



Esso Petroleum Company Limited

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# ENVIRONMENTAL REVIEW

Proposed works to install a rock armour revetment wall at the Former ESSO Fuel Distribution Terminal, Bowling



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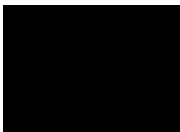
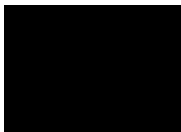
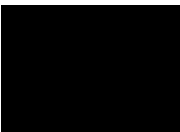
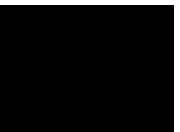

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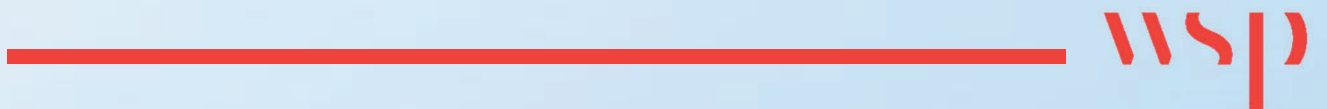
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SUMMARY OF POTENTIAL MITIGATION AND MONITORING PROPOSED



1

# INTRODUCTION



# 1 INTRODUCTION

## 1.1 PROJECT BACKGROUND

- 1.1.1. The proposal forms a modification to a wider remediation scheme which was granted full planning permission in March 2019 (see LPA Ref. DC18/013). The remediation scheme is linked to the purchase of the former Bowling Terminal by West Dunbartonshire Council. A Screening Opinion under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 for the wider remediation scheme was issued from West Dunbartonshire Council (WDC) that confirmed Environmental Impact Assessment (EIA) was not required (LPA Ref: PAN16/006). Part of the remediation scheme included the replacement sheet pile wall along the Centerfield (CFD) frontage and this was screened separately to obtain a Marine Licence from Marine Scotland. The Scottish Minister came to the view that the proposal was not works requiring EIA under the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (hereafter “the Marine Works EIA Regulations”).
- 1.1.2. The project underwent a design review with a rock armour revetment solution along the CFD frontage now the chosen design option by the applicant. The rationale behind the amendment is to create a more efficient remediation design solution, whilst providing a rock armour frontage which is also better in keeping with its natural surroundings. In September 2020, Esso submitted a Planning Application (Planning Reference DC20/182) to West Dunbartonshire Council to gain approval for the amended scheme with a rock armour revetment along the CFD frontage. Full details of the planning application currently with WDC can be accessed using the following link:  
<https://apps.west-dunbarton.gov.uk/dcdisplayinitial.asp?vCriteria=DC20%2F182&Submit2=Search>
- 1.1.3. Prior to submitting the new planning application, the amended scheme was screened in July 2020 against the Town and Country Planning EIA ‘2017 Regulations’ and a Screening Opinion was issued by WDC that confirmed EIA was not required for the proposed minor amendment. All the EIA Screening Opinions received for the scheme to date are listed in Table 1-1 below and copies of each Screening Opinion issued by WDC and the Regulator contained in (see Appendix A).

**Table 1-1 - Summary of EIA screening opinions received to date for the project**

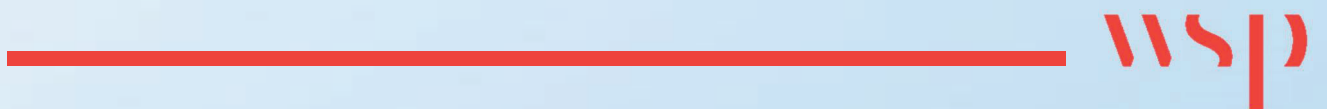
Consultee	Reference	Date	Screening Opinion
West Dunbartonshire Council	PAN16/006	02 May 2017	EIA not required
Marine Scotland and Scottish Natural Heritage	N/a	25 January 2019	EIA not required
West Dunbartonshire Council	N/a	28 July 2020	EIA not required

## 1.2 SCOPE OF REPORT

- 1.2.1. This report considers the amended proposal in the context of the Marine Works EIA Regulations with reference to other potential environmental licences and has been prepared to support the request for a screening opinion from the Regulator for the new rock armour revetment solution. A description of the proposed works and site setting are summarised in Section 2 of this report. Section 3 considers the Marine Works EIA Regulations in the context of the proposal, and other possible environmental related licence requirements. Section 4 provides a summary review (by topic area) on the potential effects of the development on the environment, the potential for significant effects on the environment and mitigation to be applied. A conclusion is then provided in Section 5 with a summary of the considered position to the significance of any potential environmental effects and proposed mitigation measures.

# 2

## **SITE SETTING AND PROPOSED DEVELOPMENT**



## 2 SITE SETTING AND PROPOSED DEVELOPMENT

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### 2.1 LOCATION OF SITE

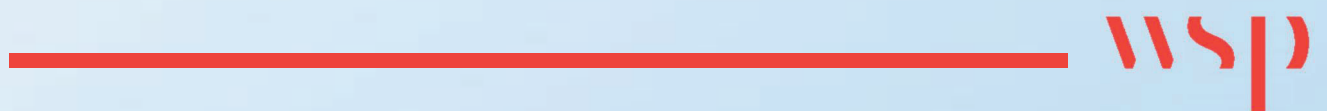
- 2.1.1. The site is located on the north bank of the River Clyde, approximately 0.3 km to the west of the village of Bowling and 4 km to the south east of Dumbarton. The proposed installation of a rock armour revetment (which is the subject of this screening request) is within the CFD section of the Bowling Fuel Distribution Terminal. The site location is shown on Drawing No. PL001 (see Appendix B).
- 2.1.2. The area surrounding the site where the proposed rock armour revetment will be installed is the remainder of the former terminal (to the North) and the River Clyde (to the South).
- 2.1.3. The area surrounding the wider Bowling site comprises:
  - transport infrastructure (the A82 road, and the rail line to Helensburgh to the North);
  - vacant land (Scotts Yard to the East); and
  - mudflats to the West.
- 2.1.4. The nearest residential property to the area where rock armour revetment installation is proposed is the Littlemill apartments located approximately 380 m to the northeast; beyond the railway line.

### 2.2 PROPOSED WORKS ALONG RIVER CLYDE

- 2.2.1. A description of the proposed alteration can be broken down into two parts:
  - Excavation of the existing revetment (to the east), removal of the existing sheet pile wall and the Oleophilic Bio Barrier (OBB).
  - Installing a new rock armour revetment wall, the full length of the CFD frontage.
- 2.2.2. As previously presented to Marine Scotland on 2 June 2020, DEC has undertaken preliminary assessment, including Preliminary Dispersion modelling, which indicates that the proposed excavation of the existing revetment and demolition of the sheet pile wall will not significantly impact the River Clyde in terms of both hydrocarbon impact and sediment deposition. This is presented within Appendix C.
- 2.2.3. A new rock armour revetment wall will be installed along the full length of the CFD frontage (~250 m) extending from the rock outcrop in the east to the Basin in the west. The site overlaps with the Inner Clyde Special Protection Area at its western and southern extents (see drawing no. PL003\_EIA). Overlap will occur both with the Revetment Works Area and the final Revetment footprint. Areas of overlap comprise narrow strips of the existing rock armour revetment and an area of 'slumped' revetment stone that extends to the south.
- 2.2.4. Excavation and remediation of the CFD will progress in a north to south direction, such that the majority of the CFD area will likely have been remediated and backfilled prior to commencement of the revetment works. It is anticipated that the remediation contractor will undertake the revetment works using a sectional approach, whereby on completion of each excavation section construction of the revetment is commenced. Excavation will be undertaken on a falling tide to minimise mobilisation of contamination and sediment to the River Clyde.

# 3

## MARINE LICENCES



## 3 MARINE LICENCES

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### 3.1 MARINE LICENCE REQUIREMENTS

- 3.1.1. A Marine Licence from the Scottish Ministers is required if organisations intend on carrying out certain acts in the Scottish marine area. These acts can include:
- The deposit of substances or objects into the sea or onto the seabed;
  - The removal of substances or objects from the seabed;
  - Construction, alteration and improvement works;
  - Dredging; and
  - The deposit or use of explosives.
- 3.1.2. The installation of the rock armour revetment will require works within the marine environment and thereby require a Marine Licence to be submitted to Scottish Ministers.

### 3.2 ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS

- 3.2.1. The primary legislation relating to potential environmental impact of development projects is split between works above and below Mean High Water Springs and is implemented by the relevant Local Authority and Marine Scotland respectively:
- The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017; and
  - The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the Marine Works EIA Regulations).
- 3.2.2. As previously discussed in Section 1, the instalment of a rock armour revetment wall along the CFD frontage was screened in 25 January 2019 where Marine Scotland issued a Screening Opinion that confirmed an EIA is not required. The scheme has been re-screened in 28 July 2020 against the Town and Country Planning EIA '2017 Regulations' where WDC issued a Screening Opinion that confirmed the design change does not result in the development requiring EIA to be undertaken.
- 3.2.3. Due to the scheme's location along the River Clyde, a separate EIA screening request, considering the marine receptors, must now be submitted to Marine Scotland under The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 to determine whether an EIA is required for the amended scheme.
- 3.2.4. The scheme does not fall within any of the categories listed within Schedule 1 of the Marine Works EIA Regulations and therefore does not automatically require an EIA. It is therefore necessary to assess the proposal in terms of the Schedule 2 criteria. Schedule 2 works mean works, other than exempt works, of a description set out in column 1 of Schedule 2 where;
- (a) Any part of the works is to be carried out in a sensitive area; or
  - (b) Any applicable threshold or criterion in the corresponding part of column 2 of that table is respectively exceeded or met in relation to the works.



3.2.5. With regards to criterion (a) a section of the proposed revetment works will overlap and extend into 'sensitive areas' as defined by Regulation 2(1):

- Inner Clyde Special Protection Area;
- Inner Clyde Ramsar Site; and
- Inner Clyde Site of Special Scientific Interest.

3.2.6. In terms of criterion (b) there are two paragraphs within Schedule 2 (Paragraphs 10 (g), and (m)) which could be construed as being applicable to the development. These are defined in Table 3-1 along with the relevant thresholds and WSP Opinion.

**Table 3-1 - Descriptions of development falling under Schedule 2 of the Marine Works EIA Regulations**

Paragraph	Description of Development	Applicable threshold / criteria	Opinion
<b>Infrastructure Projects</b>			
<b>10 (g)</b>	Construction of harbours and port installations, including fishing harbours (unless included in Schedule 1).	The area of works exceeds 1 hectare	The overall area of the proposed works is less than 1 hectare.
<b>10 (m)</b>	Costal work to combat erosion and maritime works capable of altering the coast though the construction, for example, of dykes, moles, jetties and other sea defence works excluding the maintenance and reconstruction of such works.	All works	Whilst the proposed works will take place within the river environs, the works do not include any features noted in the description and will be of a small-scale nature that will not alter the coast through its construction. Once completed the low-key development will not result in any additional impacts over and above the existing situation. The works are proposed for remediation purposes only.

3.2.11. The threshold for sea defence works as described in column 2 of Schedule 2 of the Marine Works EIA Regulations, is "all development". Given the proposal falls under criterion (a) and loosely in criterion (b) the scheme involves assessment against guidance and the selection criteria within Schedule 3 to demonstrate the amendment does not constitute EIA development. The aspects under Schedule 3 to consider are as follows:

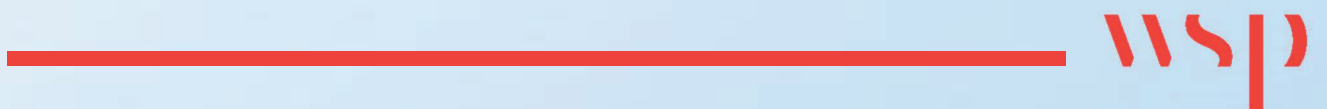
- Characteristics of the development;
- Location of the development; and



- Characteristics of the potential impact.

# 4

## **SCHEDULE 3 - ASSESSMENT**



## 4 SCHEDULE 3 - ASSESSMENT

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### 4.1 CHARACTERISTICS OF THE DEVELOPMENT

- 4.1.1. This section assesses the scheme against the criteria set out in Schedule 3 of the Marine Works EIA Regulations for screening Schedule 2 development. These criteria comprise the characteristics of development, the location of development and the characteristics of the potential impact. The 'scheme' relates specifically to the alternative design solution for the revetment area of the already wider consented remediation strategy (DC18/013) for this brownfield site. Whilst the revised design solution for the CFD will be extended in length, appearance and coverage when compared to the previously consented arrangements for the same area, the scale of the revised developments proposals is not of an extent for it to have wide-ranging or significant environmental effects.
- 4.1.2. The proposed rock armour revetment works is less than 1 hectare in size. Rock armour constitutes the existing revetment treatment for much of the surrounding shoreline and these proposals will be in-keeping with this and integrate to the existing sections both within the site and further along the Basin (area to the west of the scheme) offering continuity and consistency. Whilst the development works will take place within the river environs, the works do not include any features noted in Schedule 2 of the Marine Works EIA Regulations and will be of a small-scale nature that will not alter the coast through its construction. Once completed, the low-key development will not result in any additional impacts over and above the existing situation. The wider works are proposed for remediation purposes only.
- 4.1.3. Giving due regard to the scale and nature of these proposals and the site context which is currently made up of various forms of revetment treatments (including existing rock armour), it is not considered that the revised proposals for this area will be out of scale for the existing environment. Equally, it is not considered that the revised proposals by virtue of their scale, mass, presence or arrangement have will have a significant effect in this regard.
- 4.1.4. The proposals are not a stand-alone development in their own right, and they require to be understood and considered within the context of the aforementioned approved remediation application. This specific proposal forms part of and will be delivered through the already consented wider scheme for the remediation of the site. A revetment solution (sheet piled walls) has already been approved, where EIA was not considered required, as part of a previous planning permission and as such it is not considered that the revised revetment proposals will have any additional impacts from the overall remediation strategy for the site. It is worth noting as part of this that the wider site is identified as a redevelopment site under the City Deal projects and is subject to a current separate planning application in with the Council (DC20/088). A screening and scoping opinion for this development has already acknowledged a cumulative impact and this application is accompanied with a full EIA. It is not considered that this particular revised development will have or lead to any further cumulative impact.

- 4.1.5. Although the footprint is more extensive than a sheet pile wall, it reduces or potentially negates the need for piling during construction and is more sympathetic to the surrounding environment. A small strip of the revetment wall extends just beyond the red line boundary of the original planning consent. Beyond this footprint, the proposed works also include a small amount of additional excavation to the south east section of the frontage to what was previously screened. The total area outwith the original red line boundary is approximately 0.07 ha as shown in drawing 70067562 PL002.
- 4.1.6. All works will be undertaken through a methodology and approach which seeks to minimise mobilisation of sediment and hydrocarbon impact:
- Works undertaken on a falling tide and using sectional approach;
  - Containment and absorbent booms will be deployed as a precautionary measure; and
  - Monitoring and river water quality sampling to be undertaken during the excavation and construction of the new revetment.
- 4.1.7. Excavation and remediation of CFD will progress in a north to south direction, such that the majority of the CFD area will likely have been remediated and backfilled prior to commencement of the revetment works. It is anticipated that the remediation contractor will undertake the revetment works using a sectional approach, whereby on completion of each excavation section construction of the revetment is commenced.
- 4.1.8. The proposed works will employ the same risk-based criteria as agreed by the West Dunbartonshire Council and conditioned under application DC18/013. As outlined in earlier sections, in order to facilitate the construction of the revetment and to deliver the holistic solution with a tie-in to existing sections, additional areas will now be subject to excavation beyond those proposed through the earlier consented scheme. As a result, this means that the removal of these contaminated materials will provide further certainty that, post-remediation, there is no significant hydrocarbon contamination source remaining. An updated/addendum to the approved Remediation Strategy for DC18/013 is provided as part of the subsequent planning application to capture the overall approach, including the scope and nature of the additional excavation to be undertaken.
- 4.1.9. A full detailed approach to remediation that demonstrates a rock armour is suitable for the purpose of containing the contamination is set out in a Technical Note – Bowling Contamination Review (June 2020) which forms part of the recent planning application submission as well as supporting environmental information in this screening request.

## 4.2 LOCATION OF DEVELOPMENT

4.2.1. The revised proposal means some modest sections of the proposed works encroach into 'sensitive areas' as defined by the 2017 Regulations. Detailed plans and drawings have been prepared to demonstrate the extent and nature to which the revised proposals extend into these sensitive areas. Drawing No. PL003\_EIA (see Appendix B) shows the extent of overlap:

- Area of Revetment works overlapping SPA/SSI: 0.0309 Ha (309 sqm)
- Area of Revetment Footprint overlapping SPA/SSI: 0.0134 Ha (134 sqm)
- Area of Revetment Works Area overlapping Ramsar site: 0.0051 Ha (51 sqm)
- Area of Revetment Footprint Overlapping Ramsar site: 0.0002 Ha (2 sqm)

4.2.2. The specific areas within the Inner Clyde SPA/SSI/Ramsar site where the works will now be taking place constitute previously disturbed and modified ground which have been subject a number of historic semi-intrusive works including excavation and repairs as well as those undertaken to install a Oleophilic Bio Barrier (OBB) in the past – see drawing PL004\_EIA and site photos in Appendix D.

4.2.3. In this regard, much of the impact on the physical make-up, appearance and character of this habitat at this particular location has already taken place. The fact that this ground has already been disturbed, modified and altered and is in essence made up of existing various river wall defence treatments. It is considered that based on this evidence, the physical impact of the revised revetment works, and proposals will not have significant effects on the character and integrity of these sensitive areas and there will be no net loss of available habitat. This position is subject to mitigation being in place as set out in the preceding section.

## 4.3 POTENTIAL ENVIRONMENTAL EFFECTS

4.3.1. The types and characteristics of any likely environmental impacts of the revised design solution has been appropriately informed by re-appraisals of all relevant environmental disciplines. As information to support the request for a screening opinion please see the following technical notes (in Appendix E):

- Technical Note – Bowling Contamination Review (June 2020)
- Technical Note – Bowling Ecology Review (July 2020)
- Technical Note – Bowling Cultural Heritage & Archaeology Re-appraisal (June 2020)

- 4.3.2. Given this is a separate screening request under the Marine Works EIA Regulations, a further technical review has been undertaken by Marine Ecologists that further considers the marine receptors:
- Technical Note – Bowling Marine Ecology Review (October 2020)
- 4.3.3. Within Table 4-1 below, we have provided an opinion (by topic area) on the potential effects of the development on the environment, mitigation that will be applied (where relevant) and the potential for significant effects on the environment. This includes monitoring, and whilst monitoring is not mitigation, it is stated where appropriate as a measure to monitor the effectiveness of the mitigation. The mitigation is also summarised in Table F-1 - Appendix F, where monitoring is summarised in Table F-2 Appendix F.

**Table 4-1 - Review of potential environmental effects by topic area**

Topic area	Potential impact	Potentially significant impact	Impact discussion/Potential mitigation (if required)	Additional assessment or work required	Significant effect following mitigation
<b>Controlled waters (River Clyde)</b>	Mobilisation of hydrocarbon contamination	Potential.	Works will be undertaken post remediation of CFD (i.e. bulk mass of contamination will have been removed). Works will be undertaken in a manner to minimise mobilisation i.e. on a falling tide and using sectional approach. Containment and absorbent booms will be deployed as a precautionary measure. Monitoring and water quality sampling to be undertaken during construction of revetment.	Remediation Contractor to undertake further dispersion modelling and agreement of criteria with Marine Scotland.	None.
<b>Controlled Waters (River Clyde)</b>	Mobilisation of sediment	Potential.	Works will be undertaken in a manner to minimise mobilisation i.e. on a falling tide and using sectional approach. Monitoring and water quality sampling to be undertaken during construction of revetment.	Remediation contractor to undertake further dispersion modelling and agreement of criteria with Marine Scotland.	None.
<b>Ecology – Marine Habitats</b>	Construction and Operation	Possibly Loss of existing benthic habitat by	Replacing the existing sheet pile river wall with rock armour revetment has the potential to modify coastal processes. This could include modifying the flow of the River Clyde / tidal	No	Yes, positive effects



Topic area	Potential impact	Potentially significant impact	Impact discussion/Potential mitigation (if required)	Additional assessment or work required	Significant effect following mitigation
		<p>encroachment of rock revetment 'foot' into subtidal habitats.</p> <p>Loss of existing rock armour revetment complete with associated intertidal fauna and flora.</p> <p>Loss of habitat due to an alteration in coastal process during operation.</p>	<p>action to increase erosion or promote the deposition of sediment (Kraus and McDougal, 1996<sup>1</sup>).</p> <p>The site of the new revetment will largely utilise the site of the existing river walls and follows the same alignment. Only the 'foot' of the new revetment extends beyond the existing river wall footprint, to a maximum of 1.5 m. Modification of coastal process are associated with an alteration to coastal topography (Basco, 2004<sup>2</sup>). As modifications associated with the new Revetment are very minor, associated changes in coastal processes should also be de-minimis in extent.</p> <p>Replacing the sheet pile steel wall with a rock revetment could be anticipated to reduce scour and erosion directly adjacent to the river wall. Scour adjacent to the sheet pile river wall is evident as no intertidal mud/sand is exposed at low Mean Low Water Springs (as shown by tide lines on Ordinance Survey mapping).</p> <p>The new revetment will likely result in the accumulation of more fine sediment / mud directly adjacent than is currently the case with the sheet pile wall<sup>1</sup>. The creation of additional mudflat habitat, in addition to the rocky intertidal habitat of the revetment itself, has the potential to provide <b>positive impacts</b> on the intertidal and benthic flora and fauna.</p>		
Ecology – Marine Habitats	Construction activity	Possibly.	Works will be undertaken post remediation of Centerfield i.e. bulk mass of contamination will have been removed.	Remediation Contractor to undertake further dispersion modelling	No

<sup>1</sup> Kraus, N, C and McDougal, W, G (1996). The effects of seawalls on the beach: Part 1, an updated literature review. Journal of Coastal Research. Vol. 12, No. 3, pp 691-701

<sup>2</sup> Basco (2006). Seawall Impacts on Adjacent Beaches: Separating Fact from Fiction. Journal of Coastal Studies. Issue 36, Vol.2, pp 741-744.



Topic area	Potential impact	Potentially significant impact	Impact discussion/Potential mitigation (if required)	Additional assessment or work required	Significant effect following mitigation
		Pollution and sediment released during construction could degrade marine habitats	Works will be undertaken in a manner to minimise mobilisation i.e. on a falling tide and using sectional approach. Containment and absorbent booms will be deployed as a precautionary measure. Monitoring and water quality sampling to be undertaken during construction of revetment.	and agreement of criteria with Marine Scotland.	
<b>Ecology – Marine Mammals</b>	Construction activity	No Amending the Scheme to remove the permanent sheet pile wall reduces the potential of acoustic disturbance to marine mammals during construction.	Works on existing and new revetment will be undertaken at low water, where possible.	None required.	No.
<b>Ecology - Redshank</b>	Construction activity	Possibly Removal of sheet piling requirement reduces the potential of acoustic disturbance to redshank during construction	Qualifying species of the Inner Clyde SPA. Works will be undertaken outside the main overwintering period (16th September to 15th of March inclusive) or in agreement with NatureScot (formerly Scottish Natural Heritage). If works need to be undertaken within the main overwintering period then additional mitigation will be required including the erection of visual screens, where practicable and supervision of the works by an Ecological Clerk of Works (ECOW).	Habitats Regulations Appraisal.	No.
<b>Ecology – Fish</b>	Construction activity	Possibly. Noise generated during the removal of	The proposed change in the planned approach from a replacement steel sheet piled river frontage to a rock armour solution will reduce the amount of noise and vibration created during the construction phase, (by removing the requirement	No	No

Topic area	Potential impact	Potentially significant impact	Impact discussion/Potential mitigation (if required)	Additional assessment or work required	Significant effect following mitigation
		<p>the existing river wall and replacement with rock armour frontage may generate noise, vibration and other disturbance which has the potential to disturb fish (particularly migratory salmonids), European eel, and lamprey. This disturbance may cause delay or prevention to fish migration or cause sub-lethal or even lethal damage to fish (if noise/vibration is very high).</p> <p>There is also a possibility of direct disturbance or harm to fish caused by the placement of rock armour onto the riverbed.</p> <p>Additionally, disturbance of sediment or soil (with possible contaminants) has the potential to be released or re-suspended into the</p>	<p>for pile-driving) and therefore presents an improved situation than that which was previously consented.</p> <p>Furthermore, the stated avoidance periods proposed for prevention of disturbance to redshank and wintering birds broadly coincides with key migration and spawning periods for migratory salmonids, so it is unlikely that any significant effects on migratory salmonids would occur as a result of this scheme. Further consideration of other species (e.g. European eel and lamprey) may also need to be considered and this would need to be agreed with the Marine Scotland.</p> <p>In terms of the potential direct disturbance caused by the placement of rock armour onto the riverbed, it is likely that the localised disturbance caused by the construction activities would deter fish from entering the immediate area where rock armour is being placed. It is unlikely that any significant effects on fish would occur as a result.</p> <p>The stated mitigation for the prevention of pollution of the river environment would apply and prevent any such occurrences.</p>		

Topic area	Potential impact	Potentially significant impact	Impact discussion/Potential mitigation (if required)	Additional assessment or work required	Significant effect following mitigation
Ecology – Benthic Invertebrates	Construction activity and operation	river environment, which may cause pollution and harm to aquatic life.	<p>Possibly -</p> <p>Loss of existing benthic habitat by encroachment of rock armour toe into existing riverbed.</p> <p>Direct damage to benthic invertebrates due to placement of rock armour on the riverbed.</p> <p>Additionally, disturbance of sediment or soil (with possible contaminants) has the potential to be released or re-suspended into the river environment, which may cause pollution and harm to aquatic life.</p>	No	Yes, positive
			<p>The proposed change from a vertical steel sheet piled river wall to a profiled rock armour frontage would confer a number of benefits for benthic invertebrates, which are an important source of food for wading birds and fish. These benefits include a coarser, stone substrate with interstitial spaces which would provide useful habitat for invertebrates and would be readily colonised by plants and algae. The profile and roughness of the rock armour wall would also encourage sediment deposition and create new areas of benthic habitat which would help to off-set any minor loss due to the placement of the rock armour on the existing riverbed.</p> <p>The stated mitigation for the prevention of pollution of the river environment would apply and prevent any such occurrences.</p>		

Topic area	Potential impact	Potentially significant impact	Impact discussion/Potential mitigation (if required)	Additional assessment or work required	Significant effect following mitigation
<b>Ecology -</b> [REDACTED]	Construction activity	Possibly. Construction could disturb [REDACTED] or damage/destroy resting sites.	Exclusion zones around [REDACTED] resting sites and other mitigation as set out in Applied Ecology report (2019).	Amendment to European Protected Species Mitigation Licence No. 146559. Pre-construction surveys.	No.
<b>Ecology - Bats</b>	Construction activity	Possibly. Removal of sheet piling requirement reduces the potential of acoustic disturbance to bats during construction.	All site lighting will be directed away from the potential bat roost at Dunglass House.	Consultation with NatureScot (formerly Scottish Natural Heritage). with regards any European Protected Species Mitigation Licence that may be required prior to works.	No.
<b>Designated sites – Inner Clyde Special Protection Area / Ramsar Site/ Site of Special Scientific Interest</b>	Construction activity and operation	Possibly. Construction could disturb and displace the qualifying features of the designated sites (primarily Redshank <i>Tringa totanus</i> )  The new Revetment will overlap with designated habitat to a maximum area of 0.0134 ha. Additionally, excavations associated with construction will	A comprehensive assessment of effects on designated sites has been undertaken during the HRA process. Key mitigation proposals are listed below.  Works will be undertaken outside the main overwintering period (16th September to 15 <sup>th</sup> of March inclusive) or in agreement with NatureScot (formerly Scottish Natural Heritage).  If works need to be undertaken within the main overwintering period then additional mitigation will be required including the erection of visual screens, where practicable, and supervision of the works by an ECoW.	No.	No.



Topic area	Potential impact	Potentially significant impact	Impact discussion/Potential mitigation (if required)	Additional assessment or work required	Significant effect following mitigation
		occur within a maximum of 0.039 ha of designated habitat (outside the footprint of the revetment).			

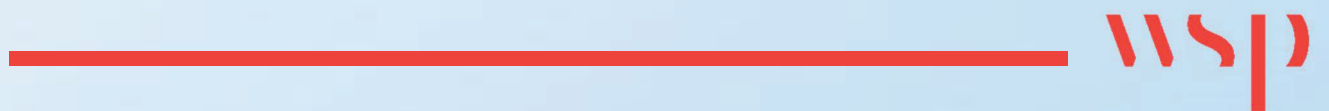
- 4.3.4. The general characteristics and impacts of this revised design approach is a beneficial one, as it significantly reduces, or potentially even removes, the need for riverside piling and associated disturbance. The creation of a revetment along the entire CFD frontage affords an opportunity to restore the site frontage to a more natural condition.

## **4.4 ENVIRONMENTAL CONTROLS AND TIMINGS**

- 4.4.1. There has been positive engagement with NatureScot (formerly Scottish Natural Heritage) and Marine Scotland to date over the design change. In order to facilitate the proposed remediation works, double oil booms and silt booms will be used to prevent unintentional releases to the River Clyde. The area does not dry out at Low water Springs. Additional oil absorbent pads will be deployed and replaced should any unintentional releases occur.
- 4.4.2. Furthermore, the following works, surveys and mitigations have been proposed:
- A Habitat Regulations Assessment Stage 2 – Appropriate Assessment has been completed which confirms no adverse impact is expected on the Ecology from the proposed works.
  - An outline Construction Environmental Management Plan has been prepared that takes into consideration the various mitigations required to properly execute the works.
- 4.4.3. The above mitigation measures could also be secured through the marine licence and/or planning permission (as appropriate), to be finalised by the remediation contractor.
- 4.4.4. The work is anticipated to be completed within the six-month period and will be undertaken outside of the sensitive overwintering period of the redshank (i.e. short term nature of impact). Once complete a more sympathetic natural feature would be present along the river frontage.

# 5

## CONCLUSION



## 5 CONCLUSION

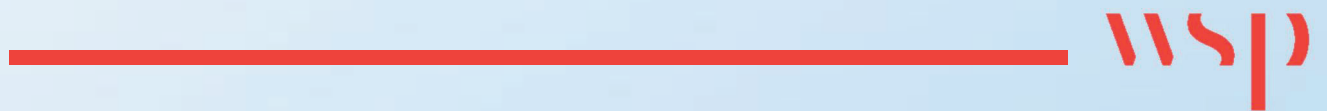
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- 5.1.1. The potential for the amended scheme (rock armour revetment) to result in significant effects on the environment with, and without, mitigation in place (as summarised in Table 3, Section 3 and detailed in the supporting Technical Notes provided, and the Habitat Regulations Assessment) has been considered. Using the assessment criteria set out under Schedule 3 of the Marine Works EIA Regulations, it is considered that EIA is not required for the proposed rock armour revetment and there is not significant departure from the previous EIA screening opinion issued by Marine Scotland, which confirmed the proposed scheme is not EIA development.
- 5.1.2. Given the improved method of construction and the availability of standard construction mitigation, it is considered that the proposed rock armour revetment will not result in significant adverse effects on the environment provided, relevant mitigation measures are adopted.
- 5.1.3. We have included the outline Construction Environmental Management Plan (CEMP), which takes into account the relevant mitigation measures to be prepared for the development. The CEMP is a working document and will be updated by the Remediation Contractor to include any agreements with Marine Scotland.
- 5.1.4. We trust this Environmental Review and enclosed drawings/photos/technical notes provides the necessary information required to enable Marine Scotland to consider this EIA screening request and provide a Screening Opinion that confirms **no EIA development**.



# Appendix A

## **PREVIOUS EIA SCREENING OPINIONS**



**Environmental Impact Assessment (Scotland)**  
**Regulations 2011**

**Screening Opinion: Remediation Works at Centrefield,**  
**Exxon Site, Bowling (Ref. PAN16/006)**

**INTRODUCTION**

A request for a screening opinion has been submitted for works to remediate an area within the former Exxon fuel distribution facility at Bowling. The Exxon site sits along the northern bank of the River Clyde on vacant land between Bowling and Dumbarton and extends to 60ha in size. The north site boundary follows the line of the Glasgow-Dumbarton railway line. Directly to the east of the site is the former shipyard known as Scott's Yard with Bowling village beyond. To the north-west is the village of Milton. To the south is the river's edge which is built up with a wall and various protruding quay structures except for the foreshore area at Milton Island (west) which retains its natural shape.

The proposal is for the remediation of a number of areas or "fields" within the larger site: Centrefield; the northern half of Westfield B; two small areas within Northfield; a small area which straddles Westfield A and the south-west corner of Westfield B; and four small areas within Westfield C. The total area for remediation extends to less than 12ha in size. The timescale of the project is expected to be around two years with the phasing to be split into two periods due to the volume of soil to be treated and the areas required for stockpiling treated soils. It is anticipated that Centrefield will be remediated in Year 1 and Westfield/other small areas in Year 2. This phasing may be reversed depending on the conclusions of the site investigations and the resulting remediation strategy.

The remediation strategy is not associated with any specific development plans for the site but is to be designed to leave the site suitable for a generic future commercial and open space use. The main part of the proposed remediation works will focus on the removal of oil products and materials below-ground and treatment of the soil. The works will include breaking of any concrete areas and excavations across the site. Contaminated soil will be treated using one or more remediation techniques such as bio-remediation (stimulation of microbes which use contaminants), thermal desorption (removal of organic contaminants by heating) and soil washing (using liquid and mechanical process to scrub soils). These options are currently being evaluated and a preferred remediation strategy is yet to be finalised, as this will be subject to agreement with Environmental Health. The remediation strategy may include a combination of the above remediation techniques as the applicant has indicated that thermal treatment could treat the majority of, and bioremediation up to 50% of soils requiring remediation. The applicant has indicated that soils will generally be remediated and re-used on site, although it may be necessary to remove a small proportion off-site to a soil treatment facility or for disposal. The aim is to recycle over 90% of the materials excavated on the site. Site levels will be restored, typically to the same levels present before the remedial works commenced.



The remediation will require temporary works such as piling to safely manage and maintain deep excavations close to the river walls. Suitable safe distances from Dunglass Castle and the Inner Clyde SPA will be maintained during the works with acoustic and visual screens used to reduce disturbance. Any recovered waters will also be treated, and discharged under a suitable consent (SEPA licence). Working hours on site are to be 8am to 6pm, Monday to Friday and on Saturdays between the hours of 8am to 1pm. Vehicle movements are expected to be low due to on-site treatment. Cars and small vans would average 10-20 vehicles per day, general delivery vehicles would average 2-3 per day and large tankers, tipper lorries would be an average 20-35 vehicles per week. Access and egress is to be via the main entranceway located off the A814 which exists towards Dunglass Roundabout avoiding Bowling village.

Under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011, proposals are “screened” to determine whether they fall within the description of development requiring an Environmental Impact Assessment (EIA). In screening an application consideration is firstly given to whether the proposal falls into any of the categories set out in Schedules 1 and 2 of the Regulations. All three remediation techniques are considered in this screening opinion.

### **SCHEDULE 1 AND SCHEDULE 2**

The site does not fall into any category under Schedule 1 and therefore does not automatically require an EIA.

Development types listed in Schedule 2 are developments where an EIA may be required under specified circumstances, typically where the development is to be carried out in a sensitive area or meets/exceeds a size threshold listed in the Schedule. The proposal fits the description of being an infrastructure project under paragraph 10(b) of the table in Schedule 2 and exceeds the size threshold of 0.5ha. In addition, part of the Inner Clyde Special Protection Area (SPA) coincides with the southern reaches of the site and it is therefore partly adjacent to a sensitive area. The proposal is therefore a Schedule 2 development.

Schedule 2 development does not automatically require an EIA to be submitted, rather, that consideration be given of the likelihood that the proposal will have significant effects on the environment by virtue of factors such as nature, size and location. Determination is made using the selection criteria set out in Schedule 3 of the 2011 Regulations and the advice contained in Circular 3/2011 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011 and the guidance in PAN 1/2013. The consideration of these is set out below.

### **SCHEDULE 3**

#### **1. Characteristics of Development**

This considers criteria such as the size of development, cumulation with other development, use of natural resources, production of waste, pollution and nuisances, the risk of accidents (with reference to substances or technologies) and any other characteristics.

Bowling oil terminal was developed in the late 1930s and was decommissioned in 1997. The site is 60ha in size, which significantly exceeds the Schedule 2 size threshold of



0.5ha, and is a very large brownfield site. Much of the site was built upon reclaimed land which resulted in the formation of a river wall on the eastern half of the site which still exists. Part of the site (known as Eastfield) previously contained around 20 above ground storage tanks, but these, along with other structures on the site have now been cleared and the site is overgrown. As a result of the former use the site is subject to contamination by hydrocarbons and the site's owner has already carried out soil remediation measures on Eastfield. This latest remediation proposal is similarly limited to a small proportion of the site (a sixth of overall site) whereby works are restricted to Centrefield and Westfield B with some spillover into adjoining "fields". The works will not be out of scale or character with the existing environment.

The proposal seeks to make use of the existing access into the site off the A814 and no new roads or accesses will be necessary. There will be small increases in traffic movement to and from the site compared to the recent low levels of vehicular movements associated with the remediation of the Eastfield part of the site and site management controls are proposed to ensure vehicles do not pass through Bowling village but directly access the A82 via Dunglass roundabout. The small increases in traffic can be absorbed within the local road network without adverse impact. There will be some plant equipment, welfare buildings, and set-aside areas as part of the works but these will be temporary in nature and proposed to be located on the western half of Eastfield adjacent to the access road and separated from Bowling village by the railway and a small strip of land. There are no permanent buildings proposed. This proposal is a stand-alone development: although the wider site is identified as a redevelopment site under the City Deal projects, a screening and scoping opinion for that project (Ref. PREAPP15/034) has already acknowledged a cumulative impact if the site is developed under the City Deal project, and has concluded that redevelopment would require an EIA.

There are no natural resources on the site which will be utilised as a result of this development. The proposal seeks to reclaim natural soil resources through remediation techniques and this soil will be left in-situ once remediated. The strategy seeks to recycle 90% of the soils keeping waste products to a minimum.

All three remediation techniques will require excavation and, with respect to pollution and nuisances, the excavation of soils contaminated with hydrocarbons may release odours. The hydrocarbon contaminants comprise heavy-end hydrocarbons which are less volatile and generate fewer odours compared with the light hydrocarbons exposed at Eastfield. However, controls and monitoring is proposed including monitoring wind direction/speed, sheeting stockpiles, erecting screens and barriers and using atomising sprays/foam where necessary. The remediation strategy will include details of these mitigation measures to control odour release. There is also potential for some dust generation and noise caused by the breaking out of concrete, temporary sheet piling and by moving soil materials around the site. These are likely to be intermittent during the phases of the work and can be controlled by planning conditions. In respect of emissions, the primary source will be nitrogen dioxide from diesel powered plant and equipment required for the the thermal desorption remediation method (to capture contaminant vapours not destroyed using the thermal oxidiser) and earthmoving plant required for the excavations. Emissions will be mitigated using modern and well-maintained plant and equipment; operatives are to be instructed to throttle-back and turn-off engines when not in active use; and the works are to be programmed carefully to ensure that works are undertaken in the most efficient manner. It is accepted that an on-site treatment approach with the re-use of materials will significantly reduce vehicle movements to and



from the site (estimated by the applicant to be over 10,000 lorry movements during the life of the project).

The majority of the remediation areas are within the interior of the site, however where works are closer to the river wall deeper excavation of the soil is required, sheet piling is proposed to protect the banks. The river bank in this part of the site is a hard man-made edge. Although there is a small risk that pollutants will enter the Inner Clyde Special Protection Area, the conditions of the required SEPA licence for during operations will significantly reduce this risk.

The proposed works do not indicate any significant risk of accidents with reference to substances or technologies used in the remediation process.

Finally, in respect of other characteristics, there are potential physical changes to the topography of the site but these will be temporary with ground levels to be restored to their previous levels. There are areas of vegetation that will be lost but these relate to the interior of the site and along the railway embankment and not the protected habitats of the riparian zone. A habitat survey carried out in 2011 did not reveal any protected species within the interior; however, an Extended Phase 1 Habitat Survey is being carried out to inform the planning application.

## **2. Location of Development**

Although the site is a recognised brownfield site it is outwith the built-up urban areas of Dumbarton and Clydebank and is adjacent to the villages of Milton and Bowling with a rural hinterland. The areas for remediation are nearest to Bowling village but are separated by the railway line, a narrow strip of land and the A814. The distance to the nearest property in Bowling is 190m and this is a block of flats at the extreme west end of the village. The change in topography means that there is no unrestricted view from the village into the interior of the site where the works are proposed. Due to the distances the impact on residents in terms of noise from heavy plant equipment, vehicles, dust pollution and vibration are small and can be controlled by planning conditions.

There are no sensitive land uses such as hospitals, schools, places of worship or community facilities which could be affected. There is no loss of greenfield land.

The remediation works would not directly use up any important, high quality or scarce natural resources. It would not impact upon natural resources in the adjacent River Clyde. The site adjoins the Inner Clyde Special Protection Area (SPA) which is an internationally designated conservation site, and the application site therefore falls within the description of a sensitive site as defined in the Regulations. The qualifying interest of the SPA is overwintering redshank, which roost and feed close to the development site. The works will result in some limited and temporary disturbance to the redshank in the form of visual and noise disturbance. There will be no work carried out or physical alterations within the SPA boundary which would directly impact on the natural habitat of the birds. However, although the works are not directly impacting on the natural habitat of the river and foreshore, they will be within 300m of the boundary of the SPA and Scottish Natural Heritage confirm that activities within this distance could potentially disturb the wintering redshank in terms of noise and visual impact.

The SPA is also designated as a Site of Special Scientific Interest (SSSI) and a RAMSAR site. The RAMSAR designation is for wetlands of international importance and coincides with the SPA boundaries. The SSSI designation is due to the site being the most northerly of Britain's large west coast estuaries used by migrating birds (not just redshank), and is of national importance for its populations of wintering wildfowl and waders. The foreshore areas support a variety of typical estuarine plant communities with good examples of transitions from saltmarshes to brackish swamps and grassland periodically inundated with sea water. They also provide the largest example in West Central Scotland of grazed and ungrazed upper saltmarsh with relatively uninterrupted transitions to swamp and grassland vegetation. One of the most extensive areas of saltmarsh, covering approximately 76 hectares, is found on the north shore of the River Clyde between Milton Island and Dumbarton, which includes the western shores of the Exxon site. However the main remediation works are at least 350m from the SSSI at Milton Island and will not impact on the SSSI. The remediation proposed around the basin perimeter is close to the protected areas (10-20m) but a hard man-made edge comprising either steep revetments or quay walls separates the works from the foreshore and there will be no physical alterations to the protected areas. Instead the main impacts of the activities relate to visual and noise disturbance.

The site contains two listed buildings: Dunglass Castle, and the Henry Bell obelisk which are both B-listed. Dunglass Castle stands on an irregular rocky cliff by the River Clyde and has a round tower probably dating from the 17th century as well as some more modern additions. It is in a poor condition at present. The obelisk memorial to Henry Bell (engineer) stands in the north-east corner of the enclosure of the castle. The remediation works will not have any impact on the structures or their setting.

### **3. Characteristics of the Potential Impact**

The potential impacts of the proposal on the site and surrounding area have to be assessed in terms of the extent, trans-boundary nature, magnitude and complexity, probability and duration, frequency and reversibility. As assessed above, the main potential impacts of the site relate to visual and noise disturbance of the redshank during the remediation works regardless of the preferred remediation technique. The site is not adjacent to a heavily populated area and the impacts of the works such as noise, dust, vibration and vehicular movements would be relatively localised in nature and not significantly impact on people receptors due to the location of the works within the interior of the site and the in-situ remediation which will limit vehicle movements outwith the site. The receptors for consideration are therefore the redshank population and the wintering wildfowl and waders which all inhabit the Inner Clyde SPA/SSSI/Ramsar site.

The proposal is contained within the boundaries of the site and there is no potential for a trans-boundary impact on the Inner Clyde SPA, or impacts with magnitude and complexity. There are no risks that the protected sites or habitats will be physically altered by the remediation works. Any excavations will be behind the quay walls and revetments within the interior of the site. However, the works are within 300m of the SPA boundary and SNH have advised that activities within this distance could potentially disturb the wintering redshank through visual and noise disturbance. The SSSI is designated for other bird species in addition to its non-breeding redshank population, and an assessment using the 300m threshold will cover the locations of other noted bird species as well.



The impacts of visual and noise disturbance will occur intermittently across the site and be phased across the site for a temporary period of approximately two years until the soils are decontaminated. Any negative impact would therefore have a short-term and reversible effect. There are a number of mitigation measures which have been employed on other development sites operating within 300m of the Inner Clyde SPA such as visual screens and limiting times of noisy activities. Further to a robust assessment to inform the remediation work along with a Habitat Regulations Assessment prior to the determination of any planning application, appropriate measures could be applied through planning conditions.

### **CIRCULAR 3/2011**

Paragraph 52 of the circular gives advice as to when EIA is required for Schedule 2 developments. It states that there is not a universal test but that each site should be considered on a case-by-case basis and that “the fundamental test to be applied in each case is whether that particular type of development and its specific impacts are likely, in that particular location, to result in significant effects on the environment”.

The proposal is adjacent to an internationally sensitive site and although potential impacts have been identified in respect of visual and noise disturbance to the qualifying interest of the SPA, the scale, intensity and magnitude of these potential impacts would not result in significant environmental effects and can be addressed through the Habitat Regulation Appraisal process

### **CONCLUSION**

Under the Regulations the proposal is a Schedule 2 development by reason of it meeting the criteria listed in the Schedule. On the basis of the Schedule 3 selection criteria and the guidance contained in Circular 3/2011 it is considered that the proposal is not likely to give rise to significant environmental impacts.

### **SCREENING OPINION**

Having regard to the relevant Regulations and the advice given in Circular 3/2011, West Dunbartonshire Council considers that **the proposed development does not require an Environmental Impact Assessment.**

Signed:



Dated: 2 May, 2017

Pamela Clifford  
Planning & Building Standards Manager  
West Dunbartonshire Council

### **RIGHT TO REQUEST SCREENING DIRECTION**

If the applicants are aggrieved by this decision, they are entitled to request a screening direction from Scottish Ministers. The procedures for so doing are set out in Regulation 7 of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011.



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Nick Townsend  
Associate Director/Ground Risk & Remediation  
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Tyndall St  
Cardiff  
CF10 4 BZ

Date: 25 January 2019

Dear Mr Townsend

**Former Bowling Terminal Bowling West Dumbartonshire**

**SCREENING OPINION UNDER PART 2, REGULATION 11 OF THE MARINE  
WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND)  
REGULATIONS 2017 (AS AMENDED)**

Thank you for your correspondence received on the 19 December 2018 with regard to sea wall repairs, connection of new drainage system to existing outfall and, to facilitate remediation works, installation of replacement sheet pile wall including piling and temporary works within the foreshore.

In considering your screening opinion request, the Scottish Ministers have consulted with Scottish Natural Heritage ("SNH") as to their view on whether the proposed works are an Environmental Impact Assessment ("EIA") project. A copy of SNH's response is enclosed for your review (Appendix 1).

The Scottish Ministers consider the works to fall under paragraph 10(m) of Schedule 2 of The Marine Works (Environmental Impact assessment (Scotland) Regulations 2017 (as amended) ("the 2017 MW Regulations"). The threshold for sea defence works, as described in column 2 of Schedule 2 of the 2017 MW Regulations, is "all works", thus the proposed works exceeds this threshold.



When making a determination as to whether Schedule 2 works are an EIA project, the Scottish Ministers must take into account the selection criteria set out in Schedule 3 of the 2017 MW Regulations as are relevant to the works. In this regard, the Scottish Ministers have considered the following:

### **1. Characteristics of the works**

The proposed works forms part of a wider programme of site remediation at the former Bowling Fuel Terminal. West Dumbarton Council considers that the proposed development does not require an Environmental Impact Assessment.

The proposed works are for 4500 m<sup>2</sup> of remediation work to meet planning requirements for an existing site which will include 173 m of a vibro sheet pile wall to enable the removal of the existing wall.

If marine mammals are observed in proximity to the site, piling works will be suspended until the mammals have moved away.

Based on the information provided and advice received, the Scottish Ministers are of the opinion that the characteristics of the works are unlikely to have significant effects on the environment and is similar to what already exists.

### **2. Location of the works**

The site is immediately adjacent to the Inner Clyde European Protection Area (SPA), Scottish National Heritage (SNH) are of the view that the installation of the vibro sheet pile wall will not require to be made subject to EIA. However, the proposed work will be subject to a Habitats Regulation Appraisal. The site is also adjacent to an SSSI and a RAMSAR site.

Sheet piling is proposed to take place in the summer months to avoid impacts to wintering redshanks.

Based on the information provided and the advice received, the Scottish Ministers do not have any significant concerns regarding the environmental sensitivity of the geographical areas likely to be affected by the proposed works.

### **3. Characteristics of the potential impact**

The main potential impact is to wintering redshanks but this will be avoided due to the works being undertaken in the summer months.

There is the potential of noise disturbance to marine mammals but with vibro piling being undertaken the noise disturbance is reduced.

In view of the findings in sections 1 and 2 above, the Scottish Ministers are content that the proposed works are unlikely to significantly affect the environment and that any potential impacts can be effectively addressed and mitigated by the marine licence application and determination process.

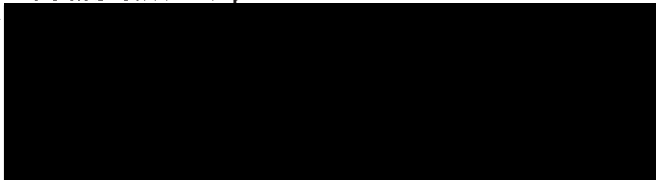
The Scottish Ministers are therefore of the opinion that the proposed works are not an EIA project under the 2017 MW Regulations and EIA is not required to be carried out in respect of the proposed works.

If you increase, alter or extend the proposed works, you are advised to contact Marine Scotland – Licensing Operations Team to confirm the screening opinion is still valid.

A copy of the screening opinion has been forwarded to West Dunbartonshire Council planning department for their information. The screening opinion has been made publicly available through the Marine Scotland Information webpage:  
<http://marine.gov.scot/marine-applications>.

Thank you for consulting with us on this matter.

Yours sincerely



Katie Mac Donald Menzies  
Licensing Operations Team  
Marine Scotland

## Macdonald Menzies K (Katie)

---

**From:** Dave Lang <Dave.Lang@nature.scot>  
**Sent:** 16 January 2019 13:08  
**To:** Macdonald Menzies K (Katie)  
**Subject:** RE: FW: Esso Petroleum Company Ltd – Installation of a sheet pile wall – Bowling, West Dunbartonshire – Consultation on Request for Screening Opinion – Response Required by 05 February 2019

Dear Sir/Madam,

The proposed installation of a sheet pile wall at this location forms part of a wider programme of site remediation at the old Esso Petroleum Company site in Bowling, West Dunbartonshire for which the applicant is also in the process of seeking planning consent from West Dunbartonshire Council. This wider programme of works has been deemed not to require to be made subject to Environmental Impact Assessment under the Regulations – a decision with which Scottish Natural Heritage agrees.

This being the case, SNH are of the view that the installation of the sheet pile wall to which this Marine Licence relates will not require to be made subject to EIA either.

That said, as is made clear by the applicant in their submission, the proposed side of the works is immediately adjacent to the Inner Clyde European Special Protection Area (SPA) classified to protect and internationally important population of over-wintering redshank. As such, the planning application to West Dunbartonshire Council does require to be made subject to a Habitats Regulations Appraisal (HRA) in order to fulfil the requirements of the Conservation (Natural Habitats, &c.) Regulations 1994 as amended (the "Habitats Regulations").

This will also be the case with if a Marine Licence application is required.

If determining a licence application for these works, Marine Scotland as a competent authority is required to consider the effect of the proposal on the SPA before it can be consented (i.e. to undertake a Habitats Regulations Appraisal or 'HRA'). There is also a statutory requirement to consult SNH as part of this process. The SNH website has a summary of the legislative requirements at <http://www.snh.gov.uk/docs/A423286.pdf>

I would therefore request clarification from you as to whether you intend to submit a subsequent consultation to us on the licence application itself once EIA screening has been determined, in order that these legislative requirements can be fulfilled.

I look forward to hearing from you with regard to this matter in due course - but hope that, in the interim, the advice above allows you to progress your EIA screening determination.

Yours,

---

**Dave Lang | Operations Officer**

Scottish Natural Heritage | Caspian House | Mariner Court | Clydebank Business Park | Clydebank | G81 2NR | t: 0131 314 6761

Dualchas Nàdair na h-Alba | Taigh Caspian | Cùirt a' Mharaiche | Pàirc Gnothachais Bhruach Chluaidh | Bruach Chluaidh | G81 2NR

[nature.scot](http://nature.scot) – Connecting People and Nature in Scotland – [@nature\\_scot](mailto:@nature_scot)

**From:** [Katie.Macdonaldmenzies@gov.scot](mailto:Katie.Macdonaldmenzies@gov.scot) [<mailto:Katie.Macdonaldmenzies@gov.scot>]  
**Sent:** 15 January 2019 15:32

To: STRATHCLYDE\_AYRSHIRE

Subject: FW: Esso Petroleum Company Ltd – Installation of a sheet pile wall – Bowling, West Dumbartonshire – Consultation on Request for Screening Opinion – Response Required by 05 February 2019

Dear Sir/Madam,

**THE MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017 (AS AMENDED) (“the EIA Regulations”)**

**CONSULTATION UNDER PART 2, REGULATION 10(5) OF THE EIA REGULATIONS**

Esso Petroleum Company Ltd – Installation of a sheet pile wall – Bowling, West Dumbartonshire

Esso Petroleum Company Ltd have submitted an application for a marine licence. The Scottish Ministers consider that the works may require an EIA under the above regulation and have therefore decided that the works require a screening opinion to be adopted under regulation 10(1) of the EIA Regulations.

I should be grateful if you would please review the information found at <http://marine.gov.scot/ml/installation-sheet-pile-wall-bowling-west-dumbarton> and, as required by regulation 10(5) of the EIA Regulations, provide your view as to whether the above proposed works are an EIA project as defined in the EIA Regulations.

In accordance with regulation 10(6) of the EIA Regulations, please ensure you provide your view no later than 05 February 2019 (3 weeks from the date of consultation).

Please be aware that West Dumbarton Council have already screened the works under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulation 2011 and concluded that the works do not require an EIA. SNH may have previously provided advice on these works which may inform a response to this consultation.

Kind regards,

Katie Mac Donald Menzies  
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## **SCREENING OPINION**

### **The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017**

- Site: Former Esso Oil Depot, Dumbarton, Road, Bowling, G60 5AF
- Proposal: Proposed modification to application DC18/013 to replace the approved sheet pile wall with a rock armour revetment along the Centrefield frontage
- Date of Screening Request: 14<sup>th</sup> July 2020

#### **1. Introduction**

A Screening Opinion has been requested in respect of a prospective planning application for a proposed modification to a previous consented application (DC18/013) to replace the approved sheet pile wall river defence scheme with a rock armour revetment along the Centrefield frontage aspect of the wider redevelopment site.

Under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, proposals are screened to determine whether they fall within one of the types or scales of development which would require an Environmental Impact Assessment (EIA). In screening an application, consideration is given to whether the proposal would fall into any of the categories set out in Schedules 1 or 2 of the Regulations.

Schedule 1 of the Regulations lists types and scales of development for which an EIA will always be required. Schedule 2 of the Regulations lists types and scales of development for which an EIA might be required, subject to assessment under Schedule 3. Consideration of these proposals against the relevant criteria is set out in more detail in Section 2 below.

#### **Site Description and Site History**

The site sits along the northern bank of the River Clyde and forms part of the wider vacant land comprising of the former Bowling oil terminal. The Bowling oil terminal was developed in the 1920s and was decommissioned in 1997. The wider site was cleared in 2001 and it has largely been unused since that date. Much of the wider site was built upon reclaimed land, which necessitated the formation of a river wall, some of which still exists today. The facility, which was previously occupied by Esso Petroleum Company, was at its largest and most active during the 1960s and early 1970s with a wide variety of petroleum products being processed, stored and distributed.

The specific application site subject to the proposed works is situated along the southern river frontage and is located within the Centrefield area of the former Bowling oil terminal. The site covers an area of approximately 0.37 hectares and extends to a length of circa 250m beginning from the rock outcrop in the east to the 'Basin' in the west. The western section is formed by approximately 175m of sheet piles, with the remaining frontage comprising a revetment, variably formed by a mixture of rock armour and concrete faced rock sections that formed part of the original historic river wall. This site is both adjacent to and partly overlaps the European designated Inner Clyde Special Protection Area where the overwintering redshank are the qualifying interest. This same area is also a designated Ramsar site and a Site of Special Scientific Interest (SSSI).

#### **Planning Background and Context of application DC18/013**

The original proposal to install a replacement sheet pile wall formed as part of a wider remediation scheme, which was granted planning permission in 2019 under DC18/013 (referred



hereafter as the “original” consent). Prior to the submission of the original application, this project was screened in May 2017 against the ‘2011 Regulations’ and a Screening Opinion response provided by the Planning Authority at this time confirmed that an EIA was not required. The scheme, including the replacement sheet pile wall along the Centrefield Flood Defence (CFD) frontage, was also screened in 2018 under separate cover to obtain a Marine License from Marine Scotland. The Scottish Minister came to the view on 25/01/2019 that the proposed works were not EIA project under the 2017 Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

The original permission granted relates to the remediation of the remaining areas of the Bowling site where residual hydrocarbon impact are present from historical operations. For context, the remediation is proposed in anticipation of the future sale of the Bowling site to West Dunbartonshire Council to make the whole site suitable for generic commercial end use (and is conditional upon achieving the sale). The current proposals still forms part of a wider remediation works of the former fuel distribution terminal. Consequently, the wider scheme remains the same and it is only the design solution along the CFD frontage that differs and which forms part of the current EIA Screening Opinion.

#### Proposals and Nature of Work (Modifications to application DC18/013)

The works as consented under DC18/013 comprised of the installation of a new sheet pile along the frontage of the existing sheet pile wall. The wall was intended to facilitate unhindered access and allow the complete excavation and subsequent remediation of hydrocarbon impacted soils adjacent to the wall which failed which failed the agreed site remediation criteria. The original sheet pile wall would have been demolished/removed during the excavation works. No works were proposed to the remaining river frontage to the east of the sheet pile wall.

Following a subsequent design review, a rock armour revetment solution along the Centrefield frontage is now the chosen preferred option by the applicant. Essentially, the proposals represent a change in design solution along the CFD frontage and the amended works can be broken down into two parts:

- *Excavation of the existing revetment and removal of the sheet pile wall*
- *New rock armour revetment wall.*

As outlined above, the amended scheme comprises the demolition and excavation of the existing revetment and the removal of the existing sheet pile wall with replacement by a new rock armour revetment. The proposed new revetment will extend the full length of the southern CFD river frontage and tie into the existing rock armour present further along the Basin. The proposed new revetment will extend approximately 250metres in length in comparison to the previous consented scheme (this is approximately 77 metres longer in length due to the rock armour solution extending into the Basin). The proposed works also includes a small amount of additional excavation to the south east section of the frontage to what was previously screened. A small strip of the revetment wall extends just beyond the red line boundary of the original planning consent; DC18/013. The total area which is outwith the original red line boundary development site is approximately 0.07 ha.

Excavation and remediation of the CFD will progress in a north to south direction, such that the majority of the CFD area will likely have been remediated and backfilled prior to commencement of the revetment works. It is then proposed that the remediation contractor will undertake the revetment works using a sectional approach, whereby on completion of each section being excavated, the construction of the revetment commences. Excavation will be undertaken on a falling tide to minimise mobilisation of contamination and sediment to the River Clyde and sensitive ecological areas. The proposed works employ the same criteria and treatment protocols as agreed in the Remediation Strategy approved as part of application DC18/013. In addition to

the excavation of materials, in order to permit construction of the revetment and to deliver the revised solution with a tier in to existing sections, additional areas will now be subject to excavation. This partly underpins the reasoning for progressing with the revised solution as the applicant is of the view that the removal of these further impacted materials will provide further certainty that, post remediation, there is no significant hydrocarbons impacted source remaining. In this regard, it is their opinion that the revised solution is considered to provide greater environmental betterment than original envisaged, as under the existing strategy and sheet pile wall approach, there is no driver for remediation of these areas.

#### Assessment in Relation to Schedule 1

The proposed development and site is not of a type/scale listed in Schedule 1 of the Regulations and therefore does not automatically require an EIA. It is therefore necessary to assess the proposal in terms of the Schedule 2 criteria.

#### Assessment in Relation to Schedule 2

The development types listed in Schedule 2 are developments where an EIA may be required under specific circumstances or characteristics. This is typically where a development is to be carried out in a sensitive area or meets/exceeds a size threshold listed in the Schedule.

In terms of criterion b) of Schedule 2, there are two paragraphs within the criteria of development type 10 'Infrastructure Projects' (Part G and M) which could be deemed as being applicable to the development. The threshold for sea defense works as described in column 2 of Schedule 2 of the 2017 EIA Regulations is 'all development' and as such this in itself triggers the requirement for a consideration of the development in relation to Schedule 3 criteria. In addition, part of the site coincides and partly overlaps with aspects of the:

- Inner Clyde Special Protection Area (SPA)
- Inner Clyde Ramsar Site
- Inner Clyde Site of Special Scientific Interest (SSSI)

Based on a combination of the above, the revised development proposals are therefore a Schedule 2 development.

It is important to note that Schedule 2 developments do not automatically require an EIA to be submitted and in this case includes the fact that the development works extend to or are located within a sensitive areas. Rather, Schedule 2 developments mean consideration has to be given of the likelihood to which that the proposal will have significant effects on the environment by virtue of factors such as nature, size and location. Determination is made using the selection criteria set out in Schedule 3 of the 2017 Regulations and the advice and guidance contained in the relevant circular. The consideration of these is set out below to establish whether or not an EIA will be necessary.

#### Assessment in Relation to Schedule 3

Schedule 3 of the Regulations provides selection criteria for the screening of Schedule 2 developments. Circular 1/2017 indicates that there are no rigid thresholds providing a universal test of whether or not an EIA is required. The proposal must be considered on a case-by-case basis by virtue of factors such as its nature, size or location. The fundamental test to be applied in each case is whether that particular type of development proposed and its specific impacts are likely, in that particular location, to result in significant effects on the environment.

## 2. Characteristics of Developments



This section considers criteria such as the size of development, cumulation with other developments, use of natural resources, production of waste, pollution and nuisances, the risk of accidents as well as risk of the development to human health.

In the first instance, weight requires to be given to the fact the current proposals relate specifically to an alternative design solution for the revetment area of an already wider consented remediation strategy (DC18/013) for this brownfield site. Whilst the revised design solution for the CFD will be extending in length, appearance and coverage than when compared to the previously consented arrangements for the same area, the scale of the revised developments proposals are not of an extent for it to have wide-ranging or significant environmental effects. Rock armour constitutes the existing revetment treatment for much of the surrounding shoreline and these proposals will be in-keeping with this and integrate to the existing sections both within the site and further along the Basin offering continuity and consistency. Giving due regard to the scale and nature of these proposals and the site context which is currently made up of various forms of revetment treatments (including existing rock armour), it is not considered that the revised proposals for this area would be out of scale for the existing environment. Equally, it is not considered that the revised proposals by virtue of their scale, mass, presence or arrangement have would have a significant effect in this regard.

The proposals are not a stand-alone development in their own right and they require to be understood and considered within the context of the aforementioned approved remediation application. This specific proposal forms part of and will be delivered through the already consented wider scheme for the remediation of the site. A revetment solution (sheet piled walls) has already been approved as part of this previous permission and as such it is not considered that the revised revetment proposals will have any consequential impacts upon the overall delivery of the remediation strategy for the site. It is worth noting as part of this that the wider site is identified as a redevelopment site under the City Deal projects and is subject to a current separate planning application in with the Council (DC20/088). A screening and scoping opinion for this development has already acknowledged a cumulative impact and this application is accompanied with a full EIA. It is not considered that this particular revised development will have or lead to any further cumulative impact in its own right.

The land itself is brownfield (former oil depot and terminal) and there are no natural resources on the site which will be utilised because of this development. The works would not directly use up any important, high quality or scarce resources and they would not impact upon natural recourses in the adjacent River Clyde. Equally, the proposed works do not indicate any significant risks of accident with reference to substances or technologies and noting the nature of the development it is not considered that it will unduly contribute to risks to human health. Whilst construction noise and some degree of waste at construction stage are inevitable consequences given the nature of the works, these matters can be reviewed and assessed as part of the planning application. Any negative impacts would be for a limited duration, intermittent and be a temporary nature and on this basis, it is not considered that there would any significant effect in this regard.

The site is subject to significant tidal fluctuations and so the risk of cross contamination and pollution into the Clyde remains relevant for the revised proposals. In particular, the mobilisation of hydrocarbon contamination and sediment into the River Clyde still represent a potential significant effect and these matters merit consideration.

In response to contamination matters, the developer has proposed a suite of mitigation measures which are determined to offer protection of risk to the River Clyde and groundwater. These adopt the same principles as those granted through permission DC18/013 in that all works will be undertaken through a methodology and approach which seeks to minimise mobilisation:

- *Works undertaken on a falling tide and using sectional approach.*
- *Containment and absorbent booms will be deployed as a precautionary measure.*

- *Monitoring and river water quality sampling to be undertaken during the excavation and construction of the new revetment.*

As part of this, the developer has confirmed that the proposed works will employ the same risk based criteria as agreed by the Council and conditioned under application DC18/013. As outlined in earlier sections, in order to facilitate the construction of the revetment and to deliver the holistic solution with a tie-in to existing sections, additional areas will now be subject to excavation beyond those proposed through the earlier permission. As a result, this means that the removal of these impacted materials will provide further certainty that, post-remediation, there is no significant hydrocarbon impacted source remaining. An updated/addendum to the approved Remediation Strategy for DC18/013 will be provided as part of the subsequent planning application to capture the overall approach including the scope and nature of the additional excavation to be undertaken/ .

Although there is now a risk that pollutants could enter the sensitive areas (SPA, Ramsar, SSSI) given the change in the location of the works, a Habitats Regulation Re-Appraisal is also to accompany the forthcoming planning application and details of the intended mitigation measures to safeguard these areas have been included as part of the EIA Screening Opinion. It is also noted that from dialogue with Marine Scotland that the revised design solution represents a material change to the previously granted license and therefore a new marine license application is required. Marine Scotland have advised that this new license would be required to demonstrate suitability of rock armour for the purpose of containing the contamination and ensuring any leaching of contaminants into the Clyde occurs before a marine license application can be determined.

Fundamentally, weight is given to the fact the overarching remediation strategy and approach for the site is not changing despite the revised proposals for the sea defence scheme of the wider programme of works. Through a combination of factors including the conditions secured through the required SEPA license, the conditions already in place as part of application DC18/013, the requirement for a new Marine Scotland License and the opportunity to impose further conditions through the subsequent planning application, these mechanisms collectively provide degree of certainty and comfort to limit impacts. More specifically, all of these provisions will ensure that mitigation and safeguarding continues to be in place so that any potential impact in terms of risks of mobilisation of contamination is not significant or capable of having significant effects.

Having examined the criteria above, it is viewed that the characteristics of the development/proposed works do not raise significant effects on the site or surrounding area.

### 3. Location of Development

The sections focuses on the location of the development which needs to be considered in respect of its “environmental sensitivity” i.e. the existing land uses, natural resources in the area and the natural environment. Paragraph 37 of the Planning Circular Guidance (2017) states that the relationship between a proposed development and its location is a crucial consideration when applied to ‘sensitive areas’ which is particularly relevant in this instance.

As previously outlined, the revised proposal now means some modest sections of the proposed works venture into ‘sensitive areas’ as defined by Regulation 2(1) of the 2017 Regulations. As part of the EIA Screening Opinion submission, the applicant has provided detailed plans and drawings to demonstrate the extent and nature to which the revised proposals extends into these sensitive areas. This includes the following conclusions:

- *Area of Revetment works overlapping SPA/SSI: 0.0309 Ha (398sqm)*
- *Area of Revetment Footprint overlapping SPA/SSI: 0.0134 Ha (134sqm)*

- *Area of Revetment Works Area overlapping Ramsar site: 0.0051 Ha (51sqm)*
- *Area of Revetment Footprint Overlapping Ramsar site: 0.0002 Ha (2sqm)*

In the first instance, weight is given to the fact that much of the specific areas within the Inner Clyde SPA/SSSI/Ramsar site where the works will now be taking place constitute previously disturbed and modified ground and this has been evidenced by the developer. Alongside a number of technical reports, the developer has provided a series of detailed photographs packs which documents the current appearance of the sensitive areas where the revised development works are proposed. From review of these, it is clear that the physical characteristics and appearance of the sensitive areas relevant to the current works either constitute existing sheet pile walling (western stretch of the site), existing rock armour (central stretch of the site) or the original river wall (eastern stretch of the site).

Further to this, the supporting technical reports provided demonstrate that parts of the Inner Clyde SPA/Ramsar/SSSI whilst still constituting a 'sensitive area' and forming part of these designated sites, have been subject a number of historic semi-intrusive works including excavation and repairs as well as those undertaken to install a Oleophillic Bio Barrier (OBB) in the past. In this regard, much of the impact on the physical make-up, appearance and character of this habitat at this particular location has already taken place. The fact that this ground has already been disturbed, modified and altered and is in essence made up of existing various river wall defence treatments is an important factor as part of this assessment. It is considered that based on this evidence, the physical impact of the revised revetment works and proposals will not have significant effects on the character and integrity of these sensitive areas and there will be no net loss of available habitat. This position is subject to mitigation being in place as set out in the preceding paragraphs below.

Scottish Natural Heritage (SNH) have provided both pre-application feedback to these revised proposals and a further more formalised response following the submission of the EIA Screening Opinion. Crucially, they have advised that whilst they recognise that the revised proposals and works now directly enter the SPA/SSSI/Ramsar site, the considerations and mitigation measures largely stay the same as those proposed before in order to ensure no adverse impact on the sensitive areas. Put simply, SNH have stipulated that for any development within 150m of the SPA boundary the same hierarchy of mitigation should be applied as per the original permission DC18/030.

The developer has made consistent reference to the same hierarchy of mitigation measures conveyed by SNH as part of this EIA Screening Opinion response for the proposed development, demonstrating recognition to the fact that these measures will still need to be in place for the revised works. As part of this, they have also set out further specific mitigation measures to be deployed during the construction phase of the works in the interest of redshank, [REDACTED] and bats, all of which are protected species which inhabit the area. The developer has also demonstrated their awareness for separate SNH consents including application for consent for works within a SSSI and an amendment to the European Protected Species Mitigation License [REDACTED] [REDACTED] due to changes to the revetment works. Further to all of these mitigation measures and licenses being in place alongside the submission of an updated Habitat Regulations Re-Appraisal being provided as part of any planning application (as advised by the applicant), appropriate measures to safeguard the integrity of the SPA/SSSI/Ramsar site would be in place. Most of these could be applied through appropriately worded planning conditions and these measures would ensure the effects on these sensitive areas and protected species are not significant.

As one final point with regards to the ecology and the sensitive area considerations, it is noted that SNH have advised throughout the pre-application dialogue that the change from a planned sheet pile sea wall at Dunglass to a rock armour revetment solution is a potentially beneficial one in terms of the impacts of the birds of the Inner Clyde. These benefits will firstly come through during the construction phase given the revised proposals remove much (if not all) of the need for

noisy sea front piling activities that were associated with the original revetment works. This in turn would limit any risks for noise disturbance for the redshank amongst other bird species. Further to this, once complete, it is also considered that the rock armour revetment solution will likely create a more appropriate ecological habitat for birds and that this design offers better opportunities for species who use the area.

Particular weight is given to SNH's most recent position as set out to this EIA Screening Opinion where they state that they believe there will be lower net impacts to the SPA overall as a result of the revised proposals. They go on to confirm that as there will be no net loss of available habitat (if anything more) this means they are content as a future statutory consultee to rely on the process of Habitats Regulations Appraisal alone to deal with the natural heritage impacts of this proposal, without a wider Environmental Impact Assessment being required. Whilst the fact that the works potentially represent an improvement and betterment in this regard cannot be relied upon in isolation as part of these current EIA considerations, these factors do contribute to promote the position previously outlined that the proposed revised works will not significantly affect the overall integrity and character of this area of SPA/SSSI/Ramsar site.

In terms of other relevant location based considerations, there are no sensitive land uses such as hospitals, schools, places of worship or community facilities which could be affected. There is no loss of greenfield land. The proposed development would not directly use up any important, high quality or scarce natural resources and it would not impact upon natural resources in the adjacent River Clyde.

Bowling oil terminal contains two category B listed buildings; Dunglass Castle and the Henry Bell obelisk and it is also recognised from the previous planning history that the site is subject to potential archaeological remains. This EIA Screening Opinion submission is supported by a re-appraisal and addendum to the Cultural Heritage Desk Based Assessment undertaken for planning application DC18/013. This has re-assessed a 200 meter buffer around the specific area of works and considered all built, cultural and archaeological assets and features within this. The findings confirm that the revised revetment solution whilst marginally closer to some features (e.g. Dunglass Castle) will still not have any direct impact on these built heritage features or their respective settings. Some mitigation in terms of demarcation of these features and exclusions and standoff zones are proposed for best practice and safeguarding and these could be addressed as planning conditions.

Given the revetment area is being extended the re-appraisal has acknowledged that there may be additional areas which harbour archaeological remains, however the extent of these are unknown which is the same as was the case for earlier remediation application. The assessment provided has confirmed the need for continued archaeological mitigation and has recommended appropriate conditions to ensure the new areas are also covered by the same requirements. It is not considered that there will be any significant effect on historic or archaeological features. The mitigation proposed can be secured through appropriately worded and relatively standard planning conditions to ensure this remains the case and that all features remain protected through the construction of the proposed revetment.

Finally, noting the scale and nature of the revised revetment works, it is considered that the landscape/visual impacts of the development would be limited and that there would be no significant effect in this regard.

Having examined the criteria, it is viewed that the location of the development will have not have significant impacts upon the relative sensitive areas.

#### 4. Characteristics of the Potential Impact

As defined by the Circular, consideration of these categories is designed to help in determining whether any interactions between the first two categories (i.e. between a development and its environment) are likely to be significant. More specifically, the potential impacts of the proposal on site and the surrounding area have to be assessed in terms of the extent, transboundary nature, magnitude and complexity, probability and duration, frequency and reversibility.

The site is not adjacent to a heavily populated area and the impacts of the works such as noise, dust, vibration and vehicular movements would be relatively localised in nature and not significantly impact on people receptors due to the location of the works. The specific site relevant to these aspect of the works is contained in between the boundaries of the wider brownfield redevelopment site and the River Clyde and there are no potential for trans-boundary impact or impacts with magnitude or complexity.

As assessed above in the previous sub-section the main potential effects of the development are predominantly upon the designated ecology boundaries and in particular the impact of the physical workings that are now proposed within the Inner Clyde SPA/SSSI/Ramsar site. The receptors for consideration are the redshank population, the wintering wildfowl and waders and other protected species such as bats and [REDACTED] which all inhabit the Inner Clyde SPA/SSSI/Ramsar site.

In response to this, the applicant has considered the impact and proposed a series of mitigation measures, envisaged to avoid, or prevent significant adverse effects on the sensitive areas and environment. The circular outlines that the Planning Authority must take this information into account in reaching a screening opinion and these have all been carefully considered as part of this response.

It is considered that whilst the proposed revised works will likely lead to potential irreversible outcomes in terms of the physical changes to areas located within the Inner Clyde SPA/SSSI/Ramsar site, these would not constitute significant or adverse effects. Particular weight in this regard is given to the previous works that have taken place within these areas, which have resulted in modified and disturbed ground conditions. The outcome of this is that these sensitive areas already compromise of varying forms of revetment treatments including section of rock armour. Given the proposals seek to introduce replacement rock armour, there will be no loss of available habitat within these areas and in some respects, the revised development proposal actually has the potential to improve both the amount and quality of the habitat and environment to the benefit of ecology. As part of this, it is also noted these revised proposals will remove some of the previous risks including the potential for excessive noise disturbance from the piling activity that is now no longer required. Any risks and potential effects that could occur, including those to the qualifying and protected species characterised within the area can be appropriate mitigated through the forthcoming planning application alongside the SNH and Marine Scotland License requirements.

The works and development proposed would not necessarily be permanent and could in essence be changed in the future just as the current sea defence scheme is being altered/removed and changed to make way for the current rock armour proposals. Equally, the impacts of the development would not be continuous and once the rock armour revetment is in place and all the construction to deliver it has been complete, that there would be any further significant knock on impact or effects.

There will not be significant adverse effects on any aspect of the environment during the construction and operational phases of the development. The plethora of mitigation measures proposed through the environmental re-appraisals including specific proposals for ecology, contamination and built and archaeological heritage proposed will ensure that the potential effects are mitigated and these sensitive areas are safeguarded.



In view of the findings in sections 1 and 2 above, the Council are satisfied that the proposed works are unlikely to significantly affect the environment and that any potential impacts can be effectively addressed and mitigated by the planning application and the marine license application.

## 5. Conclusion

Under the Regulations, the development falls within Schedule 2. Notwithstanding this, using the selection criteria under Schedule 3 of the EIA regulations 2017, it is considered that an EIA is not required for the amended proposal and there is not significant departure from the previous WDC EIA screening opinion that confirmed the proposed scheme is not EIA development.

The screening opinion therefore concludes that an Environmental Impact Assessment (EIA) is not required in this instance.

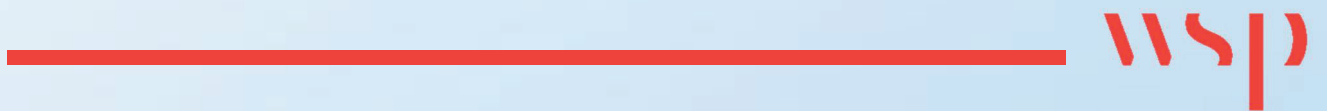
Signed: Ross Lee

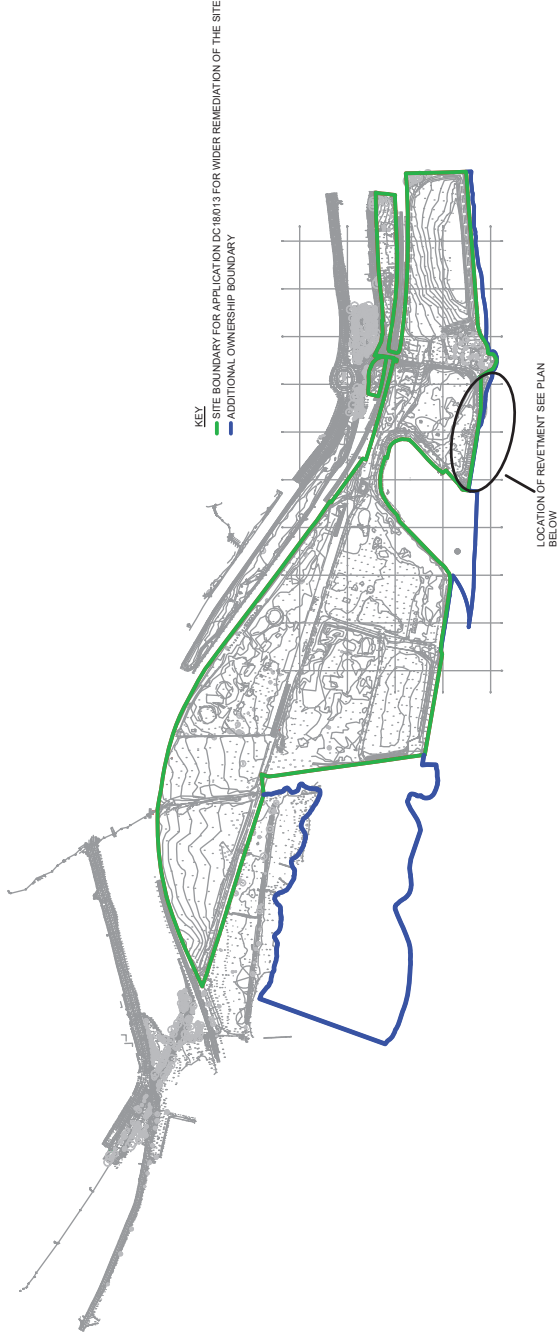
Dated: 28/07/20

Pamela Clifford  
Planning, Building Standards and Environmental Health Manager  
West Dunbartonshire Council

# Appendix B

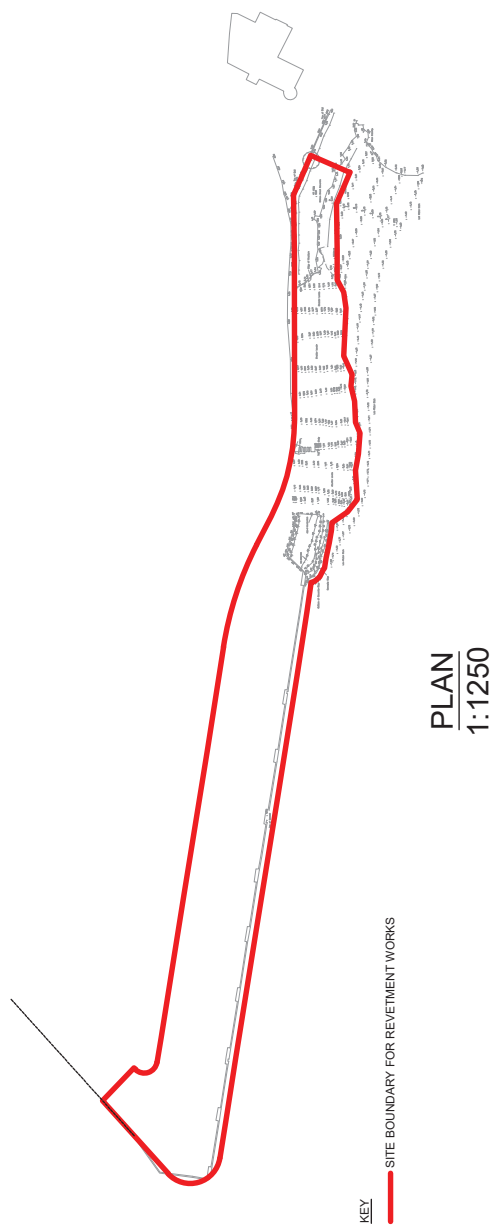
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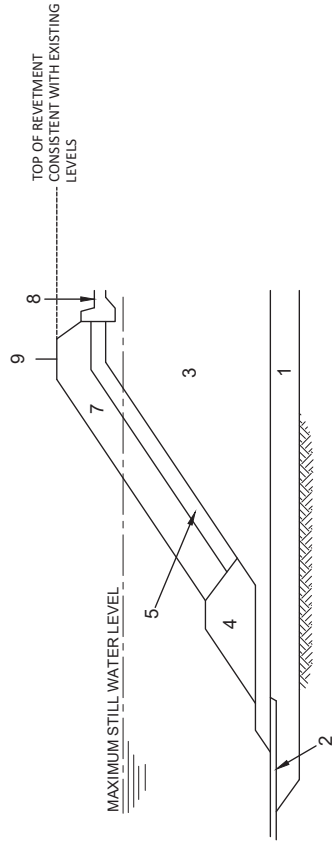
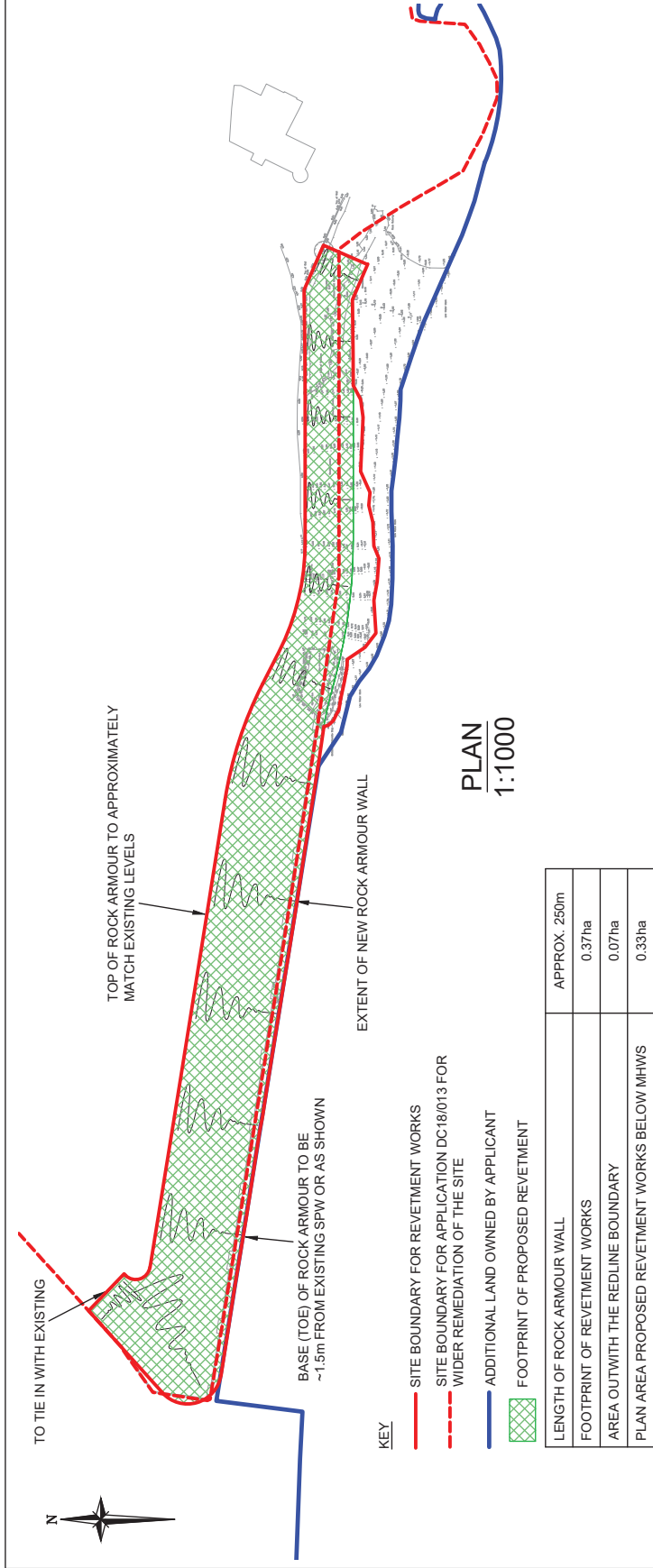


SITE LOCATION PLAN  
NTS

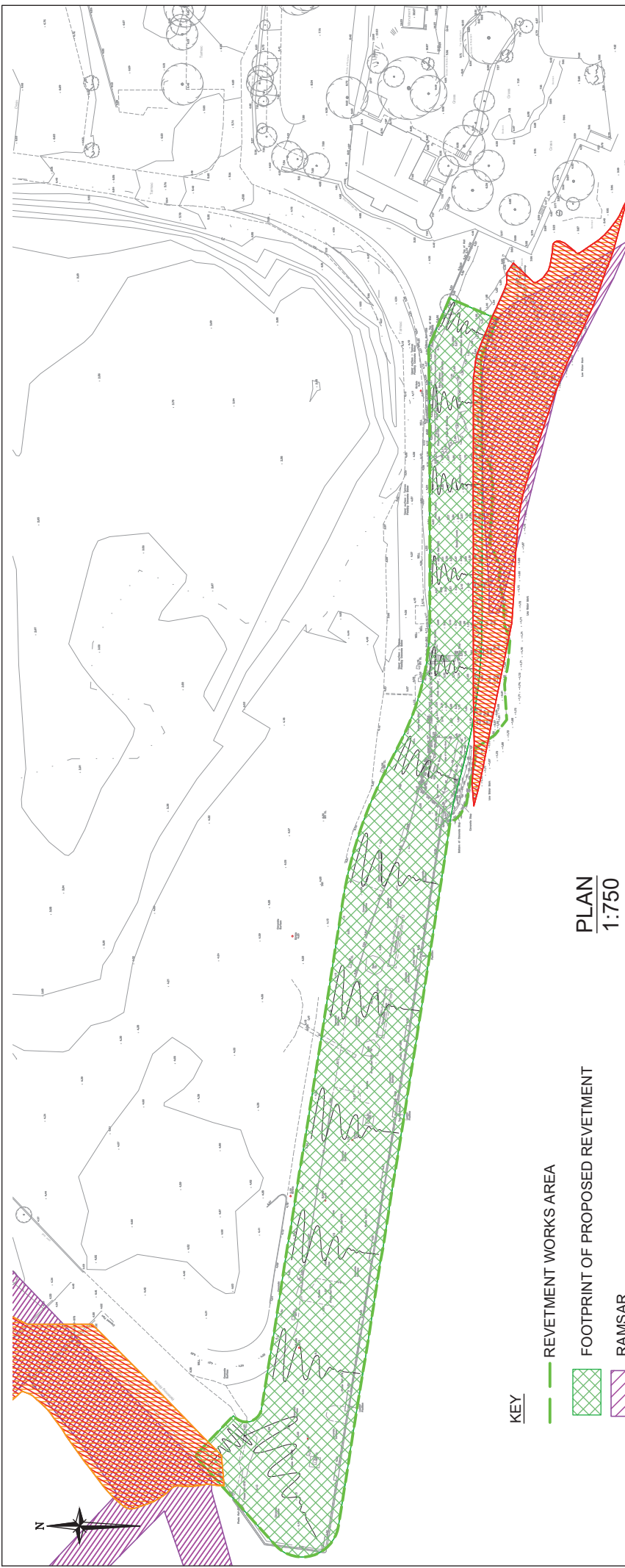
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Drawn:	NB	Checked:	NT		
Designed:	NT	Approved:			
Date:	16/06/2020	Scale: AS SHOWN	A3	Sheet:	
Project Number:	70067562	Drawing Number:	PL001	Revision:	
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Rev	Date	Description	By	Chk	App
<div><div><div>ESSE PETROLEUM COMPANY LIMITED</div><div>FORMER ESSO TERMINAL BOWLING</div></div><div><div>ILLUSTRATIVE SECTION THROUGH PROPOSED ROCK ARMOUR</div></div></div>					
Title:					
Slab/Project:					
Client:			Tel: 44-(0)1779-306200		
Kings Orchard 1 Queens Street Enfield EC2A 4HQ					
Drawn: SJ			Checked: NT		
Designed: NT			Approved:		
Date: 23/08/2020   Scale AS SHOWN A3			Sheet		
Project Number:			Revision:		
70067562			PL002		
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KEY

—

REVETMENT WORKS AREA

FOOTPRINT OF PROPOSED REVETMENT

RAMSAR

SPECIAL PROTECTION AREA

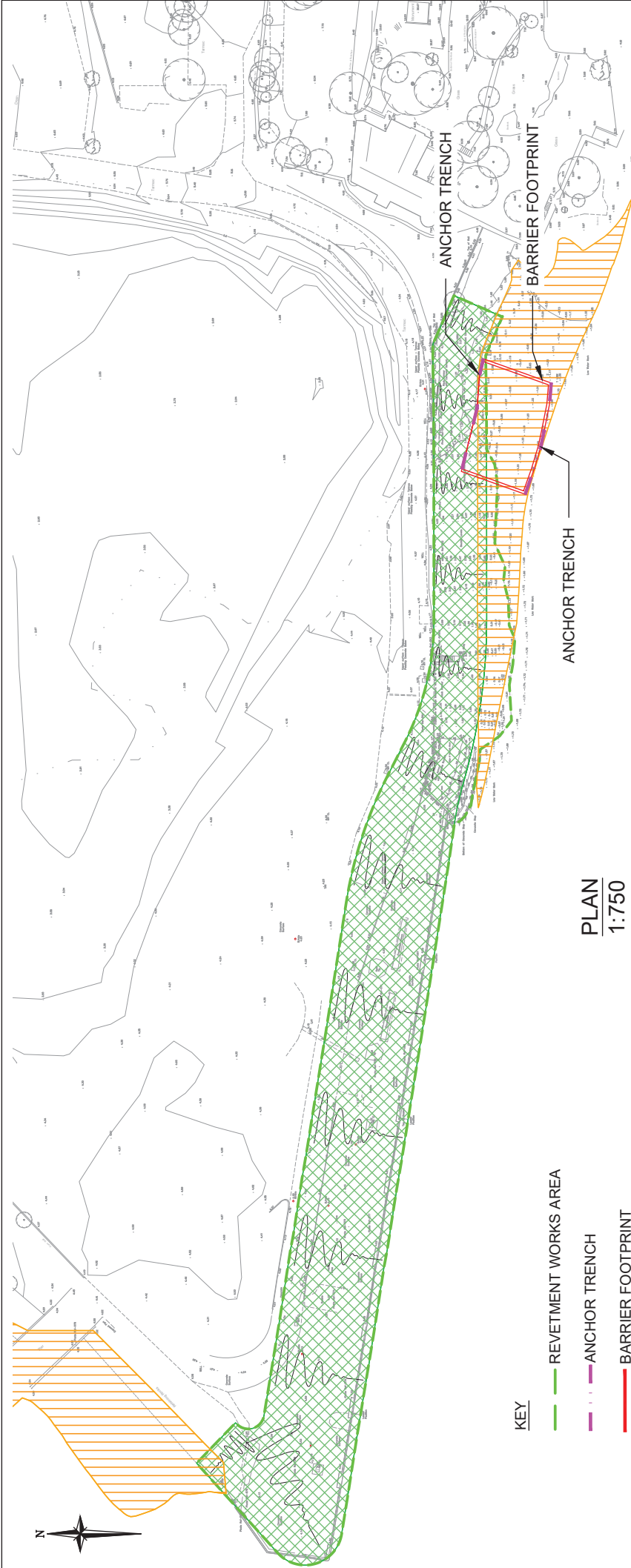
SITE OF SPECIAL SCIENTIFIC INTEREST

PLAN

1:750

Area of Revetment Works Area Overlapping SPA/SSSI	0.0309 Ha
Area of Revetment Footprint Overlapping SPA/SSSI	0.0134 Ha
Area of Revetment Works Area Overlapping Ramsar Site	0.0051 Ha
Area of Revetment Footprint Overlapping Ramsar Site	0.0002 Ha

Rev	Date	Description	By	Chk	App
<div><div><div><div><div></div><div>WSP</div></div><div><div>King's Orchard Kings Orchard Bourneville Bourneville</div><div>Client:</div><div>ESSE PETROLEUM COMPANY, LIMITED</div></div><div><div>Site Project:</div><div>FORMER ESSE TERMINAL BOWLING</div></div></div><div><div>Drawn:</div><div>SG</div><div>Checked:</div><div>NT</div></div><div><div>Designed:</div><div>NT</div><div>Approved:</div><div></div></div><div><div>Date:</div><div>20/06/2020</div><div>Scale:</div><div>AS SHOWN</div><div>A3</div><div>Sheet:</div><div></div></div><div><div>Project Number:</div><div>70067562</div><div>Drawing Number:</div><div>PL003_EIA</div></div></div><div><div>© Copyright WSP</div></div></div>					



KEY

— REVETMENT WORKS AREA

- - - ANCHOR TRENCH

— BARRIER FOOTPRINT

FOOTPRINT OF PROPOSED REVETMENT

SPECIAL PROTECTION AREA

PLAN  
1:750

Rev	Date	Description	By	Chk	App
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Kings Orchard  
Kings Road  
Bristol BS2 0HQ

Tel: 44-(0)179-306200

Client: ESO PETROLEUM COMPANY, LIMITED

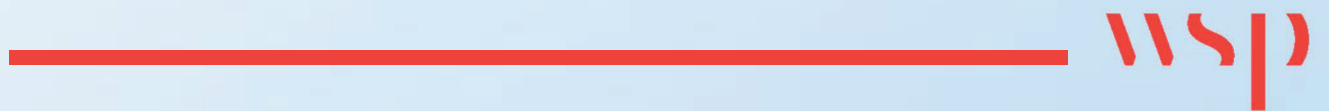
Site/Project: FORMER ESSO TERMINAL BOWLING

Title: PROPOSED REVETMENT WORKS & AREA OF OBB

Drawn: SG	Checked: NT
Designed: NT	Approved:
Date: 21/07/2020	Scale: AS SHOWN A3
Project Number	Sheet:
70067562	PL004_EIA

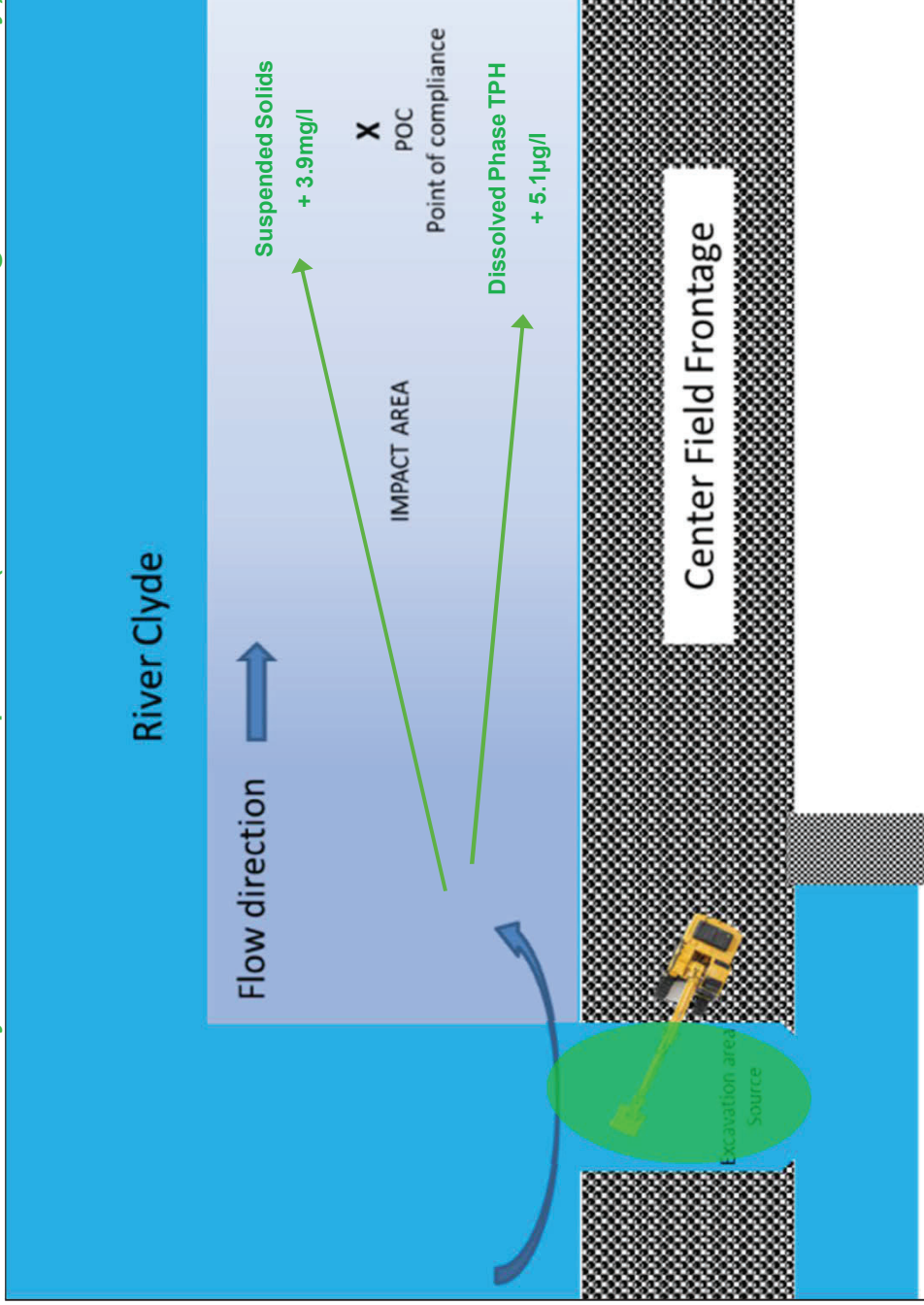
# Appendix C

## **PRELIMINARY DISPERSION MODELLING**



Particles >500µm settle within 15m of excavation

Water Quality at Point of Compliance (emission from dig face & valley)



## Centrefield River Frontage

### Dispersion Modelling

Measured values used in dispersion modelling:

- 15% - <63µm
- TPH - 27000mg/kg
- TPH Leaching - 1310mg/kg
- Worst Case Results

Average Water Depth of - 2m

Flow rate of Clyde - 0.5m/sec

Rate of Excavation - 30m<sup>3</sup>/hr

Estimated Spill - 1%





# Centerfield River Frontage

## Benchmarking of Dispersion Model Outputs

Sample Description		BASELINE WATER SAMPLES			
Date Sampled		12/02/2020	12/02/2020	06/02/2020	07/02/2020
<b>Inorganics</b>					
	BOD, unfiltered mg/l	1,75	<1	-	3,11
	COD, unfiltered mg/l	22,5	17,1	28	50,1
	Suspended solids, Total mg/l	33,3	15,6	21,8	40,4
<b>TPH Criteria Working Group (TPH CWG)</b>					
	Benzene µg/l	<7	<7	<7	<7
	Ethylbenzene µg/l	<5	<5	<5	<5
	GRO >C5-C12 µg/l	<50	<50	<50	<50
	m,p-Xylene µg/l	<8	<8	<8	<8
	Methyl tertiary butyl ether (MTBE) µg/l	<3	<3	<3	<3
	o-Xylene µg/l	<3	<3	<3	<3
	Sum of detected BTEX µg/l	<28	<28	<28	<28
	Toluene µg/l	<4	<4	<4	<4
	Total Aliphatics & Aromatics >C5-35 (dis.s.filt) µg/l	<10	<10	-	-

Dispersion  
Model  
+ 3.9mg/l

+5.1µg/l

### Conclusion:

Comparison with River Clyde water quality shows that impact at Point of Compliance is very low.

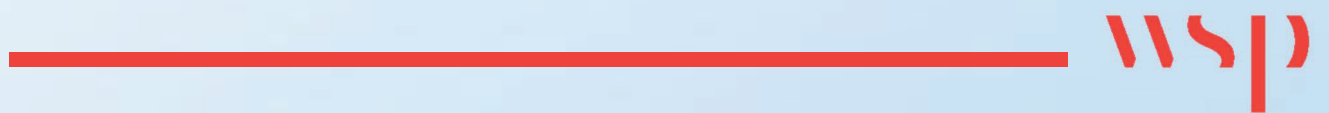
- Suspended solids is approx. 10% of the background levels
- TPH is below detection limit

Limited benefit of engineered containment structures (cofferdam/sheetpile etc.)



# Appendix D

**PHOTOS**



## Proposed Area of Works

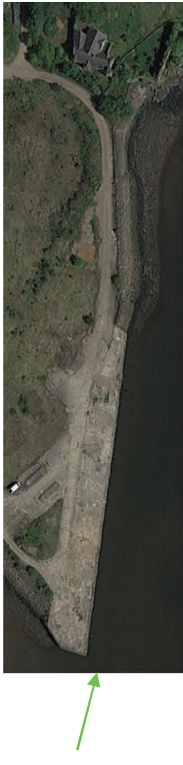




## Western End of River Wall



## View from West to East





## End of Sheet Pile Wall



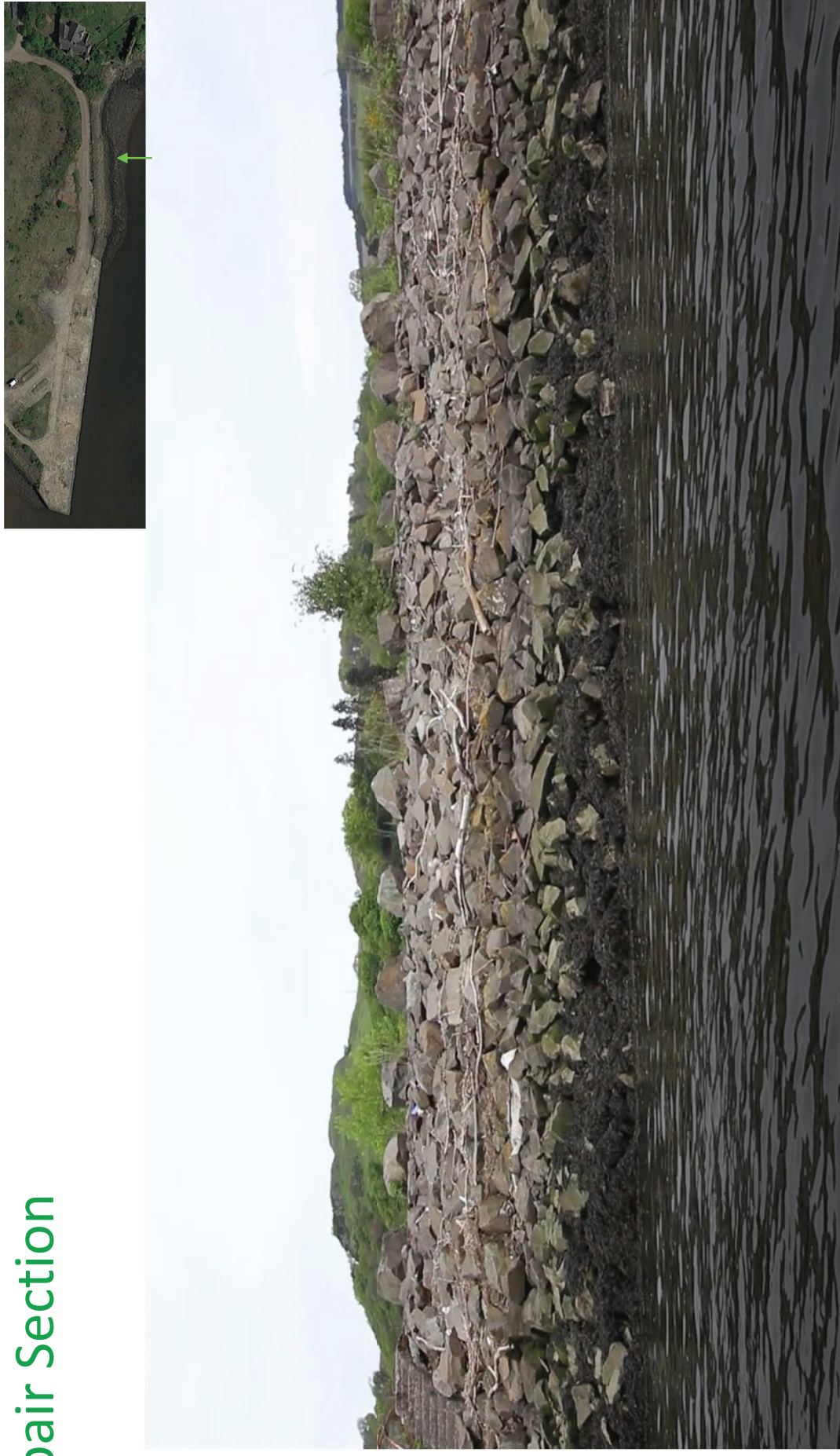


## Repair Section





## Repair Section



# Original River Wall





# Dunglass House & Castle



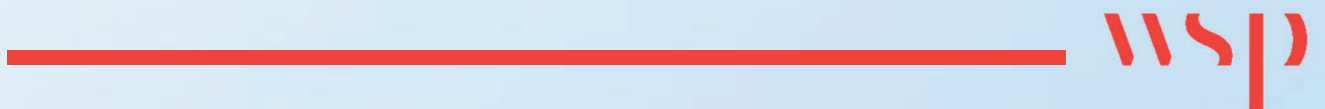


## View West from Dunglass Castle



# Appendix E

## **TECHNICAL NOTES AND ADDITIONAL DOCUMENT**





Esso Petroleum Company, Ltd.

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# **BOWLING REMEDIATION - REVETMENT WORKS**

Habitat Regulations Appraisal



Esso Petroleum Company, Ltd.

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# **BOWLING REMEDIATION - REVETMENT WORKS**

Habitat Regulations Appraisal

**TYPE OF DOCUMENT (VERSION) PUBLIC**

**PROJECT NO. 70067562**

**OUR REF. NO. V1**

**DATE: JULY 2020**



Esso Petroleum Company, Ltd.

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# **BOWLING REMEDIATION - REVETMENT WORKS**

Habitat Regulations Appraisal

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# QUALITY CONTROL

Issue/revision	First issue	Revision 1
Remarks	Draft for issue	
Date	30/07/2020	
Prepared by	Robbie Watt	
Signature	 Watt, Robbie (UKRXW032) I am the author of this document 2020.07.30 09:22:37 +01'00'	
Checked by	Hannah Williams	
Signature	 Watt, Robbie (UKRXW032) PP on behalf of Hannah Williams 2020.07.30 09:24:07 +01'00'	
Authorised by	Caroline McParland	
Signature	 Watt, Robbie (UKRXW032) PP on behalf of Caroline McParland 2020.07.30 09:25:32 +01'00'	
Project number	70067562	
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#### SITE LOCATION

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#### SITE PLANS AND OUTLINE CONSTRUCTION METHODOLOGY

# EXECUTIVE SUMMARY

WSP UK Ltd was commissioned by Esso Petroleum Company, Ltd to undertake a Habitats Regulations Appraisal (HRA) of proposals to replace a section of river wall with rock armour revetment, as part of the wider remediation works at the former Esso Terminal, Bowling (hereafter the 'Proposed Development'). The site of the Proposed Development (the 'Site') is located directly adjacent to European and internationally designated sites for nature conservation ('European Sites'), namely the Inner Clyde Special Protection Area (SPA) and Inner Clyde Ramsar site. The Proposed Development comprises an amendment to existing proposals to remediate the entire former Esso oil terminal at Bowling (the 'Scheme').

The Inner Clyde SPA and Ramsar site are both designated for supporting overwintering redshank and largely overlap across their designated habitats (hereafter referred to collectively as the 'Inner Clyde SPA').

The HRA Stage 1 Screening Assessment identified the following Likely Significant Effects (LSE) from the Proposed Development on the Inner Clyde SPA:

- Loss of SPA habitat during construction and operation;
- Loss/modification of non-designated supporting habitat during construction and operation;
- Degradation of SPA habitat during construction; and
- Disturbance and displacement of redshank during construction.

A potential effect pathway of loss / modification of SPA habitat or supporting habitat due to coastal processes was also identified. It was concluded that coastal processes (erosion and deposition) could result in a minor positive residual effect due to the increase in intertidal mud / sand available to redshank. No potential effect pathways between the Proposed Development and any other European Sites were identified. No minor negative residual effects were identified that would require consideration as part of an in-combination assessment with other projects or plans.

As LSE were identified the HRA was required to progress to Stage 2 Appropriate Assessment (AA). Impact avoidance and mitigation measures were incorporated at this stage, if required, to minimise the magnitude and extent of the identified LSE. All required mitigation will be incorporated into a Construction Environmental Management Plan with compliance overseen, where required, by an Ecological Clerk of Works. The stipulated mitigation includes the following:

- Scheduling of construction works to avoid the winter period (defined as the period 16th September to 15th of March inclusive);
- Visual screens at least 1.8m in height to be installed to minimise disturbance and displacement effects on redshank. Installation of screening to avoid the peak over wintering period (16th September to 15th of March inclusive).
- Any works scheduled for during the peak overwintering period (including installation of visual screens) that are not adequately screened will be undertaken under the supervision of an ECoW.

- No construction will commence without prior approval from Marine Scotland (in the form of a Marine Licence) with regards method and mitigation; and
- Mitigation to minimise the likelihood of pollution of the River Clyde will include the installation of oil booms, oil skimming and pollution monitoring

Following a detailed assessment of the identified LSE and stipulated mitigation, the AA concluded that the Proposed Development would not adversely affect the integrity of the Inner Clyde SPA.

Minor positive residual effects were identified in relation to the extent of SPA habitat and non-designated supporting habitat available to redshank post-construction. Minor negative residual effects (not eliminated by mitigation) were identified in relation to disturbance and displacement to redshank.

This minor residual effect was assessed in-combination with the same effect from the following identified projects:

- Former Esso oil terminal, Bowling – site remediation; and
- Golden Jubilee Hospital – phase 2 extension.

The assessment concluded that disturbance and displacement of redshank would not result in an adverse effect on site integrity when considered in-combination with effects from the above projects.

The conclusions of this HRA are advisory only and are subject to review by the competent authority (West Dunbartonshire Council).

---

**Contact name Robbie Watt**

Contact details 0141 220 5428 | [robbie.watt@wsp.com](mailto:robbie.watt@wsp.com)

# 1 INTRODUCTION

---

- 1.1.1. WSP UK Ltd. was commissioned by Esso Petroleum Company, Ltd. to provide planning support in respect of proposals to replace a section of river wall with rock armour revetment, as part of wider remediation works, (hereafter the 'Proposed Development') at the south eastern end of the former Esso petroleum terminal in Bowling (hereafter the 'Site', OS Grid Reference NS 43555 73540). The Proposed Development is required as an amendment to wider proposals to remediate the former Terminal site (hereafter the 'Wider Site'). Remediation proposals include the excavation and treatment of contaminated soils; subsequent backfilling with remediated soils and replacement of sheet pile river walls (hereafter the 'Scheme'). Remediation of the Site is required to mitigate risk to controlled waters.
- 1.1.2. Proposals for the Scheme were submitted to West Dunbartonshire Council (WDC) with planning permission granted in 2019 (planning reference number DC18/013). Further to consultation, WDC determined that the Proposed Development represents a material variation to the original planning consent and therefore a separate planning application is required.
- 1.1.3. The Site is located in proximity to areas subject to legal protection under European legislation Directive 2009/147/EC on the conservation of wild birds (The 'Birds Directive') and Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora (The 'Habitats Directive'), namely the Inner Clyde Special Protection Area (SPA<sup>1</sup>), Inner Clyde Ramsar site<sup>2</sup> (hereafter SPAs and Ramsar sites are collectively termed 'Europeans Sites') (Appendix A – Figure 1).
- 1.1.4. Due to the potential of the Proposed Development to adversely affect European Sites a Habitats Regulations Appraisal (HRA) is required. The legislative background for HRA and the assessment process is described below.

## 1.2 THE HABITAT REGULATIONS

- 1.2.1. Under the requirements of the Birds Directive and Habitats Directive, it is necessary to consider whether the Proposed Development may have significant effects upon areas of nature conservation importance designated/classified under the Directives. This requirement is translated into Scottish law through the Conservation of Habitats and Species Regulations 2017 (in relation to reserved matters) and the Conservation (Natural Habitats. &c.) Regulations 1994 (collectively, 'The Habitats Regulations').

---

<sup>1</sup> Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.

<sup>2</sup> Ramsar sites are wetlands of international importance designated under the Ramsar Convention, an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.



- 1.2.2. The Habitat Regulations place a duty upon ‘Competent Authorities<sup>3</sup>’ to consider the potential for effects upon European Sites prior to granting consent for projects or plans. Should likely significant effects be identified by the initial screening process it is necessary to further consider the effects by way of an ‘Appropriate Assessment (AA)’. Overall this process of assessment is known as Habitats Regulations Appraisal (HRA) and further details of the applicable legislative context are summarised below.

## 1.3 HABITAT REGULATIONS APPRAISAL CONTEXT

### LEGISLATIVE CONTEXT

- 1.3.1. Article 6 (3) of the Habitats Directive sets out the need for AA of plans or projects which have potential to affect the integrity of European Sites:
- ‘Any plan or project likely to have a significant effect on a Natura 2000, either individually or in combination with other plans or projects, shall undergo an Appropriate Assessment to determine its implications for the site. The competent authorities can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site concerned’ (Article 6.3).
- 1.3.2. As the purpose of the Natura 2000 network is preservation of examples of species and habitats across Europe, rather than preservation of individual sites, Article 6 (4) allows for exceptional circumstances where negative effects may be permitted. This reads:
- ‘In exceptional circumstances, a plan or project may still be allowed to go ahead, in spite of a negative assessment, provided there are no alternative solutions and the plan or project is considered to be of overriding public interest<sup>4</sup>. In such cases the Member State must take appropriate compensatory measures to ensure that the overall coherence of the Natura 2000 Network is protected.’ (Article 6.4).
- 1.3.3. Regulation 63 (1) of the Habitats Regulations states that ‘A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—
- (a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and
- (b) is not directly connected with or necessary to the management of that site,

---

<sup>3</sup> The Habitats Regulations state that a competent authority “includes any Minister, government department, public or statutory undertaker, public body or any description, or person holding a public office”. In the case of the Proposed Development the Competent Authority is the relevant local planning authority, West Dunbartonshire Council.

<sup>4</sup> An exact definition of ‘imperative reasons of overriding public interest’ is not provided, but European Commission (EC) guidance states ‘It is reasonable to consider that the “imperative reasons of overriding public interest, including those of social and economic nature” refer to situations where plans or projects envisaged prove to be indispensable:

- within the framework of actions or policies aiming to protect fundamental values for the citizens’ life (health, safety, environment);
- within the framework of fundamental policies for the State and the Society;
- within the framework of carrying out activities of economic or social nature, fulfilling specific obligations of public service.’

*—must make an Appropriate Assessment of the implications for that site in view of that site’s conservation objective.’*

- 1.3.4. Like the Habitats Directive, the Habitat Regulations also make allowance for projects or plans to be completed if they satisfy ‘imperative reasons of overriding public interest (IROPI)’<sup>5</sup>. Regulations 64 and 68 relate to such situations.

## POLICY CONTEXT

- 1.3.5. It is a matter of Scottish Government policy (Scottish Government, 2014) that sites designated under the 1971 Ramsar Convention for their internationally important wetlands (commonly known as Ramsar sites) are also considered in the same way as SACs, SPAs.

## 1.4 STAGES OF HABITATS REGULATIONS APPRAISAL

- 1.4.1. Guidance on the Habitats Directive (European Commission, 2001) sets out the step wise approach which should be followed to enable Competent Authorities to discharge their duties under the Habitats Directive and provides further clarity on the interpretation of Articles 6 (3) and 6 (4). The process used is usually summarised in four distinct stages of assessment:
- Stage 1: Screening: the process which identifies whether effects upon a Natura 2000 site of a plan or project are possible, either alone or in combination with other plans or projects and considers whether these effects are likely to be significant.
  - Stage 2: Appropriate Assessment: the detailed consideration of the effect on the integrity of the Natura 2000 site of the plan or project, either alone or in combination with other plans or projects, with respect to the site’s conservation objectives and its structure and function.
  - Stage 3: Assessment of alternative solutions: the process which examines alternative ways of achieving the objectives of the plan or project that avoid adverse effects on the integrity of the Natura 2000 site.
  - Stage 4: Assessment where no alternative solutions exist and where adverse effects remain: an assessment of whether the development is necessary for IROPI and, if so, of the compensatory measures needed to maintain the overall coherence of the Natura 2000 network.

## 1.5 GUIDANCE

- 1.5.1. In undertaking this HRA, the following guidance was referred to:
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2001);
  - Habitats Regulations Appraisal of Plans: Guidance for Plan-making Bodies in Scotland (David Tyldesley and Associates, 2015);

---

<sup>5</sup> ‘(a) reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or

(b) any other reasons which the competent authority, having due regard to the opinion of the European Commission, consider to be imperative reasons of overriding public interest.’

- Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission, 2018);
- Communication from the Commission on the Precautionary Principle (European Commission 2000);
- SNH guidance on the handling of mitigation in Habitats Regulations Appraisal (SNH, 2018);
- SNH guidance on assessing connectivity with Special Protection Areas (SNH, 2016); and
- Scottish Environmental Protection Agency (SEPA) Guidance – The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (SEPA, 2019).

1.5.2. This HRA Report (this 'Report') presents the screening assessment and provides information to enable the Competent Authority to undertake an AA of the Proposed Development. This information is provided in the form of a 'shadow' AA.

## **1.6 ASSESSMENT BACKGROUND**

- 1.6.1. WSP produced the HRA report for the wider Scheme in 2018 (WSP, 2018). Following the implementation of appropriate impact avoidance and mitigation measures it was concluded that no adverse effects on the integrity of the SPA would occur. The HRA report for the Scheme incorporated detailed information in the form of for example, wintering bird surveys and noise assessments.
- 1.6.2. As the Site of the Proposed Development is located within the Scheme much of the information provided within the Scheme HRA is of relevance to the Proposed Development. As such, information from the Scheme HRA is included within this Report, or appropriately referenced, where required.
- 1.6.3. As part of the wider Scheme works an Oleophilic Bio Barrier (OBB) was installed within the Site to mitigate the appearance of hydrocarbon sheen on the River Clyde. These works were undertaken in February 2020 and were subject to a separate consenting processes to the Scheme HRA and this Report. Information gathered during the OBB works, particularly in relation to redshank monitoring, is referenced in this Report (Arcadis, 2020).

## 2 THE PROPOSED DEVELOPMENT

---

### 2.1 BACKGROUND

- 2.1.1. The Proposed Development is required as part of wider proposals to remediate the former Terminal site. Remediation of the Site is required to mitigate risk to controlled waters. Initial proposals for the Scheme on Site comprised the replacement of the existing sheet pile river wall with new sheet piling during the remediation process. Further to design review, a revised holistic solution has been determined, which replaces both the existing rock armour and sheet pile wall employing a rock armour revetment (the 'Revetment') along the entire southern river frontage of Centrefield.
- 2.1.2. The river walls currently on site comprise sheet piling and concrete (vertical aspect) at the western end and a section of rock armour/concrete revetment at the eastern end. The sheet piling river wall joins to a section of existing rock armour revetment at the western end of the Site at Dunglass Basin. This section of the river wall was subject to modification during the installation of the OBB in February 2020. Photographs of the existing Site conditions are included in Appendix B.

### 2.2 SPECIFICATION

- 2.2.1. The Revetment will extend approximately 250m in length, 13m in width (at its widest point) and covers an area of approximately 0.37ha. The base of the Revetment will extend a maximum of 1.5m from the extent of the existing sheet piling river wall. The existing river walls will be excavated and replaced with the Revetment to the height of the existing Site. Excavation requirements of the existing river defences (the 'Revetment Works Area') will exceed the footprint of the new Revetment. Specifically, the Revetment Works Area will include excavating an area of 'slumped' rock armour to the south of the Revetment footprint (Appendix A – Figure 2).
- 2.2.2. The Revetment will be constructed from imported primary aggregate primarily comprising a rock core and armour stone facing. As with the existing river walls the majority of the Revetment will sit below Mean High Water Springs.
- 2.2.3. A Site plan and indicative cross section of the Revetment are provided in Appendix A- Figure 2 and Appendix C.

### 2.3 CONSTRUCTION PHASE

- 2.3.1. The Proposed Development includes the excavation of the Site, with works scheduled to commence following completion of remediation works within the 'Centerfield' area of the Wider Site (located directly north) (Appendix C). An excavated 'Valley' will be left that will separate the remediated land at Centerfield from the Site.
- 2.3.2. Full details of the proposed works method is provided in Appendix C. A summary is provided below:
- Excavators will excavate the site in approximately 25m sections moving east to west. Dumper trucks will convey excavated material to designated stockpile are for subsequent sampling to determine treatment requirements;
  - As excavation progresses a section of the existing river wall will be breached allowing river water to enter the Valley;
  - Once excavation in a section has been completed construction of the Revetment and backfilling with uncontaminated material can commence;

- Excavation will then proceed to the next section until the entire Site has been excavated and the new Revetment constructed.

- 2.3.3. Works personnel will utilise welfare areas within the Wider Site and no welfare areas or construction compounds will be located within or adjacent (within 50m) to the Site.
- 2.3.4. It is anticipated that works associated with the Proposed Development will be completed within three months. A construction schedule is yet to be finalised, however, it is anticipated that the works will avoid the 'winter period' and commence in 2022.

## **2.4 OPERATION**

- 2.4.1. The Proposed Development comprises no operational aspect besides the Revetment itself. Due to the robust nature of the Revetment, maintenance activities will only be required in exceptional circumstances.

## 3 EUROPEAN SITE INFORMATION

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### 3.1 RELEVANT EUROPEAN SITES

- 3.1.1. European Sites were screened based on proximity to the Site and the potential for connectivity with reference to published guidance (Section 1.5). Following these criteria, two European sites have been included in the Screening Assessment:
- Inner Clyde SPA; and
  - Inner Clyde Ramsar site.
- 3.1.2. The location of the European Sites in relation to the Site are shown in Appendix A - Figure 1 with European Site information provided in Table 3-1 – European Site Information. The Inner Clyde SPA and Inner Clyde Ramsar site overlap across the majority of designated habitat and are designated for the same qualifying features (redshank *Tringa totanus*).
- 3.1.3. European Site information provided in Table 3-1 – European Site Information is taken from SNH (2020) and includes population estimates from the most recent review into the status of UK SPAs (JNCC, 2016).

### 3.2 EUROPEAN SITES SCREENED OUT

- 3.2.1. No additional European Sites are located up or down stream of the Site along the River Clyde. The Black Cart SPA, designated for supporting [REDACTED], is located approximately 6.8km southeast of the Site on the Black Cart Water (a tributary of the River Clyde). As the Site is located outwith the core foraging range of this species (5km, as stated in SNH (2016)) no impact from the Proposed Development on the Black Cart SPA is anticipated. Additionally, the Site and Wider Site does not provide suitable foraging habitat for [REDACTED].



**Table 3-1 – European Site Information**

<b>European Site Name, Distance from Site and Description</b>	<b>Qualifying Features</b>	<b>Condition Assessment</b>	<b>Pressures and Threats</b>	<b>Conservation Objectives</b>
<b>Inner Clyde SPA</b> Directly adjacent to Site. The Inner Clyde is a long, narrow, heavily industrialised estuary on the west coast of Scotland. The Inner Clyde SPA extends 20km westward from Newshot Island to Craigendoran Pier on the north shore and to Newark Castle on the south shore. It contains extensive intertidal flats which support large numbers of wintering waterfowl. The boundary of the Inner Clyde SPA is coincident with that of the Inner Clyde SSSI. Area - 1813.72 ha	Article 4.2 Qualification (79/409/EEC) Over winter: <ul style="list-style-type: none"> <li>Redshank, 1,873 individuals, representing a 1.6% of the Great British (GB) population.</li> </ul>	Redshank: Favourable Maintained	<ul style="list-style-type: none"> <li>Game/fisheries management</li> <li>Recreation/disturbance</li> </ul>	To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: <ul style="list-style-type: none"> <li>Population of the species as a viable component of the site</li> <li>Distribution of the species within site</li> <li>Distribution and extent of habitats supporting the species</li> <li>Structure, function and supporting processes of habitats supporting the species</li> <li>No significant disturbance of the species</li> </ul>
<b>Inner Clyde Ramsar site</b> Directly adjacent to Site.	Ramsar Criterion 6 – Species/Populations occurring at levels of international importance	Redshank: Favourable Maintained	<ul style="list-style-type: none"> <li>Recreation/disturbance</li> </ul>	None listed.



<p>The Inner Clyde estuary, located on the west coast of central Scotland, is recognised as a single ecological unit. It is a long, narrow, heavily industrialised estuary on the west coast of Scotland, extending 20km westward from Newshot Island to the northern edge of Ardmore Bay adjacent to modified shore line at Craigendoran. On the southern shore the site extends westwards from Newshot Island to Newark Castle. Almost the entire Inner Clyde Ramsar site (94.6%) consists of tidal mudflat with a shoreline of unmanaged semi-natural coastal vegetation. Saltmarsh is also present, accounting for 3.6% of the total shoreline area.</p> <p>Area - 1824.92 ha</p>	<p>Species with peak counts in winter</p> <ul style="list-style-type: none"><li>■ Redshank – 1,873 individuals, representing a 1.6% of the GB population.</li></ul>			
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## 4 STAGE 1 SCREENING

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- 4.1.1. The Proposed Development is not directly connected with or necessary for the management of any European Site. It has not been conceived solely to further the conservation of the European Sites and nor is it essential to the management of the European Sites. Therefore, further consideration of the Proposed Development within the HRA process is required.
- 4.1.2. The Inner Clyde SPA and Inner Clyde Ramsar site cover almost identical areas of designated habitat. Designated habitat directly adjacent to the Site comprises two distinct areas; intertidal habitat to the south of the Site and river walls, pontoons and intertidal habitat to the east. To the south the SPA habitat covers a slightly larger area than Ramsar habitat and to the east Ramsar habitat includes pontoons that are no longer present. Additionally, qualifying features of the Inner Clyde SPA are shared with those of the Inner Clyde Ramsar site (overwintering redshank).
- 4.1.3. Due to the above factors the assessments for the Inner Clyde SPA and Inner Clyde Ramsar site are combined (hereafter the 'Inner Clyde SPA'). It is considered that an assessment on the Inner Clyde SPA will therefore also encompass effects on the Ramsar site. As a result, and to avoid repetition, the Inner Clyde Ramsar site is not described separately further in this assessment.

### 4.2 CONSIDERATION OF EFFECTS IN ISOLATION

- 4.2.1. Utilising the information included within Sections 3 and 4, the Proposed Development was screened to identify whether potential effect pathways exist between the Proposed Development and the Inner Clyde SPA. Additionally, identified effects pathways were screened to determine if they are likely to result in significant effects upon the qualifying features of the Inner Clyde SPA.
- 4.2.2. The screening assessment of the identified potential effect pathways on the Inner Clyde SPA qualifying features, and final screening conclusion, is provided in Table 4-1 – Stage 1 Screening Assessment. The following Likely Significant Effects (LSE) were identified:
- Loss/modification of SPA habitat during construction;
  - Loss/modification of non-designated supporting habitat during construction;
  - Degradation of SPA habitat and non-designated supporting habitat during construction; and
  - Disturbance and displacement of redshank during construction.
- 4.2.3. The following potential effects pathway was concluded to result in minor positive residual effects and was therefore screened out:
- Loss / modification of SPA habitat or supporting habitat due to coastal processes.

### 4.3 POTENTIAL IN-COMBINATION EFFECTS

- 4.3.1. As identified effect pathways were either concluded to result in LSE (i.e. no minor residual effects) or screened out with minor positive effects no identified effects pathways were considered as part of an in-combination assessment during the screening stage.

**Table 4-1 – Stage 1 Screening Assessment**

<b>Potential Effect Pathway</b>	<b>Screening Assessment</b>	<b>Screening Conclusion</b>
Loss / modification of SPA habitat during construction.	<p>The Site overlaps with the SPA at its western and southern extents (Appendix A – Figure 2). Overlap will occur both with the Revetment Works Area and the final Revetment footprint. Areas of overlap comprise narrow strips of the existing rock armour revetment and an area of ‘slumped’ revetment stone that extends to the south. Habitat affected therefore comprises intertidal rock habitat and not mud/sand flats present directly adjacent to the Site to the south. Redshank will typically favour mud/sand flats over rocky intertidal habitat for foraging (Billerman <i>et al</i>, 2020).</p> <p>Due to encroachment into SPA habitat this effect pathway cannot be screened out.</p>	Likely Significant Effect Redshank
Loss / modification of non-designated supporting habitat during construction and operation.	<p>Habitat on or adjacent to site, that is not designated SPA habitat, could nonetheless potentially be utilised by redshank. This habitat would be termed non-designated supporting habitat. The existing rock armour at the eastern end of the Site supports an established intertidal macroalgae community and associated invertebrates. This community would at least temporarily be lost during construction. Such habitat could potentially be utilised by redshank for foraging. Additionally, the new Revetment will extend approximately 1.5m from the base of the existing sheet pile river wall. However, as this area is not exposed during Mean Low Water Springs this does not constitute habitat lost to redshank.</p> <p>Due to the potential loss of non-designated supporting habitat at the existing revetment this effect pathway cannot be screened out.</p>	Likely Significant Effect Redshank
Degradation of SPA habitat and non-designated supporting habitat during construction.	<p>Degradation of habitat could potentially occur due to pollution effects during the construction of the Proposed Development. Pollution released could comprise hydrocarbons, silt, sediment and dust. The Site is located directly adjacent to the SPA at its closest point with large extents of SPA habitat up and downstream from the Site. Works associated with the Proposed Development will include breaching the existing river wall in stages. Action of the river, particularly during high tides, and working during heavy rain events could facilitate the transfer of pollution from the site to the river.</p> <p>Pollution effects would be temporary in nature with a duration spanning the 3-month (maximum) construction period. On completion the site would not cause ongoing impact.</p>	Likely Significant Effect Redshank

	<p>Whilst works will be managed to control mobilisation of contamination and sediment, the above activities could potentially impact on habitat that supports redshank. Degradation could comprise adverse effects on benthic invertebrates and their supporting trophic food chain (primary producers). This could affect redshank by reducing the availability of prey or contaminating prey that redshank then consume. This could affect habitat directly adjacent to Site as well as habitat up and downstream of Site.</p> <p>Due to the potential for indirect effects to redshank this effects pathway cannot be screened out.</p>	
<p>Disturbance and displacement of redshank during construction.</p>	<p>Construction activities described in Section 2 have the potential to disturb and displace redshank from the Site and surrounding area. Works associated with the Proposed Development have the potential to disturb and displace foraging redshank for a distance of at least 150m from the Site (D. Lang (SNH), personal communication, 25/02/2020). Roosting redshank could potentially be affected at greater distances than for foraging birds, potentially extending to 250m from Site (Cutts et al., 2013). Sources of disturbance will include visual (primarily from personnel and plant) and noise (from plant and rock dumping).</p> <p>Wintering bird surveys were undertaken during 2013/14 and 2016/17 to inform the HRA for the wider Scheme. Redshank were recorded foraging and loafing around the perimeter of Dunglass Basin directly to the west of the Site (WSP, 2018). As designated redshank are an over wintering species no, or very few, birds are present within the Clyde estuary during the peak breeding period (May to July inclusive). Overwintering redshank typically leave UK estuaries in April / May and return in August / September (Frost et al., 2019). The highest number of redshank in the Clyde estuary are typically recorded in mid-winter (October to March inclusive) (WSP, 2018).</p> <p>Works undertaken during the period August to April (inclusive) therefore has the potential to disturb or displace redshank. Redshank disturbed or displaced during construction could be subject to increased energy expenditure or reduced foraging opportunities. This in turn could affect their survival or subsequent breeding success and thus affect site conservation objectives (e.g. population of redshank within the SPA).</p> <p>Due to the potential for direct effects to redshank this effects pathway cannot be screened out.</p>	<p>Likely Significant Effects</p> <p>Redshank</p>



<p>Loss / modification of SPA habitat or supporting habitat due to coastal processes – erosion and/or deposition</p>	<p>Replacing the existing sheet pile river wall with rock armour revetment has the potential to modify coastal processes. This could include modifying the flow of the River Clyde / tidal action to increase erosion or promote the deposition of sediment (Kraus and McDougal, 1996). Such action could occur in SPA habitat or non-designated supporting habitat and thus modify this habitat.</p> <p>The Site of the new Revetment will largely utilise the site of the existing river walls and follows the same alignment. Only the ‘foot’ of the new Revetment extends beyond the existing river wall footprint, to a maximum of 1.5m. Modification of coastal processes are associated with an alteration to coastal topography (Basco, 2004). As modifications associated with the new Revetment are minor, associated changes in coastal processes should also be minor in extent.</p> <p>Replacing the sheet pile steel wall with a rock revetment could be anticipated to reduce scour and erosion directly adjacent to the river wall. Scour adjacent to the sheet pile river wall is evident as no intertidal mud/sand is exposed at low Mean Low Water Springs (as shown by tide lines on Ordinance Survey mapping). The new Revetment will likely result in the accumulation of more fine sediment / mud directly adjacent than is currently the case with the sheet pile wall (Kraus and McDougal, 1996). The creation of additional mudflat habitat, as well as the rocky intertidal habitat of the Revetment itself, can only benefit redshank by providing more foraging habitat (Frost <i>et al</i>, 2019).</p> <p>No negative effect of loss / modification of SPA habitat or supporting habitat as a result of modifying coastal processes has been identified.</p>	<p>No LSE Minor residual (positive)</p>
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## 5 IMPACT AVOIDANCE AND MITIGATION MEASURES

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- 5.1.1. All impact avoidance and mitigation measures described below will be incorporated into a site-specific Construction Environmental Management Plan (CEMP) to be produced by the Contractor. Compliance with the CEMP relating to specific aspects of the Report (as detailed below) will be monitored by an Environmental Clerk of Works (ECOW) to be employed by the Contractor.

### 5.2 DEGRADATION OF SPA HABITAT AND NON-DESIGNATED SUPPORTING HABITAT DURING CONSTRUCTION

- 5.2.1. To minimise the potential of storm events or flood surges overlapping with construction, no construction will be undertaken during the winter period (16<sup>th</sup> September to 15<sup>th</sup> of March inclusive).
- 5.2.2. As a statutory consultee the Marine Scotland were consulted regarding the Proposed Development. Marine Scotland responded that works should be managed to ensure that no pollution events into the River Clyde will occur. The works will be licenced by Marine Scotland. The impact avoidance and mitigation measures detailed below are draft proposals compiled by the preferred Contractor. At the time of writing consultation with Marine Scotland regarding the proposals are ongoing. As a minimum, the following impact avoidance and mitigation measures to minimise the potential for pollutants to enter the River Clyde will be implemented.
- Works associated with the Proposed Development will occur after remediation activities within the adjacent Wider Site have been completed. As a result, material to the north of the excavated Valley will be remediated prior to breaching the river wall. This will reduce the extent of potential pollutants exposed to river water;
  - Remediation of the Site will be split into sections approximately 25m in length. Temporary access bunds will be installed across the Valley at approximately 25m intervals to minimise the extent of material exposed to river water during a breach of a single section of river wall;
  - The breach of the existing river wall will be undertaken on falling tides to minimise the time that excavation activities take place below the water level. This will minimise the spread of suspended solids and contaminated material;
  - Prior to breaching the existing river walls, oil booms will be installed within the Valley and within the main river channel to capture any oil sheens. Regular 'skimming' of visible oil sheens within the valley will be undertaken (when water level allows).
  - Regular testing of river water via remote environmental monitoring devices will be undertaken downstream of works. This monitoring will monitor the effectiveness of mitigation measures. Work will cease (if safe to do so) if pollutants exceed agreed standards and modification to mitigation considered (standards to be agreed with Marine Scotland); and
  - An emergency response plan will be developed to detail the response to unexpectedly large volumes of pollutants released and/or the failure of mitigation measures.
- 5.2.3. In addition, all construction activities will adhere to all relevant requirements of the Water Environment (Controlled Activities) (Scotland) Regulations (as amended), as detailed in SEPA guidance (SEPA, 2019). The following specific impact avoidance and mitigation measures will be adhered to:
- All oil storage bowzers, refuelling operations will take place at least 10m from the river wall;

- Plant will be regularly maintained, checked for leaks and plant nappies will be deployed under all plant stationary for an extended period (defined as at least 8 hours);
- Training will be provided to on-site personnel via Toolbox Talks (delivered by the ECoW) highlighting the risks of polluting the coastal environment during construction; and
- Appropriate oil spill kits will be located on site and in key vehicles.

### 5.3 DISTURBANCE AND DISPLACEMENT OF REDSHANK DURING CONSTRUCTION

- 5.3.1. To minimise the number of redshank potentially exposed to disturbance and displacement works are to be scheduled to avoid the peak over-wintering period (16th September to 15th of March inclusive). This period was defined on consultation with SNH and was based on their understanding of redshank ecology in the Clyde Estuary (D. Lang, SNH, personal communication, 25/02/2020). However, while fewer redshank are present out with the peak over-winter period, birds will be present on site in March / April and August / September.
- 5.3.2. To minimise the potential for works to disturb or displace redshank the following impact avoidance and mitigation measures will also be implemented.
- Visual screens at least 1.8m in height will be installed along the eastern shore of Dunglass Basin. This will screen the works from an area known to be utilised by foraging and loafing redshank. Screening fences will be installed out with the peak over wintering period (16th September to 15th of March inclusive) and will avoid any requirement to break ground, if possible (e.g. use temporary Heras fencing with attached screening netting).
  - The location and orientation of plant will be away from the SPA, unnecessary running of plant will be avoided and plant will be regularly maintained to reduce acoustic disturbance.
  - In the event that works are required during the sensitive wintering period, such works will be undertaken in the presence of an ECoW. This is required as no feasible screening option is available for the majority of the Site during works. The ECoW will be empowered to postpone or discontinue works whenever redshank are observed within 150 m of the works area. This includes during the installation of screening of undertaken during the sensitive wintering period. The ECoW will maintain a record of observations of redshank within 150 m of the works area and subsequent impact avoidance measures (delay or cessation of works) employed.
  - Acoustic barriers will be installed, in conjunction with the visual screening described above, for the duration of the works period.

## 6 INFORMATION TO INFORM AN APPROPRIATE ASSESSMENT

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### 6.1 INTRODUCTION

- 6.1.1. This section investigates the effect of the LSE identified in Section 4 in relation the continued integrity of the Inner Clyde SPA. Identified LSE are described in relation to details of the Proposed Development (Section 2), Inner Clyde SPA site information (Section 3), proposed impact avoidance and mitigation measures (Section 5) and any additional ecological supporting information (if required).
- 6.1.2. A summary of the findings of the Appropriate Assessment are provided in Table 6-1 – Summary of the Appropriate Assessment for the Inner Clyde SPA

#### **Assessment of Potential Adverse Effects on Site Integrity Loss of SPA habitat during construction.**

- 6.1.3. SPA habitat overlapping with the Revetment footprint comprises approximately 0.0134 ha with the Revetment Works Area extending to 0.0309. SPA habitat affected by the Revetment Works Area alone, therefore, comprises approximately 0.0175 ha of habitat (Appendix A – Figure 2). The maximum area of overlap (0.0309 ha) therefore represents approximately 0.002% of total SPA habitat.
- 6.1.4. Within SPA habitat the new Revetment will directly replace the old revetment and therefore this habitat will be modified rather than lost. The new Revetment, however, will be bare of macroalgae and associated invertebrate fauna in the initial years following construction. Colonisation, however, will be expected to occur following construction (Bulleri, 2005). The area of ‘slumped’ rock armour to be removed (not within the Revetment footprint) will be likely be replaced by mud/sand habitat due to coastal deposition processes. The removal of this rocky area will allow the disposition of fine mud and sediment adjacent to the new Revetment. Therefore, while this will not be a ‘like for like’ replacement of habitat the area will become of greater benefit to redshank than it is currently.
- 6.1.5. Based on the above factors, **no adverse effect on the integrity of the Inner Clyde SPA**, with respect to the sites conservation objectives (see Table 7-1), will occur as a result of loss of SPA habitat.
- 6.1.6. Due to the nature of the Proposed Development and anticipated coastal deposition processes **minor positive residual effects on the Inner Clyde SPA will occur**. This effect will persist long term during the operational phase of the Proposed Development.

#### **Loss/modification of non-designated supporting habitat during construction.**

- 6.1.7. As described for loss of SPA habitat above, non-designated supporting habitat could be lost / modified as a result of the Proposed Development. In respect of potential redshank habitat this loss / modification will comprise:
- Replacement of existing rock armour revetment with the new Revetment at the eastern end of Site.
- 6.1.8. Loss of habitat associated with the existing rock armour revetment will be temporary. Macroalgae will colonise the new Revetment (Bulleri, 2005) to replace the loss of foraging resource experienced by redshank. Additionally, redshank preferentially forage on exposed mudflats and are unlikely to forage on river wall infrastructure on a regular basis. The new Revetment will extend approximately

1.5m to the south of the existing sheet pile river wall. As this area is not exposed to MLWS no redshank habitat will be lost. The new Revetment could encourage the accumulation of sediment and mud to create intertidal foraging habitat for redshank not currently present.

- 6.1.9. Based on the above factors, **no adverse effect on the integrity of the Inner Clyde SPA**, with respect to the sites conservation objectives (see Table 7-1), will occur as a result of loss / modification of non-designated supporting habitat.
- 6.1.10. Due to the nature of the new Revetment **minor positive residual effects** on the Inner Clyde SPA are anticipated to occur. This effect will persist long term during the operational phase of the Proposed Development.

#### **Degradation of SPA habitat or supporting habitat during construction**

- 6.1.11. The overall aim of the Proposed Development is to remediate the Site to prevent oil leaching from the contaminated Site into the River Clyde. However, during hydrocarbon impact and sediment / silt could be mobilised.
- 6.1.12. Impact avoidance and mitigation measures detailed in Section 6 will reduce the likelihood and magnitude / volume of pollutants release during construction. The majority of the impact avoidance and mitigation measures were devised by the preferred Contractor. This Contractor is experienced in the remediation of coastal sites.
- 6.1.13. Works associated with the Proposed Development will not proceed until the method is approved by Marine Scotland. Consultation with Marine Scotland is ongoing and an application for a Marine Scotland licence is being prepared. However, the impact avoidance and mitigation measures detailed in this Report represent the minimal safeguarding measures required to avoid adverse effects on the SPA.
- 6.1.14. In addition to the impact avoidance and mitigation measures described it is relevant that works will be temporary in nature (three months maximum). The operational state of the Proposed Development and completion of the wider remediation works will significantly reduce risk to controlled waters
- 6.1.15. Based on the above factors, **no adverse effect on the integrity of the Inner Clyde SPA**, with respect to the sites conservation objectives (see Table 7-1), will occur as a result of degradation of SPA habitat or supporting habitat during construction.
- 6.1.16. Due to the nature of the Proposed Development and the effectiveness of described mitigation **no minor residual effects** on the Inner Clyde SPA will occur.

#### **Disturbance and displacement of redshank during construction**

- 6.1.17. In the absence of any impact avoidance or mitigation measures construction works could potentially disturb or displace redshank up to 250m from Site (150m for foraging birds and 250m for roosting). Works will not be scheduled during the peak over-wintering period for redshank (16th September to 15th of March), therefore reducing the number of redshank potentially affected. Only during the peak breeding period of May to July (inclusive), however, can the SPA be assumed to be absent of redshank (Frost et al, 2019; Parsons Brinkerhoff 2014). Bird monitoring undertaken as a requirement of works to install the OBB barrier in February 2020 recorded limited redshank activity within 150m of the works site.



- 6.1.18. To further minimise the potential of disturbance and displacement additional measures, particularly the screening fence, will be implemented. This screening fence and acoustic barriers will minimise visual disturbance and acoustic disturbance experienced by redshank within Dunglass Basin. SPA habitat to the east of the Site is screened by Dunglass Castle and associated vegetation and SPA habitat on the southern bank of the River Clyde is 210m (foraging mudflat habitat) and 580m (roosting riverbank habitat) distant from Site. These areas, therefore, will not be affected by disturbance and displacement.
- 6.1.19. The small area of SPA habitat directly south of the Site will be subject to disturbance and displacement effects. This area, however, is small in size and supported a comparatively low number of birds in comparison to those recorded in Dunglass Basin in surveys undertaken in 2013/14 (Parsons Brinkerhoff, 2014). This conclusion is based on a qualitative analysis of distribution maps provided in Parsons Brinkerhoff, 2014 (this report formed part of the baseline to inform the Scheme HRA (WSP, 2018). As construction works will only last a maximum of three months, disturbance and displacement effects will be temporary in nature.
- 6.1.20. Based on the above factors, **no adverse effect on the integrity of the Inner Clyde SPA**, with respect to the sites conservation objectives (see Table 7-1), will occur as a result of disturbance or displacement of redshank during construction. The impact and avoidance and mitigation measures described, however, will not eliminate the effect of disturbance and displacement to redshank.
- 6.1.21. As a result, **a minor negative residual effect** on the Inner Clyde SPA will occur that does not affect the integrity of the SPA.



**Table 6-1 – Summary of the Appropriate Assessment for the Inner Clyde SPA**

<b>Likely Significant Effects</b>	<b>Qualifying Features</b>	<b>Conservation Objectives Potentially Affected</b>	<b>Avoidance and Mitigation</b>	<b>AA Determination After Mitigation</b>
Loss of SPA habitat during construction	Redshank	<ul style="list-style-type: none"><li>■ Population of the species as a viable component of the site</li><li>■ Distribution of the species within the site</li><li>■ Distribution and extent of habitats supporting the species</li><li>■ Structure, function and supporting processes of habitats supporting the species</li></ul>	<ul style="list-style-type: none"><li>■ None required</li></ul>	No adverse effect on site integrity Minor positive residual effect identified
Loss / modification of non-designated supporting habitat during construction	Redshank	<ul style="list-style-type: none"><li>■ Population of the species as a viable component of the site</li><li>■ Distribution of the species within the site</li><li>■ Distribution and extent of habitats supporting the species</li><li>■ Structure, function and supporting processes of habitats supporting the species</li></ul>	<ul style="list-style-type: none"><li>■ None required</li></ul>	No adverse effect on site integrity Minor positive residual effect identified

<p>Degradation of SPA habitat and non-designated supporting habitat during construction</p>	<p>Redshank</p>	<ul style="list-style-type: none"> <li>Population of the species as a viable component of the site</li> <li>Distribution of the species within the site</li> <li>Distribution and extent of habitats supporting the species</li> <li>Structure, function and supporting processes of habitats supporting the species</li> </ul>	<ul style="list-style-type: none"> <li>Construction will be scheduled to avoid the winter period (16th September to 15th of March inclusive).</li> <li>Should works extend into the winter period, works will be supervised by an ECoW</li> <li>No construction will commence without prior approval from Marine Scotland with regards method and mitigation.</li> <li>Construction will proceed in sections with access bunds installed to limit the area of the Site exposed to river water.</li> <li>Prior to breaching the existing river wall oil booms will be installed within the river to encapsulate the Site. Booms will also be installed within the Valley.</li> <li>Regular skimming of the Valley will be undertaken to remove visible oil residue.</li> <li>Regular testing of river water via remote environmental monitoring devices will be undertaken downstream of works. This monitoring will monitor the effectiveness of mitigation measures.</li> <li>Work will cease (if safe to do so) if pollutants exceed agreed standards and modification to mitigation considered (standards to be agreed with Marine Scotland).</li> <li>An emergency response plan will be developed to detail the response to unexpectedly large volumes of pollutants released and the failure of mitigation measures.</li> </ul>	<p>No adverse effect on site integrity</p> <p>No minor residual effects</p>
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			<ul style="list-style-type: none"> <li>■ All oil storage bowsters, refuelling operations will take place at least 10m from the river wall.</li> <li>■ Plant will be regularly maintained, checked for leaks and plant nappies will be deployed under all plant stationary for an extended period.</li> <li>■ Training will be provided to on-site personnel via Toolbox Talks (delivered by the ECoW) highlighting the risks of polluting the coastal environment during construction.</li> <li>■ Appropriate oil spill kits will be located on site and in key vehicles.</li> </ul>	
Disturbance / displacement of redshank during construction	Redshank	<ul style="list-style-type: none"> <li>■ Population of the species as a viable component of the site</li> <li>■ Distribution of the species within site</li> <li>■ No significant disturbance of the species</li> </ul>	<ul style="list-style-type: none"> <li>■ Visual screens at least 1.8m in height will be installed along the eastern shore of Dunglass Basin. This will screen the works from an area known to be utilised by foraging and loafing redshank. Screening fences will be installed out with the peak over wintering period (16th September to 15th of March inclusive) or supervised by an ECoW if works extend into the sensitive period.</li> <li>■ All works undertaken within the sensitive wintering period (that are not adequately screened) will be supervised by an ECoW.</li> <li>■ Location and orientation of plant away from the SPA, avoid unnecessary running of plant and regular maintenance of plant to reduce acoustic disturbance.</li> </ul>	No adverse effect on site integrity Minor negative residual effect identified

## 6.2 IN-COMBINATION ASSESSMENT

- 6.2.1. The AA identified minor negative residual effects from disturbance and displacement on redshank. As these minor negative residual effects remain post mitigation, an assessment in-combination with other plans or projects that could result in the same effect is required.
- 6.2.2. Potential projects to include in the in-combination assessment were identified following a review of projects known to WSP and a search of the West Dunbartonshire Council (WDC) Planning Portal (WDC, 2020). The following projects were identified:
- Former Esso oil terminal, Bowling – site remediation (the ‘Scheme’) (planning reference number DC18/013); and
  - Golden Jubilee Hospital – Phase 2 extension (planning reference number DC19/264).

### **Former Esso oil terminal, Bowling – site remediation**

- 6.2.3. Works associated with the Scheme are scheduled for completion immediately prior to those of the Proposed Development. As a result, any disturbance and displacement effects associated with the Scheme will not overlap in time with those of the Proposed Development. SPA habitat and non-designated supporting habitat adjacent to the Wider Site will thus be available to redshank during construction of the Proposed Development. In-combination effects, however, could occur if redshank do not immediately recolonise habitat adjacent to the Wider Site on completion of the Scheme. Disturbance and displacement of redshank during Scheme works will be minimised due to the implementation of mitigation measures (including a screening fence) (WSP, 2018). In addition, the Proposed Development will likely result in a reduction in disturbance from acoustic sources (in relation to works from the original Scheme on Site) due to the removal of any sheet piling requirement. As a result, the effects of disturbance and displacement of redshank in combination with the Scheme will **not adversely affect the integrity of the SPA**.

### **Golden Jubilee Hospital – Phase 2 extension**

- 6.2.4. This project comprises an extension to the existing Golden Jubilee Hospital in Clydebank, approximately 6km upstream of the Site. Works associated with the project will be undertaken within 30m of the Inner Clyde SPA and may overlap in time with construction of the Proposed Development. A HRA for the Golden Jubilee project was undertaken in 2019 (WSP, 2019). This HRA concluded, following the implementation of mitigation, that no effects of disturbance and displacement of redshank would occur. As a result, the effects of disturbance and displacement of redshank in combination with the Golden Jubilee project will **not adversely affect the integrity of the SPA**.



## 7 CONCLUSIONS

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- 7.1.1. This report provides the requisite information to enable the Competent Authority to undertake a HRA AA in relation to the potential effects of the Proposed Development on the Inner Clyde SPA. The assessment undertaken in this Report is advisory only.
- 7.1.2. LSE from the Proposed Development on the Inner Clyde SPA were identified. Mitigation stipulated in this Report will eliminate or reduce the magnitude of these effects to ensure that no adverse effect on site integrity will result. This assessment was undertaken in relation to the Proposed Development alone and in-combination with two other identified projects.
- 7.1.3. The Proposed Development will result in minor positive residual effects in relation to the extent of intertidal habitat available to redshank post construction. The new Revetment will provide a larger area of intertidal habitat than is present on site currently (particularly in comparison to the vertical sheet piling river wall). Replacing vertical sheet piling river wall with revetment will also reduce erosion and increase deposition immediately adjacent to the site. Over time this will increase the area of intertidal sand/mud available to foraging redshank.

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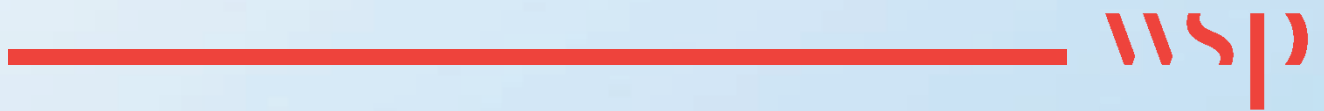
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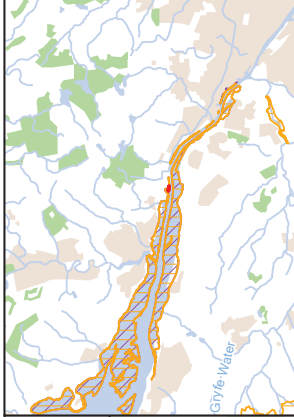
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# Appendix A

## SITE LOCATION





**Key**

- Site
- Inner Clyde Special Protection Area
- Inner Clyde Ramsar site



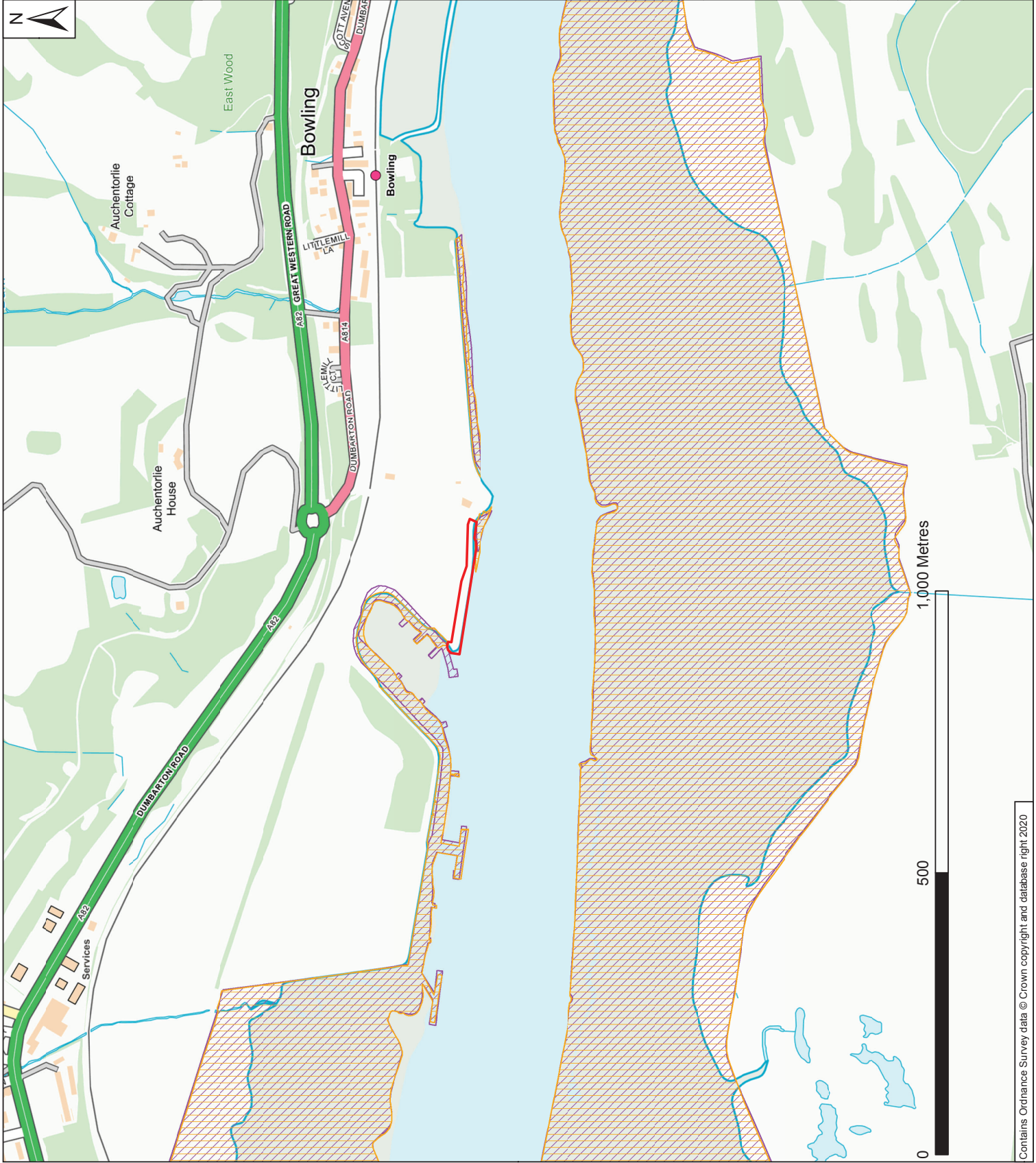
Client:  
ESSO Petroleum Company, Ltd.

Project:  
Bowling Remediation - Revetment Works

Title

Figure 1 - Site Location and European Sites

Drawing No	Layers	Drawn:	RW
Date:	01/07/2020	Checked:	HW
Scale:	6,502 @ A3	Approved:	CEM

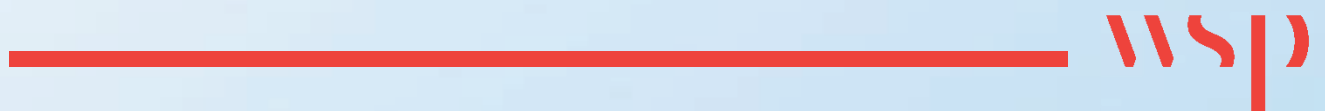






# Appendix B

## SITE PHOTOGRAPHS

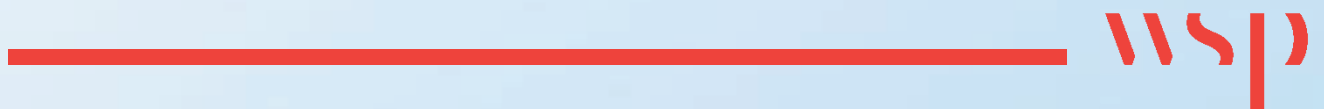




Clockwise from top left: (1) Western extent of Site at tie in with existing rock revetment in Dunglass Basin. (2) Sheet piling river wall looking west. (3) End of sheet pile river wall and tie in with existing concrete and rock revetment. (4) Eastern extent of Site at Dunglass Castle following installation of OBB.

# Appendix C

## **SITE PLANS AND OUTLINE CONSTRUCTION METHODOLOGY**



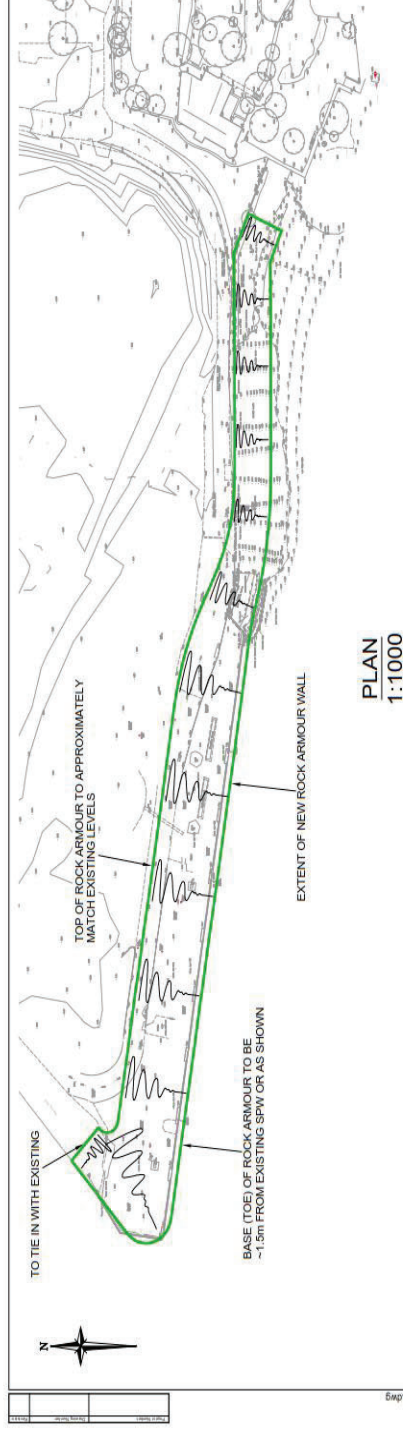


## View West from Dunglass Castle – New revetment

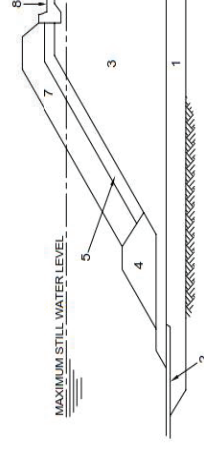




# Objectives - Final Finish Concept




PLAN  
1:1000



- | ELEMENT | FOUNDATION IMPROVEMENT (IF NECESSARY)              |
|---------|--|
| 1.      | SCOUR PROTECTION APRON                             |
| 2.      | CORE   |
| 3.      | TOE MOUND  |
| 4.      | UNDERLAYER   |
| 5.      | REAR FACE ARMOUR (NOT NECESSARY)                   |
| 6.      | MAIN ARMOUR  |
| 7.      | CONCRETE CREST STRUCTURE (WITH KEY OR CUT-OFF TOE) |
| 8.      |  |

## ILLUSTRATIVE SECTION NTS

Rev	Date	Description	By	Chk
 <p> <b>ESSO PETROLEUM COMPANY LIMITED</b>          Esso Chemical          Building 8822 B242          Tel: 44-01173-306000       </p>				
<b>FORMER ESSO TERMINAL BOWLING</b>			<b>ILLUSTRATIVE SECTION THROUGH PROPOSED ROCK ARMOUR</b>	
Title:				
Client:		Date:		
Project:		Drawn:		
Checked:		Approved:		
Project Number:		Scale as shown, A3		
70067562		T1/106		

# Construction Sequencing

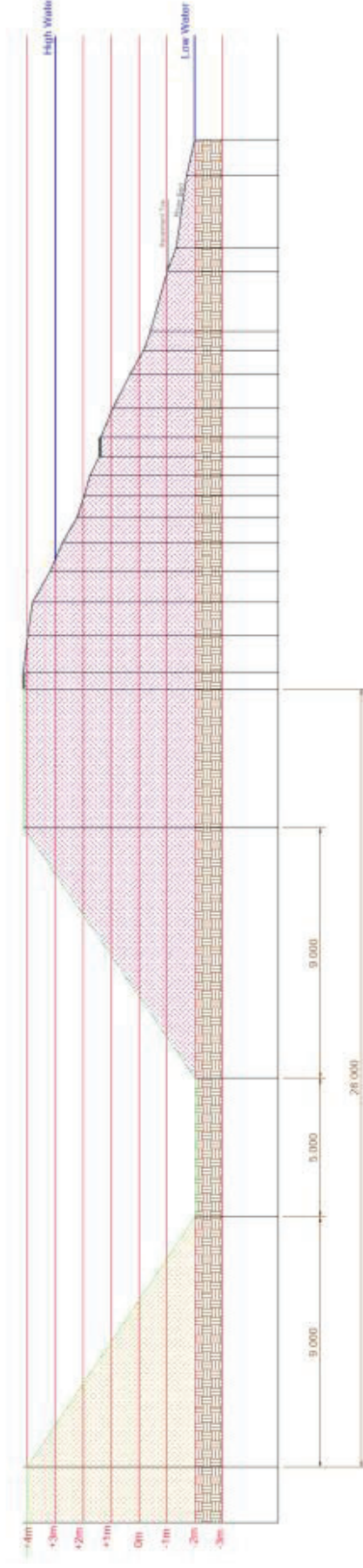


## 06 Revetment Remediation Methodology

- ▶ Complete remediation works in main area of CFD
- ▶ Offset strip of approx. 30m from crown of revetment
- ▶ No backfilling adjacent to contaminated materials remaining in offset strip

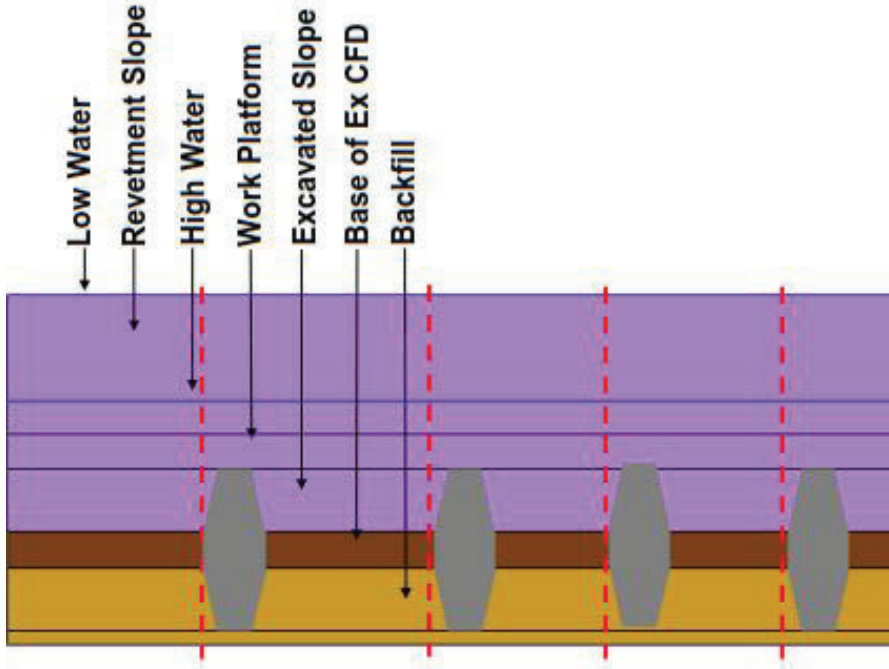
# Construction sequencing

## 06 Revetment Remediation Methodology



- ▶ 5m working strip inland of revetment crown
- ▶ 1:1.5 side slopes
- ▶ 5m space between materials and backfill at toe
- ▶ Double Booms placed in 'valley' for sheens. Skimming where possible (tide, water depth, etc)

# Commencement

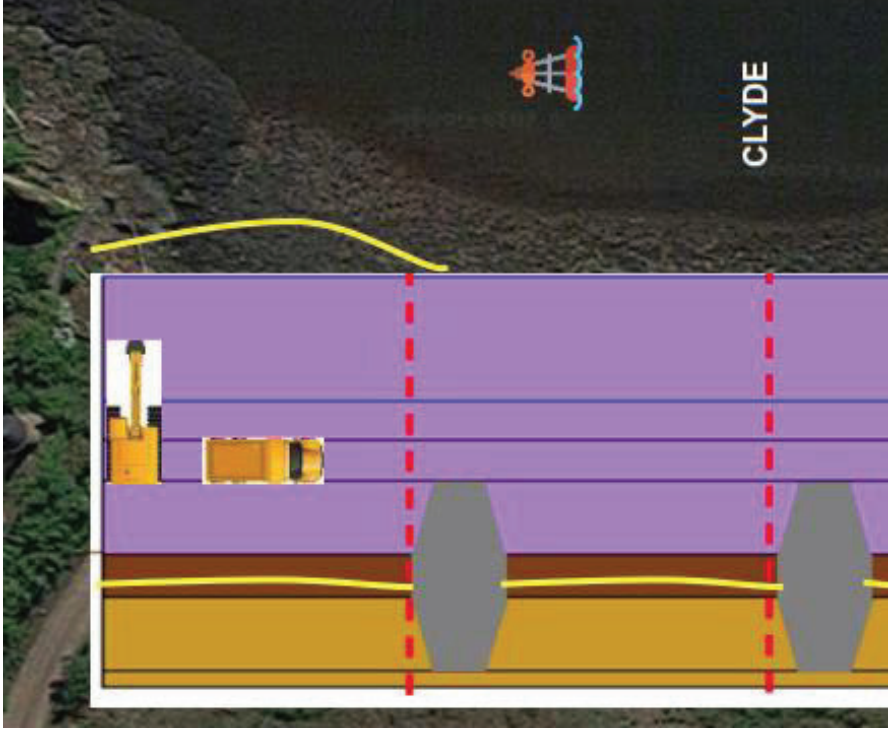


## 06 Revetment Remediation Methodology

- ▶ Theoretical Plan View
- ▶ 130m long over length of revetment section
- ▶ Split into working sections approx. 25m length
- ▶ Temp access bund to be provided across valley for each section
- ▶ Bunds will also act as 'plugs' to limit flow of water and spread of contamination through the valley.
- ▶ Tidal Working
- ▶ At low water, revetment fully exposed. Aim to excavate on falling tide, keep bucket out of water to minimize spread of suspended solids & sheens
- ▶ Ideally summer working – lower risk of storm & flood events



# Set Up



## 06 Revetment Remediation Methodology

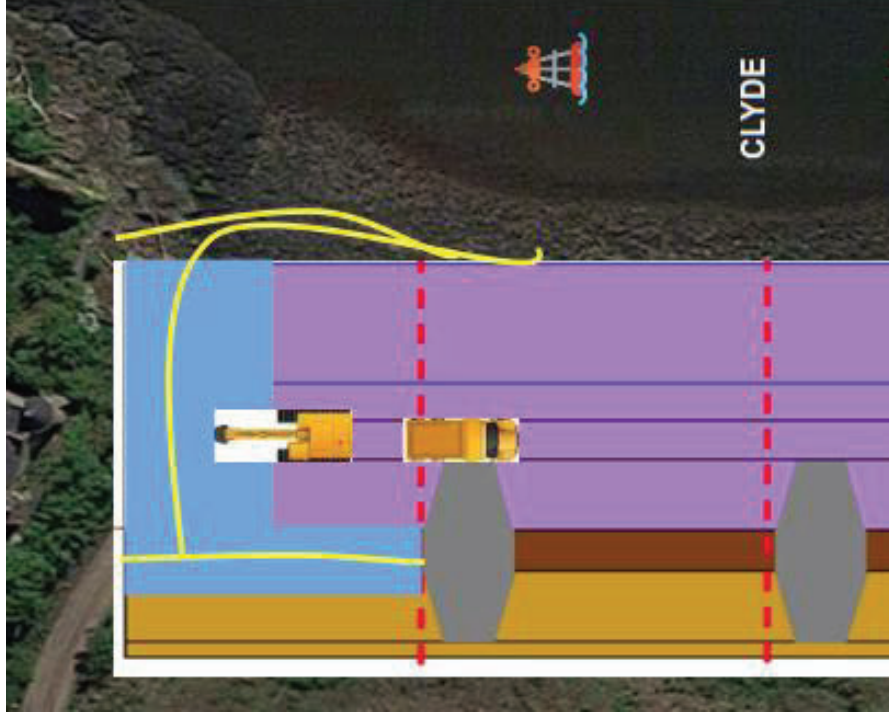
- ▶ Before commencing excavations install oil booms, skimmers and environmental monitoring devices
- ▶ Construction plant accesses the work area on temporary bund



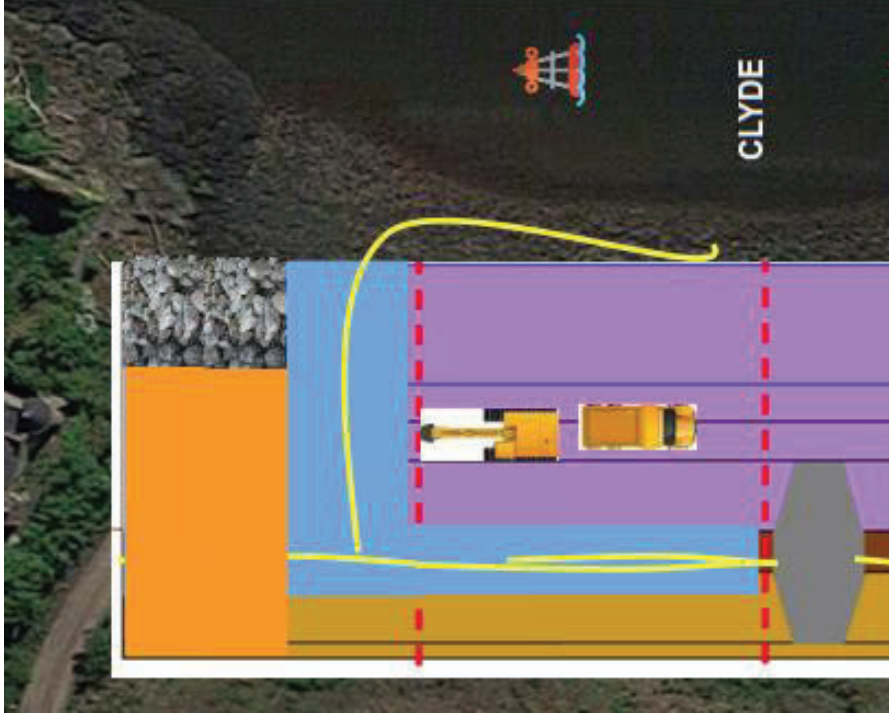
# Excavation in Bays

## 06 Revetment Remediation Methodology

- ▶ As excavation progresses, the valley and backfilled area in CFD will be exposed to river water
- ▶ Position of booms adjusted as excavation progresses



# Backfill behind and move excavation face West

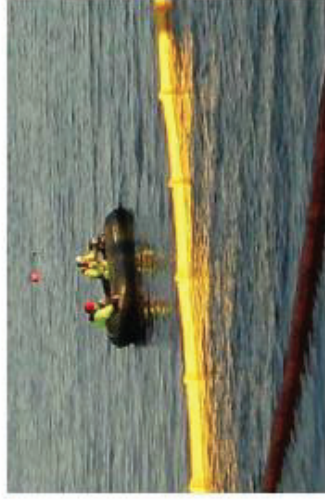
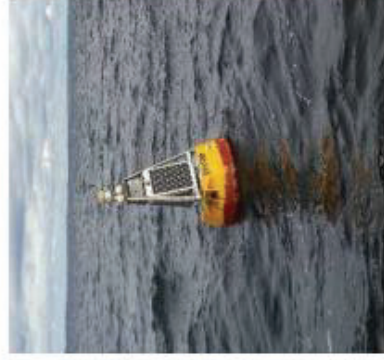
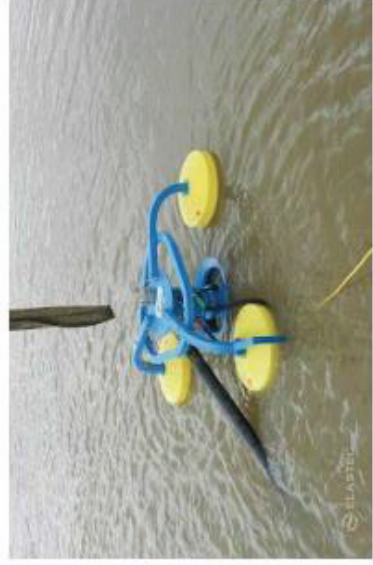
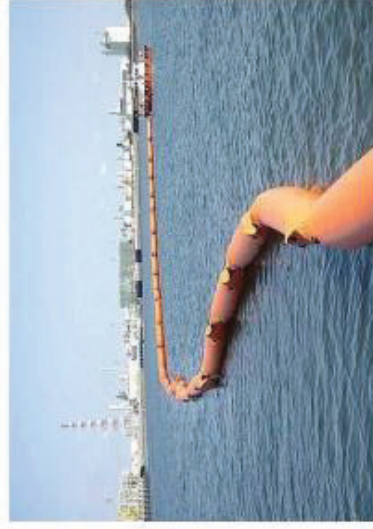


## 06 Revetment Remediation Methodology

- ▶ Once section is completed, excavator moves to next section
- ▶ Temporary road is removed
- ▶ New valley section exposed to river water
- ▶ Re-arrange oil booms
- ▶ Backfilling in small sections can commence
- ▶ Followed by placement of revetment core and armour stone
- ▶ Sequence continues for rest of revetment section
- ▶ Same approach can also be used for sheetpiled section
- ▶ Same working method can be employed if temporary works measures in the form of cofferdams or sheetpiles are used

# NAPL removal methods

## 06 Revetment Remediation Methodology





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Glasgow  
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Esso Petroleum Company Ltd

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# **FORMER BOWLING TERMINAL**

**OUTLINE CONSTRUCTION ENVIRONMENTAL  
MANAGEMENT PLAN – V. 1.4**





**TYPE OF DOCUMENT (VERSION) PUBLIC**

**PROJECT NO. 70018460**

**DATE: SEPTEMBER 2020**

**WSP**

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# QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3	Revision 4
Remarks	Draft v 1.0	Draft v 1.1	Final v 1.2	Final v 1.3	Final v 1.4
Date	06/12/17	17/01/18	19/01/18	05/12/18	04/09/20
Prepared by	L Cook / J Winstanley	J Winstanley	J Winstanley	J Winstanley	K Roeton
Signature					
Checked by	N Snedker	N Snedker	N Snedker	N Snedker	N Townsend
Signature					
Authorised by	N Snedker	N Snedker	N Snedker	N Snedker	N Townsend
Signature					
Project number	70018460	70018460	70018460	70018460	70018460
Report number	70018640-R03	70018640-R03	70018640-R03	70018640-R03	70018640-R03

ISSUE	DETAILS OF REVISION
1.0	N/A – first issue
1.1	General revisions for clarity following client review
1.2	Finalised for issue
1.3	Amendments following WDC and SNH comments and to include details of sheet pile wall option.
1.4	Amendments following a design change to the CFD frontage replacing the sheet pile wall with a rock armour revetment.

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APPENDIX B

ENVIRONMENTAL ASPECTS AND IMPACTS REGISTER

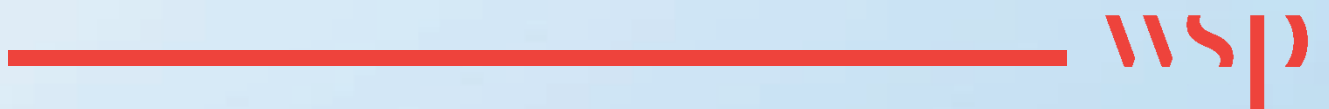
APPENDIX C

SITE WASTE MANAGEMENT PLAN



# 1

## INTRODUCTION



# 1 INTRODUCTION

---

- 1.1.1. This document provides an Outline Construction Environmental Management Plan (CEMP) for the planned voluntary remediation works at the Former Bowling Fuel Distribution Terminal, West Dunbartonshire (hereafter referred to as the Site). The Plan is prepared by WSP UK Ltd on behalf of Esso Petroleum Company, Limited.
- 1.1.2. Version 1.2 of this document was originally submitted to West Dunbartonshire Council (WDC) in January 2018 with the submission of the planning application (ref: DC18/013) for remediation of the Site. Version 1.3 was prepared to update the document to reflect comments and requirements identified during the consultation process and to include the construction of a new sheet piled wall along the frontage of the Centrefield (CFD) sub-division. This Version (1.4) represents a further update following a design change where the previously approved sheet pile wall is replaced by a rock armour revetment along the southern river frontage within the Centrefield (CFD) area of the Site.
- 1.1.3. The CEMP provides a framework detailing how the works will be undertaken and managed in accordance with environmental commitments and requirements, which include contractual, legislative and construction industry best practice. The CEMP provides a means for recording environmental risks, commitments and other environmental constraints and identifies the processes that will be used to manage and control these aspects. The CEMP also seeks to ensure compliance with relevant environmental legislation, government policy objectives and scheme specific environmental objectives. It also provides the mechanism for monitoring, reviewing and auditing environmental performance and compliance.
- 1.1.4. The CEMP is currently provided in 'outline' status, and will be refined and expanded following design, tender and appointment of a contractor to carry out the remediation works. The appointed contractor will establish working practices and procedures to further augment the details provided in this document to enable further development of the CEMP and will be responsible for safeguarding the environment and mitigating the effects of the works.
- 1.1.5. This CEMP will be a live working document, and during the works it will be updated on a regular basis. Each section is reviewed and updated as necessary and will be circulated to the project team.

## PROJECT DESCRIPTION

- 1.1.6. The project comprises voluntary remediation works to render the Site suitable for a generic future commercial end-use based broadly on existing topographical levels and without buildings. The works have been formulated to mitigate potential risks to human health and the water environment, which are associated with the Site's former use as a fuel storage and distribution terminal, and to prevent hazardous substances from entering groundwater. The main works will involve the excavation of soils, recovery of free phase hydrocarbons from the water table, and on-site treatment of impacted soils primarily by thermal techniques. Excavation voids will be backfilled with a combination of site-won soils and imported materials. Site levels will be returned to nominal existing on completion.

## LIMITATIONS

- 1.1.7. This report has been prepared for Esso Petroleum Company Limited, completed with regard to generally accepted consulting practices and may be relied upon by them and relevant third parties

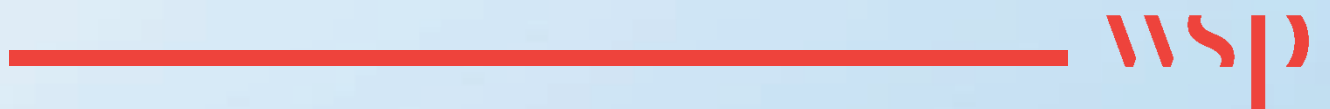


as consistent with the terms and conditions set out in the Master Services Agreement under which the report was produced.

- 1.1.8. Unless WSP UK Limited has actual knowledge to the contrary, WSP shall assume the correctness and completeness of, and shall have no liability in respect of any inaccuracy, defect or omission in any information or materials provided, anecdotally or otherwise, by the Client or any other third party to WSP. WSP does not assume any liability for misrepresentation of information or for items not visible, accessible, present or supplied at the time of the study.

# 2

## SITE INFORMATION



## 2 SITE INFORMATION

### SITE LOCATION

- 2.1.1. The Site is located on the north bank of the River Clyde, approximately 0.3 km to the west of the village of Bowling and 4 km to the south east of Dumbarton. The Site location is shown on Drawing No. 70018460/101. The Esso ownership in total covers approximately 63 hectares, of which approximately 41 hectares is terrestrial, with the remainder (23 hectares) comprising parts of the foreshore of the River Clyde and Milton Island.
- 2.1.2. The Site was developed as an oil terminal in the 1920s, and underwent several phases of expansion, before being decommissioned in the 1990s. The Site was used for the storage and distribution of various hydrocarbon products, via both road and rail.

### SUMMARY OF SITE DETAILS

- 2.1.3. A summary of site details is provided below in Table 2.1. Further details are provided in the following report: 'Remediation Options Appraisal, Strategy and Implementation Plan. WSP | Parsons Brinckerhoff'.

Table 2-1 - Site Details Summary

Site Address	<b>Former Bowling Terminal Dumbarton Road Bowling Glasgow G60 5BP</b>
Site Ownership	The Site is owned by Esso Petroleum Company Ltd.
National Grid Reference	NS437737 (main entrance way).
Site Area	Approximately 63 ha.
Internal Sub-divisions	<p>The terrestrial part of the Site is subdivided into ten separate areas:</p> <ul style="list-style-type: none"> <li>■ Centrefield (CFD);</li> <li>■ Heritage Area;</li> <li>■ Eastfield (EFD);</li> <li>■ Garden (GDN);</li> <li>■ Greenfield (GFD);</li> <li>■ Northfield (NFD);</li> <li>■ Truck Maintenance Yard (TMC)</li> <li>■ Westfield A (WFA);</li> <li>■ Westfield B (WFB); and</li> <li>■ Westfield C (WFC)</li> </ul> <p>CFD, GFD, WFA and WFC include parts of a former sub-division of the Site referred to as the 'Former Rail Sidings' (FRS). The Heritage Area, which is located between the southern end of EFD and the southern end of CFD, comprises Dunglass House and the Henry Bell Monument.</p> <p>The non-terrestrial areas are sub-divided into 'Milton Island', which comprises salt marsh and tidal mud-flats, and 'Foreshore Area' which comprises the frontage of the River Clyde and Dunglass</p>



	Basin. The internal sub-divisions are shown on Drawing No. 70018460/102.
Site Access	The main site entranceway is located off Dumbarton Road (A418) over a railway bridge. A further two entrances are present, which are not regularly used: one located to the west of GFD; and one in the north east corner of EFD. TMC is accessed via a separate entranceway directly off Dumbarton Road.
Current Site Use	The Site is currently disused, and has existing permission for storage or distribution use. The Site is currently zoned (within the West Dunbartonshire Local Plan, 2010) for a 'specialised economic development site', with the exception of GFD which is zoned as 'greenfield'.
End Use	The remediation strategy has been prepared for a future generic commercial end-use based (broadly) on existing topographical levels and without buildings. Ground engineering (e.g. land raise / foundation design) is likely to be required by any future redevelopment. These redevelopment tasks are outside the scope of this remediation project.
Topography	<p>The sub-divisions of the Site to south of the railway line are relatively low- lying, and generally slope gently south towards the River Clyde. Ground levels across these areas are typically between 1.3 mAOD and 6.35 mAOD. Ground levels within the Heritage Area, and the eastern side of CFD and western side of EFD, are elevated up to approximately 14.7 mAOD.</p> <p>GDN and TMC sit to the north of the railway line, and ground levels vary between approximately 4.0 mAOD to 14.7 mAOD.</p>
Ground Cover	<p>Ground cover predominately comprises soft-standing, largely grassland, marsh / marshy grassland and ruderal vegetation. Areas of scattered broad-leaved trees are present across much of CFD and WFC. Semi- natural broad-leaved woodland covers GDN, the central part of CFD, the southwest of WFB and along the main internal access track running east- west south of NFD and GFD.</p> <p>Hardstanding (areas of concrete, asphalt and compacted gravel) covers much of EFD and TMC, and the southern end of CFD. Elsewhere hardstanding areas include former tank bases in WFA and NFD, and areas adjacent to the river walls in WFA and WFB.</p> <p>Standing water is present (seasonally dependent) within the central parts of WFA and WFB, above the former tank bases in NFD, the north west corner of WFC and the southern end of GFD.</p>

Structures and Services	<p>The southern boundary of the Site is formed by a series of river walls, of three construction types. Several piers / jetties remain along the frontage of CFD, WFA and WFB. With the exception of the Heritage Area (which comprises, Dunglass house, the remains of Dunglass Castle, and Henry Bell's monument) there are no significant above-ground structures present. A number of bases of former tanks are visible at ground level within WFB and NFD.</p> <p>A cluster of temporary offices / welfare units are situated in the north west of EFD.</p> <p>CFD and WFA contain below-ground barrier systems. In CFD these comprise a series of separate cut-off walls (comprised of HDPE barrier type in bentonite slurry) located at the southern end, which were installed as part of remediation works. A below-ground bentonite cut-off wall was constructed inside the WFA tank farm bund (around the eastern, southern and western side) in the 1980s. It is understood this was installed in case of a release.</p> <p>The Site contains below-ground gas mains only within GDN, elsewhere there are no known live services beyond the surface water drainage network and those serving the temporary buildings in the north west of EFD. Services previously feeding TMC are isolated at the property boundary. Former pipework was generally above ground as seen on aerial photos and engineering drawings. Historic below-ground oil distribution pipes are located in CFD.</p>
-------------------------	---

## SUMMARY OF ENVIRONMENTAL SETTING

- 2.1.4. An overview of the site setting is provided below. Further details are provided in the following report: 'Remediation Options Appraisal, Strategy and Implementation Plan. WSP'.

### GEOLOGY

- 2.1.5. Made Ground has been encountered across most of the site with the exception of parts of the Heritage Area. The thickness of Made Ground is highly variable (between 1.0 - 7.6 m) and comprises both granular and cohesive horizons. WFA, WFB, WFC and parts of CFD are reclaimed with infill material. Marine deposits (comprising both granular and cohesive horizons) were encountered either beneath the Made Ground or from ground level. The thickness of these deposits is variable, and is influenced by the topography and depth to bedrock, and is known to be greater than 20 m within the southwest corner of CFD, NFD and WFA, WFC.

### HYDROGEOLOGY

- 2.1.6. Groundwater levels vary across the Site, and are in part influenced by topography and the thickness of the underlying superficial deposits. CFD, WFA, WFB and WFC are tidally influenced (and possibly the southern end of NFD) with the amplitude of the tidal variation decreasing with distance from the River Clyde. The groundwater quality is also impacted by the tidal influence in these areas, with saline/brackish groundwater quality recorded.
- 2.1.7. Recorded groundwater levels across the Site are typically close to ground level within the southern end of NFD where waterlogged ground conditions are often observed. The deepest groundwater levels have been recorded along the frontage of the River Clyde. Tidal fluctuation of between 2 m

and 4 m has been recorded within monitoring wells along the frontage with the River Clyde, which diminishes with distance from the river. Seasonal groundwater trends are observed, with higher recharge in the winter months leading to higher groundwater levels. Modelling of groundwater configuration has shown that groundwater flow across the Site is generally to the south or southeast, towards the River Clyde.

## **HYDROLOGY**

- 2.1.8. The River Clyde borders the Site to the south. The river is classified as a transitional surface water body by SEPA and is a Major Groundwater Discharge Zone (MGDZ). The Milton Burn, which is an unclassified stream, bisects GFD, running north to south, before discharging into the River Clyde. The Auchentorlie Burn, which is also unclassified, is located approximately 10 m (at its nearest point) to the north east of TMC. The burn is partially culverted and runs outside the site along the road, before discharging to the River Clyde in the vicinity of Bowling Harbour to the east.

## **DESIGNATED SITES**

- 2.1.9. Parts of the Foreshore Area and Milton Island area lie within the Inner Clyde Special Protection Area (SPA), the Inner Clyde Estuary Ramsar, and Inner Clyde Site of Special Scientific Interest (SSSI). These designations encompass the area between the mean low water springs and mean high water springs and include the foreshore of the Clyde along the frontage of WFA, WFB, EFD and parts of CFD, and most of Milton Island.

## **LISTED BUILDINGS**

- 2.1.10. Within the Heritage Area, Dunglass Castle (HA1) and the Obelisk Memorial to Henry Bell are both Category B listed buildings under the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.

## **SUMMARY OF SITE DATA AND SELECTION OF REMEDIATION APPROACH**

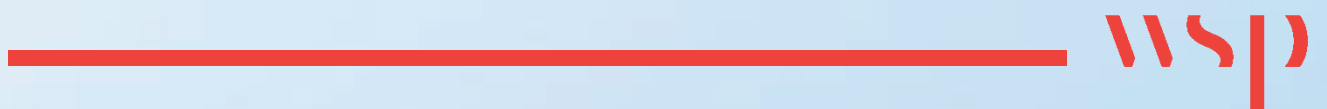
- 2.1.11. Key findings associated with previous site investigations and monitoring exercises are summarised in the “Remediation Options Appraisal, Strategy and Implementation Plan”. V1.9 WSP | Parsons Brinckerhoff (Dec 2018) (herein referenced as ROA). The findings of the investigations and monitoring exercises, and subsequent risk assessments, were used to refine the Conceptual Site Models of the site.
- 2.1.12. The Remediation Options Appraisal identified source removal by excavation coupled with ex-situ treatment by thermal techniques as the most appropriate combination of options to deal with the relevant pollutant linkages associated with soil sources. In addition, product recovery from open excavations (by pumping/skimming) will be undertaken to deal with the relevant pollutant linkages associated with free phase hydrocarbons on groundwater. These techniques were taken forward to form the basis of the Remediation Strategy (as referenced above). Subsequent to contractor discussions and project review, the remedial technique has been changed from thermal treatment to soil washing. The rationale for this change is documented within “Bridging Document – Lines of Evidence to Support Remedial Approach”, Rev 1, WSP (June 2020) (herein referenced as “LOE Bridging Document”) and has been accepted by West Dunbartonshire Council. The overall objective of the work remains to render the site safe to a standard at which it is suitable for a generic future commercial end-use based broadly on existing topographical levels and without buildings.
- 2.1.13. A technical note “Bowling Contamination Review”, WSP (June 2020) has been prepared to review the impact of amending the scheme to remove the sheet pile wall and replace it with a rock armour

revetment along the entire southern frontage of CFD. It is anticipated that excavation and remediation of CFD will progress in a north to south direction, such that the majority of the CFD area will have been remediated and backfilled prior to commencement of the revetment works. It is anticipated that the Remediation Contractor will undertake the revetment works using a sectional approach, whereby on completion of each excavation section construction of the revetment is commenced.

- 2.1.14. Excavation will be undertaken on a falling tide to minimise mobilisation of contamination and sediment to the River Clyde. The proposed works employ the same criteria and treatment protocols as agreed in the main Remediation Strategy. In addition to the excavation of materials, in order to permit construction of the revetment and to deliver the holistic solution with a tie-in to existing sections, additional areas will be subject to excavation. Removal of these impacted materials will provide further certainty that, post remediation, there is no significant hydrocarbon impacted source remaining.

# 3

## GENERAL ARRANGEMENTS





## 3 GENERAL ARRANGEMENTS

### OVERVIEW OF ACTIVITIES AND PROPOSED WORKS

#### CDM 2015

- 3.1.1. The Employer will directly employ both Designer and Contractor under separate contracts. All further contractual details are to be confirmed, including roles and responsibilities prior to, during and post-completion of the remediation works.

Table 3-1 - Roles and Responsibilities

Role	
Employer	Esso Petroleum Company Limited
Principal Designer	WSP UK Ltd
Principal Contractor	To be confirmed via appointment
Sub-Contractors	To be confirmed under appointment to the principal contractor

#### THE WORKS

- 3.1.2. A full description of the proposed remediation works is set out within the ROA and LOE Bridging Document. The strategy is based on the removal and treatment of sources which will achieve a permanent contaminant mass reduction. Remediation works will be carried out within CFD, NFD, WFA, WFB and WFC. No remediation works are required within EFD, GDN, GFD, TMC or the Heritage Area. The Technical Note (Bowling Contamination Review) sets out the proposed revetment construction along the southern frontage of CFD and reviews likely impacts of the works.
- 3.1.3. The proposed works comprise the following principal elements:
- Removal of impacted soils within both the saturated and unsaturated zones by excavation, on an 'as far as is reasonably practicable' basis,
  - Installation of rock armour revetment along the CFD frontage, to facilitate removal of impacted soils adjacent to existing sheet piled wall (with associated removal of existing revetment and sheet pile wall).
  - Removal of impacted shallow soils by excavation on an 'as far as is reasonably practicable basis', to mitigate potential risks to human health;
  - Segregation and sorting of excavated soils into suitable materials (those which can be re-used without treatment), unsuitable materials (those which require treatment to render them suitable for re-use), or soils that require off-site disposal/treatment;
  - Processing of excavated hard materials (such as concrete and brick) to produce suitable infill material;
  - Ex-situ treatment of unsuitable soils on-site by an appropriate soil washing plant;
  - Re-use of suitable materials to infill excavation voids (including asbestos containing soils), comprising those which are directly suitable for re-use without treatment and those successfully treated;

- Removal of free phase hydrocarbons from the groundwater table within open excavations, on an as far as is reasonably practicable by pumping or skimming methods;
- Treatment / separation of recovered free phase / groundwater, with discharge of treated water to the River Clyde under SEPA consent (free phase to be removed off-site for disposal / recovery);
- Off-site removal of unsuitable materials which are not treatable to an appropriately licensed facility for disposal, recycling or recovery;
- Import and placement of revetment rock armour and stone; and
- Import and placement of suitable materials in the event of a materials deficit.

3.1.4. Estimated quantities of materials associated with the works are presented below in Table 3.2 (anticipated quantities may change during production of detailed design for the project):

Table 3-2 - Estimated Quantities

Category	Quantity m <sup>3</sup>
Total excavation	198,000 m <sup>3</sup>
Suitable for re-use without treatment)	125,000 m <sup>3</sup>
Suitable for re-use following treatment	40,000 m <sup>3</sup>
Off-site treatment / disposal / recycling	10,000 m <sup>3</sup>
Free phase hydrocarbons recovered for off-site disposal / recycling	30 m <sup>3</sup>
Imported materials for revetment	25,300 m <sup>3</sup>

3.1.5. The estimated duration of the works is likely to be 24 - 30 months.

## ROLES AND RESPONSIBILITIES

### THE PLAN

- 3.1.6. The Contractor will be responsible for safeguarding the environment and for mitigating the effects of the scheme and its construction throughout the works in line with the Contract's requirements. The CEMP will be critical to the successful management of construction environmental issues during the works. All site activities must be undertaken in compliance with the CEMP.
- 3.1.7. Included within the CEMP are details of the methods and controls proposed to be employed to satisfy the general requirement to safeguard the environment and mitigate any adverse effects of the works. These will be further developed by the Contractor into detailed statements.
- 3.1.8. The CEMP is a live working document, and during the works, the CEMP shall be updated on a regular basis by the Contractor. Each section is reviewed and updated as necessary and an electronic version of the updated CEMP circulated to the project team.
- 3.1.9. The emergency contact details for the works shall be clearly displayed at the site where the public can see them.

3.1.10. The Contractor will be responsible for;

- legal and company compliance for environmental matters;
- overseeing the CEMP, and
- ensuring it is implemented on site (liaison with the site team), with regular environmental audits during the project.

### LICENCES / CONSENTS AND STAKEHOLDER ENGAGEMENT

3.1.11. A number of consents / licences will be required prior to commencement of the works, which include those listed below in Table 3.3 (non-exhaustive):

Table 3-3 Consents, Licences and Permissions

Element	Relevant Authority	Responsibility
Planning Permission	West Dunbartonshire Council	Client
Mobile plant licence and Site Specific Working Plan (SSWP)	SEPA	Contractor
Consent for works in proximity to the River Clyde	Marine Scotland	Designer / Contractor
Licence under the CAR Regulations from SEPA for abstraction and discharge of groundwater, and construction site licence (unless incorporated into the SSWP).	SEPA	Designer / Contractor
European Protected Species Licence for works where there is the potential for disturbance within 30 m of [REDACTED] resting sites.	SNH	Designer

3.1.12. Early engagement and liaison with other stakeholders may also be required as detailed below:

- RSPB (manager of the adjacent Inner River Clyde).
- Scottish Water (regarding discharges to foul sewer (if required)).
- SGN (the owner of below-ground gas mains located in GDN).
- Network Rail (adjacent railway line and right of access at the site).
- Adjacent residents and commercial properties.

### INTERNAL CONTACTS AND SPECIFIC ROLES

3.1.13. Internal contacts, specific roles and associated responsibilities will be assigned and described following contract award.

### TRAINING AND COMPETENCY

3.1.14. All staff shall be suitably trained for their roles, regarding competency requirements, environmental awareness and maintenance of training records, in order to meet the environmental commitments set out in the CEMP. A record of training is required to be maintained by the Contractor, with all site

personnel undergoing a pre-start induction training course and aspect-specific tool box talks on the environmental issues related to the works and the CEMP.

- 3.1.15. A hierarchy of mitigation can be applied and specified measures such as ECoW, which may be put in place, if required. The position will be reviewed ahead of construction commencing.

### **MONITORING AND AUDITING**

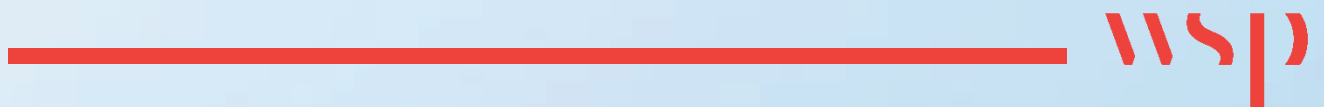
- 3.1.16. Daily inspections of the site shall occur to ensure compliance with the CEMP, and to minimise the risk of damage to the environment. All environmental incidents shall be reported to the project team, and where relevant, external parties (refer to section 5.0).
- 3.1.17. The Contractor will undertake monthly inspections and complete an assessment of environmental performance measured against environmental standards, relevant legislation and the CEMP objectives. The Contractor shall produce a monthly report detailing environmental performance and non-compliances.
- 3.1.18. Copies of all environmental audit reports, consents and licences shall be maintained by the Contractor, and held on site for review at any time. The Contractor shall be responsible for investigating and addressing any non-conformances raised by the audit within an agreed time frame and ensuring that corrective and preventative actions have been fully closed out.

### **COMMUNICATION AND AWARENESS**

- 3.1.19. The Contractor is required to manage the environmental impacts of all sub-contractors and suppliers that provide services in relation to the works.
- 3.1.20. The environmental stewardship of suppliers working with/for the Contractor shall be managed, monitored and reported through the application of method statements.
- 3.1.21. The Contractor will cooperate fully with arrangements for auditing suppliers' safety and environmental procedures.
- 3.1.22. The Contractor will be given an ecological awareness brief (pre-works), by a suitably trained ecologist, to allow ecologically sensitive issues to be recognised and the correct mitigations implemented, or support sought where necessary.

# 4

## **ENVIRONMENTAL MANAGEMENT, MITIGATION & CONTROL MEASURES**





## 4 ENVIRONMENTAL MANAGEMENT, MITIGATION & CONTROL MEASURES

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### INTRODUCTION

- 4.1.1. The following section details the environmental management, mitigation and control measures that will be implemented on-site during the works. These will be in accordance with current legislation, guidance and best practice. The workforce should be made aware of these mitigation and control measures through the induction process and their progress monitored through the site environmental monitoring process.

### REGISTER OF ENVIRONMENTAL ASPECTS

- 4.1.2. The Environmental Aspects and Impacts Register (the Register) contained in Appendix A of this document is a record of all sensitive environmental features that have the potential to be affected by the works. The Register includes information on how these features may be affected and the control measures required to mitigate any potential impacts.
- 4.1.3. Specific management plans have been prepared for the following:
- Ecology;
  - Cultural Heritage;
  - Earthworks and Waste Management;
  - Odour;
  - Groundwater and Surface Water;
  - Dust, Vehicle and Plant Emissions;
  - Noise and Vibration; and
  - Traffic.
- 4.1.4. Management plans, which detail the control and mitigation measures required to reduce the potential for impacts, for each individual aspect are set-out in the following sections.

### ECOLOGY MANAGEMENT PLAN

- 4.1.5. A 'Habitat Regulations Appraisal Screening – Stage 1 Screening Report' was completed by WSP in January 2018 (Ref: 70018460). This was revised in December 2018 to account for the proposal to construct a new sheet piled wall adjacent to the frontage of CFD, and also to account for changes in guidance / legislation. The report was subsequently retitled 'Habitat Regulations Appraisal - Stage 2 Appropriate Assessment Report'. The assessment provides an appraisal of ecological receptors that may be impacted by the proposed remediation works, and concluded that, without mitigation measures, the redshank population in the Inner Clyde SPA and Ramsar could be disturbed or displaced by acoustic and visual effects from the works. Implementation of mitigation / control measures during the remediation works is therefore required.
- 4.1.6. A series of species-specific ecology surveys were completed at the Site by WSP in 2017, following recommendations of an Extended Phase 1 Habitat Survey and Bat Suitability Assessment which was prepared by WSP in January 2017. Further [REDACTED] survey work was undertaken in July 2018 by Applied Ecology Ltd. (for WSP). Recommendations for a number of species-specific mitigation measures to be adopted during the works were identified.

- 4.1.7. A technical note (July 2020) has since been prepared that undertakes a comprehensive review of the previous ecology reports undertaken to date in light of the amendments sought to scheme design along the southern CFD frontage. Furthermore, the Habitat Regulations Appraisal report has also been updated to accommodate for the design change.
- 4.1.8. The Contractor will incorporate the requirements set out below in Table 4.1 to ensure that potential ecological impacts are reduced to an acceptable level.

Table 4-1 - Mitigation / Control Measures - Ecology

Issue / Category	Control Measures
Acoustic Disturbance	<ul style="list-style-type: none"> <li>■ Amending the Scheme to remove the permanent sheet pile wall reduces the potential of acoustic disturbance to redshank during construction.</li> <li>■ Locate and orientate plant and equipment away from SPA locations where possible.</li> <li>■ Provide screening between plant and the SPA in the form of temporary acoustic barriers.</li> <li>■ Provide acoustic screening around all noisy activities.</li> <li>■ Avoid unnecessary running of plant and equipment.</li> <li>■ Employ acoustic covers on construction plant and equipment (where possible).</li> <li>■ Undertake regular maintenance of plant.</li> <li>■ Monitoring of acoustic levels to be undertaken at strategic levels along the site boundary (to be agreed with SNH). Monitoring will comprise baseline monitoring in advance of the start of works and ongoing monitoring whilst the works are being carried out. Acoustic monitors will measure the combined levels of noise from remediation activities and other ambient noise. Monitoring will be used to determine if the acoustic levels predicted from the acoustic models are being met with additional mitigation measures required if noise levels significantly exceed predicted levels.</li> <li>■ All works undertaken within the sensitive wintering period (that are not adequately screened) will be supervised by an ECoW.</li> </ul>
Visual Disturbance	<ul style="list-style-type: none"> <li>■ Visual screens at least 1.8m in height will be installed along the eastern shore of Dunglass Basin. This will screen the works from an area known to be utilised by foraging and loafing redshank. Screening fences will be installed out with the peak over wintering period (16th September to 15th of March inclusive) or supervised by an ECoW if works extend into the sensitive period.</li> </ul>

General site management	<ul style="list-style-type: none"> <li>■ Good construction site management must be implemented to avoid / minimise generation of excessive litter, dust, noise and vibration.</li> <li>■ Implement measures to avoid / minimise potential for fuel and chemical spills, including use of spill kits / booms.</li> <li>■ There will be no storage of potentially contaminating materials in areas of ecological sensitivity and at least 10 m from any watercourses.</li> <li>■ An Emergency Spill Response Plan is prepared to ensure that impacts from any potential accidental release can be reduced to a minimum.</li> <li>■ Briefings and instructions will be given by the Contractor to its site staff and subcontractors regarding the biodiversity issues associated with the site.</li> </ul>
Materials Storage	<ul style="list-style-type: none"> <li>■ Procedures must be implemented to address site safety issues, including storage of materials.</li> </ul>
Watercourses	<ul style="list-style-type: none"> <li>■ Adopt measures in accordance with current Pollution Prevention Guidelines (PPGs) / Guidance for Pollution Prevention (GPPs).</li> <li>■ Construction will proceed in sections with access bunds installed to limit the area of the Site exposed to river water.</li> <li>■ Prior to breaching the existing river wall oil booms will be installed within the river to encapsulate the Site. Booms will also be installed within the Valley.</li> <li>■ Regular skimming of the Valley will be undertaken to remove visible oil residue.</li> <li>■ Regular testing of river water via remote environmental monitoring devices will be undertaken downstream of works. This monitoring will monitor the effectiveness of mitigation measures.</li> <li>■ Work will cease (if safe to do so) if pollutants exceed agreed standards and modification to mitigation considered (standards to be agreed with Marine Scotland).</li> <li>■ An emergency response plan will be developed to detail the response to unexpectedly large volumes of pollutants released and the failure of mitigation measures.</li> <li>■ All oil storage bowsters, refuelling operations will take place at least 10m from the river wall.</li> <li>■ Plant will be regularly maintained, checked for leaks and plant nappies will be deployed under all plant stationary for an extended period.</li> <li>■ Appropriate oil spill kits will be located on site and in key vehicles.</li> </ul>

Best Practice / Site Management Procedures	<ul style="list-style-type: none"> <li>■ Workforce must be restricted to working areas;</li> <li>■ Cover or barrier-off excavations over night to prevent wildlife from falling in, and becoming trapped, or engineer side-slopes or deploy ramps to allow wildlife to escape. Stored pipes will be capped (or stored vertically) to prevent entrapment of wildlife. Excavations will be infilled or covered if there is an extended break in works.</li> </ul>
Lighting	<ul style="list-style-type: none"> <li>■ Lighting should be installed such that illumination is minimised and tailored to functionality and focussed where needed. No site lighting will be placed on the seaward side of the visual screens and all lighting will be aligned to minimise illumination of the seawall and intertidal area, ensuring an unlit corridor of 30 m. This will result in minimal incidental illumination into the surroundings.</li> </ul>
Further Species-specific Requirements	<ul style="list-style-type: none"> <li>■ Works within 30 m of ■■■ resting sites which have the potential to cause disturbance will be undertaken in accordance with a European Protected Species licence.</li> <li>■ A pre-construction update survey for ■■■ is to be undertaken three to six months prior to the commencement of the remediation works, extending to 250 m from the works area. The results of this work will inform any further licensing requirements.</li> <li>■ The use of heavy machinery in the vicinity of ■■■ resting sites is to be limited to avoid disturbance two hours before and after dawn and dusk which are the times of day when ■■■ is most active. For non-breeding resting sites, this will apply to construction activity within 30 m, but for natal holts licensing conditions may extend this distance to 200 m.</li> <li>■ Construction of the revetment will be scheduled to avoid the sensitive winter period (16th September to 15th of March inclusive).</li> <li>■ Should revetment works extend into the winter period, works, liaison will be undertaken with SNH and, where required, supervised by an ECoW</li> <li>■ No revetment construction will commence without prior approval from Marine Scotland with regards method and mitigation.</li> <li>■ Palmate newts were identified in a number of ponds on Site. Newts will be relocated on site where the ponds may be subject to disturbance during the works.</li> <li>■ The Site offers nesting habitat for bird species. A tree survey was undertaken to inform the “Remediation Options Appraisal, Remediation Strategy &amp; Outline Implementation Plan” (WSP, 2018). The survey identified the location of trees to be felled. This work</li> </ul>

	<p>has been agreed outside of planning requirements by Forestry Commission Scotland and Esso Petroleum Company Limited. Any vegetation clearance shall be undertaken outside of the breeding bird season (March to August inclusive). If this is not possible nesting checks will be undertaken prior to clearance by an appropriately qualified ecologist.</p> <ul style="list-style-type: none"> <li>■ A number of mature trees were identified as offering potential roost features for use by bats. A non-disturbance zone of 30 m is to be maintained (until inspected by a suitably qualified ecologist). Should bat roosts be identified then these non-disturbance zones be maintained during the works (unless relocation is required and undertaken under licence from SNH).</li> <li>■ A non-disturbance zone of 30 m is to be maintained from the bat roost within the doocot (Dove Cote) in the south east corner of the Heritage Area.</li> </ul>
Invasive Species	<ul style="list-style-type: none"> <li>■ Stands of both Japanese Knotweed and Himalayan Balsam are present on Site. An exclusion zone of at least 10 m shall be maintained from these stands during the works (with the exception of invasive species treatment works).</li> </ul>

## CULTURAL HERITAGE MANAGEMENT PLAN

- 4.1.9. A Cultural Heritage Desk-Based Assessment was prepared for the Site in September 2017 to assess the potential impacts of the proposed remediation works on heritage assets. The assessment identified no significant built surface remains within the parts of the Site where remediation works are proposed, however, despite extensive filling / reworking of the site, there remains the limited potential for previously unknown subsurface remains where the interface between filled ground and the underlying mudflats may be encountered. This was reviewed in light of the revetment solution see “Technical Note - Bowling Cultural Heritage & Archaeology Re-appraisal” (June 2020). No additional mitigation or action required as a result of amended scheme.
- 4.1.10. Dunglass Castle and the obelisk monument in the Heritage Area are listed buildings, however, no works will be undertaken within this area, and therefore the proposed works will not have a direct or lasting impact on any of the listed buildings within, or in the vicinity of the Site.
- 4.1.11. The Contractor will incorporate the requirements set out in Table 4.2 to ensure that potential impacts on heritage assets are reduced to an acceptable level.



Table 4-2 - Mitigation / Control Measures - Cultural Heritage

Issue / Category	Control Measures
Potential for sub-surface remains to be encountered and disturbed.	<ul style="list-style-type: none"> <li>Targeted monitoring by an appropriately qualified archaeologist should archaeological items of interest be found during works in the area of the interface between the original underlying mudflats and the later fill material.</li> <li>Should any sub-surface remains be encountered the attendant archaeologist will make a record any findings (where practicable). In the event any archaeology is encountered during monitoring work, any excavation or recording works will be severely hampered or constrained for environmental protection and practical safety reasons. Preservation / recovery will not be possible given ground conditions and safety constraints.</li> <li>Best practice to introduce a standoff (circa 10 meters if space permits) and allow for demarcation of the wall surrounding the Listed Building of Dunglass Castle. The additional inclusion of this element within any toolbox talks should also advise of no physical impacts or encroachment on the Listed Building.</li> </ul>

## EARTHWORKS & WASTE MANAGEMENT PLAN

- 4.1.12. The works will involve relatively large-scale earthworks to excavate soils from the Site, for characterisation and treatment. This will give rise to soils and hard materials such as brick and concrete. Other materials, such as metal and wood, may be encountered and removed during excavation works. Given the Site's former use and objectives of the works, hydrocarbon- impacted materials will be encountered.
- 4.1.13. A Site Waste Management Plan (SWMP) will be implemented during the works to record and track the various waste streams generated. An outline of the SWMP is provided in Appendix B, and this will be further developed by the Contractor following appointment. The Contractor will be responsible for updating the SWMP throughout the works.
- 4.1.14. The Contractor will incorporate the requirements set out in Table 4.3 to ensure that potential impacts associated with the earthworks and waste management activities are reduced to an acceptable level.

Table 4-3 - Mitigation / Control Measures - Earthworks

Issue / Category	Control Measures
Earthworks	<ul style="list-style-type: none"> <li>■ Best practice site management procedures will be implemented to avoid / minimise generation of excessive litter, dust, noise and vibration.</li> <li>■ Materials processing operations (such as screening / crushing) will be located as far away from sensitive receptors as is reasonably practicable.</li> <li>■ Temporary stockpiles of excavated / processed materials will be located to minimise potential nuisance impacts to neighbouring land users and to reduce double-handling of materials. A minimum 50 m stand-off from Milton Island will be maintained in which no materials shall be stored.</li> <li>■ Sheeting and barriers (such as booms etc.) will be used to prevent run-off from stockpiled materials.</li> <li>■ Stockpile preparation: all stockpile and treatment areas will be placed on impermeable surfaces with covers and suitable drainage to collect and dispose of waters, validation testing of these areas to be undertaken to allow the land quality to be assessed post- completion of the works.</li> <li>■ Soils containing asbestos to be stockpiled separately from other excavated materials, and will be kept damp and sheeted.</li> <li>■ Equipment will be washed and maintained to prevent spread of potential contamination across the site.</li> <li>■ Odour control systems will be employed where necessary to mitigate odours from stockpiles or open excavations.</li> <li>■ A tracking system will be implemented to control and log stockpiles created and materials movements. Each stockpile will be given a unique identifying reference and will be clearly labelled.</li> </ul>
Waste Management	<ul style="list-style-type: none"> <li>■ All waste containers will be suitable for the intended contents and will be labelled appropriately.</li> <li>■ Materials will be segregated wherever practicable and sustainable re-use of suitable materials undertaken.</li> <li>■ All wastes removed from the site will be properly handled under the Duty of Care obligation under the Environmental Protection Act 1990.</li> <li>■ Only suitably licensed landfill or soils treatment facilities will be used.</li> <li>■ All waste carriers used will be appropriately licensed.</li> <li>■ Materials classification for waste disposal will be confirmed during the work, including where necessary waste acceptance criteria (WAC) testing.</li> </ul>

## ODOUR MANAGEMENT PLAN

- 4.1.15. The works have the potential to give rise to odour from the exposure and processing of materials impacted by hydrocarbons. The hydrocarbons present are typically mid- to heavy-end which are less likely to give rise to significant odours (via volatilisation) than light-end hydrocarbons which were encountered during the remediation of Eastfield which was completed in 2014. Notwithstanding this, the Contractor will incorporate the requirements set out below in Table 4.4 to ensure that potential impacts from dust and emissions are minimised.

Table 4-4 - Mitigation / Control Measures - Odour

Issue / Category	Control Measures
Odour	<ul style="list-style-type: none"> <li>Operations will be conducted with regard to the wind direction and speed, to minimise the migration of odours / vapours.</li> <li>If necessary, operations will be temporarily suspended if significant odours / vapours are generated that are not contained within the Site.</li> <li>If necessary, stockpiles will be sheeted and odour neutralisation systems to contain odours within the site boundary.</li> <li>A suitable odour control system (such as atomising spray system or foam) will be used should the means above fail to contain the odours / vapours.</li> <li>Odour monitoring will be undertaken in accordance with methodology outlined in Box 4 of Appendix 2 of the IAQM document 'Guidance on the Assessment of Odour for Planning'. This provides a detailed methodology considering the 'FIDOL' factors. (frequency, intensity, duration, odour unpleasantness and location).</li> <li>Volatile organic compounds (VOCs) monitoring will be undertaken during the works, which will enable correlation of concentrations of volatiles with the resultant odour (VOCs are considered the primary potential source of odours).</li> </ul>

## GROUNDWATER AND SURFACE WATER MANAGEMENT PLAN

- 4.1.16. The Site is located adjacent to the River Clyde, and the Milton Burn bisects GFD in the north west of the Site. The Site contains a surface water drainage network which discharges to the River Clyde via a series of oil/water interceptors. A groundwater body is present beneath the Site at relatively shallow depths within the superficial deposits.
- 4.1.17. The Contractor will incorporate the requirements set out in Table 4.5 to ensure that potential impacts to groundwater and surface water are reduced to an acceptable level.

Table 4-5 - Mitigation / Control Measures - Surface Water and Groundwater

Issue / Category	Control Measures
General Controls	<ul style="list-style-type: none"> <li>■ All staff inducted on to the site will be made aware of the locations of all surface water courses and drainage network present at the site.</li> <li>■ No storage of materials will be permitted on the foreshore.</li> <li>■ Stockpiles of excavated materials and areas of refuelling will be located away from drains and ditches.</li> <li>■ Stockpiles of suspected contaminated materials will be placed on an impermeable surface or lined area and covered to prevent the leaching of contaminants.</li> <li>■ Measures to prevent runoff carrying sedimentation or construction materials into surface water drainage will be via the use of bunds, diversion drains and/or drain-blockers where necessary. Surface water shall be prevented from entering excavations, e.g. by the use of cut-off ditches.</li> <li>■ Wash-down of vehicles and equipment will take place in designated areas and washwater will be prevented from passing untreated into water courses.</li> <li>■ Buffer strips of vegetation will be left along site boundaries/river banks where practicable to act as sediment filters.</li> <li>■ Site compounds/parking areas will be located away from the surface watercourses.</li> <li>■ All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling.</li> <li>■ Where required silt control intervention measures will be employed (e.g. silt mat/wattle etc.) to reduce potential for run-off.</li> <li>■ If required binders will be used on haul road surfacing (will also help to control dust).</li> </ul>

Issue / Category	Control Measures
	<ul style="list-style-type: none"> <li>■ A supply of pipe-blockers will be available should any below-ground pipework be encountered that requires sealing.</li> <li>■ Storage of all chemicals and fuels to be within secondary containment (capable of holding 110% of total volume).</li> <li>■ Localised use of sandbags to direct any run-off away from sensitive areas.</li> <li>■ Installation of absorbent land booms around local working areas to capture contaminated run off.</li> <li>■ Oil booms and absorbent pads (or other spill response equipment) will be available to control spillages.</li> <li>■ During works adjacent to the River Clyde, silt booms and separate double oil protection booms will be deployed within the river if they are not already present. In case of any oil sheen, an oil boom shall be placed within 30 minutes after detection of the oil sheen (where not already present), around the perimeter of the issue point to contain the sheen. After containment, the oil sheen will be removed by skimming or other similar method and booms / materials arising, including any caught silt, disposed of appropriately.</li> <li>■ Safe working stand-offs will be maintained from the active surface water drainage network to avoid any impacts on the integrity of the pipework.</li> </ul>
Spill Kits	<ul style="list-style-type: none"> <li>■ Employ the use of drip trays and spill kits. Each spill kit will contain: <ul style="list-style-type: none"> <li>• Absorbent pads (suitable for chemical and oil spills)</li> <li>• Absorbent roll (suitable for chemical and oil spills)</li> <li>• Absorbent socks (suitable for chemical and oil spills)</li> <li>• Absorbent booms (suitable for chemical and oil spills)</li> <li>• Dammit mats</li> <li>• Disposal bags and ties</li> <li>• Stakes</li> <li>• Personal safety kits</li> </ul> </li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>■ A periodic monitoring programme will be undertaken during the works, which will include sampling and analysis of surface water bodies.</li> <li>■ The River Clyde adjacent to work areas will be monitored for signs of sheens on a daily basis during</li> </ul>

	the works and a record of these visual observations maintained.
Emergency Response Sub-Contractor	<ul style="list-style-type: none"> <li>■ Identification of an accredited emergency spill response contractor by the Principal Contractor in the event that there is a requirement for emergency clean-up following an incident (see ESRP).</li> </ul>

## DUST & EMISSIONS MANAGEMENT PLAN

- 4.1.18. The works have the potential to give rise to dust and emissions from site operations. The Contractor will incorporate the requirements set out in Table 4.6 to ensure that potential impacts from dust and emissions are reduced to an acceptable level.

Table 4-6 - Mitigation / Control Measures – Dust and Emissions

Issue / Category	Control Measures
Vehicles and Plant Emissions	<ul style="list-style-type: none"> <li>■ Use only modern and well maintained plant and equipment which is in good working order.</li> <li>■ Instruct operatives to throttle back and turn off engines when not in active use</li> <li>■ Programme works to ensure that works are undertaken in the most efficient manner.</li> <li>■ Operation of treatment plant to be in accordance with the agreed SSWP which will include the requirement for periodic stack-</li> </ul>
Dust	<ul style="list-style-type: none"> <li>■ Conduct operations so that any dust generated is minimised at source and that dust generated settles close to the source within the site, and is not carried beyond the site boundary.</li> <li>■ Adjust the location of excavation, re-grading materials processing and/or filling operations with regard to the wind direction and speed. Suspend operations altogether, in the event that any such adjustment fails to prevent significant dust (as defined below) from being carried beyond the boundary of the site.</li> <li>■ Shape and form stockpiles by rolling or other means to reduce the potential for dust generation.</li> <li>■ Dampen down stockpiles and haul roads.</li> <li>■ Employ wheel wash facilities.</li> <li>■ Sweep haul roads when required;</li> <li>■ Limit plant and vehicle movements to a 15 mph site speed limit.</li> <li>■ Prohibit idling of vehicles.</li> <li>■ Cover all loaded haulage lorries before leaving site.</li> <li>■ Use only enclosed skips on site.</li> <li>■ Provide sheeting for stockpiles with weighted covers.</li> </ul>



Issue / Category	Control Measures
	<ul style="list-style-type: none"> <li>■ Employ regular use of water bowsers and sprays during dry weather.</li> <li>■ Undertake environmental monitoring of dust and airborne particulates. Prior to the commencement of the work, install dust deposit gauges (Frisbee technique to SEI-Y practice method), at each of the site boundaries. The dust deposit gauge will include an adhesive strip (or similar), to assess the deposition rate and direction. The deposit gauge will be collected and analysed at weekly intervals, to determine the quantity of dust generated at the site through dissolved and undissolved solids and the effective area covered. Results will be compared to action levels of: a deposition rate of 200 mg.m<sup>-2</sup>.day<sup>-1</sup> (level at which deposits are likely to cause a nuisance in industrial urban areas); and a 0.5 % effective area coverage per day.</li> <li>■ Undertake particulate monitoring in accordance with the Greater London Authority guidance document 'The Control of Dust and Emissions from Construction and Demolition' (July 2014). An action level for PM10 of 250 µg.m<sup>-3</sup> over 15 minutes shall be adopted.</li> <li>■ Undertake daily location of workings areas and atmospheric conditions.</li> <li>■ Undertake a daily visual assessment of airborne dust at the site boundaries and within the site with the frequency of the observations being determined on the basis of the activities being undertaken. Undertake the visual dust assessment using the following 'dust rating': <ul style="list-style-type: none"> <li>• 1 not noticeable;</li> <li>• 2 slight dust;</li> <li>• 3 moderate dust;</li> <li>• 4 unacceptable dust (remedial action required)</li> </ul> </li> </ul>

## NOISE AND VIBRATION MANAGEMENT PLAN

- 4.1.19. The works have the potential to generate noise and vibration from site operations. The Contractor will incorporate the requirements set out below in Table 4.7 to ensure that potential impacts from noise and vibration are reduced to an acceptable level.

Table 4-7 - Mitigation / Control Measures – Noise and Vibration

Issue / Category	Control Measures
General site management	<ul style="list-style-type: none"> <li>■ General site operations will be confined to the following working hours 08:00 hrs to 18:00 hrs Monday</li> </ul>

Issue / Category	Control Measures
	<p>to Friday and 08:00 hrs to 13:00 hrs on Saturdays. It may be necessary to undertake occasional low-impact works outside of these hours, such as critical maintenance works or responses to emergencies. There will be an overnight security presence at the Site.</p> <ul style="list-style-type: none"> <li>■ During the soil treatment phase of the works, it will also be necessary to operate the soil treatment system seven days a week including overnight. This is to avoid reheating the treatment system each day thereby reducing emissions and optimising the treatment programme.</li> <li>■ All vehicles and mechanical plant used will be maintained in good and efficient working order. All generators and compressors will be 'sound reduced' models, fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use. All pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.</li> <li>■ Plant and equipment in intermittent use will be shut-down, or throttled down to a minimum, in the intervening period between work activities. All stationary plant will be screened, where reasonably practicable. All pumps will be fitted with effective exhaust silencers and will be maintained in good and efficient working order. All dewatering pumps will be 'sound reduced' models fitted with properly lined and sealed acoustic covers.</li> <li>■ Over-night operation of generators and/or compressors will be avoided by using mains power instead, where reasonably practicable to do so. Where the use of generators cannot be avoided, measures will be taken to avoid noise transmission beyond the site boundaries, such as use of acoustic barriers.</li> <li>■ Appropriate measures will be incorporated in the method of working to prevent damage to adjacent and other properties due to vibrations caused by executing the works.</li> <li>■ Due regard will be given to the location and nature of off-site receptors and site activities will be arranged / managed to minimise noise at the site boundaries, as far as reasonably practicable, including the following:</li> </ul>

Issue / Category	Control Measures
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	<ul style="list-style-type: none"> <li>• Selective location of generators and other stationary plant/ equipment.</li> <li>• Use of acoustic screens</li> <li>• Limiting amount of plant working at any one time</li> <li>• Silencing of plant</li> </ul> <ul style="list-style-type: none"> <li>■ Routine monitoring during the works will be undertaken using a portable sound level meter (Class 2) with external microphone, tripod and weather proof housing in accordance with BS7445- 1:2003, -2:1991, -3:1991 'Description and Measurement of Environmental Noise'. Monitoring to be undertaken before start of the works and noise action level to be agreed with the Local Authority prior to commencement.</li> <li>■ If required ground borne vibration monitoring will be undertaken where works are in proximity to sensitive structures using the guidelines in BRE403 'Damage to Structures from Ground Borne Vibration' (March 1995).</li> </ul>
Overnight Working	<ul style="list-style-type: none"> <li>■ The treatment system will operated at the minimum level required to keep the system in efficient operation.</li> <li>■ Noise will be minimised by use of acoustic barriers and siting the system in areas where significant attenuation of noise will occur (WFA or WFB, which are screened by wooded areas to the north).</li> <li>■ Soil handling will be kept to the absolute minimum required. Movement of soils will only be permitted within the stockpiling and treatment area. Loading and moving soils across the Site will only occur within the general site operations hours.</li> </ul>

## TRAFFIC MANAGEMENT PLAN

4.1.20. The works have the potential to cause impacts to local roads as a result of works traffic entering and exiting the Site, which will include site staff, visitors, deliveries and collections, and disposal / import of materials. Vehicle movements are estimated as follows:

- Cars and small vans – average of 10 to 20 vehicles per day;
- General delivery vehicles (typically medium or large vehicles) – average 5 to 10 vehicle movements per day;
- Tankers / tipper lorries (large vehicles) – average of 20 to 35 vehicles per week, although more frequent movements may be undertaken during certain periods (e.g. during import or disposal of soil materials).

4.1.21. The Contractor will incorporate the requirements set out below in Table 4.8 to ensure that potential impacts from traffic are reduced to an acceptable level.

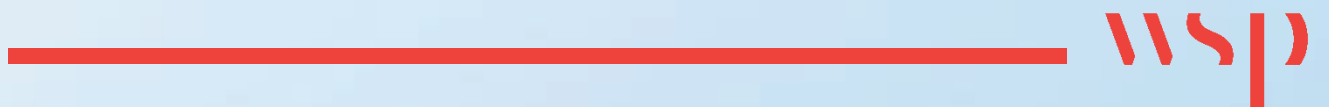
4.1.22.

Table 4-8 - Mitigation / Control Measures – Traffic

Issue / Category	Control Measures
Traffic Management	<ul style="list-style-type: none"> <li>■ All traffic safety and management measures necessary for the safe and proper execution of the works will be in place before work commences, including the delivery or removal of materials to or from the site.</li> <li>■ A wheel washing facility with rumble strips shall be established at the site exit for the clearing of vehicles prior to crossing the bridge and exiting onto local roads;</li> <li>■ All traffic leaving the site will be inspected by the gateman to ensure that tyres and the under body of the vehicle are free from significant debris.</li> <li>■ Road cleaning plant will be used as necessary.</li> <li>■ All loaded wagons will be sheeted prior to leaving the site.</li> <li>■ Access and egress of all works traffic will be via the main entranceway located off the A814 (just off the Dunglass roundabout). It is not proposed to utilise other entranceways to the Site except in emergencies.</li> <li>■ Warning signs will be placed in prominent positions ahead of the main entrance way indicating 'warning construction site traffic'.</li> <li>■ Heavy vehicles will be directed to turn left out of the Site onto the A814, and then onto the A82.</li> <li>■ Heavy vehicles will be directed to avoid Bowling Village on route to (or away from) the Site.</li> <li>■ The Site has sufficient space for turning, unloading and stacking of vehicles, which will be maintained during the works, so there will no requirement for vehicles to wait on local roads outside of the Site.</li> <li>■ Sufficient parking for staff vehicles and visitors will be maintained on Site during the works, to avoid any requirement for parking off- site on local roads.</li> </ul>

# 5

## EMERGENCY RESPONSE PLAN



## 5 EMERGENCY RESPONSE PLAN

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### EMERGENCIES AND POLLUTION RESPONSE

- 5.1.1. In the event of an accidental release of hazardous materials, information regarding those materials, spill containment materials and spill response equipment shall be clearly stated on site. A procedure for a general response shall be included in the Construction Phase Health and Safety Plan; stating the chain of command and standby operatives, and clearly advised to all staff.
- 5.1.2. A list of all nearby sensitive receptors that could be affected by an environmental incident shall be compiled and maintained by the Contractor.
- 5.1.3. Environmental incidents shall be documented and recorded by the Contractor with the following details as a minimum included;
  - Nature of spill/leak/incident;
  - Time/date;
  - Exact location;
  - Type of material released;
  - Approximate volume released;
  - Actions taken to prevent contamination;
  - Individuals reported to; and
  - Lessons learnt.
- 5.1.4. Lessons learnt shall be fed back to site staff through safety and environment briefings and used by the Contractor to amend procedures and update the CEMP accordingly.
- 5.1.5. Emergency procedure(s) shall be tested monthly by the Contractor. Examples of procedures would include:
  - The names and 24-hour contact details of all emergency response personnel and emergency services;
  - The procedures for reporting and documenting an emergency incident;
  - Personnel responsibilities during an emergency incident; and
  - The location of on-site information on hazardous materials and spill containment materials
- 5.1.6. Where the requirement for a clean-up operation to a hydrocarbon release from the site has been identified, the co-ordination of operation will be the responsibility of the Contractor.
- 5.1.7. Consultation with other authorities may also be necessary to determine the most appropriate response. The main authorities that would be concerned with a hydrocarbon release from the site are listed below.
  - West Dunbartonshire Council (WDC)
  - The RSPB
  - SEPA;
  - Scottish Natural Heritage
  - Marine Scotland

### EMERGENCY CONTACTS

- 5.1.8. Emergency contact details for the relevant authorities are listed below in Table 5.1

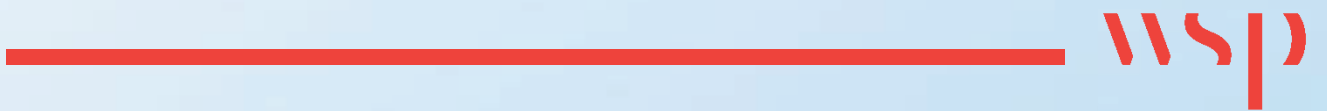


Table 5-1 - Emergency Contacts

Authority	Telephone
West Dunbartonshire Council (WDC)	01389 737000
RSPB	0141 331 0993
SEPA	0800 80 70 60
SNH	0131 314 6750
Marine Scotland	0300 244 4000

# Appendix A

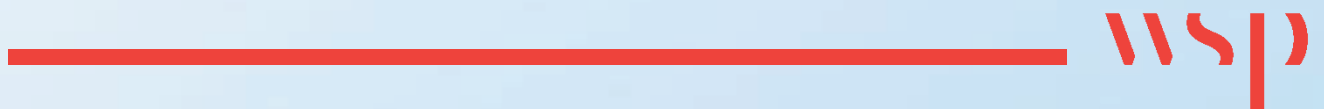
## **DRAWINGS**





# Appendix B

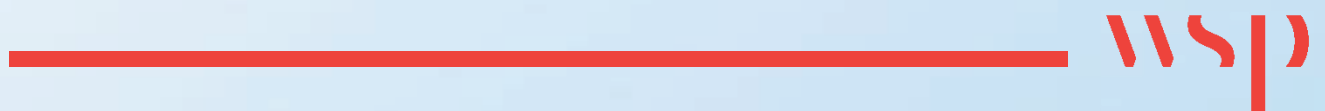
## **ENVIRONMENTAL ASPECTS AND IMPACTS REGISTER**





# Appendix C

## **SITE WASTE MANAGEMENT PLAN**





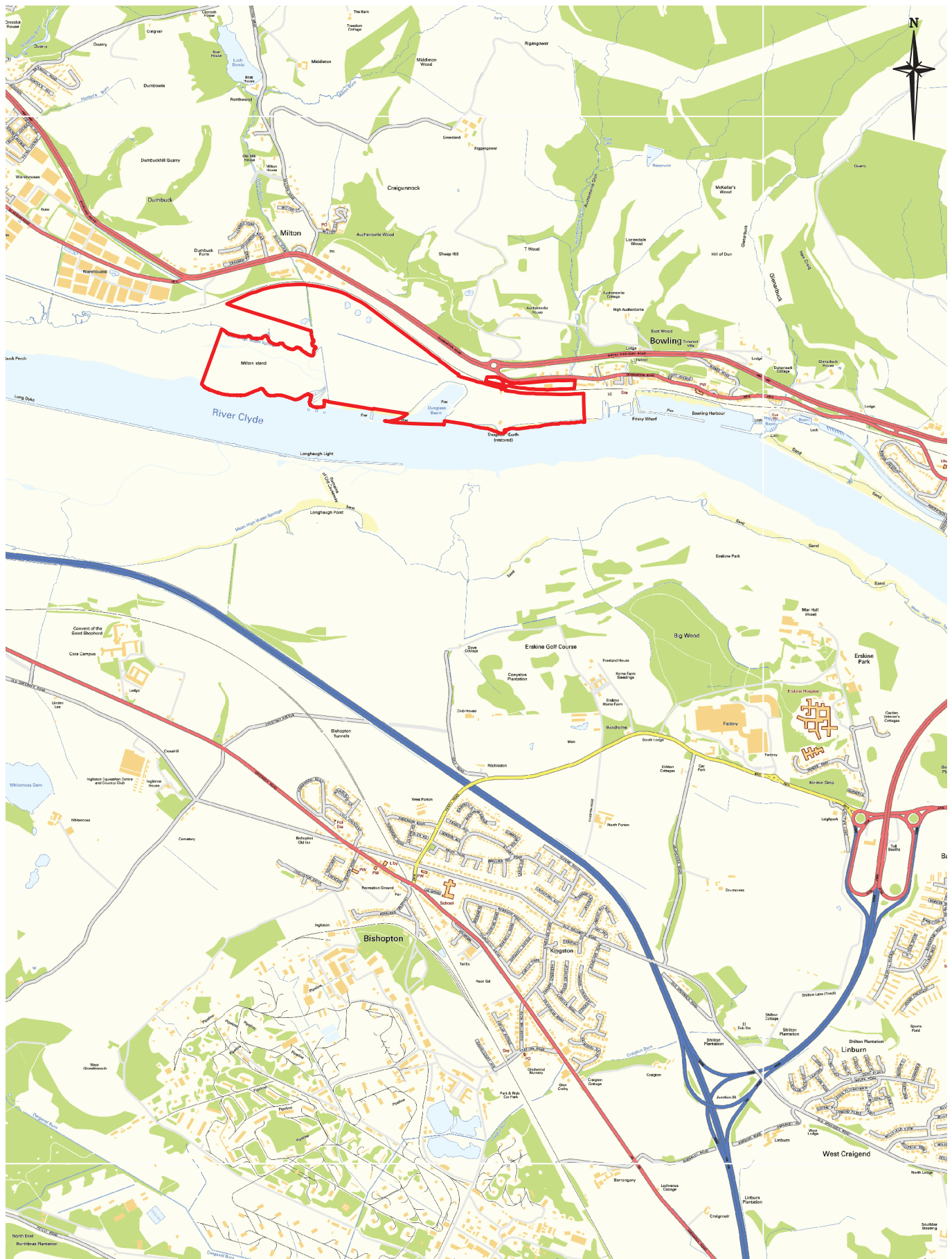




The Mailbox  
Level 2  
100 Wharfside Street, Birmingham  
B1 1RT

**wsp.com**

PUBLIC



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# KEY

— SITE BOUNDARY



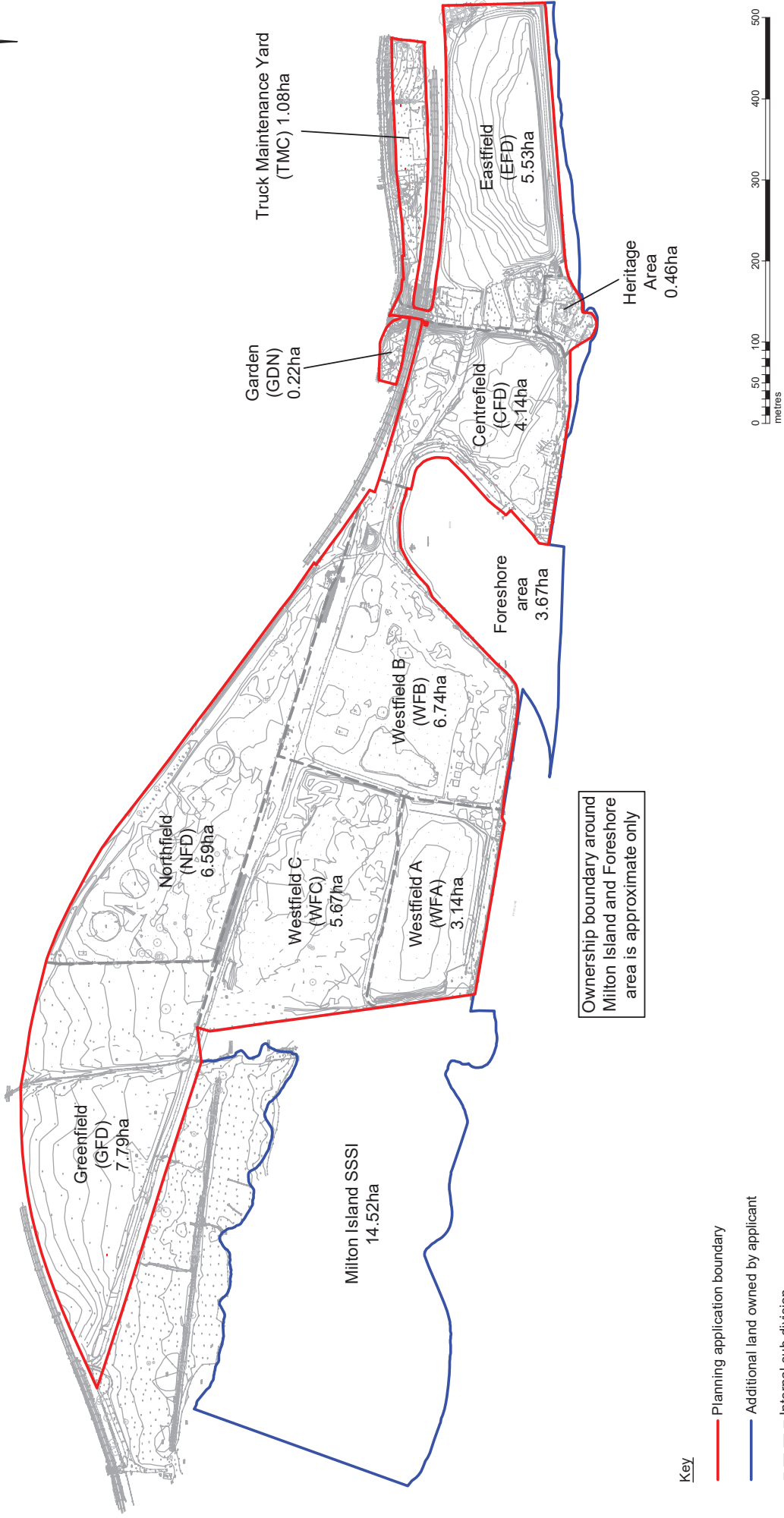
Kings Orchard  
1 Queen Street  
Glasgow G1 3JN

Tel: 44 (0)1476 300000

Client/Project:

**ESSO PETROLEUM  
COMPANY LIMITED**  
**FORMER ESSO TERMINAL, BOWLING**  
Title: **SITE LOCATION PLAN**

Drawn: CEW		Checked: JW	
Designed: JW		Approved: NS	
Date: 28/11/2018	Scale: 1:25,000	A4	Sheet:
Project Number:		Drawing Number:	Revisi
70018460		101	B



- Key**
- Planning application boundary
  - Additional land owned by applicant
  - - - Internal sub-division

Rev	Date	Description	By	Chk	App	Notes
B	20/05/17	Clarification to areas	CW	JW	NS	
C	16/07/18	Planning & land ownership boundary amended	CW	JW	NS	
D	26/04/18	Boundary area recalculated	CW	JW	NS	
E	22/11/18	Boundaries amended	CW	JW	NS	

1. EFD area previously remediated under planning permission DC11/218



Kings Orchard  
1 Queen Street  
Bristol BS2 0HQ  
Tel: 44-(0)1175-300200

Client

Esso Petroleum  
Company Limited  
Bowling, Glasgow

Project:

Title

Site Layout and Planning  
Application Boundary Plan

Drawn: CEW	Checked: NS
Designed: JW	Approved: NS
Date: 22/11/2018	Scale: 1:5000   A3   Sheet
Project Number: 70018460	Drawn Number: 102
Revision: E	

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Environmental Aspects and Impacts Register

Project	Former Bowling Terminal Remediation
Site Location	Former Bowling Terminal, Bowling, Glasgow
Date Completed	19 January 2018
Revision A	21 November 2018
Revision B	03 December 2018

Aspect	Associated Activities	Impact	Initial Significance Ranking (Prior to Controls)			Control Measures	Revised Significance Ranking (Considering Controls)		
			Severity	Likelihood	Significance		Severity	Likelihood	Significance
Air									
Use of plant and equipment (including treatment plant)	<ul style="list-style-type: none"><li>Excavation, backfilling, handling and temporary stockpiling of soils.</li><li>Treatment of soils.</li><li>Free phase recovery from excavations and water treatment.</li><li>Break-out of below-ground obstructions.</li></ul>	Impacts on local air quality and contribution to climate change from emissions.	Minor	Possible	Moderate	<ul style="list-style-type: none"><li>Use of modern, serviced and well maintained plant and equipment.</li><li>Plant and equipment to be switched-off or throttled-back when not in use.</li><li>Stack emissions controls and compliance monitoring to be employed.</li></ul>	Insignificant	Unlikely	Low
		Potential nuisance issue from release of dust from running surfaces.	Minor	Possible	Moderate	<ul style="list-style-type: none"><li>Works to be undertaken with regard to wind speed and direction and work locations to be adjusted or suspended where required.</li><li>Damping-down to be employed where necessary during excavation, handling and on haul roads.</li><li>Dust monitoring to be undertaken at sensitive boundaries.</li></ul>	Minor	Unlikely	Low
		Potential nuisance issue from release of dust from stockpiled materials.	Minor	Possible	Moderate	<ul style="list-style-type: none"><li>Covering / damping-down of stockpiles.</li><li>Damping-down of materials during processing.</li><li>Stockpiles to be located away from sensitive receptors.</li><li>Works to be undertaken with regard to wind speed and direction and work locations to be adjusted or suspended where required.</li><li>Dust monitoring to be undertaken at sensitive boundaries.</li></ul>	Minor	Unlikely	Low
Vehicle movements	<ul style="list-style-type: none"><li>Transport for site staff and visitors.</li><li>Haulage of materials to / from site.</li><li>Haulage of materials within the site.</li></ul>	Impacts on local air quality and contribution to climate change.	Insignificant	Possible	Low	<ul style="list-style-type: none"><li>Lift-sharing and use of public transport to be encouraged.</li><li>Use of modern, serviced and well maintained vehicles.</li></ul>	Insignificant	Unlikely	Low
		Potential nuisance issue from release of dust from running surfaces.	Minor	Possible	Moderate	<ul style="list-style-type: none"><li>Covering / damping-down of stockpiles</li><li>Damping-down of running surfaces.</li><li>Dust monitoring at sensitive boundaries.</li><li>Loads to be covered during transit to and from the site.</li></ul>	Minor	Unlikely	Low
Groundwater / Surface Water									
Storage and use of fuels, oils etc. (including recovered free product)	<ul style="list-style-type: none"><li>Excavation, backfilling, handling and temporary stockpiling of soils.</li><li>Haulage of materials within the site.</li><li>Treatment of soils.</li><li>Free phase recovery from excavations and water treatment.</li><li>Processing of soils and hard materials.</li></ul>	Contamination of groundwater and / or surface water from accidental releases. Damage to adjacent designated sites.	Moderate	Likely	High	<ul style="list-style-type: none"><li>Fuels to be stored in appropriate labelled containers away from sensitive environmental receptors, and locations where damage by collision may occur.</li><li>Fuel storage tanks shall be bunded and have secondary containment capable of containing 110% of the total volume of fuel stored.</li><li>Drip trays shall be placed below equipment and parts liable to leak.</li><li>Spill kits shall be available at all times and staff trained in their use.</li><li>Where reasonably practicable, refuelling shall be</li></ul>	Minor	Unlikely	Low

Aspect	Associated Activities	Impact	Initial Significance Ranking (Prior to Controls)			Control Measures	Revised Significance Ranking (Considering Controls)		
			Severity	Likelihood	Significance		Severity	Likelihood	Significance
						<ul style="list-style-type: none"> <li>undertaken on hardstanding areas.</li> <li>Drain blockers will be used to protected drainage entry points.</li> <li>An incident response plan will be in place, and tested during an early stage of the works.</li> <li>Booms (oil and silt) to be deployed in the River Clyde where works may result in releases.</li> </ul>			
Excavation, handling and temporary stockpiling of impacted materials	<ul style="list-style-type: none"> <li>Excavation, handling and temporary stockpiling of impacted soils.</li> <li>Processing of soils and hard materials.</li> </ul>	Contamination of groundwater and / or surface water from impacted materials. Damage to adjacent designated sites.	Minor	Likely	Moderate	<ul style="list-style-type: none"> <li>Impacted materials to be placed on impermeable surfaces.</li> <li>Spill kits shall be available at all times and staff trained in their use.</li> <li>Drain blockers will be used to protected drainage entry points.</li> <li>Any wash-down water from plant, equipment and vehicles to be contained and disposed of appropriately.</li> <li>An incident response plan will be in place, and tested during an early stage of the works.</li> </ul>	Insignificant	Unlikely	Low
Vehicle movements	<ul style="list-style-type: none"> <li>Transport for site staff and visitors.</li> <li>Haulage of materials to / from site.</li> <li>Haulage of materials within the site.</li> </ul>	Silting of surface water courses and drains.	Minor	Likely	Moderate	<ul style="list-style-type: none"> <li>Wheel-washing facility to be installed to prevent transfer of mud and other debris off-site (wheel-wash water to be contained).</li> <li>Drain blockers will be used to protected drainage entry points.</li> <li>Cut-off trenches to collect run-off to be installed where necessary.</li> </ul>	Minor	Unlikely	Low
Discharges to surface water	<ul style="list-style-type: none"> <li>Free phase recovery from excavations and water treatment.</li> </ul>	Contamination of groundwater and / or surface water.	Moderate	Likely	High	<ul style="list-style-type: none"> <li>Appropriate pumping, treatment and storage plant and equipment will be used, which will be maintained and inspected frequently.</li> <li>Storage tanks and treatment vessels will be bunded.</li> <li>Compliance testing to be undertaken prior to discharge.</li> </ul>	Minor	Unlikely	Low
<b>Land</b>									
Excavation, handling and temporary stockpiling of impacted materials	<ul style="list-style-type: none"> <li>Excavation, handling and temporary stockpiling of impacted soils.</li> <li>Processing of soils and hard materials.</li> </ul>	Ground contamination via direct mixing with non-impacted areas.	Moderate	Possible	Moderate	<ul style="list-style-type: none"> <li>Impacted materials to be placed on impermeable surfaces.</li> <li>Remediated areas of the site not to be used for stockpiling of impacted materials.</li> </ul>	Minor	Unlikely	Low
Material quality of backfill material	<ul style="list-style-type: none"> <li>Re-use of site-won soils and hard materials.</li> <li>Import and placement of imported materials.</li> </ul>	Ground contamination via placement of unsuitable materials.	Moderate	Possible	Moderate	<ul style="list-style-type: none"> <li>Validation testing of all materials to be placed, to demonstrate compliance against re-use / import criteria.</li> <li>Tracking system to be implemented to record material movements and locations of materials placed.</li> </ul>	Minor	Unlikely	Low
<b>Natural Resources</b>									
Energy use (diesel, gas, electricity) by plant and equipment.	<ul style="list-style-type: none"> <li>All site operations including excavation, stockpiling, processing and treatment.</li> </ul>	Depletion of finite natural resources.	Minor	Unlikely	Low	<ul style="list-style-type: none"> <li>Mains power to be used wherever reasonably practicable.</li> <li>Renewable energy sources to be used wherever reasonably practicable e.g. solar panels for telemetry (limited applicability).</li> <li>Works to be planned in the most efficient manner.</li> <li>Bench trials to be undertaken to inform most efficient operating temperature for treatment.</li> <li>Plant and equipment to be switched-off when not in</li> </ul>	Insignificant	Unlikely	Low



Aspect	Associated Activities	Impact	Initial Significance Ranking (Prior to Controls)			Control Measures	Revised Significance Ranking (Considering Controls)		
			Severity	Likelihood	Significance		Severity	Likelihood	Significance
Water usage	<ul style="list-style-type: none"> <li>Damping down of stockpiles / haul roads and during materials processing.</li> <li>Addition of water</li> <li>Wheel-washing and wash-down activities.</li> <li>General consumption for welfare etc.</li> </ul>	Depletion of natural resources.	Minor	Unlikely	Low	<p>use.</p> <ul style="list-style-type: none"> <li>Mains water to be used.</li> <li>Application of damping-down water to be controlled efficiently e.g. hoses to be turned-off during pauses in processing activities.</li> <li>Wheel-wash water to be re-circulated where possible.</li> <li>Water lines to be inspected regularly for leaks and any repairs made promptly.</li> </ul>	Insignificant	Unlikely	Low
Imported soil / aggregate	<ul style="list-style-type: none"> <li>Import and placement of backfill materials.</li> </ul>	Depletion of finite natural resources.	Minor	Unlikely	Low	<ul style="list-style-type: none"> <li>Re-use of site-won materials to be undertaken wherever reasonably practicable.</li> <li>Import of secondary aggregate to be prioritised (subject to cost-benefit of use of local quarried material)</li> <li>Ordering process to be considered to avoid over-ordering material leading to surplus.</li> </ul>	Insignificant	Unlikely	Low
<b>Waste Management</b>									
Disposal of waste materials	<ul style="list-style-type: none"> <li>All site operations including excavation, stockpiling, processing and treatment.</li> </ul>	Reduction in local landfill capacity or indirect impacts from processing e.g. incineration.	Moderate	Possible	Moderate	<ul style="list-style-type: none"> <li>Careful separation / segregation of waste materials to be undertaken to maximise re-use and recycling of materials wherever practicable.</li> <li>Recyclable materials to be collected from site office facilities for recycling.</li> <li>A Site Waste Management Plan will be prepared for the works.</li> </ul>	Insignificant	Unlikely	Low
Cross-contamination / mixing of wastes	<ul style="list-style-type: none"> <li>All site operations including excavation, stockpiling, processing and treatment.</li> </ul>	Misclassification of wastes and disposal to unsuitable facilities, with indirect impacts at point of disposal.	Minor	Possible	Moderate	<ul style="list-style-type: none"> <li>Tracking system to be implemented to record waste classification and destination.</li> <li>All wastes which are temporarily stored are to be clearly labelled.</li> <li>Wastes to be disposed of in accordance with the Duty of Care.</li> <li>A Site Waste Management Plan will be prepared for the works.</li> </ul>	Minor	Unlikely	Low
<b>Local Community</b>									
Generation of noise and vibration	<ul style="list-style-type: none"> <li>All site operations including excavation, stockpiling, processing and treatment.</li> </ul>	Nuisance to site neighbours.	Moderate	Possible	Moderate	<ul style="list-style-type: none"> <li>General site operations will be confined to the following working hours 08:00 hrs to 18:00 hrs Monday to Friday and 08:00 hrs to 13:00 hrs on Saturdays. It may be necessary to undertake occasional low-impact works outside of these hours, such as critical maintenance works or responses to emergencies. There will be an overnight security presence at the Site.</li> <li>During the soil treatment phase of the works, it will also be necessary to operate the soil treatment system seven days a week including overnight. To minimise impacts: <ul style="list-style-type: none"> <li>The treatment system will operated at the minimum level required to keep the system in efficient operation;</li> <li>Noise will be minimised by use of acoustic barriers and siting the system in areas where significant attenuation of noise will occur (WFA or WFB, which are screened by wooded areas to the north); and</li> <li>Soil handling will be kept to the absolute minimum required. Movement of soils will only be permitted within the stockpiling and treatment area. Loading</li> </ul> </li> </ul>	Minor	Unlikely	Low

Aspect	Associated Activities	Impact	Initial Significance Ranking (Prior to Controls)			Control Measures	Revised Significance Ranking (Considering Controls)		
			Severity	Likelihood	Significance		Severity	Likelihood	Significance
						<ul style="list-style-type: none"> <li>and moving soils across the Site will only occur within the general site operations hours.</li> <li>All vehicles and mechanical plant used will be maintained in good and efficient working order.</li> <li>Equipment used will be 'sound reduced' models and be fitted with acoustic covers, mufflers or silencers where practicable.</li> <li>Plant and equipment in intermittent use will be shut-down, or throttled down to a minimum, in the intervening period between work activities.</li> <li>All stationary plant will be screened, where reasonably practicable.</li> <li>Over-night operation of generators and/or compressors will be avoided by using mains power instead, where reasonably practicable to do so.</li> <li>Due regard will be given to the location and nature of off-site receptors and site activities will be arranged / managed to minimise noise and vibration at the site boundaries.</li> <li>Routine noise and vibration monitoring during the works will be undertaken.</li> </ul>			
Generation of odours	<ul style="list-style-type: none"> <li>All site operations including excavation, stockpiling, processing and treatment.</li> </ul>	Nuisance to site neighbours.	Moderate	Likely	High	<ul style="list-style-type: none"> <li>Operations will be conducted with regard to the wind direction and speed, to minimise the migration of odours / vapours. Operations will be temporarily be suspended if significant odours / vapours are generated that are not contained within the Site.</li> <li>If necessary, stockpiles will be sheeted and screens/barriers erected to contain odours within the site boundary.</li> <li>A suitable odour control system (such as atomising spray system or foam) will be used should other means fail to contain the odours / vapours.</li> <li>Odour monitoring will be undertaken within the site and at site boundaries.</li> </ul>	Minor	Unlikely	Low
Litter	<ul style="list-style-type: none"> <li>All site operations including excavation, stockpiling, processing and treatment.</li> </ul>	Accidental release of waste materials causing nuisance to local community.	Minor	Possible	Moderate	<ul style="list-style-type: none"> <li>Loose wastes and those susceptible to generation of run-off will be covered and banded whilst stored.</li> <li>Loads will be covered during transport.</li> <li>Litter picking will be undertaken on a routine basis.</li> </ul>	Minor	Unlikely	Low
Security	<ul style="list-style-type: none"> <li>All site operations.</li> </ul>	Vandalism / damage to plant and equipment, personal belongings.	Moderate	Likely	High	<ul style="list-style-type: none"> <li>Security to be maintained during the works.</li> <li>Gates to be kept closed when not in use, and either locked or manned.</li> <li>Fences and gates to be regularly inspected and repaired promptly where necessary.</li> </ul>	Minor	Unlikely	Low
Use of lighting	<ul style="list-style-type: none"> <li>All site operations including excavation, stockpiling, processing and treatment.</li> </ul>	Disturbance / nuisance to local residents.	Minor	Unlikely	Low	<ul style="list-style-type: none"> <li>Lighting will be installed such that illumination is minimised and tailored to functionality and focussed where needed. No site lighting will be placed on the seaward side of the visual screens and all lighting will be aligned to minimise illumination of the seawall and intertidal area.</li> <li>Lighting will be controlled overnight so that light does not impact nearby residents.</li> </ul>	Minor	Unlikely	Low
Traffic	<ul style="list-style-type: none"> <li>Transport for site staff and visitors.</li> <li>Haulage of materials to / from</li> </ul>	Nuisance to site neighbours via loss of parking spaces or congestion on local	Moderate	Likely	High	<ul style="list-style-type: none"> <li>Works to be undertaken in accordance with a Traffic Management Plan.</li> <li>Access and egress of all works traffic will be via the</li> </ul>	Minor	Unlikely	Low

Aspect	Associated Activities	Impact	Initial Significance Ranking (Prior to Controls)			Control Measures	Revised Significance Ranking (Considering Controls)		
			Severity	Likelihood	Significance		Severity	Likelihood	Significance
	<ul style="list-style-type: none"> <li>Haulage of materials within the site.</li> </ul>	roads.				main entranceway located off the A814 (just off the Dungiass roundabout). It is not proposed to utilise other entranceways to the Site except in emergencies. Warming signs will be placed in prominent positions ahead of the main entrance way indicating 'warning construction site traffic'. <ul style="list-style-type: none"> <li>Heavy vehicles will be directed to turn left out of the Site onto the A814, and then onto the A82.</li> <li>Heavy vehicles will be directed to avoid Bowling Village on route to the Site.</li> <li>No parking of works-related traffic will be permitted on local roads (except when using local businesses).</li> </ul>			
<b>Cultural Heritage</b>									
Excavation of buried former shoreline.	<ul style="list-style-type: none"> <li>Excavation, handling and temporary stockpiling of impacted soils.</li> <li>Free phase recovery from excavations and water treatment.</li> </ul>	Damage / loss of culturally significant remains / artefacts.	Moderate	Unlikely	Moderate	<ul style="list-style-type: none"> <li>Mitigation to follow recommendations made in Cultural Heritage Desk-based Assessment which includes the requirement for a qualified archaeologist to attend site during the limited works which may expose the former shoreline.</li> </ul>	Negligible	Unlikely	Low
<b>Ecosystems</b>									
Noise disturbance	<ul style="list-style-type: none"> <li>All site operations.</li> </ul>	Disturbance to protected species, damage to designated sites.	Moderate	Likely	High	<ul style="list-style-type: none"> <li>General site operations will be confined to the following working hours 08:00 hrs to 18:00 hrs Monday to Friday and 08:00 hrs to 13:00 hrs on Saturdays. It may be necessary to undertake occasional low-impact works outside of these hours, such as critical maintenance works or responses to emergencies. There will be an overnight security presence at the Site.</li> <li>During the soil treatment phase of the works, it will also be necessary to operate the soil treatment system seven days a week including overnight. To minimise impacts:               <ul style="list-style-type: none"> <li>The treatment system will operate at the minimum level required to keep the system in efficient operation;</li> <li>Noise will be minimised by use of acoustic barriers and siting the system in areas where significant attenuation of noise will occur (WFA or WFB, which are screened by wooded areas to the north); and</li> <li>Soil handling will be kept to the absolute minimum required. Movement of soils will only be permitted within the stockpiling and treatment area. Loading and moving soils across the Site will only occur within the general site operations hours.</li> </ul> </li> <li>Hydraulic piling techniques to be used (where practicable) rather than percussive techniques.</li> <li>A 'soft-start' to noisy activities is to be employed.</li> <li>Plant and equipment to be located and orientated away from designated locations where possible.</li> <li>Screening to be provided between working plant and designated sites in the form of temporary acoustic barriers, and around all piling rigs and noisy activities.</li> <li>Unnecessary running of plant and equipment to be avoided.</li> <li>Acoustic covers / barriers to be used on / around construction plant and equipment (where possible).</li> <li>Monitoring of acoustic levels to be undertaken at</li> </ul>	Minor	Unlikely	Low

Aspect	Associated Activities	Impact	Initial Significance Ranking (Prior to Controls)			Control Measures	Revised Significance Ranking (Considering Controls)		
			Severity	Likelihood	Significance		Severity	Likelihood	Significance
Visual disturbance	<ul style="list-style-type: none"> <li>All site operations.</li> </ul>	Disturbance to protected species, damage to designated sites.	Moderate	Possible	Moderate	<p>strategic levels along the site boundary.</p> <ul style="list-style-type: none"> <li>General site operations will be confined to the following working hours 08:00 hrs to 18:00 hrs Monday to Friday and 08:00 hrs to 13:00 hrs on Saturdays. It may be necessary to undertake occasional low-impact works outside of these hours, such as critical maintenance works or responses to emergencies. There will be an overnight security presence at the Site.</li> <li>During the soil treatment phase of the works, it will also be necessary to operate the soil treatment system seven days a week including overnight. To minimise impacts: <ul style="list-style-type: none"> <li>The treatment system will operate at the minimum level required to keep the system in efficient operation;</li> <li>Noise will be minimised by use of acoustic barriers and siting the system in areas where significant attenuation of noise will occur (WFA or WFB, which are screened by wooded areas to the north); and</li> <li>Soil handling will be kept to the absolute minimum required. Movement of soils will only be permitted within the stockpiling and treatment area. Loading and moving soils across the Site will only occur within the general site operations hours.</li> <li>Visual screens to be erected along the site boundary with the designated sites.</li> <li>The presence of sensitive receptors will be considered during the use of artificial lighting, which will be installed such that illumination is minimised and tailored to functionality and focussed where needed.</li> <li>An Ecological Clerk of Works will oversee the river wall repair works, installation of visual screening fence and drainage outfall works, if undertaken between mid-October to mid-April, to ensure works are progressed when redshank are not present.</li> </ul> </li> <li>Lighting will be installed such that illumination is minimised and tailored to functionality and focussed where needed. No site lighting will be placed on the seaward side of the visual screens and all lighting will be aligned to minimise illumination of the seawall and intertidal area, ensuring an unit corridor of 30 m.</li> <li>As detailed within Section 4.0 of the EMP.</li> </ul>	Minor	Unlikely	Low
Use of lighting	<ul style="list-style-type: none"> <li>All site operations including excavation, stockpiling, processing and treatment.</li> </ul>	Disturbance / nuisance to wildlife	Moderate	Possible	Moderate		Minor	Unlikely	Low
Species-specific Impacts	<ul style="list-style-type: none"> <li>All site operations including excavation, stockpiling, processing and treatment.</li> </ul>	Disturbance, nuisance, injury to protected species.	Moderate	Likely	High		Minor	Unlikely	Low

Note 1: Potential impacts associated with impacts to Local Communities from dust generation are included in 'Air'.

Note 2: Potential impacts associated with impacts to ecological systems from dust are included in 'Air' and run-off, whilst impacts from discharges, releases and hazardous materials are included in 'Groundwater / surface water', 'Land' and 'Local Communities'.

The significance of the identified aspects have been evaluated by firstly determining the severity of the potential consequence (impacts) of the risk occurring and the likelihood of the impact occurring. The process for determining the classification of consequence is detailed in the table below:

Severity of Impact		Likelihood	
1	<b>Catastrophic</b> – Intense local impacts with short to medium term effects, and/or major potential for widespread impacts in the medium to long term. There impacts are clearly apparent and may be irreversible.	A	<b>Almost Certain</b> to happen
2	<b>Major</b> –Major local impacts with short to medium term effects and/or moderate potential for widespread impacts in the medium to long term.	B	<b>Likely</b> to happen at some point
3	<b>Moderate</b> – Moderate local impacts with medium term effects and/or low potential for widespread impacts in the short to medium term.	C	<b>Possible</b> , it might happen
4	<b>Minor</b> – Minor local impacts with short term effects or minor widespread impact in the short term.	D	<b>Unlikely</b> , not likely to happen
5	<b>Insignificant</b> – Minor impact with negligible effects.	E	<b>Rare</b> , practically impossible

Once the severity and likelihood have been determined, the corresponding scores are multiplied to determine the significance, which then categorised, ranging from 'low' to 'critical', as shown in the tables below:

		Likelihood				
		A	B	C	D	E
Severity	1	25	24	22	19	15
	2	23	21	18	14	10
	3	20	17	13	9	6
	4	16	12	8	5	3
	5	11	7	4	2	1

Significance	
Score	Description
23-25	Critical
16-22	High
7-15	Moderate
1-6	Low

# Bowling remediation - Site Waste Management Plan (SWMP)

Version 1  
Dec-17









## SWMP - Actual Data (Remediation Stage)

[illegible]

## SWMP - Data Summary

[illegible]

# TECHNICAL NOTE 1

<b>DATE:</b>	04 June 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Cultural Heritage & Archaeology Reappraisal		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Kevin Mooney
<b>CHECKED:</b>	Nick Townsend	<b>APPROVED:</b>	Nick Townsend

## PROJECT BACKGROUND

WSP has been commissioned by Esso Petroleum Company, Limited (Esso) to undertake a Cultural Heritage & Archaeology reappraisal of the impact of the proposal to construct a revetment along the southern river frontage of Centrefield. This proposal represents a change from the consented works (DC18/013) and thus requires review.

This reappraisal forms an addendum to the Cultural Heritage Desk Based Assessment<sup>1</sup> and follows the same aims and objectives as well as the scope and methodology set out in this original document. The reappraisal has been carried out in accordance with the requirements of Scottish Planning Policy<sup>2</sup> and to the standards specified by the Chartered Institute for Archaeologists<sup>3</sup> and Historic Environment Scotland<sup>4</sup>.

### EIA screening

The environmental effect of the amended scheme on Cultural Heritage & Archaeology has also been reviewed for EIA screening purposes. Within Table 1 below, we have provided an opinion on the potential effects of the amended scheme on the Cultural Heritage resource, and thus the potential for significant effects. There are no predicted significant effects on the Cultural Heritage resource.

### Policy and Legislation Updates

Since the production of the Cultural Heritage Desk Based Assessment, there has been changes in policy and legislation.

- The Scottish Historic Environment Policy (SHEP 2009)<sup>5</sup> was replaced by the Historic Environment Scotland Policy Statement (HESPS 2016)<sup>6</sup>.
- A new Historic Environment Policy for Scotland (HEPS 2019)<sup>7</sup> was adopted on the 01 May 2019, when it replaced the HESPS.

The new Historic Environment Policy for Scotland is a strategic policy document for the whole of the historic environment and is underpinned by detailed policy and guidance. This includes a selection of Managing Change in the Historic Environment Guidance Notes<sup>8</sup>.

<sup>1</sup> WSP, 2017 Cultural Heritage Desk Based Assessment, *Bowling Oil Terminal, Bowling Dumbarton, Report No 70018460-CHDBA*

<sup>2</sup> Scottish Planning Policy, 2014 (SPP) Paragraphs 135-151: Valuing the Historic Environment available at <https://www.gov.scot/publications/scottish-planning-policy/>

<sup>3</sup> Chartered Institute for Archaeologists, 2014 Standards and Guidance for Historic Environment Desk-based Assessment

<sup>4</sup> Historic Environment Scotland's Managing Change in the Historic Environment guidance notes, 2016 Accessed <http://www.historicenvironment.scot/heps>

<sup>5</sup> Historic Scotland, 2009 Historic Environment Policy

<sup>6</sup> Historic Environment Scotland, 2016 Historic Environment Scotland Policy Statement.

<sup>7</sup> Historic Environment Scotland, 2019 Historic Environment Policy for Scotland.

<sup>8</sup> Accessed <http://www.historicenvironment.scot/heps>

# TECHNICAL NOTE 1

<b>DATE:</b>	04 June 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Cultural Heritage & Archaeology Reappraisal		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Kevin Mooney
<b>CHECKED:</b>	Nick Townsend	<b>APPROVED:</b>	Nick Townsend

The following reappraisal has taken cognisance of all changes in policy and legislation identified, and adhered to the updated changes during the reassessment of impacts on the Cultural Heritage & Archaeology resource present.

## Methodology

This reappraisal has reviewed the previous desk based study and examined the Site and the previous radius of 200 metres beyond its boundary. The reassessment of the Site and the surrounding landscape was necessary to review the local archaeological and historical context, to provide updates to the current baseline and to provide an update on any changes to our understanding of the historical development of the Site.

- GIS data sets on Scheduled Monuments and Listed Buildings were re visited from Historic Environment Scotland;
- GIS data sets on Cultural Heritage assets/sites were re visited on the Scottish National Record of the Historic Environment which is maintained by Historic Environment Scotland;
- Information from the West Dunbartonshire Historic Environment Record (HER) was revisited online from the West of Scotland Archaeology Service (WoSAS);

Readily accessible primary and secondary historical resources including the relevant historic maps for the study area have already been examined as part of the original assessment. This included Ordnance Survey maps from the 1st Edition to the twentieth Century.

## Limitations

The document represents a high-level reappraisal of archaeological risk and has not included

- A full refresh and review of resources consulted during the original Cultural Heritage Desk Based Assessment, that remained static (eg documentary, cartographic, air photographic, and geotechnical, architectural and engineering sources).
- No additional Site walkover/inspection has been carried out – from the original in February 2017, as the Site remains unchanged and it is unlikely that further assets will have been identified in the intervening period .
- Archaeological remains are buried and not visible. In the absence of intrusive archaeological field investigation, it is possible that there are buried assets within the monitoring Site that have not been identified by the reappraisal of the archaeological constraints.

The reappraisal has only considered the updates to the design (i.e. the replacement of the sheet piled wall with a revetment) which have been identified as requiring the submission of a refreshed planning application for the amended scheme.

## Appraisal

The reappraisal has identified that no additional Cultural Heritage assets have been identified within the Site boundary or within the 200 metre assessment buffer surrounding it. The archaeological baseline has remained static within the Site boundary.



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<b>CHECKED:</b>	Nick Townsend	<b>APPROVED:</b>	Nick Townsend

The previous walkover survey did not identify any significant built surface remains within the Site, however, there still remains the potential for previously unknown subsurface remains due to the nature of the hydraulic filling of the mudflats prior to the terminal construction.

The proposed remediation work would not have a direct impact on Dunglass Castle. Due to changes in consented works and the proximity of work, demarcation of the wall would be advised if the working area was constrained in this location.

There would be no lasting impact on the Setting of any of the listed buildings surrounding the proposed Site or to the Scheduled Monument (Sheep Hill, fort) on the hill overlooking the Site. This is primarily due to the reinstatement on the excavated soil after it has been remediated and the temporary nature of the works taking place. No lasting change in the land formation is required for this phase of soil remediation work. Temporary impacts may exist in the form of increased road traffic associated with the delivery of revetment rock materials from the adjacent quarry – however, it is likely that this will be of relatively short term duration and will be managed in accordance with the Traffic Management Plan and restrictions on vehicle movements (to avoid school travel times) as per conditions 6 & 7 of DC18/013.

The later periods of land reclamation across the area may undoubtedly have had an adverse impact on any potential previously unknown archaeological remains in the southern and central areas of the Site. The extent to which this may have affected possible deposits remains unknown.

The reappraisal of impacts has highlighted that there will be no change in impact on any of the previously identified assets, and as such no significant adverse impacts.

*Table 1 – Assessment of impacts from updated design*

SITE NO.	REFERENCE NUMBER	DESIGNATION	SITE NAME	VALUE	UPDATED DESIGN	
					Magnitude of impact	Overall impact
1	WoSAS ID 7948 Canmore ID 43398 LB14399	Category B	Dunglass Castle	High	Negligible	Slight
2	Canmore ID 232088 LB14400	Category B	Obelisk Memorial to Henry Bell	Low	Negligible	Slight
3	Canmore ID 298349	HER	Dunglass Castle Doocot	Low	Negligible	Slight
4	Canmore ID 43390 WoSAS ID 7940	HER	Dunglass Point (Pottery)	Negligible	No Change	Neutral
5	Canmore ID 43374 WoSAS ID 7924	HER	Dunglass, Cromwellian Fort	Low	Negligible	Slight
6	Canmore ID 43339 WoSAS ID 7889	HER	Dunglass, Roman Fort	Low	Negligible	Slight
7	Canmore ID 350858	HER	River Clyde, Dunglass Castle	Unknown	No Change	Neutral

# TECHNICAL NOTE 1

<b>DATE:</b>	04 June 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Cultural Heritage & Archaeology Reappraisal		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Kevin Mooney
<b>CHECKED:</b>	Nick Townsend	<b>APPROVED:</b>	Nick Townsend

SITE NO.	REFERENCE NUMBER	DESIGNATION	SITE NAME	VALUE	UPDATED DESIGN	
					Magnitude of impact	Overall impact
8	Canmore ID 350869	HER	River Clyde, Dunglass Castle	Unknown	Negligible	Neutral
9	Canmore ID 43332 WoSAS ID 7882	HER	Bowling/Dunglass Castle/Bowling 1 and 2/Clyde 20 and 21	High	No Change	Neutral
10	Canmore ID 295761	HER	Bowling, Dunglass basin, Oil Tank Farm	Unknown	No Change	Neutral
11	Canmore ID 43350	HER	River Clyde, Dumbuck, Roman Ford	Medium	No Change	Neutral
12	Canmore ID 43333 WoSAS ID 7883	HER	Milton Island/River Clyde/Dunglas/Clyde 22	Medium	No Change	Neutral
13	Canmore ID 43389 WoSAS ID 7939	HER	Milton	Negligible	No Change	Neutral
16	Canmore ID 43335	HER	Dumbuck Hill, Fort	Medium	No Change	Neutral
17	Canmore ID 43399 WoSAS ID 7949	HER	Dumbuck, figurine	Low	No Change	Neutral
18	Canmore ID 198421	HER	Milton, Crannog Road, Crannog Cottage	Low	No Change	Neutral
19	Canmore ID 340419	HER	Milton, Dumbarton Road, Primary School, War Memorial	Low	No Change	Neutral
20	Canmore ID 198423 LB49861	Category B	Milton, Dumbarton Road, Primary School	Medium	No Change	Neutral
21	Canmore ID 288648	HER	Milton, 9-16 Whytes Corner General	Low	No Change	Neutral
22	Canmore ID 140931 WoSAS ID 39973	HER	Milton, Tourist Information Centre, Trough	Unknown	No Change	Neutral
23	Canmore ID 43330 WoSAS ID 7880	HER	Auchentorlie, Treemass Castle	Low	No Change	Neutral
24	Canmore ID 43331 WoSAS ID 7881	HER	Auchentorlie, building, mound	Low	No Change	Neutral
25	Canmore ID 170982 WoSAS ID 40202	HER	Auchentorlie House, buildings	Low	No Change	Neutral
26	Canmore ID 75729 WoSAS ID 12855	HER	Auchentorlie House, cup marked stone	Medium	No Change	Neutral
27	Canmore ID 197492	HER	Auchentorlie House	Low	No Change	Neutral
28	Canmore ID 7938 SM2908	Scheduled Monument	Sheep Hill, Fort, Auchentorlie	High	Negligible	Slight

# TECHNICAL NOTE 1

<b>DATE:</b>	04 June 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Cultural Heritage & Archaeology Reappraisal		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Kevin Mooney
<b>CHECKED:</b>	Nick Townsend	<b>APPROVED:</b>	Nick Townsend

SITE NO.	REFERENCE NUMBER	DESIGNATION	SITE NAME	VALUE	UPDATED DESIGN	
					Magnitude of impact	Overall impact
29	Canmore ID 241051 LB19656	Category B	Littlemill Distillery, former Exciseman's House and Boundary walls, gatepiers and railings	Medium	No Change	Neutral
30	Canmore ID 81823 WoSAS ID 13990	HER	Bowling, Dumbarton road, Littlemill Distillery, Maltings and Kilns	Low	No Change	Neutral

## Conclusions

The changes in design will have negligible impact on the conclusions from the previous assessment.

The scale of previous disturbance across the Site, during the reclamation of the land for use as the terminal, will have adversely impacted the archaeological resource.

We cannot yet be certain whether the Site retains small islands/pockets of surviving archaeological remains, and if so the nature and extent of these. It is unlikely that if surviving, they will be spatially extensive, however the rarity or possible survival serves to increase the potential significance of any remains within them i.e. Crannogs and/or log boats.

Targeted archaeological monitoring (previously identified) would enable the establishment of the spatial extent of any areas of continuing archaeological potential and allow for the mitigation of any potential losses in accordance with planning policies.

Due to the proximity of work on the foreshore and the change to consented works, best practice would be to introduce an indicative standoff (circa 10 meters if space permits), and allow for demarcation of the wall surrounding the Listed Building of Dunglass Castle. The additional inclusion of this element within any tool box talks should also advise of no physical impacts or encroachment on the Listed Building.

As previously identified, it is likely that the local authority archaeological advisers (WoSAS) will recommend archaeological mitigation.

# TECHNICAL NOTE 1

<b>DATE:</b>	07 July 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Contamination Review		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Nick Townsend
<b>CHECKED:</b>	Nigel Snedker	<b>APPROVED:</b>	Nigel Snedker

## PROJECT BACKGROUND

WSP has been commissioned by Esso Petroleum Company, Limited (Esso) to undertake a reappraisal of the impact of the proposal to construct a revetment along the southern river frontage of Centrefield.

The CFD river frontage comprises a length of circa 250m which extends from the rock outcrop in the east to the “basin” in the west. As illustrated within Figure 1, the western section is formed by approximately 175m of sheet piles, with the remaining frontage comprising a revetment, variably formed by a mixture of rock armour and concrete faced rock sections.

**Figure 1 – Aerial View of Centrefield River Frontage**



Google Maps, 2019, <https://www.google.com/maps/@55.9293882,-4.50475,144m/data=!3m1!1e3>

The works, as consented under DC013/18 (relating to remediation of the wider site), comprised the installation of a new sheet pile along the frontage of the existing sheet pile wall. The new wall was intended to facilitate unhindered access and allow the complete excavation and subsequent remediation of hydrocarbon impacted soils adjacent to the wall which failed the agreed site remediation criteria. The original sheet pile wall would have been demolished / removed during the excavation works. No works were proposed to the remaining river frontage to the east of the sheet pile wall.

The amended scheme comprises the demolition and excavation of the existing revetment and removal of the existing sheet pile wall with replacement by a new rock armour revetment. The proposed new revetment will extend the full length of the southern CFD river frontage and tie-in to the existing rock armour present within the Basin. The works represent a material change from the consented works and thus require review to determine the impact of the proposed change. This document reviews the impact of the change in terms of the agreed remediation strategy as set out in the WSP Report, “*Remediation Options Appraisal, Remediation Strategy & Outline Implementation Plan, Ref: Final V1.0, Dec 2018*”, subsequently referred to as Remediation Strategy.

# TECHNICAL NOTE 1

<b>DATE:</b>	07 July 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Contamination Review		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Nick Townsend
<b>CHECKED:</b>	Nigel Snedker	<b>APPROVED:</b>	Nigel Snedker

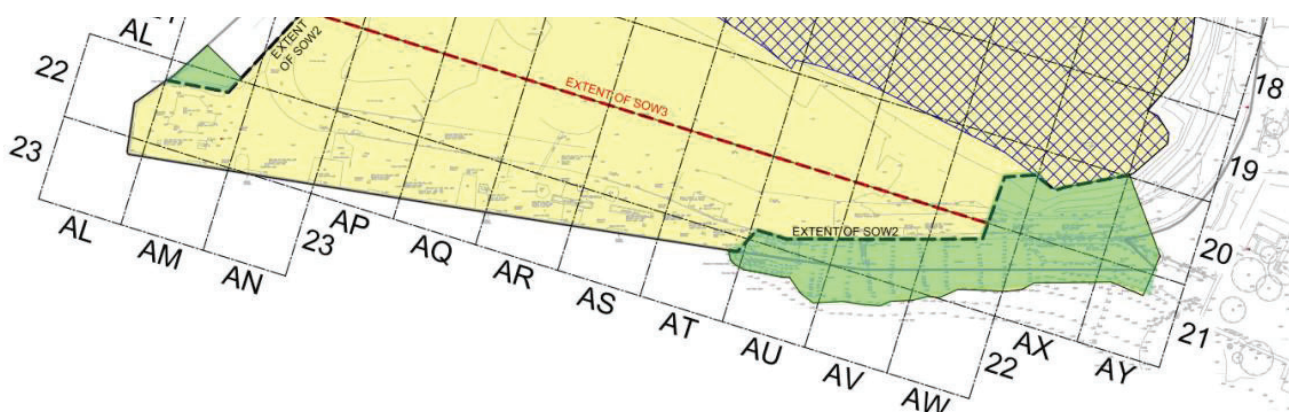
As identified above, the Remediation Strategy proposed the excavation of materials up to the existing sheet pile wall. Excavated materials would be conveyed to a stockpile area and tested to determine the requirement for remediation, with subsequent on-site treatment for soils failing the site remediation criterion (9,600mg/kg TPH). Soils passing the remediation criterion (<9,600mg/kg TPH) and treated soils which meet the treatment target (3,000mg/kg TPH) are to be subsequently re-used as backfill on the site. No driver for remedial action was identified for the remaining area of river frontage (i.e. east of the sheet pile wall) beyond the removal of the primary sources on CFD (to be undertaken as part of the agreed remediation works) which would have reduced the minor short duration sheens over time.

## RE-APPRAISAL

Excavation and remediation of CFD will progress in a north to south direction, such that the majority of the CFD area will have been remediated and backfilled prior to commencement of the revetment works. It is anticipated that the Remediation Contractor will undertake the revetment works using a sectional approach, whereby on completion of each excavation section construction of the revetment is commenced. Excavation will be undertaken on a falling tide to minimise mobilisation of contamination and sediment to the River Clyde.

The proposed works employ the same criteria and treatment protocols as agreed in the Remediation Strategy. In addition to the excavation of materials, in order to permit construction of the revetment and to deliver the holistic solution with a tie-in to existing sections, additional areas will be subject to excavation (identified as the green areas shown in Figure 2). Removal of these impacted materials will provide further certainty that, post remediation, there is no significant hydrocarbon impacted source remaining, and will provide greater environmental betterment than originally envisaged, as under the existing strategy there is no driver for remediation of these areas.

**Figure 2 – Proposed Additional Remediation Excavation Extents**





# TECHNICAL NOTE 1

<b>DATE:</b>	07 July 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Contamination Review		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Nick Townsend
<b>CHECKED:</b>	Nigel Snedker	<b>APPROVED:</b>	Nigel Snedker

Excavation will extend to circa -1.5mAOD, generating an additional 12,500m<sup>3</sup> of materials to be assessed for treatment in accordance with the remediation strategy, i.e. materials failing the 9,600 mg/kg TPH remediation criteria shall be subject to remedial treatment, with treated soils achieving the 3,000mg/kg TPH treatment criteria.

## SUMMARY

A summary of potential impacts and mitigation measures is provided within Table 1.

**Table 1 Summary of Potential Impacts**

Topic Area	Potential Impact	Potentially Significant Effect	Potential Mitigation (if required)	Additional Assessments or Work Required	Significant Effects Following Mitigation
Controlled Waters (River Clyde)	Mobilisation of hydrocarbon contamination	Yes	Works phased to be undertaken post remediation of CFD (i.e. bulk mass of contamination will have been removed).  Works will be undertaken in a manner to minimise mobilisation i.e. on a falling tide and using sectional approach.  Containment and absorbent booms will be deployed as a precautionary measure.  Monitoring and river water quality sampling to be undertaken during the excavation and construction of the new revetment.	Remediation Contractor to undertake further dispersion modelling and agreement of criteria with Marine Scotland	None
Controlled Waters (River Clyde)	Mobilisation of sediment	Yes	Works will be undertaken in a manner to minimise mobilisation i.e. on a falling tide and using sectional approach.  Monitoring and river water quality sampling to be undertaken during the excavation and construction of the new revetment.	Remediation Contractor to undertake further dispersion modelling and agreement of criteria with Marine Scotland	None

## CONCLUSION

The revetment works require the agreement of Marine Scotland thus, as part of the licencing process, the Remediation Contractor will be required to demonstrate that the works can be undertaken without risk of significant adverse effect on the River Clyde during the works.

The proposed works will employ the same risk based criteria as agreed with WDC and conditioned under DC013/18, which are determined to be protective of risk to the River Clyde and groundwater. Through the removal of an additional volume of hydrocarbon impacted material, further certainty is gained that no significant hydrocarbon impacted source remains, with consequent greater environmental betterment over the originally proposed works.



# TECHNICAL NOTE 1

<b>DATE:</b>	07 July 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Ecological Reappraisal		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Robbie Watt
<b>CHECKED:</b>	Greg Chamberlain	<b>APPROVED:</b>	Jon Seller

## PROJECT BACKGROUND

WSP has been commissioned by Esso Petroleum Company, Limited (Esso) to undertake a reappraisal of the potential ecological impact of the proposal to construct a revetment along the southern river frontage of Centrefield (the ‘Proposed Scheme’). This proposal represents a change from the Consented Works (DC18/013 – i.e. the construction of a permanent sheet pile wall) and thus requires review. The site of the Proposed Scheme (the ‘Site’) is located at the south eastern section of the wider site that comprises the Consented Scheme (the ‘Wider Site’).

This technical note considers:

1. A reappraisal of any potential ecological effects to support Environmental Impact Assessment (EIA) screening; and
2. An appraisal of the ecological requirements to support a new planning application for the Proposed Scheme.

To inform this technical note ecology technical reports produced to inform the Consented Scheme were reviewed. Previous technical reports comprise the following:

- [REDACTED] WSP (2017a). Former Bowling Terminal. Extended Phase 1 Habitat Survey & Bat Habitat Suitability Assessment
- WSP (2017b). Bowling – Reptile Survey Report
- WSP (2017c). Bowling – Dunglass House Bat Activity Survey Report
- WSP (2017d). Bowling Remediation: Ecology Surveys – [REDACTED] Water Vole and Great Crested Newt.
- WSP (2018a). Proposed Works to the River Clyde Boundary Wall at the Former ESSO Fuel Distribution Terminal, Bowling – Environmental Review
- WSP (2018b). Bowling Remediation – Habitat Regulations Appraisal Stage 2 Appropriate Assessment Report

## EIA Screening

The environmental effect of the Proposed Scheme on Ecology receptors has been reviewed for EIA Screening purposes. Within Table 1 below, we have provided an opinion on the potential effects of the Proposed Scheme on ecology, mitigation that could be applied (where relevant) and the potential for significant effects.

Topic area	Potential impact	Potentially significant effect	Potential mitigation (if required)	Additional assessments or work required?	Significant effects following mitigation?
Ecology – Marine Mammals	Construction activity	No. Amending the Scheme to remove the permanent sheet	Works on existing and new revetment will be undertaken at low water, where possible.	None required	No

# TECHNICAL NOTE 1

<b>DATE:</b>	07 July 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Ecological Reappraisal		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Robbie Watt
<b>CHECKED:</b>	Greg Chamberlain	<b>APPROVED:</b>	Jon Seller

Topic area	Potential impact	Potentially significant effect	Potential mitigation (if required)	Additional assessments or work required?	Significant effects following mitigation?
		pile wall reduces the potential of acoustic disturbance to marine mammals during construction.	Not considered necessary, however a marine mammal watching brief undertaken by the ECoW could be proposed.		
Ecology - Redshank	Construction activity	Possibly. Amending the Scheme to remove the permanent sheet pile wall reduces the potential of acoustic disturbance to redshank during construction.	Qualifying species of the Inner Clyde SPA.  Works will be undertaken outside the main overwintering period (16th September to 15th of March inclusive) or in agreement with SNH. If works undertaken within the main overwintering period additional mitigation will be required including the erection of visual screens, where practicable and supervision of the works by an ECoW.	Habitats Regulations Appraisal	No
Ecology - <span style="background-color: black; color: black;">[REDACTED]</span>	Construction activity	Possibly.	Exclusion zones around <span style="background-color: black; color: black;">[REDACTED]</span> resting sites and other mitigation as set out in the Applied Ecology report (2019).	Amendment to European Protected Species Mitigation Licence No. 146559  Pre-construction surveys	No
Ecology - Bats	Construction activity	Possibly. Amending the Scheme to remove the permanent sheet pile wall reduces the potential of acoustic disturbance to bats during construction.	All Site lighting will be directed away from potential bat roost at Dunglass House.	Consultation with SNH with regards any European Protected Species Mitigation Licence that may be required prior to works.	No

# TECHNICAL NOTE 1

<b>DATE:</b>	07 July 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Bowling Ecological Reappraisal		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Robbie Watt
<b>CHECKED:</b>	Greg Chamberlain	<b>APPROVED:</b>	Jon Seller

Topic area	Potential impact	Potentially significant effect	Potential mitigation (if required)	Additional assessments or work required?	Significant effects following mitigation?
Designated sites – Inner Clyde Special Protection Area / Ramsar Site/ Site of Special Scientific Interest	Construction activity	Possibly. The new Revetment will overlap with designated habitat to a maximum area of 0.0134 ha. Additionally, excavations associated with construction will occur within a maximum of 0.039ha of designated habitat (outside the footprint of the revetment).	A comprehensive assessment of effects on designated sites will be undertaken during the HRA process. Key mitigation proposals are listed below.  Works will be undertaken outside the main overwintering period (16th September to 15th of March inclusive) or in agreement with SNH.  If works undertaken within the main overwintering period additional mitigation will be required including the erection of visual screens, where practicable and supervision of the works by an ECoW. .	Habitats Regulations Appraisal  Application for consent for works within a SSSI. It is anticipated that the HRA report will also provide information to inform consent for works within a SSSI.	No

## New Planning Application Requirements

A HRA Appropriate Assessment report will be produced to investigate the effects of the Proposed Scheme on the Inner Clyde SPA / Ramsar Site. The HRA Appropriate Assessment report is currently in draft format and had been produced following pre-application consultation with SNH. It is anticipated that the HRA report will also comprise the supporting information required to inform consent for works within the Inner Clyde Site of Special Scientific Interest.

It is anticipated that no further ecological studies will be undertaken to support the planning application for the Proposed Works. This is due to the availability of recent (within 3 years) relevant ecological studies and the nature of the current Proposed Scheme (i.e. replacing an existing seawall with a new seawall). Where applicable ecological mitigation will be incorporated into a project specific CEMP with adherence overseen, as necessary, by an ECoW.

Should there be any further variation to the Proposed Scheme then these conclusions should be reviewed accordingly.

# TECHNICAL NOTE 1

<b>DATE:</b>	29 October 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Marine Ecological Appraisal		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Mike Hill
<b>CHECKED:</b>	Robbie Watt	<b>APPROVED:</b>	Greg Chamberlain

## PROJECT BACKGROUND

WSP has been commissioned by Esso Petroleum Company Limited (Esso) to undertake a specialist Marine Ecology appraisal of the potential ecological impact of the proposal to construct a revetment along the southern river frontage of Centrefield (the 'Proposed Scheme'). This proposal represents a change from the Consented Works (DC18/013 – i.e. the construction of a permanent sheet pile wall) and thus requires review. The site of the Proposed Scheme (the 'Site') is located at the south eastern section of the wider site that comprises the Consented Scheme (the 'Wider Site').

This technical note provides a further appraisal of any potential marine ecological effects to support screening under the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

To inform this technical note ecology technical reports produced to inform the Proposed Scheme at each design stage were reviewed. Relevant previous technical reports comprise the following:

- Applied Ecology (2018). The Former Exxon Site, Bowling – [REDACTED]
- Applied Ecology (2019). The Former Exxon Site, Bowling – [REDACTED] and Species Protection Plan
- WSP (2017a). Former Bowling Terminal. Extended Phase 1 Habitat Survey & Bat Habitat Suitability Assessment
- WSP (2017b). Bowling Remediation: Ecology Surveys – [REDACTED] Water Vole and Great Crested Newt.
- WSP (2018a). Proposed Works to the River Clyde Boundary Wall at the Former ESSO Fuel Distribution Terminal, Bowling – Environmental Review
- WSP (2018b). Bowling Remediation – Habitats Regulations Appraisal Stage 2 Appropriate Assessment Report
- WSP (2020). Bowling Remediation – Revetment Works. Habitats Regulations Appraisal
- Technical Note – Bowling Ecology Review (July 2020),

## EIA Screening

The environmental effect of the Proposed Scheme on Ecology receptors has been reviewed for EIA Screening purposes. Within Table 1 below, we have provided an opinion on the potential effects of the Proposed Scheme on ecology, mitigation that could be applied (where relevant) and the potential for significant effects.

**Table 1 – Potential effects of the Proposed Scheme on ecology**

Topic area	Potential impact	Potentially significant effect	Potential mitigation (if required)	Additional assessments or work required?	Significant effects following mitigation?
Ecology – Marine Habitats	Construction and Operation	Possibly Loss of existing benthic habitat by encroachment of rock revetment 'foot' into subtidal habitats.	Replacing the existing sheet pile river wall with rock armour revetment has the potential to modify coastal processes. This could include modifying the	No	Yes, positive effects

# TECHNICAL NOTE 1

**DATE:** 29 October 2020

**CONFIDENTIALITY:** Public

**SUBJECT:** Marine Ecological Appraisal

**PROJECT:** Bowling

**AUTHOR:** Mike Hill

**CHECKED:** Robbie Watt

**APPROVED:** Greg Chamberlain

Topic area	Potential impact	Potentially significant effect	Potential mitigation (if required)	Additional assessments or work required?	Significant effects following mitigation?
		<p>Loss of existing rock armour revetment complete with associated intertidal fauna and flora.</p> <p>Loss of habitat due to an alteration in coastal process during operation.</p>	<p>flow of the River Clyde / tidal action to increase erosion or promote the deposition of sediment (Kraus and McDougal, 1996<sup>1</sup>).</p> <p>The Site of the new Revetment will largely utilise the site of the existing river walls and follows the same alignment. Only the 'foot' of the new Revetment extends beyond the existing river wall footprint, to a maximum of 1.5m. Modification of coastal process are associated with an alteration to coastal topography (Basco, 2004<sup>2</sup>). As modifications associated with the new Revetment are very minor, associated changes in coastal processes should also be de-minimis in extent.</p> <p>Replacing the sheet pile steel wall with a rock revetment could be anticipated to reduce scour and erosion directly adjacent to the river wall. Scour adjacent to the sheet pile river wall is evident as no intertidal mud/sand is exposed at low Mean Low Water Springs (as shown by tide lines on Ordinance Survey mapping).</p> <p>The new Revetment will likely result in the accumulation of</p>		

<sup>1</sup> Kraus, N, C and McDougal, W, G (1996). The effects of seawalls on the beach: Part 1, an updated literature review. Journal of Coastal Research. Vol. 12, No. 3, pp 691-701

<sup>2</sup> Basco (2006). Seawall Impacts on Adjacent Beaches: Separating Fact from Fiction. Journal of Coastal Studies. Issue 36, Vol.2, pp 741-744.

# TECHNICAL NOTE 1

**DATE:** 29 October 2020

**CONFIDENTIALITY:** Public

**SUBJECT:** Marine Ecological Appraisal

**PROJECT:** Bowling

**AUTHOR:** Mike Hill

**CHECKED:** Robbie Watt

**APPROVED:** Greg Chamberlain

Topic area	Potential impact	Potentially significant effect	Potential mitigation (if required)	Additional assessments or work required?	Significant effects following mitigation?
			more fine sediment / mud directly adjacent than is currently the case with the sheet pile wall <sup>1</sup> . The creation of additional mudflat habitat, in addition to the rocky intertidal habitat of the Revetment itself, has the potential to provide <b>positive impacts</b> on the intertidal and benthic flora and fauna.		
Ecology – Marine Habitats	Construction activity	Possibly. Pollution and sediment released during construction could degrade marine habitats	<p>Works phased to be undertaken post remediation of Centerfield i.e. bulk mass of contamination will have been removed.</p> <p>Works will be undertaken in a manner to minimise mobilisation i.e. on a falling tide and using sectional approach.</p> <p>Containment and absorbent booms will be deployed as a precautionary measure.</p> <p>Monitoring and water quality sampling to be undertaken during construction of revetment.</p>	Remediation Contractor to undertake further dispersion modelling and agreement of criteria with Marine Scotland.	No
Ecology – Marine Mammals	Construction activity	No. Amending the Scheme to remove the permanent sheet pile wall reduces the potential of acoustic disturbance to marine mammals during construction.	<p>Works on existing and new revetment will be undertaken at low water, where possible.</p> <p>Not considered necessary, however a marine mammal watching brief undertaken by the ECoW could be proposed.</p>	No	No
Ecology – Fish	Construction activity	Possibly. Noise generated during the removal of the existing river wall and replacement with rock armour frontage may	The proposed change in the planned approach from a replacement steel sheet piled river frontage to a rock armour solution will reduce the amount	No	No



# TECHNICAL NOTE 1

**DATE:** 29 October 2020

**CONFIDENTIALITY:** Public

**SUBJECT:** Marine Ecological Appraisal

**PROJECT:** Bowling

**AUTHOR:** Mike Hill

**CHECKED:** Robbie Watt

**APPROVED:** Greg Chamberlain

Topic area	Potential impact	Potentially significant effect	Potential mitigation (if required)	Additional assessments or work required?	Significant effects following mitigation?
		<p>generate noise, vibration and other disturbance which has the potential to disturb fish (particularly migratory salmonids), European eel, and lamprey. This disturbance may cause delay or prevention to fish migration, or cause sub-lethal or even lethal damage to fish (if noise/vibration is very high).</p> <p>There is also a possibility of direct disturbance or harm to fish caused by the placement of rock armour onto the river bed.</p> <p>Additionally, disturbance of sediment or soil (with possible contaminants) has the potential to be released or re-suspended into the river environment, which may cause pollution and harm to aquatic life.</p>	<p>of noise and vibration created during the construction phase, (by removing the requirement for pile-driving) and therefore presents an improved situation than that which was previously consented.</p> <p>Furthermore, the stated avoidance periods proposed for prevention of disturbance to redshank and wintering birds broadly coincides with key migration and spawning periods for migratory salmonids, so it is unlikely that any significant effects on migratory salmonids would occur as a result of this scheme. Further consideration of other species (e.g. European eel and lamprey) may also need to be considered and this would need to be agreed with the Marine Scotland.</p> <p>In terms of the potential direct disturbance caused by the placement of rock armour onto the river bed, it is likely that the localised disturbance caused by the construction activities would deter fish from entering the immediate area where rock armour is being placed. It is unlikely that any significant effects on fish would occur as a result.</p> <p>The stated mitigation for the prevention of pollution of the river environment would apply,</p>		

# TECHNICAL NOTE 1

**DATE:** 29 October 2020

**CONFIDENTIALITY:** Public




**SUBJECT:** Marine Ecological Appraisal

**PROJECT:** Bowling

**AUTHOR:** Mike Hill

**CHECKED:** Robbie Watt

**APPROVED:** Greg Chamberlain

Topic area	Potential impact	Potentially significant effect	Potential mitigation (if required)	Additional assessments or work required?	Significant effects following mitigation?
			and prevent any such occurrences.		
Ecology – Benthic Invertebrates	Construction activity and operation	<p>Possibly - Loss of existing benthic habitat by encroachment of rock armour toe into existing river bed.</p> <p>Direct damage to benthic invertebrates due to placement of rock armour on the river bed.</p> <p>Additionally, disturbance of sediment or soil (with possible contaminants) has the potential to be released or re-suspended into the river environment, which may cause pollution and harm to aquatic life.</p>	<p>The proposed change from a vertical steel sheet piled river wall to a profiled rock armour frontage would confer a number of benefits for benthic invertebrates, which are an important source of food for wading birds and fish. These benefits include a coarser, stone substrate with interstitial spaces which would provide useful habitat for invertebrates and would be readily colonised by plants and algae. The profile and roughness of the rock armour wall would also encourage sediment deposition and create new areas of benthic habitat which would help to off-set any minor loss due to the placement of the rock armour on the existing river bed.</p> <p>The stated mitigation for the prevention of pollution of the river environment would apply, and prevent any such occurrences.</p>	No	Yes, positive
Ecology - 	Construction activity	<p>Possibly. Construction could disturb  or damage/destroy resting sites.</p>	<p>Exclusion zones around  resting sites and other mitigation as set out in the Applied Ecology report (2019).</p>	<p>Amendment to European Protected Species Mitigation Licence No. 146559</p> <p>Pre-construction surveys</p>	No

# TECHNICAL NOTE 1

<b>DATE:</b>	29 October 2020	<b>CONFIDENTIALITY:</b>	Public
<b>SUBJECT:</b>	Marine Ecological Appraisal		
<b>PROJECT:</b>	Bowling	<b>AUTHOR:</b>	Mike Hill
<b>CHECKED:</b>	Robbie Watt	<b>APPROVED:</b>	Greg Chamberlain

Topic area	Potential impact	Potentially significant effect	Potential mitigation (if required)	Additional assessments or work required?	Significant effects following mitigation?
Designated sites – Inner Clyde Special Protection Area / Ramsar Site/ Site of Special Scientific Interest	Construction activity and operation	<p>Possibly. Construction could disturb and displace the qualifying features of the designated sites (primarily Redshank <i>Tringa totanus</i>)</p> <p>The new Revetment will overlap with designated habitat to a maximum area of 0.0134 ha. Additionally, excavations associated with construction will occur within a maximum of 0.039ha of designated habitat (outside the footprint of the revetment).</p>	<p>A comprehensive assessment of effects on designated sites has been undertaken during the HRA process. Key mitigation proposals are listed below.</p> <p>Works will be undertaken outside the main overwintering period (16th September to 15th of March inclusive) or in agreement with NatureScot (formerly Scottish Natural Heritage).</p> <p>If works undertaken within the main overwintering period additional mitigation will be required including the erection of visual screens, where practicable and supervision of the works by an ECoW.</p>	No	No

# Appendix F

## **SUMMARY OF POTENTIAL MITIGATION AND MONITORING PROPOSED**

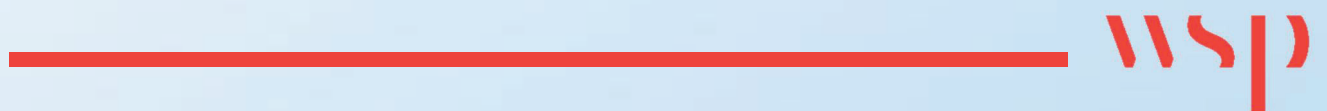


Table F-1 presents a list of potential mitigation measures proposed for the scheme.

**Table F-1 - Potential mitigation proposed**

Topic area	Potential mitigation proposed
General	An outline Construction Environmental Management Plan has been prepared which takes into consideration the various mitigations required to properly execute the works. The CEMP will be updated by the Remediation Contractor and will include any agreements with Marine Scotland.
Controlled waters	<p>Works will be undertaken post remediation of CFD (i.e. bulk mass of contamination will have been removed).</p> <p>Works will be undertaken in a manner to minimise mobilisation (i.e. on a falling tide and using a sectional approach).</p> <p>Containment and absorbent booms will be deployed as a precautionary measure.</p>
Ecology – Marine Habitats	<p>Works will be undertaken post remediation of Centerfield (i.e. bulk mass of contamination will have been removed).</p> <p>Works will be undertaken in a manner to minimise mobilisation (i.e. on a falling tide and using sectional approach).</p> <p>Containment and absorbent booms will be deployed as a precautionary measure.</p>
Ecology – Marine Mammals	Works on the existing and new revetment will be undertaken at low water, where possible.
Ecology -Redshank (qualifying species of the Inner Clyde SPA)	<p>Works will be undertaken outside the main overwintering period (16th September to 15th of March inclusive) or in agreement with NatureScot (formerly Scottish Natural Heritage).</p> <p>If works need to be undertaken within the main overwintering period, additional mitigation will be required including the erection of visual screens, where practicable and supervision of the works by an Ecological Clerk of Works (ECoW).</p>
Ecology - [REDACTED]	Exclusion zones will be created around [REDACTED] resting sites and other mitigation as set out in Applied Ecology report (2019).

Ecology - Bats	All site lighting will be directed away from the potential bat roost at Dunglass House.
Designated sites – Inner Clyde Special Protection Area / Ramsar Site/ Site of Special Scientific Interest	<p>Works will be undertaken outside the main overwintering period (16th September to 15th of March inclusive) or in agreement with NatureScot (formerly Scottish Natural Heritage).</p> <p>If works need to be undertaken within the main overwintering period then additional mitigation will be required including the erection of visual screens, where practicable, and supervision of the works by an ECoW.</p>

Table F-2 presents a list of potential monitoring measures proposed for the scheme.

**Table F-2 - Potential monitoring proposed**

Topic area	Potential monitoring proposed
Controlled waters	Monitoring and water quality sampling to be undertaken during construction of the revetment.
Ecology – Marine Habitats	
Ecology – Fish	Further consideration of other species (e.g. European eel and lamprey) may be needed and subjected to agreement with Marine Scotland.





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