

5 PROJECT DESCRIPTION

5.1 Introduction

This chapter of the EIA describes the Proposed Scheme in the context of site location, project site, design, size and what is involved throughout the Proposed Scheme as it evolves from construction phase to operational phase. This chapter should be read in conjunction with Chapter 4 Consideration of Alternatives which describes the other options investigated and provides information on the why the Proposed Scheme has been deemed the most suitable.

5.2 Location of the Proposed Scheme and Site Characteristics

5.2.1 Site Location and Context

The Proposed Scheme is located within Burnfoot, Co. Donegal (Figure 5.1)

Burnfoot lies at the base of the Inishowen Peninsula east of the confluence of two small catchments, the Burnfoot River and Skeoge River. The Burnfoot River flows from east to west draining a narrow valley before flowing under the R238 and through the village. It meets the Skeoge River to the west of the village before both drain out to Lough Swilly via a tidal lagoon behind Inch Island. The Skeoge River drains an area including the outskirts of City of Derry/Londonderry and then flows in a north westerly direction, through Bridgend and past the south west of Burnfoot village to meet the Burnfoot River. The Burnfoot River is subject to flash flooding with the village at risk of fluvial flooding and the flat, reclaimed agricultural lands downstream subject to river flooding.

Following hydrological and hydraulic analysis undertaken as part of the Proposed Scheme it has been established that the main source of flood risk to Burnfoot emanates from fluvial driven water levels in the Burnfoot River.

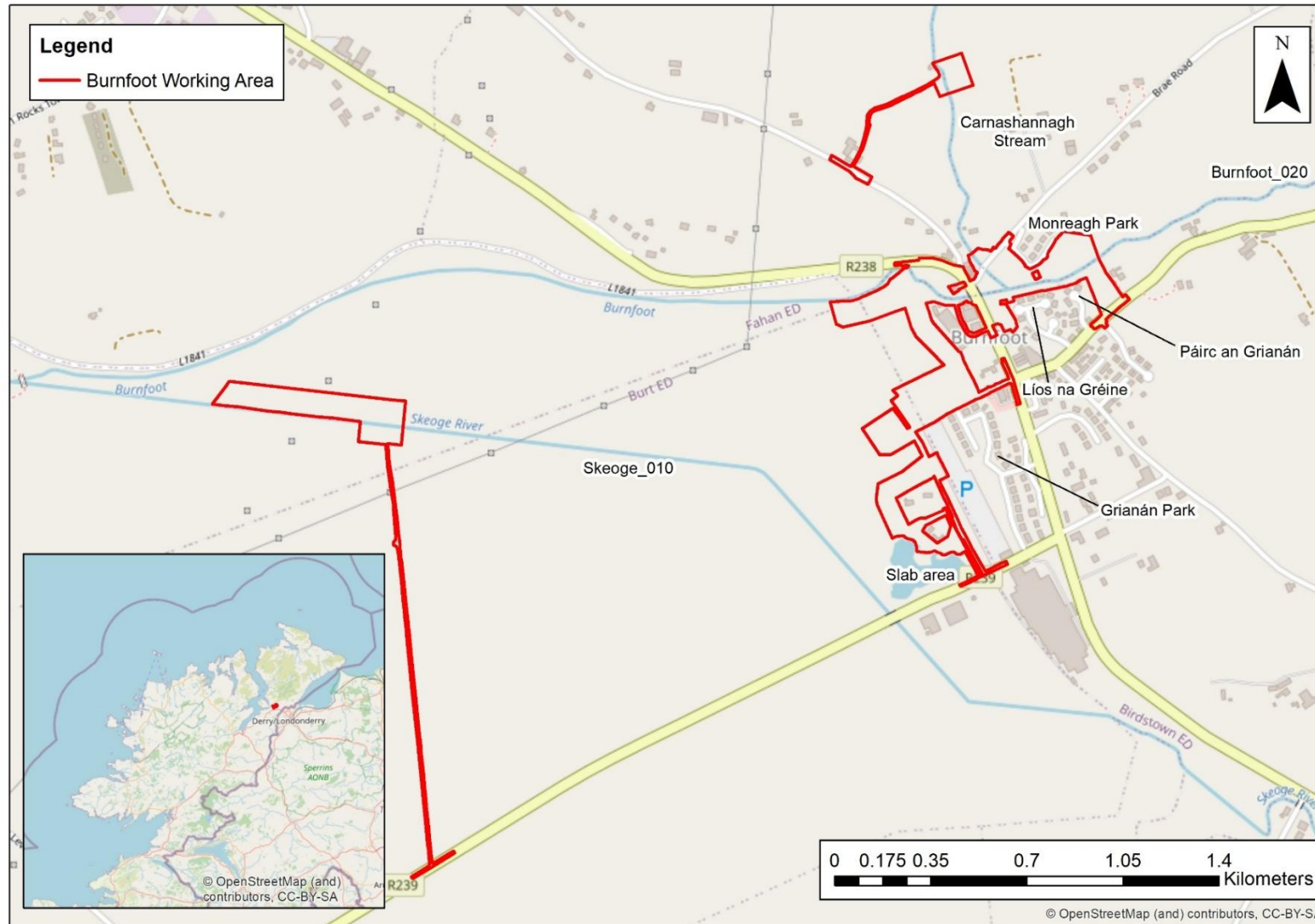


Figure 5.1: Location of the Proposed Scheme

5.3 Description of the Proposed Scheme

The Proposed Scheme for Burnfoot to protect against the 0.5% annual exceedance probability (AEP) fluvial flood event consists of the following main elements:

- Demolition and replacement of the existing R238 road bridge with a clear span structure and raising of the approach roads to the bridge to allow tie in with existing roads, designed to DMURS standard;
- Upgrade to existing culverts (2 no.) on the Carnashannagh Stream, a tributary of the Burnfoot River, which joins the main channel upstream of the existing R238 road bridge. These works consist of the construction of a new culvert inlet where the watercourse passes beneath Brae Road and a new culvert approximately 400m upstream;
 - Upgrade of lower culvert on the Carnashannagh Stream to a box culvert (1.2m height x 2.4m width), sized for future climate change flood flows, under Brae Road extending beyond the proposed embankment, with new headwall structures and debris screens as required;
 - Upgrade of upper culvert (box culvert of 1.2m height x 2.4m width), on the Carnashannagh Stream, sized for future climate change flood flows. To include new headwall structures and debris screens as required.
- 38m of reinforced concrete flood walls with foundations to accommodate future climate change flood scenarios on both banks of the Carnashannagh Stream upstream of the Brae Road, with a replacement shed to accommodate the construction.
- 315m of embankment, tying into raised laneways, around three properties to the south of the village near Slab Road (R239) with an average height of 0.79m.
- 630m of embankment along / adjacent to the Burnfoot River with an average defence height of 1.1m above ground level;
- 395 metres of sheet piled wall with an average height of 1.1 metres above existing ground adjacent to the Burnfoot River upstream and downstream of the R238 bridge;
- 35 metres of reinforced concrete flood walls with an average height of 1.1 metres above ground level upstream of the R238 road bridge. The foundations have been designed to accommodate future climate change flood scenarios;
- The first 183m of the Burnfoot/Skeoge Arterial Drainage Scheme embankment, downstream of Burnfoot, removed to provide short term storage on a recurring basis to reduce flood levels in the town centre by reconnecting the existing floodplain.
- The removal of 345m of embankment from the right bank of the Skeoge River as well as localised drainage amendment as required, to reconnect the existing floodplain.
- 120m of embankment with an average height of 0.8m around the existing sewerage treatment works to the west of Grianán Park estate
- 145m of embankment removed from the right-hand bank of the Burnfoot River, 168m upstream of the R238 bridge.
- Existing land on the right-hand bank of the Burnfoot River upstream of the R238 bridge, to be utilised for construction and safeguarding of existing floodplain within the settlement framework, will be landscaped.
- Surface water measures (road reprofiling / cambering, additional gullies and swale to discharge to watercourse) at:
 - a. R239 / Fairview Manor
 - b. L-1881 Brae Road
- Back drainage behind the proposed defences with associated outfalls;

- Land take to facilitate future operation and maintenance of flood embankments, including for embankment top ups and/or access to complete the same as well as general maintenance e.g. grass cutting and ad hoc repairs as necessary. Access to complete this work will be required on the defended side of embankments which are on benefiting lands, at the embankment on the left-hand bank immediately upstream of the bridge and at the embankment on the right-hand bank downstream of the bridge.
- The construction of the Proposed Scheme will require additional working areas, construction compounds, haul routes and site access. The proposed location of these is provide in Figure 5.2 and in the submitted Planning Drawings.

5.3.1 Description of Construction Phase

An outline Construction Method Statement is included below This construction methodology and the submitted Planning Drawings, provide the basis for the impact assessment of the Proposed Scheme. The Proposed Scheme can be considered in a number of distinct elements which are listed below:

1. Utility diversions;
2. Site establishment and clearance;
3. Flood Embankments – these are constructed where there is adequate space to enable their construction but also with consideration of maintenance requirements during the design life of the scheme;
4. Flood Walls – Proposed where there is insufficient space for embankments. These are located adjacent to the Líos Na Greíne and Páirc an Grianán residential developments and in the vicinity of the R238 bridge. Some walls have a steel sheet piled cut-off;
5. Demolition and replacement of the R238 bridge;
6. Culvert Improvements on the Carnashannagh Stream;
7. Alterations to the existing Arterial Drainage Scheme Embankments;
8. Back Drainage; and
9. Reinstatement;

A summary of each of these elements is included below. A draft Construction and Environmental Management Plan (CEMP) is included in Appendix 5.1.

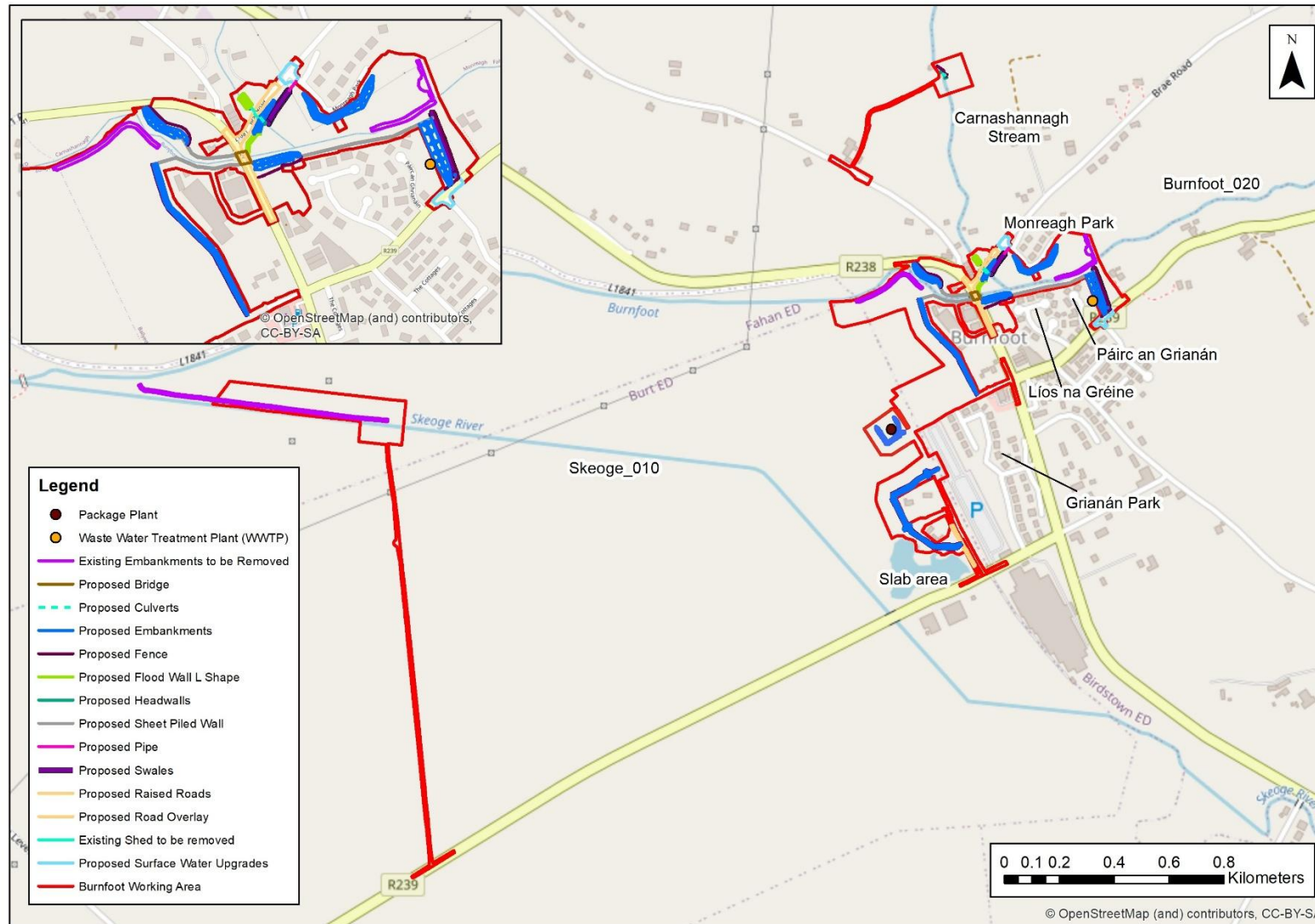


Figure 5.2: Outline of the Proposed Burnfoot Scheme

5.3.1.1 Utility Diversions

All major utility diversions ideally will be conducted in advance of construction works where possible, especially the ESB electrical poles which will require permanent relocation to enable the construction of the proposed defences. Other works involving drainage infrastructure are relatively minor and can be accommodated during the construction of the defences by the main contractor. Based on the information collated to date, there are no obvious conflicts between existing utilities and the Proposed Scheme that would require significant enabling works.

There are a number of services and utilities currently crossing the bridge. These include a fibre-optic telecommunications cable and watermain. The latter of these is currently strapped to the upstream parapet of the bridge. Liaison and subsequent approvals with all utility providers will be required but the intention would be to accommodate these within the proposed bridge deck.

5.3.1.2 Site Establishment and Clearance

The Proposed Scheme will be constructed on previously undeveloped land. As set out in Table 15.11 in Chapter 15 Cultural Heritage, advanced archaeological mitigation measures are undertaken prior to site establishment and clearance works such as invasive species treatment, tree felling etc. This is to identify unknown sub-surface archaeological remains that may be present on site. At these locations it will require:

- Initial clearing of vegetation and trees within a working strip up to 20m in width.
- Treatment of invasive species will be required in advance to avoid any spreading as a result of the works.
- Temporary fencing of the working area will be required for the duration of the construction works for security and health and safety purposes.
- A stoned haul road will be needed to enable the transportation of embankment material into the site and along the length of the proposed embankments downstream of the Burnfoot bridge. This will need to remain as a permanent feature for means of access for inspection and maintenance.
- Temporary occupation of part of the rear gardens of properties in Líos Na Greíne and Páirc an Grianán.
- The proposed culvert upgrade on the Carnashannagh Stream will require the demolition of an existing stone outbuilding.

5.3.1.3 Flood Embankment Construction

The construction of the flood embankments will involve the following construction methodology. Advance archaeological consultant is to be carried out where sheet piled wall and reinforced concrete are proposed.

- Stripping and storage of topsoil within the working area for reuse.
- Import and storage of suitable clay material to form the core of the embankment by lorry and road.
- Excavation of a trench will be undertaken by an excavator to a suitable cut-off, and clay placed and compacted in layers until the defences have reached the necessary height.
- Embankment front and back slopes will be profiled to meet the required gradient of 1 in 3. The embankment will then be topsoiled with a suitable, biodegradable geotextile and sown in grass.
- Stockproof fencing will be required where embankments are to be located in agricultural land where grazing is likely.
- For the low bund embankments around the properties on Slab Road there will be localised raising of the access road where the embankments tie into it up to a maximum of 300mm.

The exact locations of the proposed flood embankments can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_101 and IBE2204_Bt_102 with typical cross sections shown from Drawing IBE2204_Bt_105 to Drawing IBE2204_Bt_113 and Drawing IBE2204_Bt_117.

5.3.1.4 Flood Wall Construction

Sheet Piled Wall

Based on geotechnical assessment it is considered necessary to have sheet pile walls positioned to the rear of Líos Na Greíne and Páirc an Grianán (Figure 5.3) and also on both banks downstream of the Burnfoot Bridge (Figure 5.4).

Sheet piles are not aesthetically attractive and require a capping beam which typically is 750-1000mm square formed along the top of the driven piles. For this reason, a design which terminates the piles and the subsequent capping beam at existing ground level with a cantilevered flood wall of width 250-300mm extending above ground to the required flood defence height is proposed.

The exact locations of the sheet piled wall can be seen in the submitted Planning Drawings, Drawing IBE2204_Bt_106 and Drawing IBE2204_Bt_110 along with typical cross sections.



Figure 5.3: Rear of Líos Na Greíne and Páirc an Grianán



Figure 5.4: R238 Burnfoot Bridge and downstream banks

Reinforced Concrete Wall

There are a number of short sections of reinforced concrete wall which are proposed where insufficient space exists for the construction of a flood embankment. These are immediately upstream of the bridge to connect the earth embankments and the bridge parapets. There are also two short sections on both banks of the Carnashannagh Stream upstream of the Brae Road. The flood wall on the left bank at this location will tie into the shed which is required to be removed and rebuilt to facilitate construction of the flood wall. These will be constructed from cast in-situ reinforced concrete.

The exact locations of the proposed reinforced concrete wall can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_107, to IBE2204_Bt_109 along with typical cross sections.

5.3.1.5 R238 Bridge Replacement

The R238 bridge needs to be replaced as part of the scheme but it has a considerable number of vehicle movements per day. The R238 Annual Average Daily Traffic (AADT) flow through Burnfoot is 12,380. This will therefore require a methodology to account for demolition of the existing structure and construction of the new bridge while facilitating the traffic movements during this process.

The only feasible option to facilitate demolition of the existing R238 bridge and construction of a new bridge is to create a temporary bridge, immediately upstream of the existing structure. The residential and commercial properties downstream prevent this location from being an option. The temporary bridge will be constructed as a clear span structure, with a suitable road make-up to facilitate the traffic movements estimated for the duration of 4-6 months. The formation of the bridge would be a contractor-designed item and will be agreed with Donegal County Council roads section and/or Transport Infrastructure Ireland to ensure it met all safety requirements.

The existing bridge can then be demolished offline, and a new bridge constructed before removing the temporary structure and opening the new bridge to traffic. The R238 will need to be realigned onto the new Bridge and the only location where the temporary bridge can be located is in the fields upstream of the existing bridge. These are lower than the existing road, so suitable stone will need to be imported to facilitate the construction of a temporary road extending from Brae Road (L-1881) to the north to a suitable point just south of the river.

When the temporary bridge is in place the existing bridge will be demolished. This will need to be undertaken in stages removing the road surface and parapets and then carefully locating the services within the bridge to avoid damage. Temporary support for the services including a fibre optic cable and watermain will need to be provided and agreement sought with the utility providers before the remainder of the bridge is demolished and removed. A full structural survey will inform a suitable method for the demolition of the bridge. The new permanent bridge arrangement would be with precast pre-tensioned beams and infilled concrete deck making the total deck thickness of 750mm excluding the road surfacing. The deck would be made integral with the abutments.

The temporary bridge location and cross section is illustrated in Drawing IBE2204_Bt_201. The exact locations of the proposed permanent bridge can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_107 and IBE2204_Bt_110 with typical elevation and sections shown on Drawing IBE2204_Bt_202.

5.3.1.6 Culvert Improvements

On the Carnashannagh Stream, conveyance improvements are required in two locations. These works consist of the construction of a new culvert inlet where the watercourse passes beneath Brae Road and a new culvert approximately 400m upstream.

At the upstream location, the works will require the removal and disposal of the existing culvert using an excavator and the minor realignment of the stream on approach to the culvert headwall. Eighteen metres of a new, reinforced concrete box culvert of 1.2m high x 2.4m wide will be laid upon imported granular subbase and the works will be completed with a suitable head wall and trash screen and tail wall. These will be precast reinforced concrete structures that can be purchased as standard and set into place.

At the lower location, a box culvert of 1.2m high x 2.4m wide will be required to accommodate future climate change scenario river flows. This culvert will be extended downstream from the Brae Road until it passes beneath the proposed flood embankment from where it will continue in an open channel to the confluence with the Burnfoot river. New headwall structures and debris screens will be provided at proposed flood embankment.

The works will be undertaken during a dry period to ensure low flows. This will facilitate the temporary damming of the river and diversion of the flow via temporary pipes over a short section where work is being undertaken.

Consideration will be given to over-pumping to ensure the works remain dry for the placement of the concrete base for the structures.

The exact locations of the culvert improvements can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_108 and IBE2204_Bt_109 along with typical cross sections.

5.3.1.7 Alterations to Existing Embankments

The Proposed Scheme includes removal of two sections of embankment downstream of the town to allow floodplain reconnection. One of these, on the left bank of the Burnfoot River is part of an existing OPW maintained Arterial Drainage Scheme. The other, on the right bank of the River Skeoge, is a privately owned embankment. This will involve simple removal of the embankments using an excavator and dumper/lorry to remove the material from the site.

The location of the embankment removal downstream can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_111 and IBE2204_Bt_115 along with typical cross sections.

There are also two embankments upstream of Burnfoot Bridge at Monreagh Park that will be removed to allow reconnection of the flood plain along this reach of the Burnfoot River. The locations of the embankment removal at Monreagh Park can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_114 and IBE2204_Bt_106 along with typical cross sections.

5.3.1.8 Back Drainage

With the construction of the new flood defences, each will have some degree of cut-off to prevent excessive flow beneath the embankments. Along with the above-ground barrier, this restricts the ability of the land behind the defences to drain post scheme. To facilitate this drainage, and ensure the land behind the defences does not become waterlogged, the construction of a series of land drains behind the defences will be required. This will consist of a series of perforated pipes bedded in no fines granular material and laid parallel to the defence line at the rear toe. Precast concrete manholes will be provided at regular intervals to facilitate access for maintenance or changes in direction.

The outfalls of the back drain will discharge to the river via precast concrete headwalls mounted with flap valves to prevent backflow. The outlet pipework will therefore have to pass either beneath embankments or through walls as applicable.

The exact locations of back drainage can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_107 and IBE2204_Bt_110 along with typical cross sections.

5.3.1.9 Reinstatement

Reinstatement will be undertaken to the entire working area on a like-for-like basis as far as is possible. Within areas of open space or agricultural fields, this will be limited to installing some localised lateral drainage to connect into the back drainage, re-grading of the ground, topsoiling and sowing in grass.

In residential properties, this will additionally involve the replacement of garden sheds, reinstatement of paving areas, replacement of property boundaries, fences, and planting.

5.3.1.10 Landscaping proposals

The landscaping proposals are included in the submitted Planning Drawing, Drawing IBE2204_Bt_204 and include:

- Retention of existing vegetated areas, which are to be retained and protected in accordance with BS 5837;
- Proposed specimen tree planting, comprised of Heavy Standard Trees of locally appropriate native species;
- Proposed woodland planting areas comprised of locally appropriate native tree and shrub species;
- Proposed areas of grass seeding to proposed Swales;
- Proposed areas of low maintenance grass seeding to embankments;
- Proposed areas of low maintenance grass seeding to remaining areas;
- Pedestrian circulation route, surfaced in resin bound aggregate; and
- Street furniture elements comprised of bench seating and litter bins.

5.3.2 Description of Operational Phase

Given that the main elements of the Proposed Scheme are hard defences, culvert improvements and a bridge replacement there are no unusual or specialist maintenance or operational activities envisaged. A description of envisaged maintenance activities for each element of the Proposed Scheme is detailed below. Inspections, cleaning, and maintenance works including repairs, where necessary and in accordance with standard asset management procedures, will be the main operational activities.

- Defence walls (Piled and RC) – maintenance regarding these will be minimal. Inspections in accordance with standard asset management procedures are likely to be the main activities. Dealing with vandalism (graffiti or damage) to capping stones can be an issue. This will require access to private gardens and properties, especially at the rear of Líos Na Greíne and Páirc an Grianán.
- Flood Embankments – these will need regular inspection and should be mowed at least twice annually to prevent growth of significant vegetation. Inspection activities will need to look for presences of animal burrowing or damage from livestock through fencing of the defences, where located within agricultural fields should prevent the latter. Access to embankments is easily achieved for both inspection and maintenance purposes. It is envisaged that embankments adjacent to the R238 bridge will be maintained by a ride on or pushed mower whereas the agricultural embankments may be cut by tractor mounted flail.
- Culverts – Inlet structures and screens will need regular inspection and cleaning. This is particularly important prior to and post significant rainfall events. The inlet structures will be designed to facilitate ease of access for cleaning and removal of debris.
- Drainage elements – Flap valves will need checked regularly to ensure they are working as they form a key aspect of Scheme function. These will be designed in such a way to provide safe access. This can be within a manhole on the defended side of the defences rather than at the point of outfall to the river. Back drainage will need to be checked for blockage and rodded if necessary. Manholes will be provided to enable this to happen. These manholes will be located on private property including residential gardens and agricultural land. Although potential road drainage improvements will only be confirmed at the design stage, their maintenance will be required for these elements. Swales will require little maintenance; however, it is important to inspect for any obstructions in the channel which may hinder flows or that may be conveyed into the Carnashannagh Stream / Burnfoot River, as well as management of vegetation growth within the channel.

- Bridge – The bridge will be maintained by Donegal Council Roads in accordance with their inspection and asset management procedures. Detailed design of the bridge will consider any requirements in this regard but there is not envisaged to be any unique challenges specific to Burnfoot.

5.3.3 Other related projects and potential for ex-situ effects

The proposed greenway is the only other known construction activity that may coincide with the construction of the FRS at this stage of the contract. This should not adversely affect the delivery of the Proposed Scheme and may compliment it by incorporating a walkway along the crest of the embankments. This will be reviewed as the development of the Proposed Scheme progresses. Any other further developments or proposed developments will be considered as they arise.

5.3.4 Construction Management and Constraints

5.3.4.1 Site Compound and Working Areas

To enable the storage of materials, accommodate welfare facilities and site offices it will be necessary to provide sufficient areas within the proximity of the proposed construction works. These would be preferably located adjacent to main work areas and must be able to be secured adequately. There are three locations proposed for the site compounds. Two areas upstream of the Burnfoot bridge - one on the left-hand bank in the fields adjacent to the Páirc an Grianán housing development accessed from the R239 and one on the right-hand bank adjacent to Líos na Greíne housing development accessed from the R238. A third site compound is proposed in the fields behind the mart accessed from an existing access from the R238 at Monreagh Park. The location of these is shown in the submitted Planning Drawing, Drawing IBE2204_Bt101.

Working areas are required to ensure that the proposed scheme can be built safely with full consideration of the movement of plant and transportation of materials. This is an important consideration concerning the importation of embankment material and the need to stockpile it before use as well as the footprint of the proposed embankments. These can be considerable with a 1m high embankment having an overall footprint of 6-7m. Given these requirements, a general working area of 20m width has been allowed to facilitate this. Most of these working areas are greenfield areas and will need to be stripped of topsoil, stoned as necessary to facilitate plant movement and fenced off with Heras fencing, or similar, for the duration of the works. On completion of the works, it will be re-topsoiled and/or reinstated to the existing condition.

5.3.4.2 Access Routes for Construction

The Burnfoot Flood Relief Scheme requires several access points to enable the defences to be constructed on both sides of the river and upstream and downstream of the Burnfoot bridge. This will require plant movements on public roads for the duration of the works and therefore consideration must be given to this in the Contractor's traffic management plan. With appropriate controls and good contractor working practices, this can be achieved without significant risk but it must be thoroughly considered in terms of construction methodology, time frames and cost. The permitted access routes during construction are shown in the submitted Planning Drawing, Drawing IBE2204_Bt103. The main access points for construction are described below:

R238 - All plant and materials will be brought into Burnfoot via the R238 and this road will be the only means for plant crossing the Burnfoot River to gain access to both sides of the river. The R238 bridge will be replaced

as part of the scheme and during this period a temporary bridge will need to be constructed upstream of the existing structure to allow its demolition and rebuild. This temporary bridge will be used by the public, pedestrians and site traffic.

The working area downstream of the Burnfoot Bridge on the right-hand bank will be accessed directly from the R238 at Carmel's Salon.

Opposite the R239 junction, immediately adjacent to the Service Station, there is a short section of roadway which leads to a residential property. This road will need to be used to access the working area behind the old mart and on the left-hand bank immediately downstream of the Burnfoot bridge for all construction materials and plant. The existing trees and vegetation at the end of this road will need to be cleared to permit access.

R239 - Plant and materials will need to use R239 (Muff Road) from the junction of the R238 to the entrance to the working area adjacent to the Páirc An Grianán housing estate.

The R239 (Slab Road) will also be utilised to the west of the R238 to access the working area needed to remove the ADS and privately owned embankments. It will be utilised for a distance of approximately 1.2km west of Burnfoot where construction traffic will turn right onto an agricultural track which runs north for a distance of 500m to the working area. The track then crosses the Skeoge River via an agricultural standard bridge. While this bridge is used by agricultural vehicles it may need to be upgraded to carry the excavator and dumpers needed to undertake this work. It would be envisaged that any replacement would be a permanent replacement but of similar size and construction to the current structure. The appointed contractor will need to design this element to suit their construction methodology and proposed plant. For the purposes of the Appropriate Assessment it is assumed that the bridge will require replacement.

Brae Road – This road will be utilised to provide access to the right-hand bank of the Burnfoot river upstream of the Burnfoot bridge. Plant and materials will be brought in via this road to the working area and to enable the construction of the defences in this area. This road will also be required to access the working area at the proposed new culvert inlet upgrade to the Carnashannagh Stream.

Carnashannagh Road – For the section of the culvert upgrade on the Carnashannagh stream access will be difficult. The most feasible route for construction traffic will be via the Carnashannagh Road and then a domestic laneway which leads for approximately 500m to the point where it crosses the Carnashannagh Stream. This is a narrow access road and therefore will limit the size of excavator, dumpers and any other plant needed to bring materials to this location and construct the new culvert. There are three domestic properties on this lane and their access must be maintained and traffic control measures put in place to avoid blocking the lane and ensure the risk of collision is minimised. The lane is not a through road and therefore despite its' narrowness it will be suitable for the intended purpose but its' usage will require liaison with the property owners.

5.3.4.3 Management of Materials and Plant

Within the confines of the working areas, plant movements will be linear in nature. Materials including clay, sheet piles, reinforcement steel, concrete, pipework and topsoil will need transporting up and down these areas from the construction access. This will require stoning of these areas to provide adequate haul roads during all weather conditions. Due to riverside working and proximity to properties, it will be necessary to ensure all

machinery is in good condition and well maintained thus minimising oil leaks and so noise to the adjacent properties is reduced as far as possible.

There are two locations proposed for the storage of materials in the site compound areas. These will be used for storage of materials that may include topsoil, clay, reinforcement steel, drainage pipes and sheet piles until needed for construction. From there, materials will be transported to the relevant section of defence utilising a range of plant via the constructed haul roads and/or public roads.

In addition to these designated storage areas, it may be necessary to store materials within the working area immediately before using them for construction. The contractor may also wish to store stripped topsoil in these locations which would reduce the number of site movements associated with double-handling topsoil.

5.3.4.4 Instream Works

The majority of the scheme consists of walls and embankments either located on top of the bank or set back from the river and will require no instream works. There are, however, three elements where instream works are unavoidable. Two of these are relatively minor and relate to the culvert upgrade and culvert inlet structure on the Carnashannagh stream but the third is the replacement of the Burnfoot Bridge. Furthermore there is a small section on the left (southern) bank downstream of Burnfoot Bridge where the installation of the sheet piled wall is spatially constrained and may require a temporary platform partially within the Burnfoot River to facilitate construction. This location is immediately adjacent to the bungalow illustrated in **Figure 5.4** where there is limited available space between the edge of the building and the left (southern bank) of the river.

The works associated with the construction of the temporary bridge; demolition of the existing bridge and construction of the new bridge will require in-channel working. This will primarily involve the demolition of the existing bridge. The placement of new abutments and supports for both the temporary and permanent structures, which will be around or below bed level will occur from the banks as the both the temporary and permanent structures will be clear span. There is likely to be a risk of debris and dust during the demolition process getting into the river channel.