SCOUR PROTECTION WORKS AT GLENCLOY WATER, BRODICK

Environmental Impact Assessment Screening Report

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1 INTRODUCTION

1.1 Purpose of the Screening Report

This EIA screening report has been prepared on behalf of North Ayrshire Council in response to a request by Marine Scotland for formal screening pursuant to schedule 2 article 10(m) of the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ("the EIA Regulations") in respect of the Scour Protection Works at Glencloy Water, Brodick. A request for permission to undertake temporary erosion control measures was granted by Marine Scotland in December 2020. Further information related to this request is provided within Section 2.

The criteria within the EIA regulations with respect to the proposed development have been included within the Environmental Impact Assessment Screening Checklist as published by the Scottish Government in June 2019[1]. The purpose of the EIA Screening Checklist is to assess the characteristics and potential effects of the proposed permanent scour protection works at Glencloy Water, Brodick. The results of this assessment are presented in Tables 4.1-4.4.

[1] Environmental Impact Assessment Screening Checklist

2 DESCRIPTION OF WORKS

2.1 The need for scour protection at Glencloy Water

Glencloy Water flows into Brodick Bay, c.200m north of Brodick village, Isle of Arran (Figure 2.1). As the Glencloy Water flows into Brodick Bay, the river is meandering in an easterly direction, eroding into the bankside verge of the public right of way, 'Fisherman's Walk'. This public right of way is part of the Arran Coastal Way and is readily used by members of the public as a pedestrian and cycle route.

Figure 2.1: Proposed development location

The area forms part of a historical landfill site however records are limited on the extent of the landfill area and if capping has been undertaken. Information may be limited due to:

- It may be unofficial;
- It may have been present during intervening mapping periods;
- Mapping is sparse for Arran/Islands due to access/little change/terrain etc.;
- It may have been unregulated (waste would probably not be required to be regulated at the time of its existence); or
- Arran came under the jurisdiction of Argyle and Bute at the time and any records were not passed over to Cunninghame District Council.

The erosion of the eastern bankside of Glencloy Water has been noted to be uncovering potentially contaminated sediments related to the historical tipping activity, as well as potentially resulting in the loss of this section of the 'Fisherman's Walk' public recreation route. ***Appendix A*** *includes a selection of photographs of the proposal site.*

2.2 The proposed scour protection

The proposed development includes the joining up/ extension of existing armourstone along the eastern bank of the meandering Glencloy Water for a length of 40m. Armourstone already exists both north and south of the proposed location. An overview of the proposal is included as Figure 2.2.

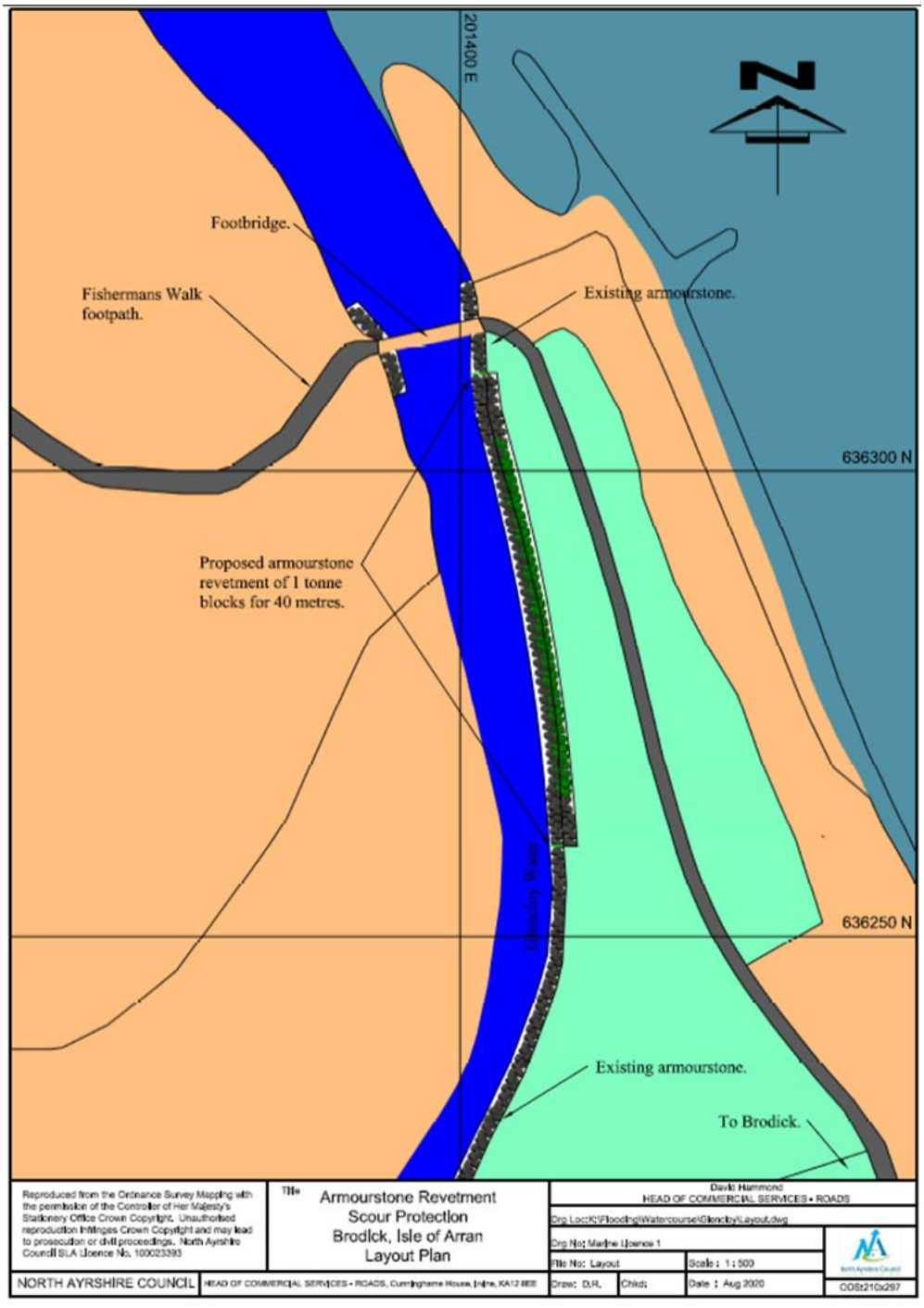

Figure 2.2: Overview of the proposed development

The proposed development will include excavation of bankside for rock armour construction. A sand bed and geotextile membrane will be laid below a granular layer, as shown in Figure 2.3. *The Method Statement is included within* ***Appendix B***. A summary method statement for the works include: the formation of a toe for the armourstone within the scoured bank, dug to an earthworks outline. A sand bed (70m^3) will be placed to protect the geotextile membrane laid (1200m^2) and a granular layer placed on slope to protect the geotextile layer from puncturing during placement of armourstone (400m^3). Armourstone to be brought up to 500mm below land level (25m^3 of acceptable fill may be required) and geotextile to be wrapped over, that a natural soil and seed be placed on top for a verge to 'Fisherman's Walk' pathway and will be sympathetic with the existing environment. In addition, the watercourse cobble bed will be regraded and cobbles placed within the armourstone voids to negate any morphological impacts to this reach of the Glencloy Water.

It is proposed that armourstone delivery will be arranged during award to the Contractor where it will be delivered to site by road, from Brodick barge / slipway dock or Calmac Ferry terminal, then along 'Fisherman's Walk' pathway to site. A post award Method Statement for construction will be forwarded to Marine Scotland once procured.

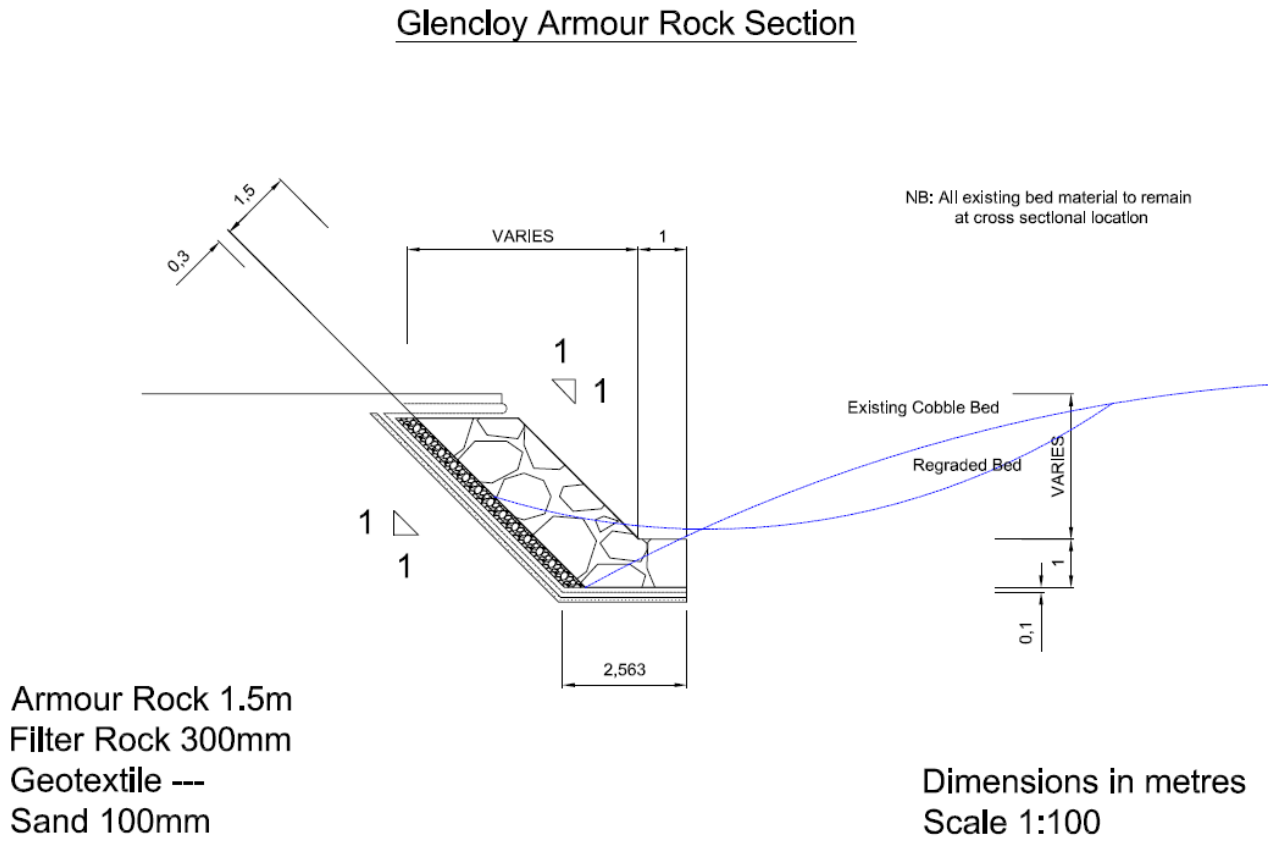

Figure 2.3: Cross-sectional drawing of proposed development

2.3 Temporary erosion mitigation

Given the urgency of the proposed works, due to the current and continued erosion, the associated potential risk of permanent loss of 'Fisherman's Walk', and contamination associated with the historic landfill, a temporary erosion mitigation request was submitted to Marine Scotland on 29th October 2020. Following a request for additional information from Marine Scotland to North Ayrshire Council, the request was granted in December 2020. The temporary erosion mitigation control was put in place until determination was made on the marine licence.

The Method Statement for the temporary erosion control works is provided within ***Appendix C***.

The temporary erosion control measures in place incorporate all of the original scope of works identified in Section 2.2, however the materials have been procured and utilised in a 'possibly permanent' construction. 'Possibly permanent' refers to the granting of a Marine Scotland licence already for the permanent armourstone revetment construction, pertaining to this report.

The site work sequence for the temporary works were as follows:

1. Set up site compound and enclosures.
2. Enact any pedestrian and traffic management to site.
3. Operatives must receive an Initial Site Induction and Work Activity Briefing
4. Excavate toe and grade for geotextile construction with rock armour pinning.
5. Lay down geotextile against scoured bank.
6. Backfill scoured embankment with imported acceptable fill and / or excess excavated material from toe excavation, depending on supply, to previous location.
7. Make up earthworks outline as necessary with excavated material and imported acceptable fill.
8. Lay sand layer on grade to protect geotextile layer.
9. Lay 2 layers of geotextile with offset overlaps in direction of watercourse flow. Geotextile to be set permanently into toe and extended temporarily over land level to be pulled.
10. Place armour rock toe 'possibly' permanently along full length of geotextile to locate toe.
11. Place temporary row of armour rock at ground level on geotextile to locate geotextile taught.
12. Remove site compound and enclosures.

A list of materials relating to the final total anticipated and the temporary erosion control measures are provided below.

Table 2.1: Materials used within the temporary erosion mitigation works and total materials required for entire works

List of materials		Temporary works materials used to date	Total materials to be used
Plastic/ synthetics	High strength geotextile	1200m^2	1200m^2
Sand	Sand	70m^3	70m^3
Boulders	Armour Rock 1 tonne blocks	150m^3	400m^3
Acceptable fill	To make up embankment below geotextile if additional required	25m^3	25m^3

In order to complete the works for scour protection, a subsequent installation of 250m^3 of permanent rock armour revetment on bank of Glencloy Water will finalise protection measures, pending marine licence approval, pertaining to this EIA screening report. The installation process will be as laid out in the method statement in ***Appendix B***.

3 ENVIRONMENTAL CHARACTERISTICS OF STUDY AREA

3.1 Population and human health

When considering the environmental characteristics of the proposal area in the context of EIA, Population and Human Health is directly linked to the number of population in proximity to the scheme and those likely to be exposed to its effects - whether these are beneficial or adverse.

The proposal site is located c.200m north of Brodick Village, which is the main village on the Isle of Arran and had a population of 853 in 2019[2]. The proposal location is adjacent to the public right of way 'Fisherman's Walk' and is therefore located where the local populations visits recreationally.

3.2 Biodiversity

The site is not located within any sensitive area, within the meaning of the EIA regulations. There are no statutory designations within the site either i.e. there are no Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs), or Ramsar Sites.

Designated sites present within a 5km zone of influence of the proposed works include: Glean Dubh SSSI located c. 2.5km to the southwest; Arran Northern Mountains SSSI located c. 2.5km to the northwest; and Clauchlands Point – Corrygills SSSI located c. 4km to the south east.

The nearest designated sites are Arran Moors SSSI/ SPA located c.1km to the west, and upstream of the proposal site. The Arran Moors SPA is designated for breeding Hen Harrier. The Arran Moors SSSI contains notified natural features such as upland habitat assemblages which also support breeding Hen Harrier as well as other breeding bird species.

Given that the proposed development site is located within the main village of the Isle of Arran, and given the scale (150m^2) of the proposed development and the short-term and temporary nature of the construction works, it is not likely that there will be an impact to the qualifying interests of Arran Moors SSSI/SPA or those designated sites located further afield.

Although the site is not a designated area, given the environmental setting, there is potential that mobile species such as Otter or Seals may, at some time, be present in the general vicinity. Given that the bankside is made of potentially contaminated fill material, is actively eroding, and that rock armour is already present both north and south of the proposed installation location, it is unlikely that any mobile species inhabit the area of the proposed works. During construction works, if it is determined that there may be protected species present, it is recommended that works cease and that guidance is sought from Scottish Natural Heritage.

3.3 Land and Soil

The main land use in the area is for recreational use. The Glencloy Water is bound to the north by Brodick Bay, to the east by 'Fisherman's Walk' public right of way, to the south by public amenity space and to the west by coastal grassland and salt marshes.

Given the occurrence of historical tipping at the site, a contaminated land investigation was undertaken in 2010. Assessment of ground conditions in the area encountered made ground across the majority of the site. Surface soils comprised topsoil and made ground of clayey sand or sandy clay to a depth of between 0.4m and 0.9mbgl. Beneath this, made ground comprised materials generally described as medium dense black gravelly fine to coarse sand with occasional pottery, glass bottles, brick, scrap metal and ash. These were encountered at depths of between 0.4m and 0.9mbgl and were proven to between 0.1m and 0.9m thick. The natural soils beneath comprised predominantly a medium dense orange brown silty gravelly sand, sometimes with a layer of organic sand or fibrous peat beneath the made ground.

Elevated levels of arsenic, hexavalent chromium, lead, nickel and mercury were identified in the area, however it should be noted that the screening value used was for residential with garden end use, which is highly conservative given the current land use in the area.

[2] Statistics.gov.uk

The leachate results indicate the potential for some contaminants to leach from the made ground at concentrations in excess of the Water Quality Standards (WQS). However, it is considered that dilution of the leachate is likely to reduce the concentration in the receiving water to considerably less than the Environmental Quality Standard (EQS). Erosion along the eastern bank of the Glencloy Water is therefore potentially releasing contaminants into the river and Brodick Bay. The proposal for scour protection along the eastern bank would effectively create a barrier to prevent further erosion and release of potentially contaminated material into Glencloy Water.

3.4 Water

The Water framework Directive requires countries to protect the status of waterbodies from deterioration and, where necessary and practical, restore waterbodies to good status. The Glencloy Water river (ID: 10181) is currently classed as good status. The Glencloy River flows into Brodick Bay coastal water body (ID: 200023) which is currently classed as moderate status. The main reason for moderate status is from assessment undertaken in 2014 which indicated that the condition of bottom-living, invertebrate animal communities may not be good, however no cause was identified.

The location of the proposal for scour protection is located within the coastal waterbody section at the mouth of the Glencloy Water. It is anticipated that if contaminated materials are being actively released into the waterbody as a result of erosion, that the proposal for scout protection would prevent this erosion and provide a protective layer between the water body and the potentially contaminated material related to the historical landfill site.

3.5 Air

Part IV of The Environment Act 1995 places an obligation on all local authorities to regularly review and assess air quality in their areas. Local authorities have to consider the current and likely future air quality in their areas, and assess whether the objectives are likely to be achieved by the due dates. A number of pollutants require to be assessed against targets which are prescribed in regulations and set out in The UK Air Quality Strategy. However there are no Air Quality Management Areas (AQMAs) located on the Isle of Arran or in the vicinity of ‘Fisherman’s Walk’.

3.6 Climate

A changing climate and growing populations will put increasing pressure on the water environment and recreation and amenity areas. With a growing population, the projected future use of the public right of way ‘Fisherman’s Walk’ is anticipated to increase, however increased sea levels and extreme climatic events is likely to further exacerbate bankside erosion of Glencloy Water, potentially releasing contaminated materials into the surrounding environment and contributing to the permanent loss of ‘Fisherman’s Walk’.

3.7 Material Assets

In the context of the proposal for scour protection at Glencloy Water, material assets primarily refer to right of way along ‘Fisherman’s Walk’. In the absence of the proposal, it is anticipated that further erosion will lead to permanent loss of this material asset.

3.8 Cultural Heritage

There are no statutory designations within the vicinity of the site and the area of the works is made of fill material. There are a number of listed buildings located c.150m to the south of the site, along the main A841 road. Brodick Castle is located c.1km to the northwest of the proposal site. Brodick Castle (GDL00071) was designated in 1987 for exceptional and scenically important landscape with a renowned horticultural collection, nationally important architectural and archaeological features.

3.9 Landscape

The proposal site is located along the eastern coast of the Isle of Arran, c.200m north of Brodick Village. The immediate surrounding landscape consists primarily of recreational and amenity space. The main A841 road,

located c.150m from the site, forms a distinct boundary between the proposal site and Brodick Village. As per the Ayrshire Landscape Character Assessment; the wider area surrounding Brodick Village includes a number of landscape character types, including: Coastal Fringe with Agriculture, Rugged Moorland Hills and Valleys with Forestry, and Rugged Granite Uplands.

The North Arran National Scenic Area (NSA) is located c. 400m to the northwest of the proposal site and contains a number of special qualities:

- A mountain presence that dominates the Firth of Clyde
- The contrast between the wild highland interior and the populated coastal strip
- The historical landscape in miniature
- A dramatic, compact mountain area
- A distinctive coastline with a rich variety of forms
- One of the most important geological areas in Britain
- An exceptional area for outdoor recreation
- The experience of highland and island wildlife at close hand

Given the distance from the proposal site, the scale of the works and the elevation and coastal nature of the proposal, it is not anticipated that there will be any adverse impacts to the special qualities associated with the North Arran NSA.

4 EIA SCREENING CHECKLISTS

Schedule 3 of The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 presents the selection criteria that should be used to determine whether developments are likely to require an EIA. These criteria relate to the:

- The characteristics of the development
- The location of the development
- Characteristics of the potential impacts

Table 4.1 outlines project information related to the proposal for permanent scour protection at Glencloy Water.

Table 4.2 outlines the characteristics of the proposal, Table 4.3 outlines the location of the proposal and Table 4.4 identifies the characteristics of potential impacts related to the proposal.

This is based on the Scottish Government's EIA Screening Checklist and includes criteria set out in Schedule 2 of the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 for considering whether a scheme is likely to have a significant effect on the environment.

Table 4.1: Project Information

	Please Describe	
Address or location of proposed development	Glencloy Water (East Bank) at 'Fisherman's Walk' pathway, Brodick, Arran.	
Site area (hectares)	0.015 hectares	
Brief description of the proposed development	The scope of the proposed works includes the protection and thus separation of the meandering watercourse 'Glencloy Water' (east bank) from a disused, historical landfill site, by the scour protection of the tidal riverbank adjacent the landfill site with an armour stone and geotextile membrane. The proposed works would also halt erosion and potential loss of the public right of way, 'Fisherman's walk'.	
Type of Application (please tick)		Application for planning permission
		Application for planning permission in principle
		Application for the approval of matters specified in conditions
	X	Other permissions – please state: Marine Licence Application for Construction Projects

Table 4.1.1: Single Stage Consent Application (complete where relevant)

	Yes/No – Please Describe
Is the proposed development of a type listed in Column 1 of Schedule 2?	Yes – the proposed development falls under article 10(m) - coastal work to combat erosion and maritime works capable of altering the coast through the construction, for example, of dykes, moles, jetties and other sea defence works, excluding the maintenance and reconstruction of such works
Is the proposed development to be located within a 'sensitive area'?	No
Does the proposed development meet any of the relevant thresholds and / or criteria in Column 2 of Schedule 2?	Yes – article 10(m) is applicable to all development.

Where the proposed development is of a type listed in Column 1 of Schedule 2 and either:

- is located wholly or in part within a sensitive area; or

- meets any of the relevant thresholds and / or criteria in Column 2 of Schedule 2

it will be necessary to consider whether the proposed development is likely to have significant environmental effects. In determining whether a proposed development is likely to have such effects, account must be taken of the selection criteria in Section 3 of this checklist.

Table 4.1.2: Multi Stage Consents (complete where relevant)

	Yes / No – Please Describe
Does the proposed development change or extend development described in Column 1 of Schedule 2?	-
Does the application concern development to be located within a sensitive area?	-
Does the development as changed or extended meet or exceed any of the relevant thresholds and / or criteria in Column 2 of Schedule 2?	-
Is the proposed development of a type listed in Column 1 of Schedule 2?	-

Where an application for a proposed development is part of a multi stage consent and it changes or extends development described in Column 1 of Schedule 2, and where either:

- it is located wholly or in part within a sensitive area; or

- the development as changed or extended meets any of the relevant thresholds and / or criteria in Column 2 of Schedule 2

it will be necessary to consider whether the proposed development is likely to have significant environmental effects. In determining whether a proposed development is likely to have such effects, account must be taken of the selection criteria Section 3 of this checklist.

Section 3: Selection Criteria for Screening Schedule 2 Development

There are two stages to this section of the checklist:

- **First, identifying the potential impacts of the proposed development based upon the characteristics of the development and its location.**
- **Secondly, considering whether significant environmental effects are likely based upon the characteristics of the potential impacts.**

The selection criteria in this section meet the requirements of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 – Schedule 3 for screening Schedule 2 development.

Table 4.2: Characteristics of the proposal

Selection Criteria	Yes/ No	Briefly describe potential impact	Is this likely to result in a significant effect? Please explain
1. Characteristics of the Development			
(a) Size and design of the development			
Will the proposed development be out of scale with the existing environment?	No	The proposed development is the joining up/ extension of existing armourstone along the eastern bank of the meandering Glencloy Water for a length of 40m. Armourstone already exists both north and south of the proposed location. The proposed development will include excavation of bankside for rock armour construction. A sand bed and geotextile membrane will be laid below a granular layer. Armourstone will be placed at 500mm below land level. Natural soil and seed will be placed on the surface, along the verge of 'Fisherman's Walk' and will be sympathetic with the existing environment. In addition, the watercourse cobble bed will be regraded and cobbles placed within the armourstone voids to negate any morphological impacts to this reach of the Glencloy Water.	-

Selection Criteria	Yes/ No	Briefly describe potential impact	Is this likely to result in a significant effect? Please explain
(b) Cumulation with other existing and/or approved development			
Will the proposed development lead to further consequential development or works?	No	The proposed development is effectively a protection to the marine environment from contamination by a historic landfill site, therefore potentially negating the requirement for future remediation works. Once in place, it is unlikely that any further scour protection will be required at the proposed location.	-
Are there potential cumulative impacts with other existing development, approved developments or developments the subject of valid applications?	No	The proposed development is not likely to impact on existing developments, approved developments or developments the subject of valid applications in the vicinity. A search of proposals on North Ayrshire e-planning indicate the nearest proposal is located c.7.2km to the south-west and is a proposal for residential development. Impacts are therefore not anticipated to be likely given the distance and scale of the proposed works.	-
Should the application for the proposed development be regarded as an integral part of a more substantial project? If so, can related developments which are subject to separate applications proceed independently?	No	The proposed development is integral to prevent further river meandering and erosion which may potentially result in the release of contaminants into the marine environment from a nearby historic landfill site, however it is not considered part of a more substantial project/ development.	-
(c) Use of natural resources, in particular land, soil, water and biodiversity			
Will the proposed development use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or are in short supply?	Yes	The proposed development will use natural quarry rock armourstone, sand, soils and seeds. The armourstone will be brought up to 500mm below land level and geotextile will be wrapped over, that a natural soil and seed be placed on top for a verge to 'Fisherman's Walk' pathway. No natural resources are expected to be used following the construction phase.	No – these materials are not non-renewable nor are in short supply.

Selection Criteria	Yes/ No	Briefly describe potential impact	Is this likely to result in a significant effect? Please explain
(d) Production of waste			
Will the construction, operation or decommissioning of the proposed development produce wastes?	Yes	During the construction phase, bank side material may be removed to allow for the installation of rock armour, however this is expected to be minimal. Any waste excavated material will be removed off-site by a registered waste carrier. Given the potential for excavation of contaminated material, any contaminated materials will be treated separately to normal wastes as per the method statement which includes a procedure for identification and Systems of Operation for potentially hazardous materials.	No – the proposed development area is 150m^2 and it is proposed that where possible, acceptable excavated material will be reused on site. Waste production will therefore be minimal. No waste materials are anticipated to be produced following the construction phase.
(e) Pollution and nuisances			
Will the construction, operation or decommissioning phases of the proposed development release pollutants or any hazardous, toxic or noxious substances to the air?	No	Emissions will be generated from site traffic, from transportation of construction materials and staff travel to and from the site, however given the scale of the proposed development, this is anticipated to be minimal. No pollution and / or nuisances are expected following the construction phase.	-
Will the construction, operation or decommissioning of the proposed development lead to risk of contamination of land or water from releases of pollutants?	Yes	There is potential for temporary negative impacts upon water quality in the short term as a result of construction activities, particularly with regard to erosion and sedimentation. The risk of this can be minimised with good site practice and adherence to good practice such as those identified in the Engineering in the	No – if appropriate procedures are adhered to in line with the Engineering in the Water Environment Good Practice Guide, there is not likely to be any significant effects.

Selection Criteria	Yes/ No	Briefly describe potential impact	Is this likely to result in a significant effect? Please explain
		Water Environment Good Practice Guide (SEPA 2009)[3]. This may include for example, working at low tide and ensuring no sediments enter the Glencloy Water, avoiding unnecessary vegetation clearance or through adding diversion drains. Given the historical landfill present beneath the site, chemical analysis results (2010) of samples collected from the proposed development site were compared with published screening values for a residential development with gardens end use, which are considered conservative values. This screening indicated that the soils have exceedances for arsenic, hexavalent chromium, lead, nickel and mercury. There is therefore potential for the mobilisation of contaminated soils into the Glencloy Water as a result of construction activities, however avoidance and mitigation measures will be in place to ensure that sediment release is minimised. It is also considered that dilution is likely to reduce the concentration in the receiving water. Upon completion of the proposed development, inert rock armour and geotextile membrane will act as a protective barrier from release of pollutants into the environment. In addition, the surface verge of 'Fisherman's Walk' will contain topsoil and seeding. There is therefore no further potential for releases of contaminated material anticipated post construction phase.	It should also be noted that in the absence of the proposed development, erosion and scouring may continue to expose or release potentially contaminated materials into the Glencloy Water.
Will the construction, operation or decommissioning phases of the proposed development cause noise, vibration or the release of light?	Yes	The proposed development may result in temporary noise and/ or vibration from associated machinery during the construction phase. For the most part, noise generated through construction activities is likely to be continuous and low frequency. Whilst all care can be taken to reduce the negative impacts/disruption that works may have to the surrounding area	No – there are no residential developments or sensitive receptors in the immediate vicinity of the proposed development.

[3] Engineering in the Water Environment Good Practice Guide

Selection Criteria	Yes/ No	Briefly describe potential impact	Is this likely to result in a significant effect? Please explain
		and the people who live in it, completely eliminating all disruption is unlikely. It is included within the method statement that noise levels should comply with Control of Noise and Vibration on Construction & Open Sites. The proposed development is located c. 220m north of the nearest residential development. Given the distance from the proposed site and scale of the proposed works, any potential negative impacts are anticipated to be minimal. No further potential for noise or vibration is anticipated following the construction phase.	
(f) Risk of major accidents and/or disasters which are relevant to the development concerned, including those caused by climate change, in accordance with scientific knowledge			
Will there be any risk of accidents during construction, operation or decommissioning of the proposed development which could affect the environment or human health?	No	The main risk to human health presented by the development is likely to be the risk of injury during construction work. The method statement includes both pedestrian and traffic management to the site. It is also noted that the site will be secured with temporary fencing. A safety plan will be developed and approved prior to work commencing to address the following health, safety and welfare issues: • Working in or over water • Working at height • Emergency procedures • First Aid • Work Activity Risk Assessment It is anticipated that with the aforementioned mitigation and risk assessments in place, there is unlikely to be a risk to human health as a result of the proposal.	-

Selection Criteria	Yes/ No	Briefly describe potential impact	Is this likely to result in a significant effect? Please explain
		No further risk of accidents, having regard in particular to substances or technologies used, is anticipated following the construction phase.	
(g) Risk to human health			
Will the construction, operation or decommissioning phases of the proposed development involve the use, storage, transport, handling or production of substances or materials which could be harmful to human health?	Yes	Given that the site is underlain by a historical landfill, chemical analysis results (2010) indicate that materials present within the immediate vicinity of the proposed development may exceed Soil Guidance Values (SGVs) for residential land with garden end use. Construction phase activities associated with the proposed development may involve the handling and/ or transport of excavated bankside material. The Method Statement notes that the contractor removing waste off site must be a registered waste carrier. No harmful materials will be stored or required on site following the construction phase. Upon completion of the proposed development, inert rock armour and geotextile membrane will act as a protective barrier from release of pollutants into the environment. In addition, the surface verge of 'Fisherman's Walk' will contain topsoil and seeding. There is therefore no further potential for releases of contaminated material anticipated post construction phase.	No – given the short-term and temporary nature of the proposed works, it is not likely that the potential handling or transportation of excavated waste material would pose a risk to human health. The method statement includes relevant hazards, risk assessments and control measures that are to be put in place to negate any potential risk to human health. In addition, it is important to note that the results were screened against highly conservative values which are not representative of the current or future use of the site.

Table 4.3: Location of the proposal

Schedule 3 Selection Criteria	Yes/ No	Briefly describe potential impact	Is effect likely to result in a significant effect? Please explain
Location of the Development			
(a) Existing and approved land use			
Are there existing and/ or approved land uses in the locality of the proposed development site which could be affected by the proposed development?	No	The current land use of the proposed development includes the public right of way, 'Fisherman's Walk', which is social access used by locals and tourists alike. The proposed development would protect this right of way from erosion and would not change its current land use. The proposed development site is bounded to the west by the Glencloy Water, to the south by recreational grassland, to the east by beach and to the north by Brodick Bay. The proposed development would not cause a change of land use to these areas.	-
(b) Relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground			
Are there any areas on or around the location of the proposed development and its underground which contain important, high quality or scarce resources which could be affected by the proposed development?	No	There are no important, high quality or scarce resources which will be affected as a result of the proposed development	-
(**c) Absorption capacity of the natural environment**			
Are there any areas on or around the application site that are protected under international or national legislation for their ecological, landscape, cultural heritage or other value which could be affected by the	No	The site is not located within any sensitive or designated areas, within the meaning of the EIA regulations i.e. there are no Scheduled Monuments, Sites of Special Scientific Interest (SSSIs), National Parks, National Scenic Areas (NSAs), World Heritage Sites, Special Areas of	-

construction, operation or decommissioning of the proposed development?		Conservation (SACs), Special Protection Areas (SPAs), or Ramsar Sites. The nearest designated sites are Arran Moors SSSI/SPA located c.1km to the west, and upstream of the proposed development site and North Arran NSA located c.400m to the north west of the proposed development site. The Arran Moors SPA is designated for breeding Hen Harrier. Given that the proposed development site is located within the main village of the Isle of Arran, and given the scale (150m^2) of the proposed works and the short-term and temporary nature of the works, it is not likely that there will be any impact to the qualifying interests of Arran Moors SSSI/SPA or to the visual landscape of the North Arran NSA.	
Are there any other areas on or around the location which are important or sensitive for reasons of their ecology which could be affected by the proposed development? Particular attention should be paid to the following areas: wetlands, riparian areas, river mouths; (ii)coastal zones and the marine environment; (iii)mountain and forest areas; (iv) nature reserves and parks.	No	There are no ecologically sensitive areas within or in close proximity to the proposed development site. The proposed development site lies south of Brodick Bay however the closest Marine Protected Area (MPA) is South Arran which lies approximately 3.1km to the south east. The proposed works location occurs at the mouth of the Glencloy water river body, which flows into Brodick Bay. Given that the river bank is actively eroding, the proposal will preserve this feature and protect the area from both future erosion and contamination from the adjacent historical landfill site.	-
Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora which could be affected by the proposed development?	No	There are no statutory designations within, or in close proximity to the proposed development site. The nearest SSSI and SPA is Arran Moors which is located c.1km to the west and upstream of the site. The Arran Moors SPA is designated for breeding Hen Harrier. However given the scale of the proposed development and the short term and	-

		temporary nature of the works, there is not likely to be any impact to the qualifying interests. Although the site is not a designated area, given the environmental setting, there is potential that mobile species such as Otter or Seals may at some time be present in the general vicinity. Given that the bankside is made of potentially contaminated fill material, is actively eroding, and that rock armour is already present both north and south of the proposed installation location, it is unlikely that any mobile species inhabit the area of the proposed works. During construction works, if it is determined that there may be protected species present, it is recommended that works cease and that guidance is sought from Scottish Natural Heritage.	
Are there any groundwater source protection zones or areas that contribute to the recharge of groundwater resources which could be affected by the proposed development?	No	There are no groundwater source protection zones or areas that contribute to recharge in the vicinity of the proposed development.	
Are there any areas on or around the location of the proposed development where environmental quality standards are already exceeded which could be affected by the proposed development?	Yes	Chemical analysis (2010) across the proposed development site indicate EQS exceedances of chromium, copper, lead and zinc within the soil leachate.	No – this was based on a limited number of samples and it is considered that dilution of the leachate is likely to reduce the concentration in the receiving water to considerably less than the EQS. In addition, in the absence of the proposed development, erosion and scouring will continue to expose or release potentially contaminated materials.
Are there any areas on or around the location which are densely populated which could be affected by the proposed development?	No	The proposed development is located c. 220m north of the nearest residential development. Given the scale of the proposed development and the short term and temporary nature of the works, it is not likely to affect local populations.	-

Is the proposed development in a location where it is likely to be visible to many people?	No	The proposed development is located c. 220m north of the nearest residential development. The A841 road lies immediately north of the nearest residential development. Although additional machinery will access the site during the construction phase, given that this will be short term and temporary in nature, this is not likely to have an additional visual impact to local populations. Upon completion of the construction phase, natural soil and seed will be placed on the surface, along the verge of 'Fisherman's Walk' and will be sympathetic with the existing environment.	-
Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the proposed development?	Yes	The current land use of the site is a public right of way, 'Fisherman's Walk'. In addition, the area immediately south of the site is used as recreational grassland.	No – the construction phase of the proposed development may result in temporary closure of the 'Fisherman's Walk' and associated recreational grassland. Given the scale of the proposed works, this is likely to be short-term and temporary in nature. Pedestrian/ cyclist management will be put in place as part of the method statement to ensure there are no significant impacts to local users.
Are there any areas of local landscape or scenic value on or around the location which could be affected by the proposed development?	No	There are no known features of landscape importance on or adjacent to the site. North Arran NSA is located c.400m to the north west of the proposed development site. Given the scale (150m^2) of the proposed development and the short-term and temporary nature of the works, it is not likely that there will be any impact to the visual landscape of the North Arran NSA.	-
Are there any areas of features of historic, cultural or archaeological value on or around the location which could be affected by the proposed development?	Yes	There are 5 scheduled monuments located within 1.5km of the proposed development: • Prehistoric ritual and funerary: standing stone, located 0.85km southeast of the site	No – given their locations and the scale of the proposed development, there is not likely to be any impact to the features of these sites or their setting.

		• Prehistoric ritual and funerary: cupmarks or cup-and-ring marks and similar rock art, located 1.2km west of the site • 3 locations of prehistoric ritual and funerary: standing stone, located c.1.4km north west of the site	
Is the proposed development location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions?	Yes	The proposed development is the installation of rock armour along the public walkway 'Fisherman's Walk' to protect it from erosion. The installation of the rock armour will also prevent erosion into potentially contaminated sediments associated with the historical landfill site in the vicinity.	No – In the absence of the proposed development, the Glencloy Water will continue to erode into the 'Fisherman's walk' public right of way and into potentially contaminated materials associated with the historic landfill site in the vicinity. SEPA Flood risk mapping indicate the proposed development site to be at risk of medium likelihood fluvial flood risk and at risk of high likelihood coastal flood risk.

Table 4.4: Characteristics of the potential impacts

Schedule 3 Selection Criteria
3. Characteristics of the Potential Impact
(a) Magnitude and special extent of the impact (for example geographical area and size of the population likely to be affected)
Will the effect extend over a large geographical area, affecting many people and resulting in social changes, e.g. in demography, traditional lifestyles, employment? No – the proposed development will be confined to a length of 40m of rock armour in an area of 150m^2 and will have no impact on social changes such as demography, traditional lifestyles or employment.
(b) Nature of impact
Is the development located within or close to any other areas which are protected under international, EU, or national or local legislation for their ecological, landscape, cultural or other value, which would be significantly affected by the development?

No – the nearest protected sites are Arran Moors SSSI/SPA, located c.1km to the west, and upstream of the site and North Arran NSA, located c.400m to the north west of the site. Given the scale of the proposed development site and the short term and temporary nature of the works, it is not likely that these sites would be affected by the proposed development.
(c) Transboundary nature of the impact
Will there be any potential for transboundary impact? No
(d) Intensity and complexity of the impact
Is there a risk that environmental standards will be breached? No – methods statements, risk assessment and COSHH assessments will be developed prior to commencement of the proposed works and will be available on site. In addition, Identification and Systems of Operations will be in place to identify potentially hazardous materials.
(e) Probability of the impact
Is there a high or low probability of a potentially highly significant effect? The potential effects of the proposed development can be clearly established and the probability of any highly significant effects is low.
(f) Expected onset. duration, frequency and reversibility of the impact
Will the effect be permanent, continuous or irreversible? No – During the construction phase, any potential adverse effects would be short-term and temporary and could minimised through the implementation of good practice measures such as those identified in the Engineering in the Water Environment Good Practice Guide (SEPA 2009).
(g) Culmination of the impact with the impact of other existing and/or approved development
Will the Project have cumulative effects, due to its proximity to other existing or planned Projects with similar effects? No
(h) Possibility of effectively reducing the impact
Will there be any significant adverse effects on any aspect of the environment during the construction and operational phases of the development, has the developer included mitigation measures to avoid, prevent, repair or reduce the potential impact? During the construction phase, any potential impacts associated with the proposal can be mitigated against through adherence to the Engineering in the Water Environment Good Practice Guide (SEPA 2009). Post-construction, the armourstone will be soiled and seeded along the verge of 'Fisherman's Walk'

to ensure that it blends visually into the landscape and will match the existing bank. The armourstone will effectively provide protection against further erosion and release of potentially contaminated material associated with the historical landfill site.

5 CONCLUSIONS

Temporary erosion control measures have already been put in place along the eastern bankside of the Glencloy Water. This has been to protect against continued erosion and potential loss of 'Fisherman's Walk' pathway and to protect against the release of potentially contaminated materials into the adjacent waterbody. These works form the basis of the permanent scour protection works which have been proposed. This EIA screening report is in consideration of the potential impacts associated with all of the originally proposed works involved in the proposal for permanent scour protection works. The remaining material to be added to the bank is 250m^3 of armour rock 1 tonne blocks, which would complete all works, following the temporary works already undertaken.

From an assessment of the types and characteristics of the potential impacts likely to arise from the proposed works it is considered that they **would not constitute EIA development.** With the implementation of the control measures included within the method statements and adherence to good practice such as those identified in the Engineering in the Water Environment Good Practice Guide (SEPA 2009)[4] few impacts would be likely to arise. Any potential impacts would be restricted to the immediate vicinity site and are not likely to be significant. Apart from pedestrians and cyclists that utilise 'Fisherman's Walk', the local population and other sensitive receptors are unlikely to be affected by construction activities. Given the geographical scale of the proposed works, any impact upon local receptors is likely to be short lived. Upon completion of the works, no adverse impacts are anticipated and the potentially contaminated material will be kept in-situ.

[4] Engineering in the Water Environment Good Practice Guide (SEPA 2009)

Appendix A

Photographs of the proposal site

Appendix B

Method Statement for Permanent Scour Protection Works

Method Statement:

Scope of Works:

The installation of a rock armour revetment on the scoured & eroded bank of 'Glencloy Water' which will train the river mouth from its ingress into a historical landfill site. This will also protect the Council Asset 'Fisherman's Walk' pathway for the community.

Location of Works:

Glencloy Water at 'Fisherman's Walk' pathway, Brodick, Arran.

Site Work Sequence:

1. Enact any pedestrian and traffic management to site.
2. Site to be made secure with temporary fencing.
3. Excavate for rock armour revetment construction.
4. Make up earthworks outline with excavated acceptable fill.
5. Lay sand layer to protect geotextile layer, cover 1:1 slope with a filter rock layer, which will also protect geotextile during armour rock placement
6. Place armour rock with 3 point lock.
7. Fill voids to bed level with previously excavated bed cobbles.
8. Soil and seed ground level to watercourse
9. Clear site on completion.

Hazards, Risks Assessments & Control Measures:

The work will involve working in or in the vicinity of coastal water and the Contractor should be aware of his responsibilities regarding pollution and the risk of prosecution by Marine Scotland if pollution occurs as a result of the works. In particular he should take care not to pollute the water with fuel or silt etc. Guidelines are to be adhered to.

A safety plan must be developed and approval prior to work commencing to address the following health, safety and welfare issues:

1. Working in or over water
2. Working at height
3. Emergency procedures
4. First aid
5. Work Activity Risk Assessment:

Work Activity	Risk	Control Measures Required
Location and access	Vehicle accidents	Ensure appropriate traffic management is implemented including adequate arrangements for the uplift and delivery of materials to the site.
Pedestrian / Cycles movement and control	Accidents involving members of the public	Implement pedestrian / cycles management in accordance with a pathway closure which will be required on site.
Working in or above water	Slipping and injuring Drowning Contamination of watercourse	Appropriate PPE to be worn and suitable method of access down watercourse banking is to be employed. Work is not to be undertaken during periods of high water levels. No lone working. Employ suitable containment measures refer to guidance and inform Marine Scotland immediately of any significant incidents.
Working at height	Operatives falling causing injury Materials falling causing injury	Provide details of a safe system of work. Ensure all access equipment is in a good state of repair and appropriate for the work being undertaken. Ensure working area is kept tidy and materials are placed a suitable distance from openings. Appropriate PPE to be worn.
Manual handling	Personal injury, lacerations, strains.	Method statement to be provided. Operatives should have appropriate training in the lifting of heavy and awkward loads. Appropriate PPE to be worn. Use lifting aids where appropriate.
Plant and machinery	Injury, impact,	Disengage plant and machinery when unattended. Remove to safe area at meal times. Ensure equipment has been checked and is in good working order. Wear appropriate PPE. Use banksman as appropriate.
Confined Spaces	Vermin, Trapping, Suffocation	Safe entry procedures, lifting, moving.
Contaminated Land	Hazardous materials	Identification and Systems of Operation.

Programme:

The works are to proceed at upon confirmation of Marine Licence.

Health & Safety Requirements:

1. Operatives must have appropriate skills, knowledge, experience, and training. Proof of training will be requested from operatives on site, so operatives must carry their training cards. Details of certification of operatives and supervisory personnel on site, inclusive of first aiders shall be kept in the Health & Safety File on site.
2. A site induction must be provided to the operatives to confirm the nature of the work required, method statements and the health and safety procedures in place. Site operatives must sign to confirm that they have been inducted.
3. The site induction must confirm emergency procedures, including first aid and fire provisions.
4. Method statements, risks assessments and COSHH assessments must be on site and available to the workforce
5. Mechanical lifting equipment required.
6. Plant and machinery certification to be kept in the Health & Safety File on site.
7. All plant to use a banksman where required.

PPE:

Appropriate PPE is to be worn as per site induction.

All workers are responsible for taking care of their PPE.

Environmental Risks & Control Measures:

Noise levels to be comply with Control of Noise and Vibration on Construction & Open Sites. No residential developments are nearby.

Waste Management:

The contractor removing waste off site requires to be a registered waste carrier.

Appendix C

Method Statement for Temporary Erosion Control Measures

Method Statement:

Temporary Erosion Control

Scope of Works:

The scope of these works is to address the urgent nature of having a control measure in place for the protection of the Glencloy watercourse from contamination by an existing waste landfill site via the scour of a watercourse bank.

[NB: It was considered prudent to consider a method for these temporary emergency works where materials procured could be utilised in a possibly 'permanent' construction. 'Possibly' refers to the granting of a Marine Scotland licence already applied for, for a permanent armourstone revetment construction.]

[A subsequent installation of a permanent rock armour revetment on the scoured & eroded bank of 'Glencloy Water' will finalise protection measures pending marine licence approval - These works are not part of this Method statement.]

Location of Works:

Glencloy Water at 'Fisherman's Walk' pathway, Brodick, Arran, adjacent Glencloy Water footbridge.

Site Work Sequence:

1. Set up site compound and enclosures.
2. Enact any pedestrian and traffic management to site.
3. Operatives must receive an Initial Site Induction and Work Activity Briefing
4. Excavate toe and grade for geotextile construction with rock armour pinning.
5. Lay down geotextile against scoured bank.
6. Backfill scoured embankment with imported acceptable fill and / or excess excavated material from toe excavation, depending on supply, to previous location.
7. Make up earthworks outline as necessary with excavated material and imported acceptable fill.
8. Lay sand layer on grade to protect geotextile layer.
9. Lay 2 layers of geotextile with offset overlaps in direction of watercourse flow. Geotextile to be set permanently into toe and extended temporarily over land level to be pulled.
10. Place armour rock toe 'possibly' permanently along full length of geotextile to locate toe.
11. Place temporary row of armour rock at ground level on geotextile to locate geotextile taught.
12. Remove site compound and enclosures.

List of Materials:

Plastic/Synthetics: High strength geotextile

Sand: Sand

Boulders: Armour Rock 1 tonne blocks

Acceptable Fill: To make up embankment below geotextile if additional required

Acceptable Fill material to be a selected well graded granular material that can be used below water for the construction phase prior to being covered by a geotextile barrier. The material specified is Class 6A material from the Manual of Contract Documents for highway Works - Specification for Highway Works. Material imported onto site which is not 'as dug' shall be aggregate conforming to BS EN 13242 from source Code P (natural aggregates – except shale, siltstone or slate), this is natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock. Material imported shall be free from Code A (construction and demolition recycling industries)

Hazards, Risks Assessments & Control Measures:

The work will involve working in or in the vicinity of coastal water and the Contractor should be aware of his responsibilities regarding pollution and the risk of prosecution by Marine Scotland if pollution occurs as a result of the works. In particular, he should take care not to pollute the water with fuel or silt etc. Guidelines are to be adhered to.

A safety plan must be developed and approval prior to work commencing to address the following health, safety and welfare issues:

1. Contaminated land
2. Public access
3. Site access
4. Working at height
5. Working in or over water
6. Emergency procedures
7. First aid Work activity risk assessment

Work Activity	Risk	Control Measures Required
Location and access	Vehicle accidents	Ensure appropriate traffic management is implemented including adequate arrangements for the uplift and delivery of materials to the site.
Pedestrian / Cycles movement and control	Accidents involving members of the public	Implement pedestrian / cycles management in accordance with a pathway closure which will be required on site.
Working in or above water	Slipping and injuring Drowning Contamination of watercourse / marine environment	Appropriate PPE to be worn and suitable method of access down watercourse banking is to be employed. Work is not to be undertaken during periods of high water levels. No lone working. Employ suitable containment measures refer to guidance and inform Marine Scotland immediately of any significant incidents.
Working at height	Operatives falling causing injury Materials falling causing injury	Provide details of a safe system of work. Ensure all access equipment is in a good state of repair and appropriate for the work being undertaken. Ensure working area is kept tidy and materials are placed a suitable distance from openings. Appropriate PPE to be worn.

Manual handling	Personal injury, lacerations, strains.	Method statement to be provided. Operatives should have appropriate training in the lifting of heavy and awkward loads. Appropriate PPE to be worn. Use lifting aids where appropriate.
Plant and machinery	Injury, impact,	Disengage plant and machinery when unattended. Remove to safe area at meal times. Ensure equipment has been checked and is in good working order. Wear appropriate PPE. Use banksman as appropriate.
Confined Spaces	Vermin, Trapping, Suffocation	Safe entry procedures, lifting, moving.
Contaminated Land	Hazardous materials	Identification and Systems of Operation.

Programme:

The urgent works are to proceed upon confirmation of Marine Scotland authority.

The works are expected to take 2 to 3 days weather permitting.

Health & Safety Requirements:

1. CDM Regulations apply.
2. Operatives must have appropriate skills, knowledge, experience, and training. Proof of training will be requested from operatives on site, so operatives must carry their training cards. Details of certification of operatives and supervisory personnel on site, inclusive of first aiders shall be kept in the Health & Safety File on site.
3. A site induction must be provided to the operatives to confirm the nature of the work required, method statements and the health and safety procedures in place. Site operatives must sign to confirm that they have been inducted.
4. The site induction must confirm emergency procedures, including first aid and fire provisions.
5. Method statements, risks assessments and COSHH assessments must be on site and available to the workforce.
6. Mechanical lifting equipment required.
7. Plant and machinery certification to be kept in the Health & Safety File on site.
8. All plant to use a banksman where required.

PPE:

Appropriate PPE is to be worn as per site induction.

All workers are responsible for taking care of their PPE.

Environmental Risks & Control Measures:

Due to the proximity of a historic landfill site, a Construction Phase Plan should be in place and on site to mitigate risk of pollution. In the event of an environmental incident a Spillage Procedure shall be followed and the Contractor will immediately advise the Local Authority & Marine Scotland by the next working day. Noise levels to be comply with Control of Noise and Vibration on Construction & Open Sites. No residential developments are nearby.

Waste Management:

In the event of the contractor removing waste off site, the contractor requires to be a registered waste carrier.