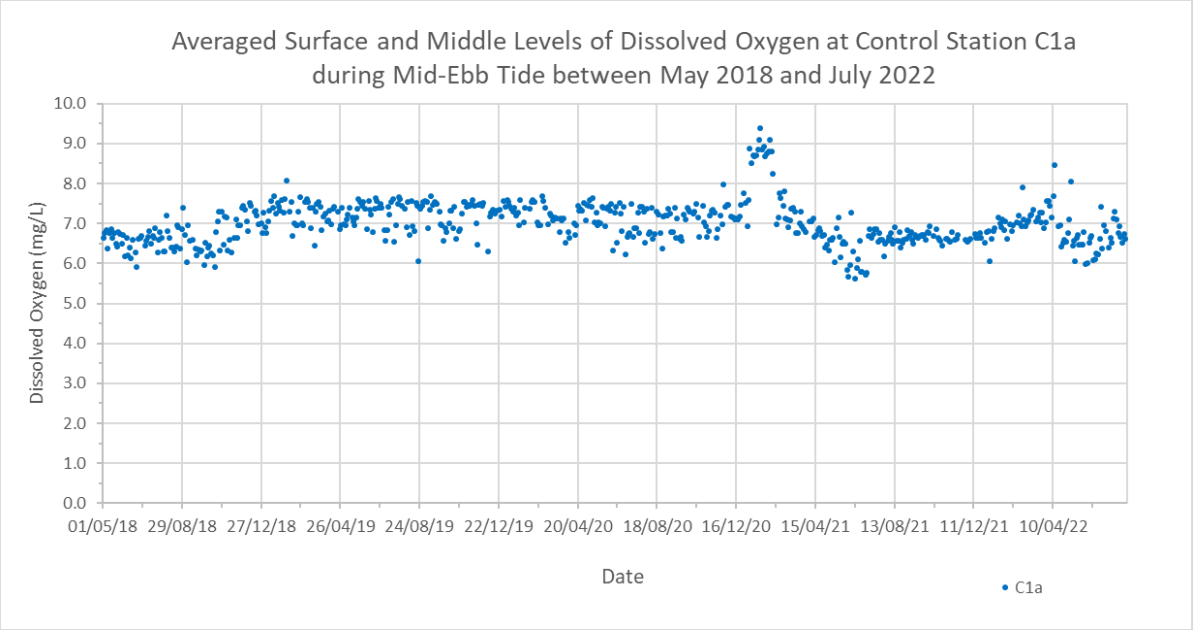

Depth Averaged Suspended Solids (SS) Level at Control Station C1a during Mid-Flood Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
C1a

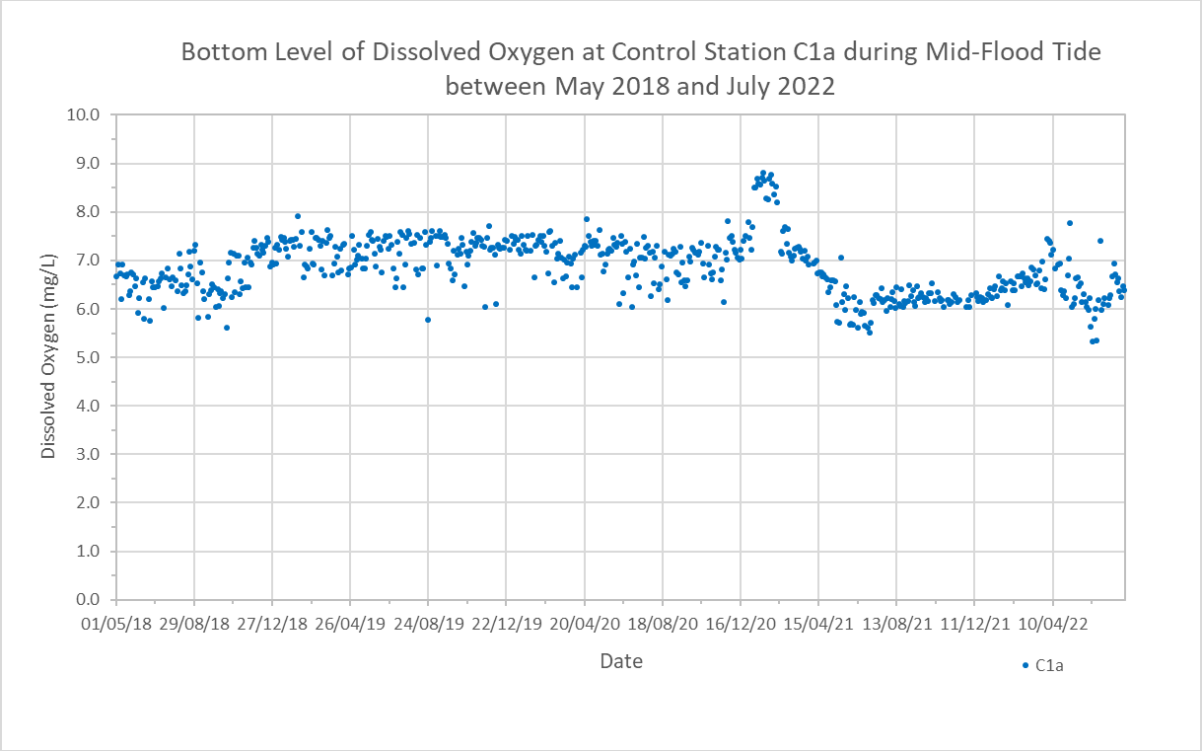

Depth Averaged Suspended Solids (SS) Level at Control Station C1a during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
C1a

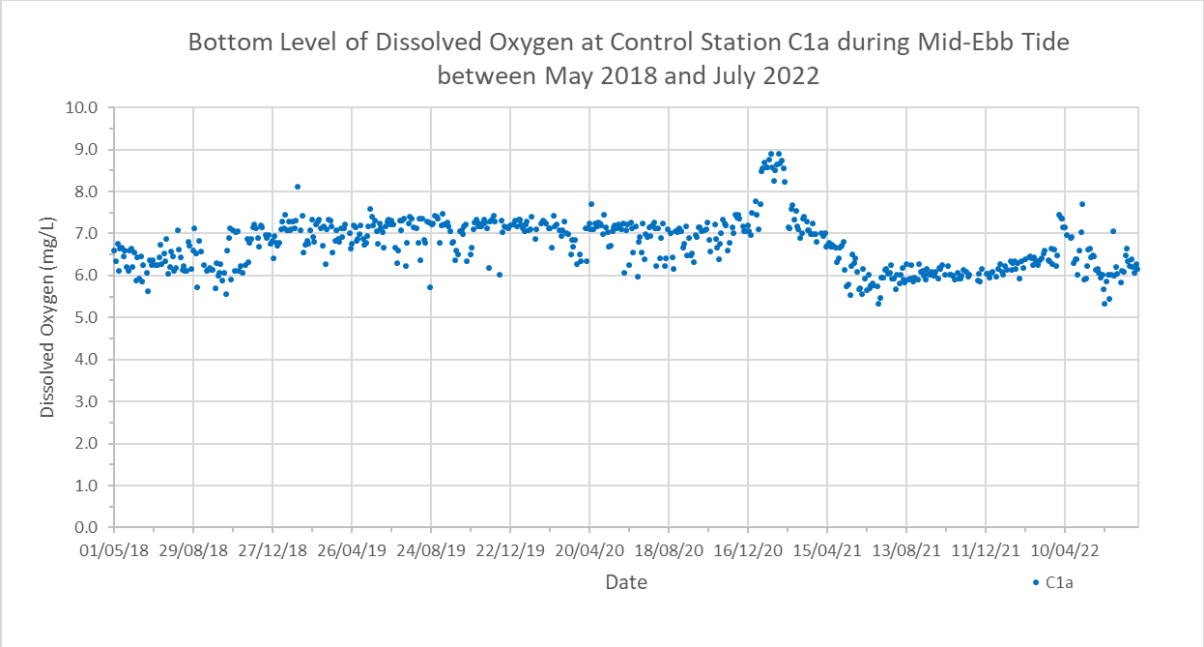

Depth Averaged Turbidity Level at Control Station C1a during Mid-Flood Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
C1a

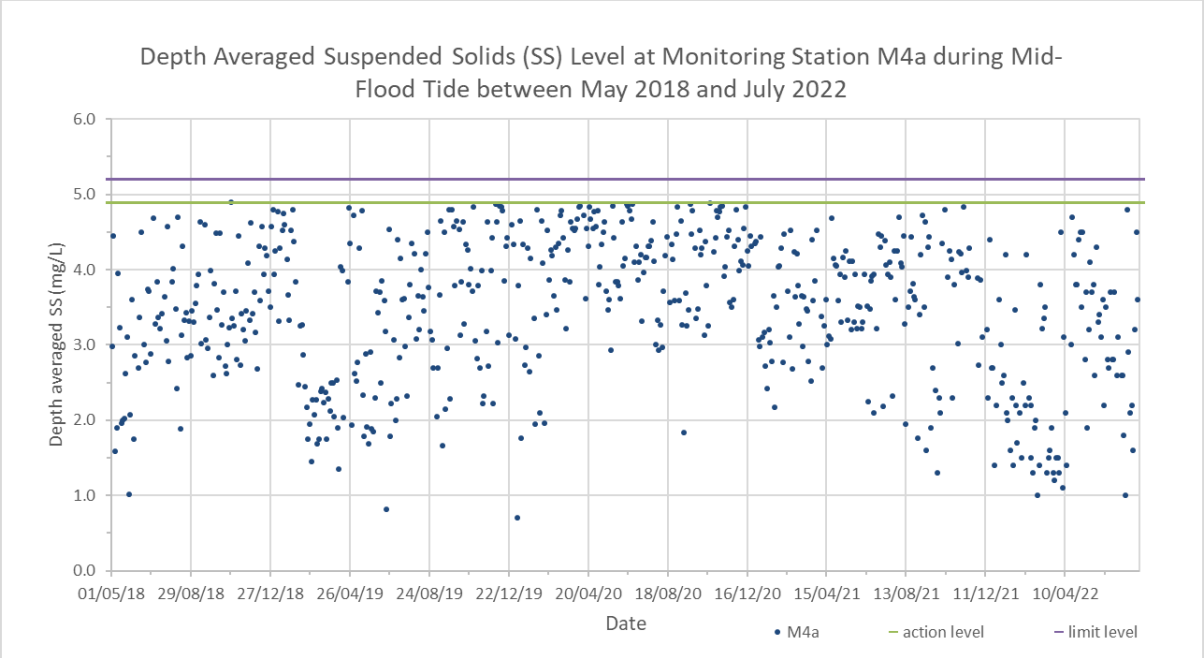

Depth Averaged Turbidity Level at Control Station C1a during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
C1a

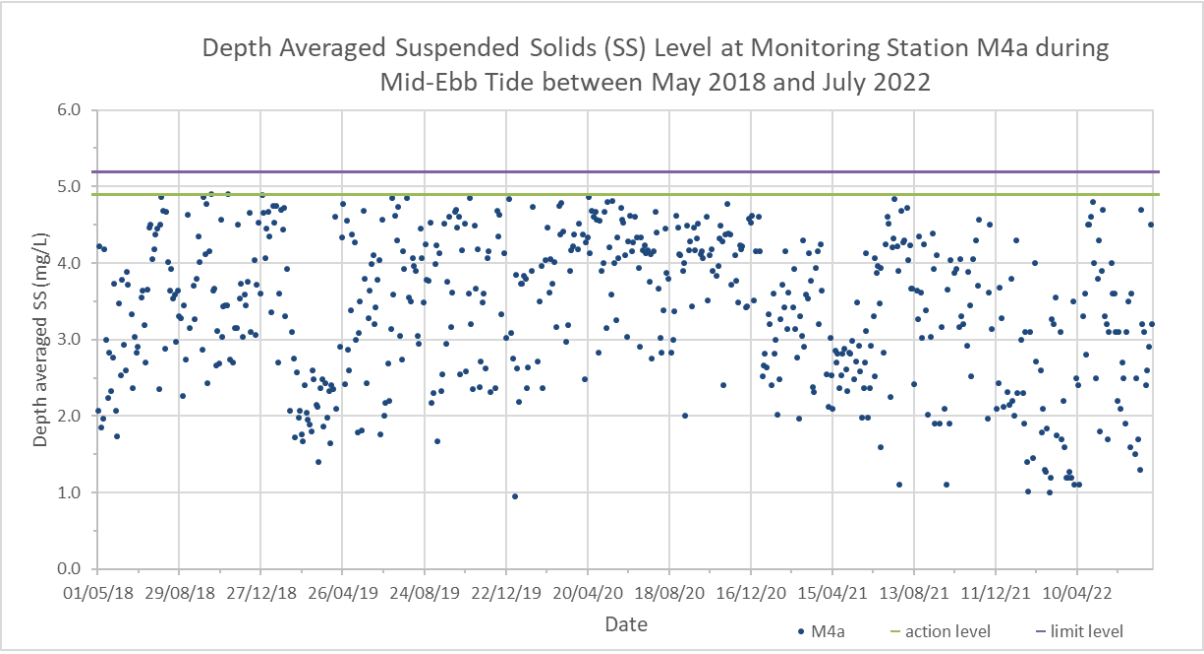

Averaged Surface and Middle Levels of Dissolved Oxygen at Control Station C1a during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
C1a

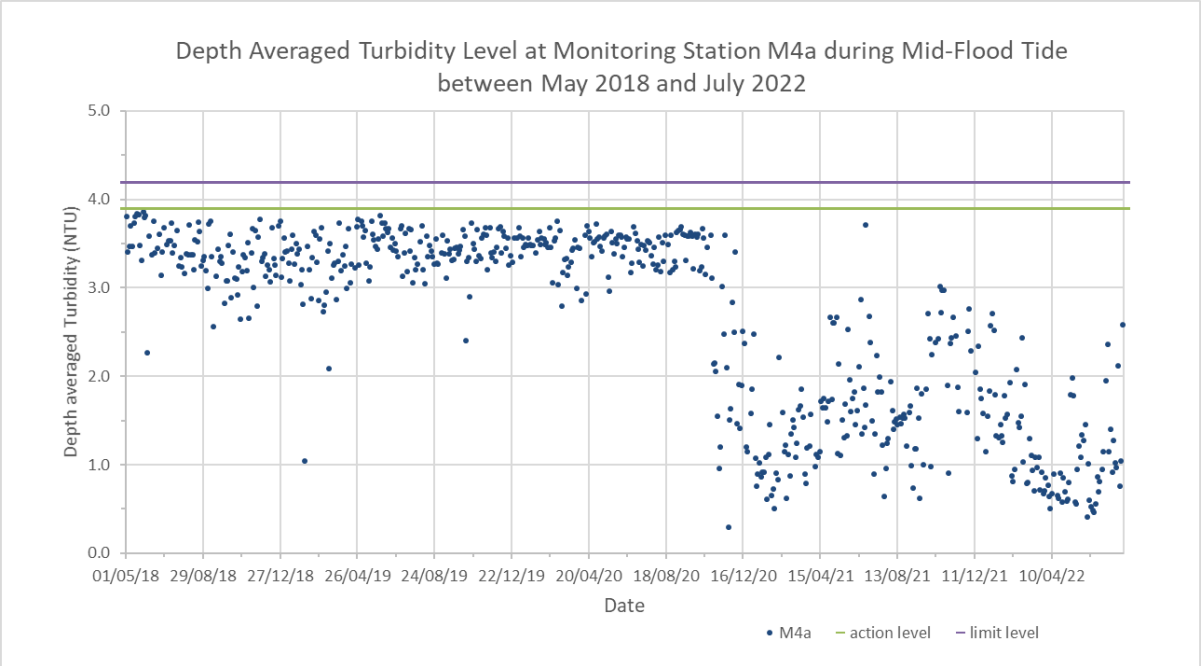

Averaged Surface and Middle Levels of Dissolved Oxygen at Control Station C1a during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
C1a

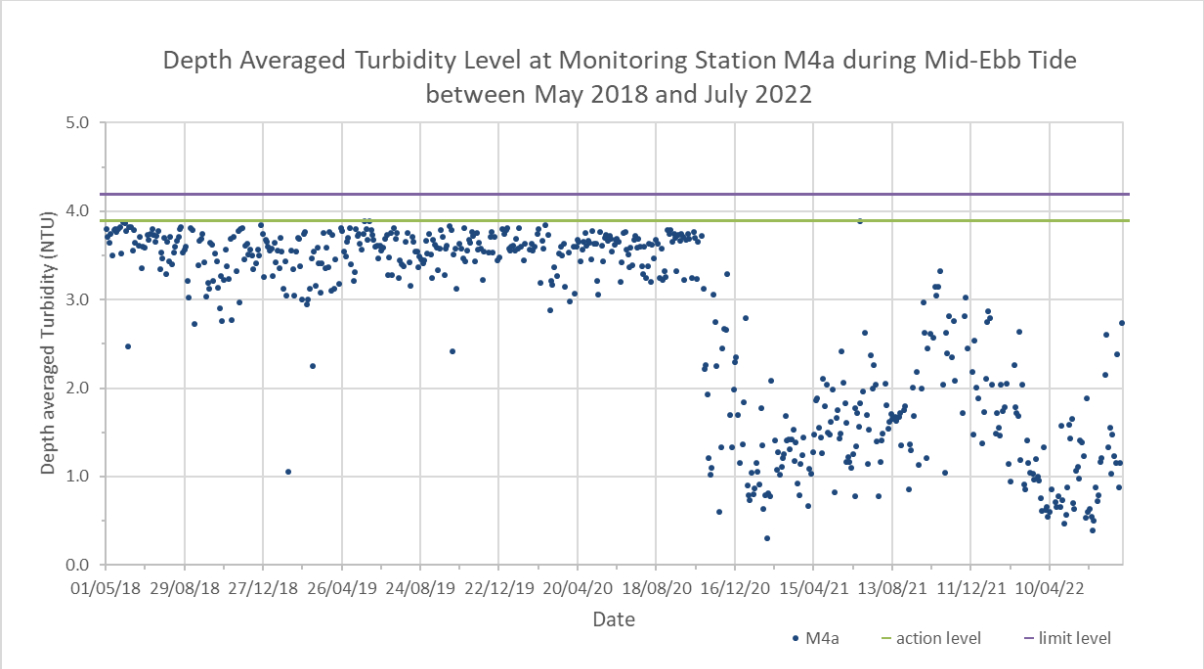

Bottom Level of Dissolved Oxygen at Control Station C1a during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
C1a

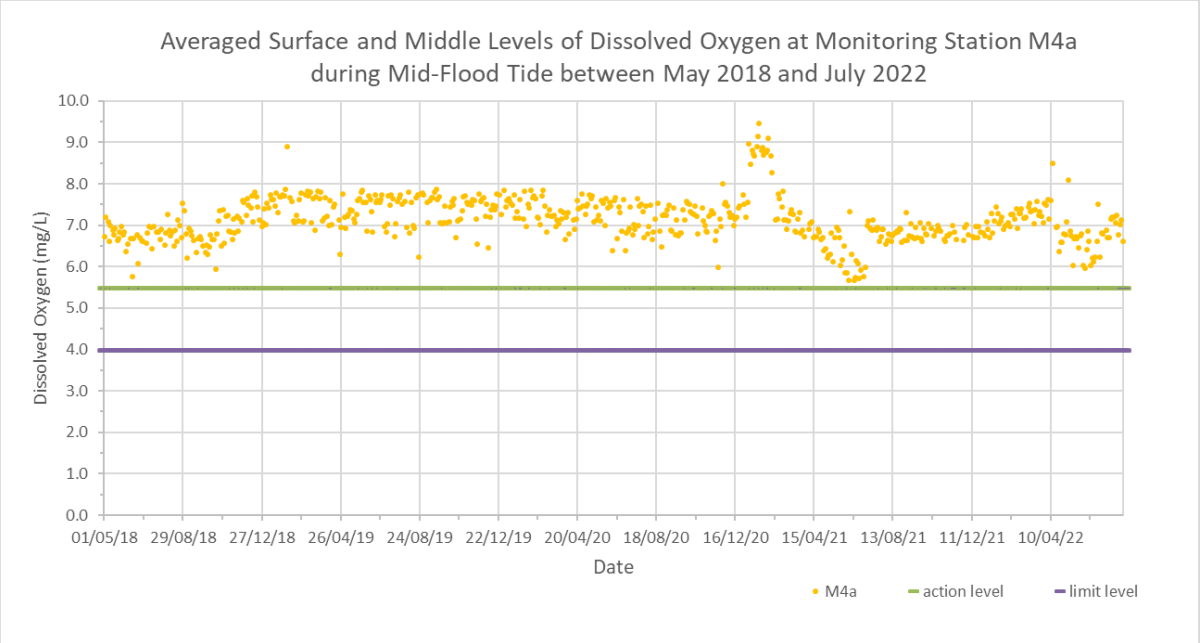

Bottom Level of Dissolved Oxygen at Control Station C1a during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
C1a

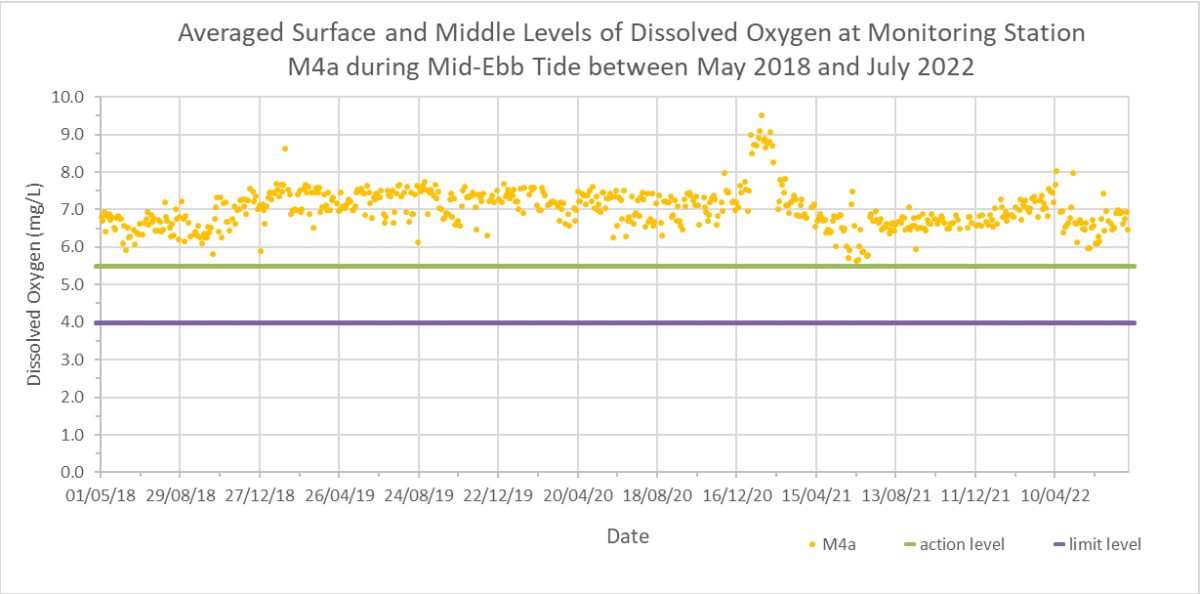

Depth Averaged Suspended Solids (SS) Level at Monitoring Station M4a during Mid-Flood Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M4a
action level
limit level

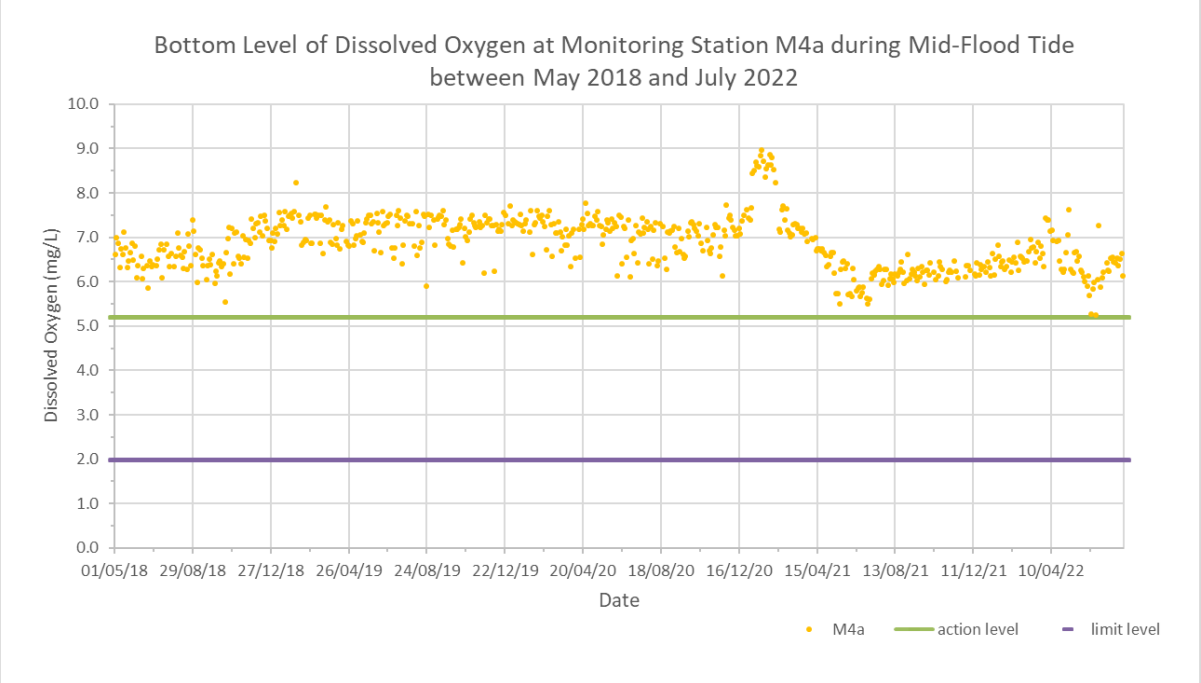

Depth Averaged Suspended Solids (SS) Level at Monitoring Station M4a during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M4a
action level
limit level

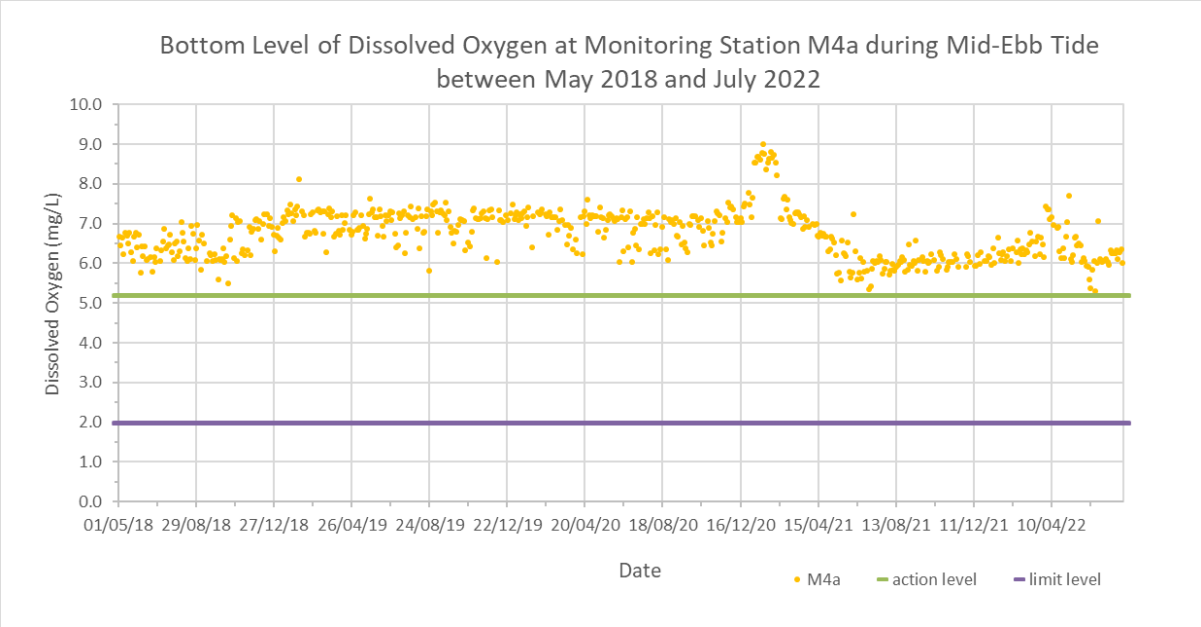

Depth Averaged Turbidity Level at Monitoring Station M4a during Mid-Flood Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M4a
action level
limit level

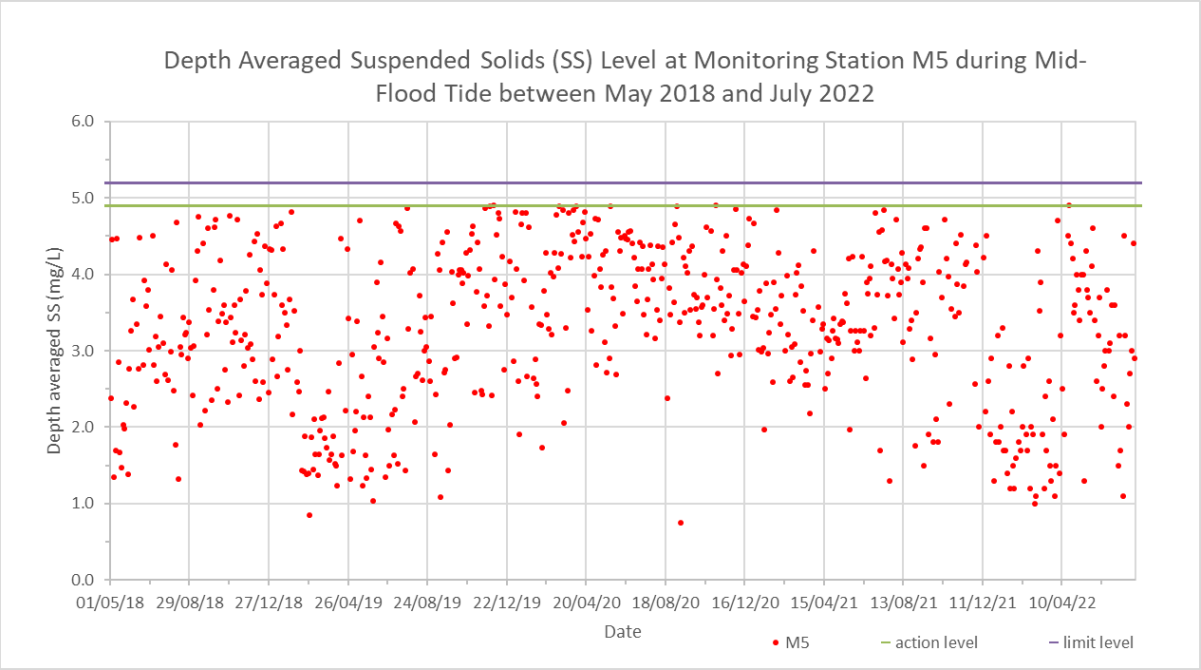

Depth Averaged Turbidity Level at Monitoring Station M4a during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M4a
action level
limit level

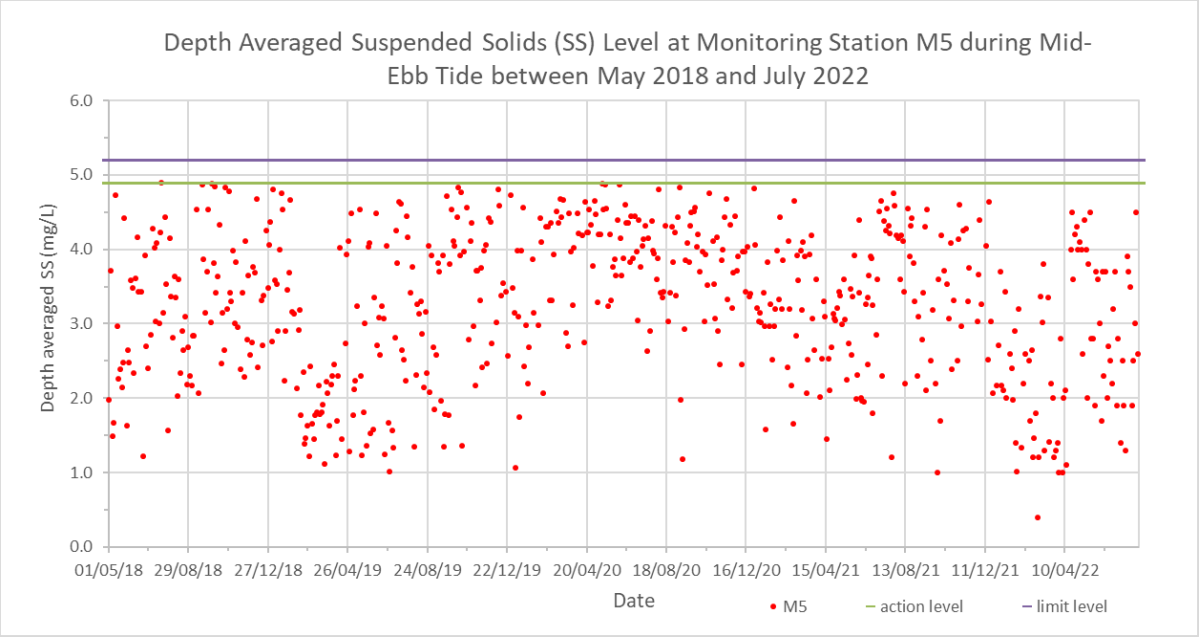

Averaged Surface and Middle Levels of Dissolved Oxygen at Monitoring Station M4a during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M4a
action level
limit level

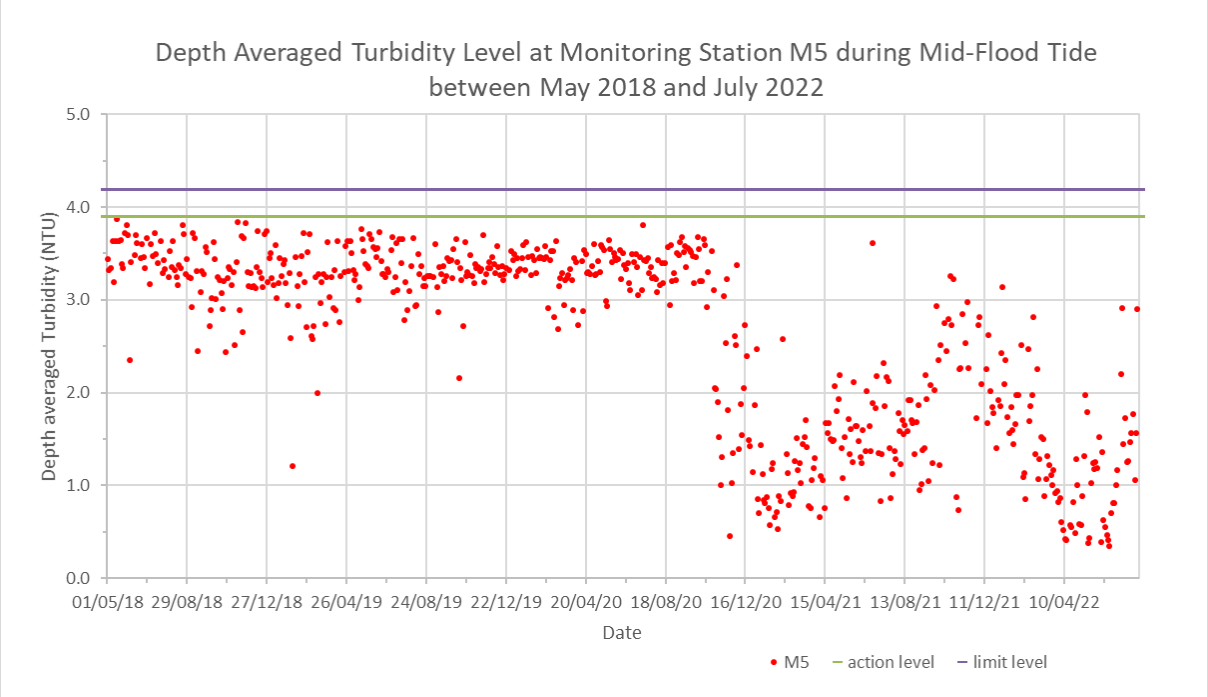

Averaged Surface and Middle Levels of Dissolved Oxygen at Monitoring Station M4a during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M4a
action level
limit level

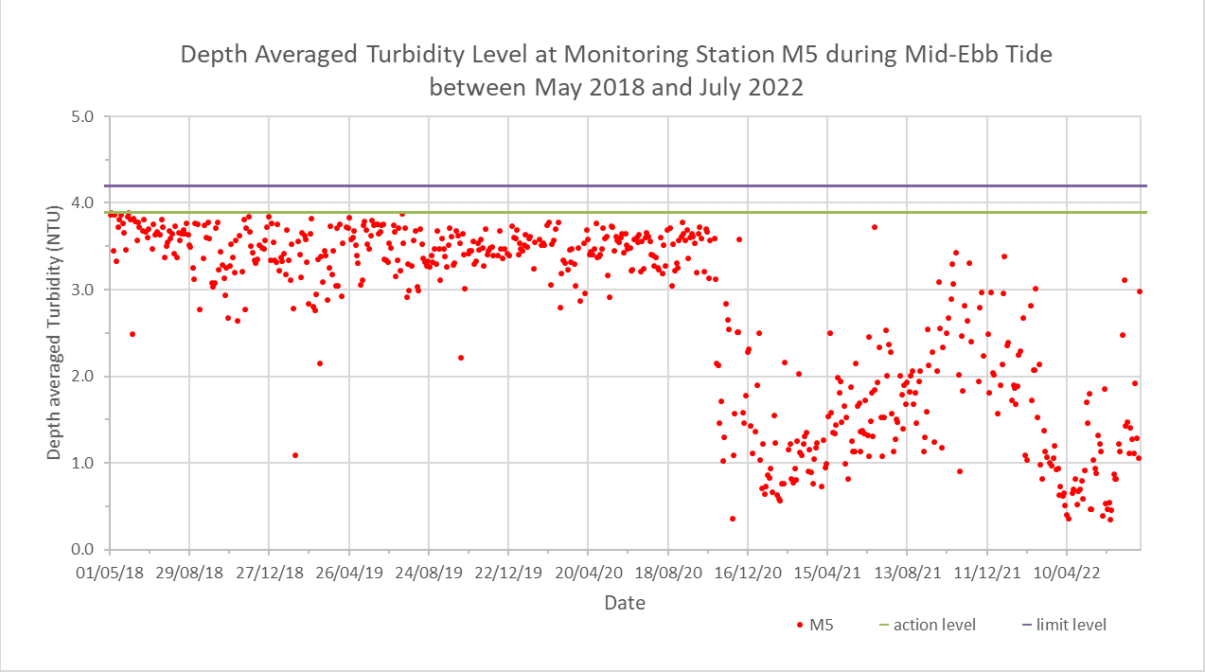

Bottom Level of Dissolved Oxygen at Monitoring Station M4a during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M4a
action level
limit level

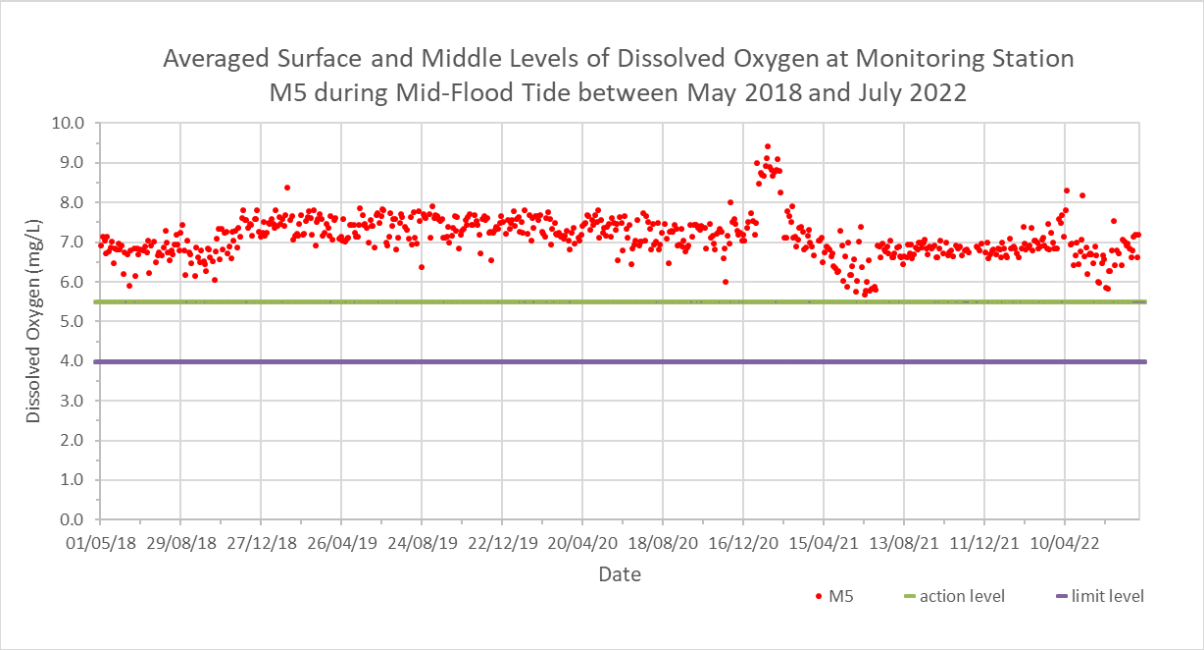

Bottom Level of Dissolved Oxygen at Monitoring Station M4a during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M4a
action level
limit level

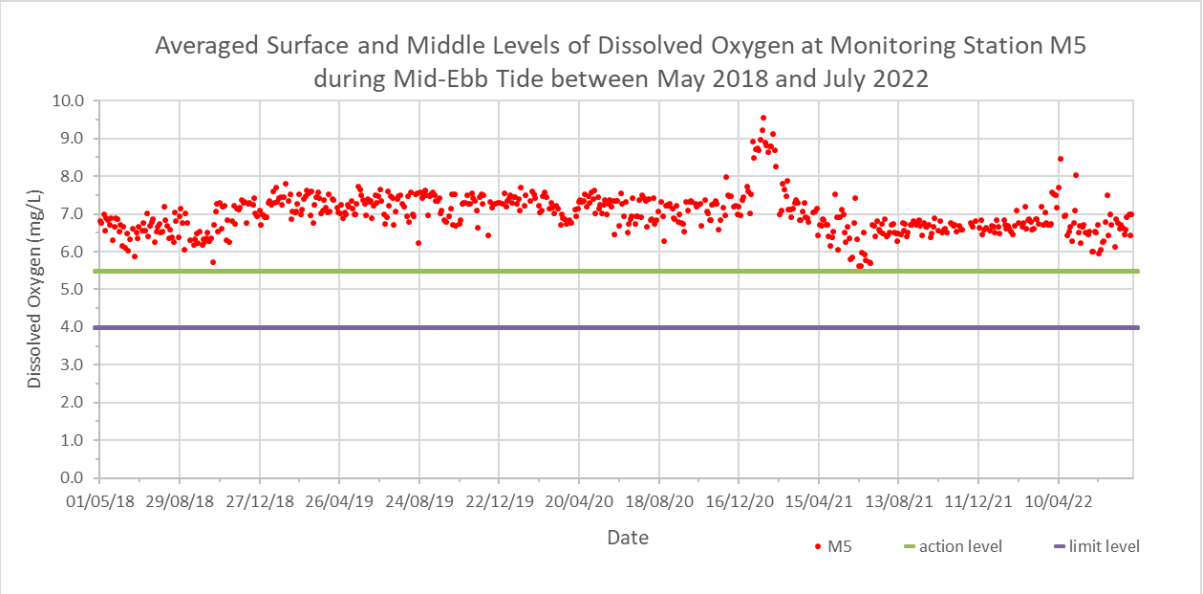

Depth Averaged Suspended Solids (SS) Level at Monitoring Station M5 during Mid-Flood Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M5
action level
limit level

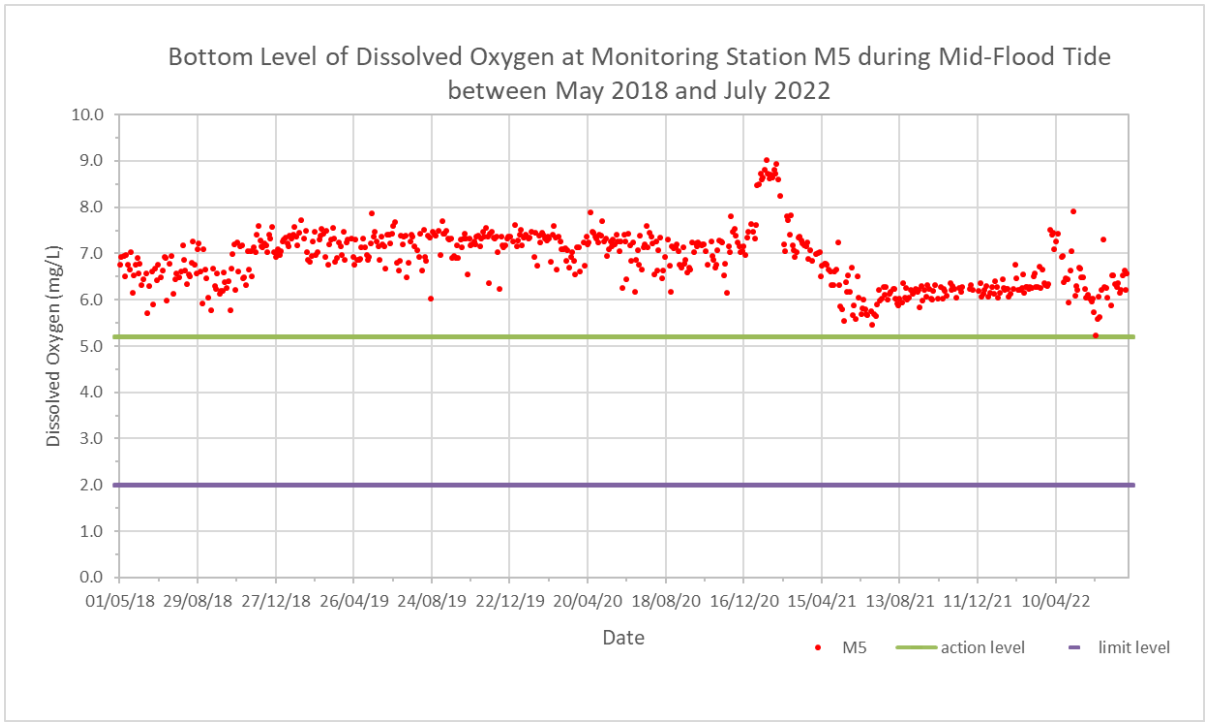

Depth Averaged Suspended Solids (SS) Level at Monitoring Station M5 during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged SS (mg/L)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M5
action level
limit level

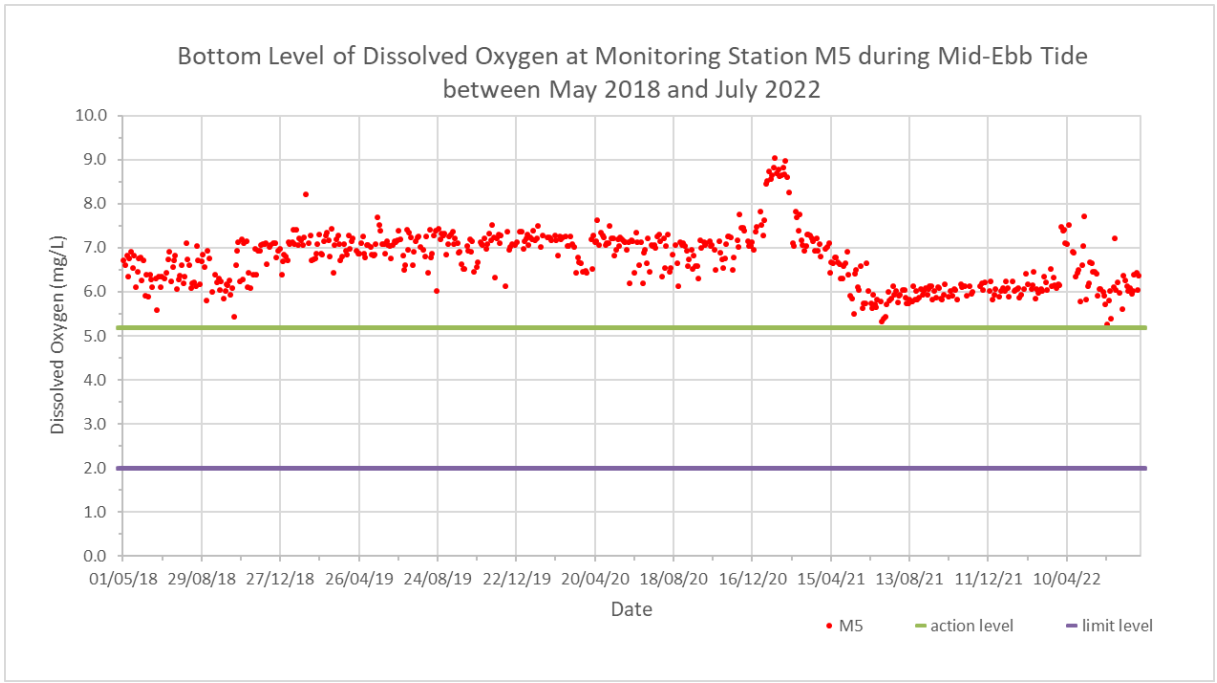

Depth Averaged Turbidity Level at Monitoring Station M5 during Mid-Flood Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M5
action level
limit level


Depth Averaged Turbidity Level at Monitoring Station M5 during Mid-Ebb Tide between May 2018 and July 2022
Depth averaged Turbidity (NTU)
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M5
action level
limit level


Averaged Surface and Middle Levels of Dissolved Oxygen at Monitoring Station M5 during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M5
action level
limit level


Averaged Surface and Middle Levels of Dissolved Oxygen at Monitoring Station M5 during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M5
action level
limit level


Bottom Level of Dissolved Oxygen at Monitoring Station M5 during Mid-Flood Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M5
action level
limit level


Bottom Level of Dissolved Oxygen at Monitoring Station M5 during Mid-Ebb Tide between May 2018 and July 2022
Dissolved Oxygen (mg/L)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
01/05/18 29/08/18 27/12/18 26/04/19 24/08/19 22/12/19 20/04/20 18/08/20 16/12/20 15/04/21 13/08/21 11/12/21 10/04/22
Date
M5
action level
limit level