



# Shimna River Flood Alleviation Scheme

Environmental Statement –  
Non-Technical Summary

Department for Infrastructure (DfI) Rivers

August 2018

49 Tullywiggan Road  
Loughry  
Cookstown  
BT80 8SG

## 1. Introduction

The Environmental Statement (ES) is a detailed report of the findings of the Environmental Impact Assessment (EIA) process. In particular, it predicts the environmental effects that the Proposed Scheme would have, and details the measures proposed to reduce or eliminate those effects. It is a statement that includes such of the information referred to in Schedule 2A to the Drainage Order 1973, as substituted by The Drainage (Environmental Impact Assessment) Regulations (Northern Ireland) 2017, that is reasonably required to assess the environmental effects of any proposed drainage works and which the Department for Infrastructure (DfI) - Rivers can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile. This shall include a Non-Technical Summary (NTS) of the information provided under points 1 to 9 below:

1. a description of the Proposed Scheme;
2. a description of the reasonable alternatives studied by the Department;
3. a description of the relevant aspects of the current state of the environment, including the 'Do-Nothing' scenario.
4. a description of the factors likely to be significantly affected by the Proposed Scheme;
5. a description of the likely significant effects of the works on the environment
6. a description of whether the likely significant effects would be direct and indirect, secondary, cumulative, transboundary, short, medium and long-term, permanent and temporary, positive and negative;
7. a description of the forecasting methods or evidence used to identify and assess the significant effects on the environment;
8. a description of the measures envisaged to avoid, prevent, reduce and where possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements; and
9. a description of the expected significant adverse effects of the works on the environment deriving from the vulnerability of the works to risks of major accidents or disasters.

The NTS is provided at the beginning of the ES, and presents a concise overview of the contents of the ES and the key environmental issues associated with the Shimna River Flood Alleviation Scheme ('the Proposed Scheme').

## 2. Background

Following severe flooding in August 2008, a post flood investigation of the Burren and Shimna Rivers was undertaken by RPS. This examined the source, causes and flooding mechanism of the fluvial flood event of 16<sup>th</sup> and 17<sup>th</sup> August 2008, and identified the properties affected by that flood and the extent of fluvial flooding at the properties. The performance of the Burren Flood Alleviation Scheme during the flood event was also assessed. Following on from this, possible outline solutions to reduce future fluvial flood risk were identified, and costs outlined.

The Flood Investigation Report (RPS 2009) showed that areas protected by the Burren Flood Alleviation Scheme could still be flooded from the Shimna River, with water travelling through Islands Park then over and along Bryansford Avenue. Flood water can then flow over the Bryansford Avenue Road bridge and flood properties within the Burren catchment, along the Shimna Road and in Shimna Vale.

Subsequent to this, RPS prepared the Shimna River, Newcastle Feasibility Study for Flood Risk Investigation' (2015), in which a computer model was constructed to assess the risk of flooding from the Shimna River. The calibrated river model was run to determine water levels for a range of storm events for both the present day and future scenarios. Flood maps were created to form the basis for the outline design of a flood protection scheme and the economic assessment of flood risk and the benefits of such a scheme.

Due to the scale and nature of the development, an EIA has been carried out and reported in the Shimna River Flood Alleviation Scheme ES. This has been prepared to assess the potential impacts resulting from the Scheme. The ES also considers the significance of these impacts, offers mitigation measures where necessary and discusses residual effects (i.e. those effects which remain following the implementation of mitigation measures).

## 3. The Proposed Scheme

### 3.1 Objective of the Proposed Scheme

The primary objective of the scheme is to provide flood protection, to the 312 properties which are currently at risk of flooding, during a 1% Annual Exceedance Probability (AEP) flood event, as indicated within the Flood Risk Management Plans for Northern Ireland (2015), under the EU Directive on managing floods. The Proposed Scheme would be designed to provide protection to properties for the 1% AEP flood event, with allowance for climate change.

### 3.2 Summary of the Proposed Scheme

The Proposed Scheme would require the construction of flood alleviation measures to reduce the risk of flooding from the Shimna River to protect existing properties in the town. The works would extend both upstream (into Tipperary Wood) and downstream (into Islands Park) from New Bridge on the Bryansford Road, as shown on **Figure 1**. The proposed works would include:

- Demolition of a number of property boundary walls and fences;
- Felling of a number of mature trees;
- Relocation of one drainage ditch;
- 1430m of brick/concrete clad sheet piles or sheet pile core embankments;
- Construction of a new pathway;
- Realignment of existing pathways; and
- Erection of one floodgate.

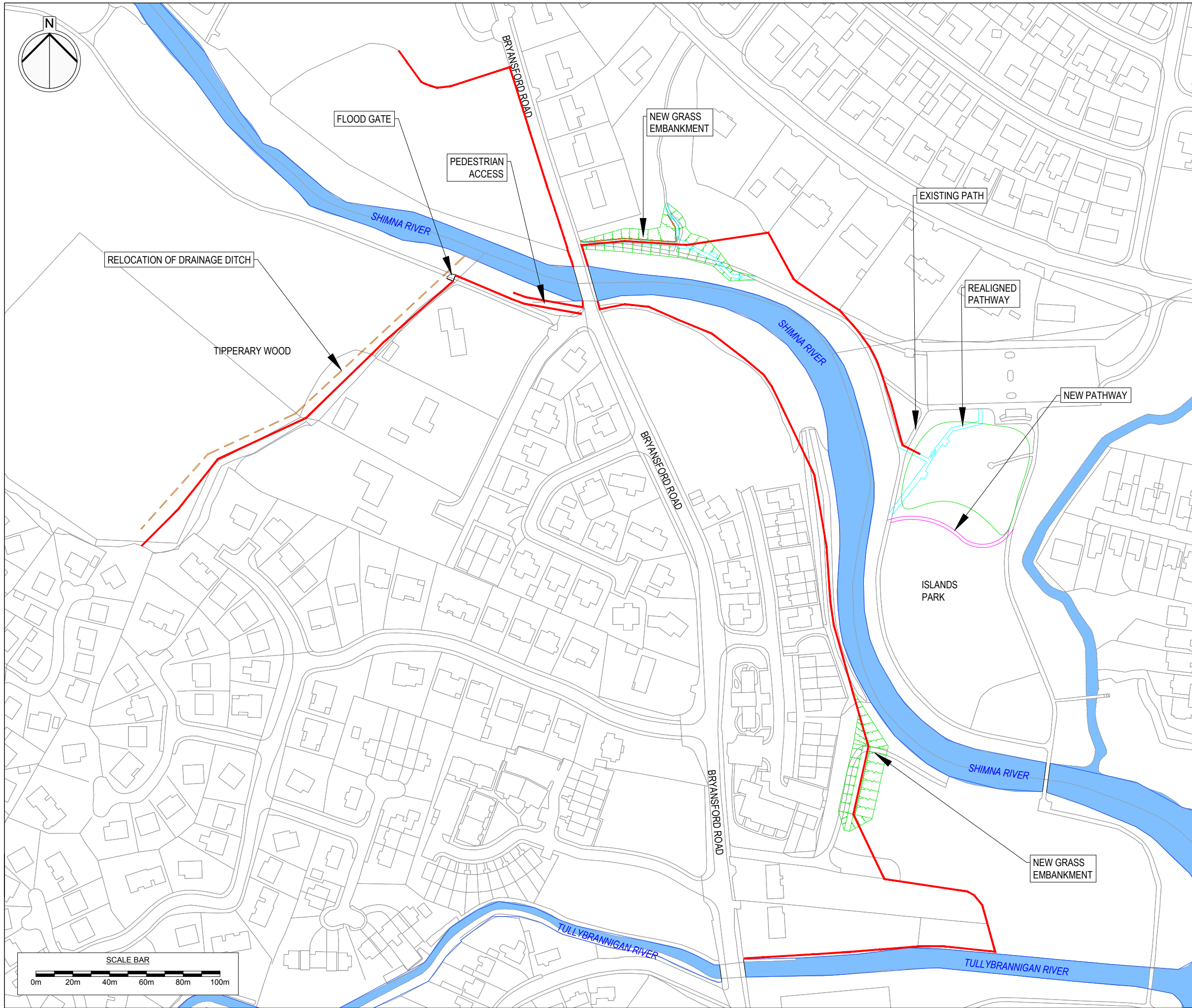
The road bridge on the Bryansford Road (New Bridge) is the hub point of the scheme. The scheme proposes construction of four separate flood defences, each starting at the bridge (as shown on **Figure 1**). On the north bank of the Shimna River, there would be construction of a flood defence from Bryansford Road Bridge (New Bridge), running parallel to the Bryansford Road for approximately 115m, then turning and running perpendicular to the road, for approximately 70m. Also on the north bank of the Shimna River, there would be construction of a flood defence from New Bridge, running downstream and parallel to the Shimna River within Islands Park over approximately 250m. On the south bank of the Shimna River, there would be construction of a flood defence from New Bridge, running downstream and parallel to Shimna River over approximately 645m across to Beers Bridge. Also, on the south bank of the Shimna River, there would be construction of a flood defence from New Bridge, running upstream, parallel, then perpendicular to the Shimna River for approximately 290m.

## 4. Alternatives Considered

A number of options were progressed through the screening process, identifying which could potentially resolve flooding issues from the Shimna River. These options are outlined below.

### 4.1.1 Do-Nothing Scenario

In this scenario no action is taken to sustain, maintain or improve existing flood defences. If no works were undertaken, the threat of overtopping of the banks of the Shimna River would remain, resulting in the possibility of frequent flooding damage to property in addition to causing considerable anxiety to local residents. The Do-Nothing Scenario was used as a base-case against which the other options are compared.



Project Title  
**SHIMNA  
 FLOOD ALLEVIATION SCHEME  
 NEWCASTLE, CO. DOWN**

Client  

 Department for Infrastructure

Drawing Title  
**NON-TECHNICAL SUMMARY**  
**SHIMNA RIVER FLOOD ALLEVIATION SCHEME**

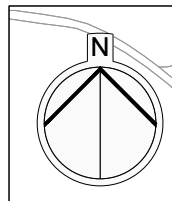
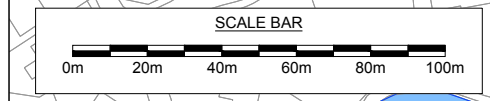
KEY

	NEW SHEET PILE WALL
	NEW FLOOD GATE
	RELOCATED DRAINAGE DITCH
	NEW PATHWAY
	REALIGNED PATHWAY
	EMBANKMENT
	NEW FENCE

Scale @ A3  
 1:2000  
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**FIGURE 1**

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## 4.1.2 Provision of Hard Defences

There were a range of alternative methods of construction considered for flood defences which depended on various factors including the ground conditions. Flood walls would generally be constructed from reinforced concrete, but where ground conditions are poor, sheet piles or bored piles may be required below ground. Where space permits, flood embankments can be constructed from clay, but again where ground conditions are poor, a sheet pile core may be required. Various methods of construction were costed at the feasibility stage as ground conditions were unknown. The options costed were:

- **Option 2A:** reinforced concrete flood walls at all locations;
- **Option 2B:** reinforced concrete flood walls on right bank, reinforced concrete flood walls on left bank upstream of bridge, clay embankments on left bank downstream of bridge (within Islands Park);
- **Option 2C:** reinforced concrete flood walls with sheet pile below ground level at all locations; and
- **Option 2D:** reinforced concrete flood walls with sheet pile below ground on right bank, reinforced concrete flood walls with sheet pile below ground on left bank upstream of bridge, sheet pile core embankments on left bank downstream of bridge (within Islands Park).

Subject to Economic Appraisal, **Option 2C** was chosen to be brought forward as the basis for the Proposed Scheme.

## 5. Existing Conditions

As shown on **Figure 2**, the Shimna River rises in the Mourne Mountains and flows to Newcastle through Tollymore Forest Park. Within the town of Newcastle, the Shimna River meets the Burren River in Islands Park. Further downstream of the confluence with the Burren River, the Shimna River is joined by the Tullybrannigan River in the vicinity of the boating lake in Castle Park, before flowing into the Irish Sea.

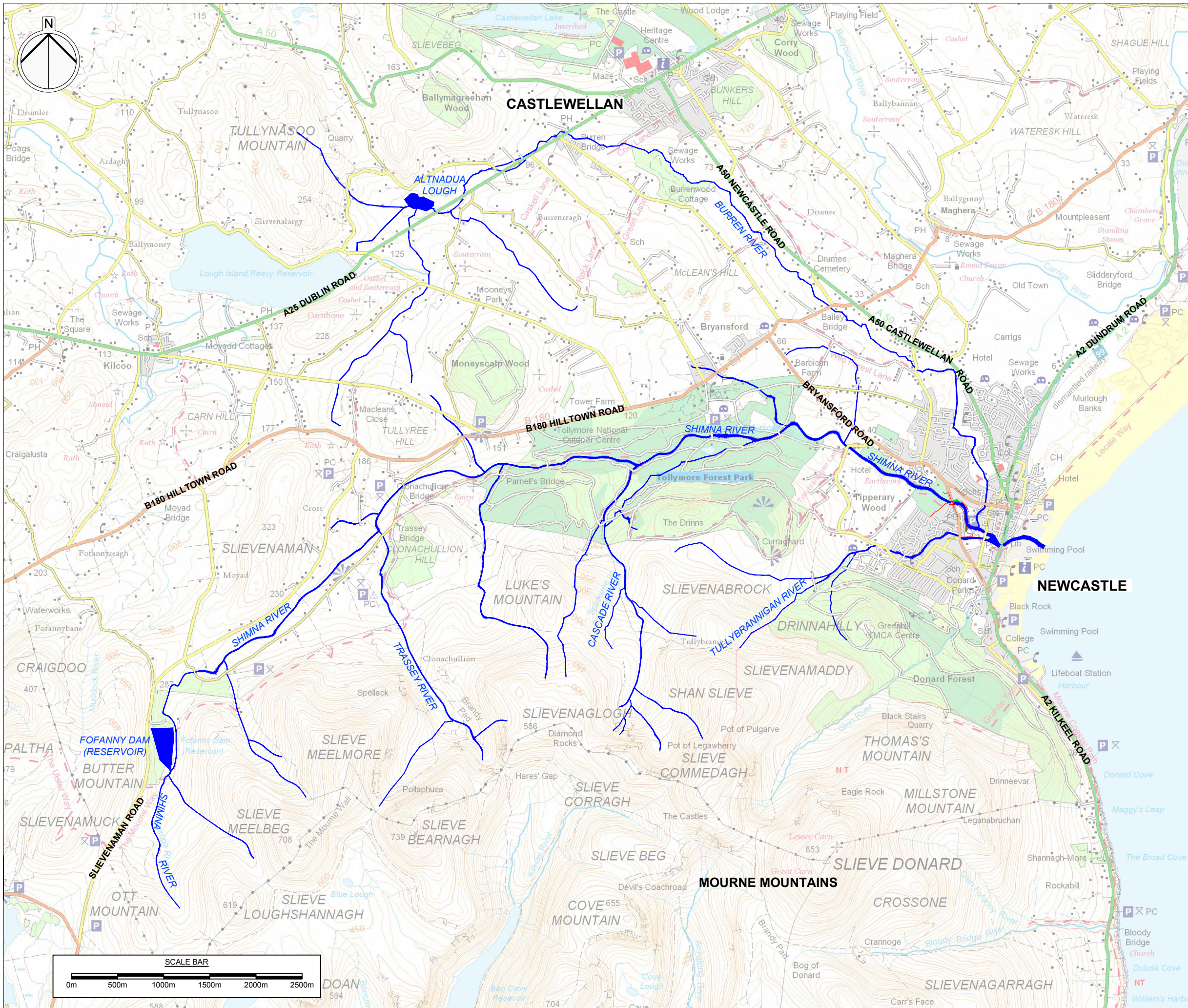
The source of the Shimna River is in the Mourne Mountains, rising on the slopes of Ott Mountain. The river then flows in a northerly direction into Fofanny Dam, before flowing in a north-easterly direction through Tollymore Forest Park where it has its confluence with the Spinkwee River and Trassey River. From Tollymore, the Shimna River flows in a south-easterly direction towards Newcastle, flowing through Tipperary Wood before entering the settlement limit of the town.

The river's diverse geology, flora and fauna have made the river corridor an Area of Special Scientific Interest (ASSI). Apart from the presence of Fofanny Dam, the river is in a highly natural state due to limited human impact. A short, fast-flowing spate river, the Shimna River is characterised by sequences of riffles, runs and pools where its gradient is shallow and the river beds are composed of cobbles, with scattered boulders and sandy margins but where the gradient is steep and the bed composed of bedrock and boulder, the flow is more dramatic with rapids, cascades and water falls.

The Shimna River provides excellent habitat for spawning salmonids, with populations of Atlantic salmon, brown trout and sea trout present. It is also a very popular river for angling under the control and operation of the Shimna Angling Club.

Within the study area, the Shimna River corridor and the area that surrounds it has many existing land uses and is very much representative of the convergence and tension between the natural and human environment with the meeting of the riparian corridors of the converging Shimna, Tullybrannigan and Burren rivers (and associated wetlands) with the residential and amenity areas of Newcastle Town.


The study area centres on the Shimna River which serves as a valuable and diverse area of landscape and ecological importance. The study area forms a locally distinctive landscape within the town and includes the Shimna valley, Tipperary Wood and the river corridors associated with the Tullybrannigan and Burren rivers. The Shimna River is significant for salmon fishing and breeding and is of local nature conservation interest, with the river and trees supporting a range of habitats and species.



Project Title  
**SHIMNA  
 FLOOD ALLEVIATION SCHEME  
 NEWCASTLE, CO. DOWN**

Client  


Drawing Title  
**NON-TECHNICAL SUMMARY**  
**SHIMNA RIVER**

KEY  
 SHIMNA CATCHMENT WATERCOURSES

Scale @ A3  
 1:40,000  
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**FIGURE 2**

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As shown on **Figure 3**, the main existing land uses that surround the riparian corridors of the three rivers are amenity and residential.

Islands Park is the predominant land use which is considered a valuable area of active open space and recreation for Newcastle, as designated within the Ards and Down Area Plan 2015. It includes grassed open space areas, children's playground, parking area, toilet block, wildflower meadow, numerous footways (which facilitate long distance walking routes such as the Ulster Way, Mourne Way and the Newcastle Way), pedestrian bridges, footgolf (currently closed), and tennis courts. The walking routes along the river are a valuable tourism asset within the Newcastle area, which forms a hub point for services and hospitality on a range of rambling and walking routes through the Mourne Mountains.

The riparian corridor of the Shimna River and amenity area is backed onto by a number of low density residential areas. These include private residences along Bryansford Avenue, Bryansford Road, River Side Park and more modern housing developments within Shimnamile and Alfred Crescent (located off Bryansford Road).

The area upstream of Bryansford Road Bridge which includes Tipperary Wood on the south bank of the Shimna River and a new housing development within the grounds of the former Shimna House on the north bank. Tipperary Wood is a DAERA – Forest Service plantation woodland heavily utilised by the community for walking (with direct links to Tollymore Forest), biking, etc. It is also utilised as a scout camp.

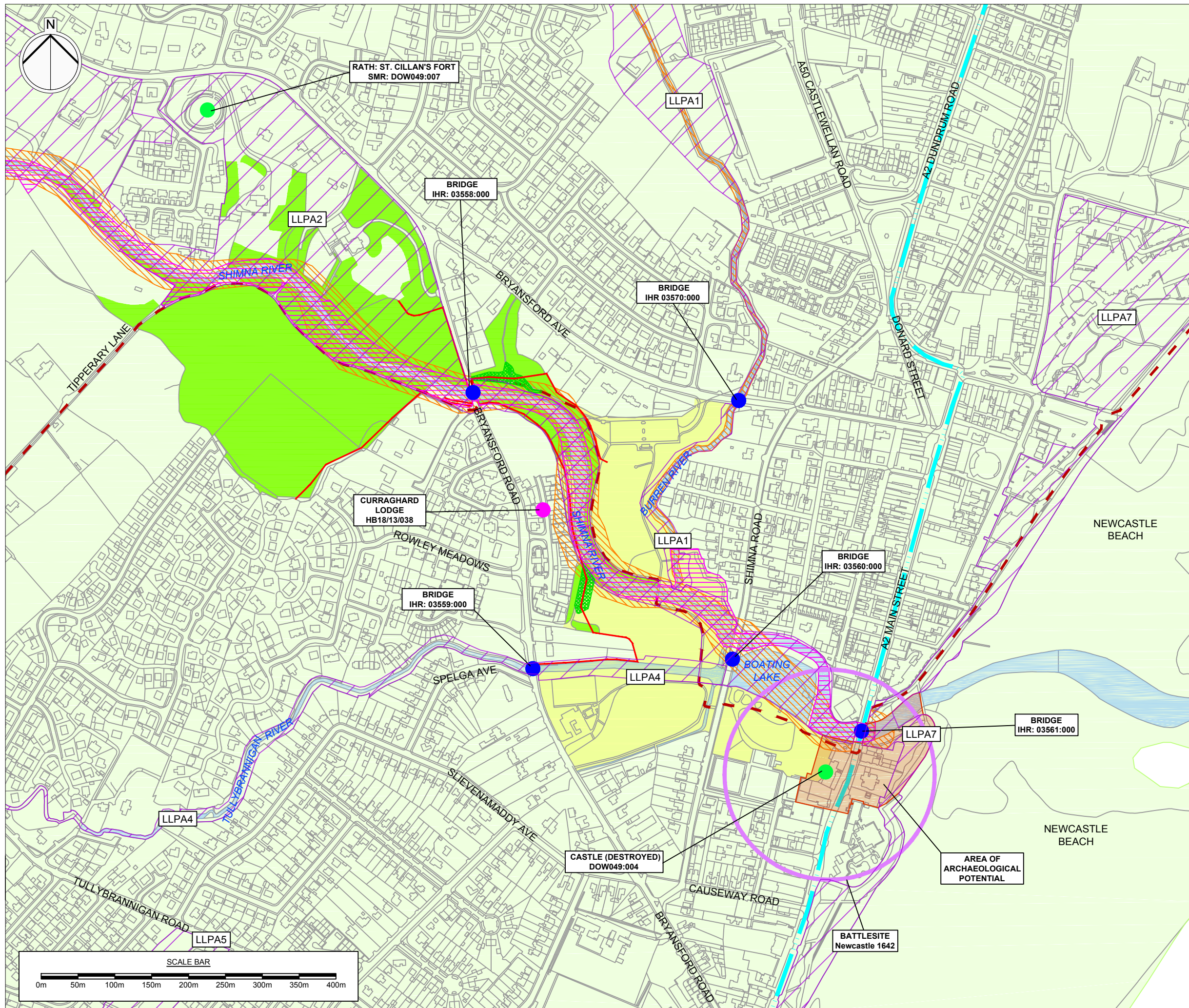
## 6. The Environmental Statement

As noted previously, the ES is a detailed report of the findings of the EIA process. In particular, it predicts the environmental effects that the Proposed Scheme would have, and details the measures proposed to reduce or eliminate those effects. The ES informs the final decision on whether the Proposed Scheme should be allowed to proceed. Its function is to give stakeholders, including the public and statutory environmental bodies, an opportunity to express an opinion before the scheme is initiated. It identifies, describes and assesses, in an appropriate manner and in light of each individual case, the significant environmental effects of the Proposed Scheme. It contains information that is relevant to the specific characteristics of the project and the environmental features likely to be affected by it.

The requirement to carry out a statutory EIA and publish a formal ES only applies to certain projects that are deemed to exceed certain thresholds and are predicted to have a significant effect on the environment. The process for determining whether it is necessary to carry out an EIA and publish an ES is termed Screening. The screening to determine whether a full EIA and subsequent ES would be required for the Proposed Scheme was undertaken and documented in an EIA Screening Report (February 2018).

EIA Scoping is the process of determining the scope and extent of issues that should be covered as part of the EIA and contained within the ES. A formal scoping exercise was not carried out for the Proposed Scheme as it is not a mandatory requirement for projects proceeding under the Drainage Order 1973, as substituted by The Drainage (Environmental Impact Assessment) Regulations (Northern Ireland) 2017. Nevertheless, an informal scoping exercise was undertaken to focus the EIA upon only those topics and matters that potentially significant impacts may arise as a result of the Proposed Scheme. The general headings of the topics and issues reported on in the ES are as follows:

- **Air Quality & Climate**
- **Cultural Heritage**
- **Biodiversity – Terrestrial Ecology**
- **Landscape & Visual**
- **Population & Human Health**
- **Noise & Vibration**
- **Drainage & the Water Environment**
- **Geology & Soils**
- **Biodiversity – Fisheries & Aquatic Ecology**



Project Title  
**SHIMNA  
 FLOOD ALLEVIATION SCHEME  
 NEWCASTLE, CO. DOWN**



Drawing Title  
**NON-TECHNICAL SUMMARY  
 CONSTRAINTS**

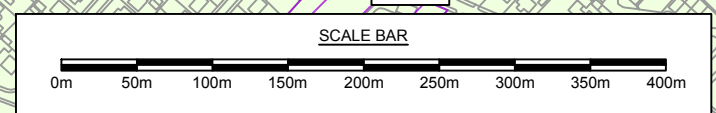
- KEY
- PROPOSED SCHEME
  - PROPOSED SCHEME EMBANKMENT
  - WATERCOURSE
  - AREA OUTSTANDING NATURAL BEAUTY (AONB)
  - WOODLAND PARK
  - EXISTING AMENITY OPEN SPACE AND RECREATION
  - SITE OF LOCAL NATURE CONSERVATION IMPORTANCE (SLNCI)
  - AREA OF SPECIAL SCIENTIFIC INTEREST (ASSI)
  - LOCAL LANDSCAPE POLICY AREAS (LLPA)
  - SITES AND MONUMENTS
  - HISTORIC BUILDINGS
  - INDUSTRIAL HERITAGE
  - AREA OF ARCHAEOLOGICAL POTENTIAL
  - BATTLE SITE

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**FIGURE 3**

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## 6.1 Environmental Impact Assessment - Approach & Methods

Details of the approach and methods used in the assessment of each environmental topic have been included in the individual technical sections of the ES. Each technical section followed the same general format, as detailed below:

- **Introduction:** a brief summary of what was considered/assessed in the section;
- **Methodology:** describing the methodology that has been used in the assessment of the environmental topic;
- **Regulatory & Policy Framework:** short summary of legislation and planning policy pertinent to the assessment of the environmental topic;
- **Baseline Conditions:** a description of the existing environmental conditions against which the predicted environmental impacts have been assessed, including an assessment of value/sensitivity of environmental receptors/assets;
- **Predicted Impacts:** identification of predicted impacts resulting from the operation and construction of the Proposed Scheme, and assessment of impact magnitude;
- **Mitigation & Enhancement Measures:** recommendations for measures to avoid, offset or reduce the identified adverse impacts associated with the Proposed Scheme;
- **Residual Effects:** assessment of significance of effects after consideration of mitigation measures; and
- **Summary & Conclusions:** a summation of main effects associated with the Proposed Scheme.

### 6.1.1 Assessment of Predicted Impacts and Residual Effects (Significance of Effects)

Predicted impacts arising from the Proposed Scheme have been identified, magnitude of impact described, and an assessment of the level of significance for each effect determined, within the assessment of each environmental topic. Impacts associated with the Proposed Scheme may or may not result in significant effects on the environment, depending on the sensitivity of the resource or receptor and potentially other factors.

The determination of the significance of effects is a key stage in the EIA process. In general, impact significance has been defined using a combination of the sensitivity (e.g. High, Medium or Low) of the environmental feature, and the magnitude of impact (e.g. Major, Moderate, Minor or Negligible) where appropriate. The criteria for assessing sensitivity and magnitude level have been defined for each environmental topic in the appropriate technical sections of the ES. The overall significance of an effect, considering the relationship between sensitivity and the magnitude level, is also defined for each environmental topic.

## 7. Environmental Effects

The Proposed Scheme and associated mitigation measures have been designed to minimise adverse environmental effects. Nevertheless, some impacts would arise from the proposals. The following summarises the key issues associated with each environmental topic assessed.

### 7.1 Air Quality & Climate

The Proposed Scheme would not give rise to operational phase emissions other than those associated with routine maintenance, which is likely to be an infrequent occurrence, and as such would be imperceptible and not significant. On this basis, there would be no predicted operational phase impacts upon sensitive receptors or designated ecological sites that would result in perceptible adverse effects. Furthermore there would be no significant impact on climate as a result of the Proposed Scheme as it has no energy requirements during operation, and thus there would be no emission impacts.

In terms of potential air quality impacts during the construction phase, approximately 504 properties would be within 200m of the proposed works. There is potential for nuisance, and health and safety impacts associated with the generation of excessive dust during construction; however, these impacts should be minimised with effective implementation of the Contractor's Dust Minimisation Plan. The contribution of airborne contaminants from site vehicles and plant to local air quality would therefore be largely Negligible, and any effects transient.

## 7.2 Cultural Heritage

There is little potential for physical impact to Cultural Heritage assets during the operation of the scheme, however there is potential for impact upon setting. New Bridge (IHR 03558:000:00) is a locally important asset located within the footprint of the Proposed Scheme. Flood walls would be tied into the sections of the bridge on the river banks using clad sheet piles which would match the existing bridge stone mitigating any impact to the physical appearance of the bridge. Additionally, the flood walls would be visually screened by existing vegetation along the river bank. The heritage value of this asset is Low and the magnitude of impact can be classed as Low Adverse giving a significance of effect of Minor. The residual effect is therefore assessed to be Minor Adverse.

Potential currently unrecorded archaeological deposits which could be present within the site would experience a very high or high impact from the Proposed Scheme. Mitigation has been proposed in the form of archaeological testing and excavation, if appropriate, to determine the presence/absence of such features and to mitigate impacts arising from the Proposed Scheme. Based on the results of the baseline report, it is assessed that previously unrecorded archaeological assets within the site are likely to be of Low value. The residual effect is therefore assessed to be Moderate Adverse (if discovered).

The Construction Phase would require the presence of machinery and structures which would not normally be present at this location while the ground works will cause visual and noise intrusion. There would be a temporary impact on one heritage asset, New Bridge. While the setting of this heritage asset will likely be affected during the Construction Phase resulting in a minor adverse temporary effect, any potential effect on setting will be reduced once the groundworks are completed.

## 7.3 Biodiversity – Terrestrial Ecology

The assessment of terrestrial ecology was informed by desktop and field based research including an extended Phase 1 Habitat Survey, invasive species survey, and various protected species surveys. These included otter, badger, bat (both ground level roost assessment and tree climbing surveys), red squirrel, and breeding birds. The affected habitat was also considered for other protected species, including kingfisher and pine marten. Surveys were carried out between June and July 2018.

There is predicted to be no significant impact on any European sites, such as SAC or pSPA, or on National Sites (ASSI's), or non-statutory designated sites (SLNCI's). Some residual impacts to Local, higher value habitats would be significant at a local level, due to direct habitat loss, indirect habitat damage and risk posed from potential spread of invasive species.

Each Protected Species which is likely to be affected has mitigation measures outlined within the ES, the implementation of which would allow impacts to be significant at a Local level only. At the construction phase, there is the potential for mortality, injury, disturbance or displacement to these species. Vegetation clearance should be timed to avoid bird nesting season, and pre-construction surveys will be carried out immediately prior to works beginning. During the operational phase of the works, there is a direct loss of habitat/nesting sites and commuting or foraging habitats. Correct implementation of mitigation measures

## 7.4 Landscape & Visual

The Proposed Scheme is located within the Mourne and Slieve Croob Regional Landscape Character Area and the Newcastle Valleys Northern Ireland Landscape Character Area. During the construction period, the temporary landscape and visual effects would vary from Minor Adverse for areas beyond 500m from the scheme, to Moderate – Major Adverse in close proximity of the proposed works. All

construction impacts would be temporary in duration, as the working areas and storage compound areas would be restored to their previous state following completion of the works.

The potential localised landscape effects at the site would range from Minor Adverse to Moderate Adverse, mostly in areas where well-established existing mature vegetation is proposed to be removed. The significance of effects in the wider area is considered to be Negligible, when assessing the landscape character as a whole. Following implementation of the mitigation measures, including replanting and effective establishment of vegetation, the significance of the localised residual landscape effects would reduce to Negligible in areas affected by significant vegetation clearance.

The potential visual effects associated with the Proposed Scheme would range from Negligible to Moderate Adverse, the latter of which would occur mainly in locations where extensive vegetation clearance is required. During assessment of views from representative viewpoints, it was established that three out of seven viewpoints would potentially experience localised Moderate Adverse effects in the operational phase of the scheme. These viewpoints are referred to in the text as Viewpoints 1, 3 and 4. Following implementation of the mitigation measures, including replanting of vegetation, the significance of the localised residual landscape effects would reduce to Minor Adverse in two views (Viewpoints 1 and 4). The effect on Viewpoint 3 remains Moderate, due to the fact that two of the new walls would be visible at this particular location. Beneficial effects have been identified where path and picnic area improvements are proposed to the existing amenity area.

## 7.5 Population and Human Health

From an operational perspective, there would be a long-term positive socio-economic impact of improved flood protection (the primary aim of the Proposed Scheme) with Major-Moderate beneficial significance effects are anticipated from damage avoidance and Minor beneficial significance effects from expense avoidance, and regeneration potential improvement from increased investor confidence. There would be long-term positive health, safety and wellbeing impacts from improved flood protection of the residents and visitors to Newcastle, with Minor beneficial effects anticipated on physical health, and Major-Moderate beneficial effects anticipated on psychological health, and Moderate-Minor beneficial significance effects from reduced disruption to utilities and facilities during flood events up to the 1 in 100 year level. There would be no long-term adverse impacts from a recreation and amenity perspective associated with reduced access to greenspace and angling opportunities and enjoyment due to the introduction of flood walls and severance impacts, with mitigation such as careful selection of wall cladding materials, restoration of footways and sensitive re-design of public spaces, result in an anticipated residual impact of Minor adverse significance.

From a construction perspective, the short-term economic benefit of increased jobs is assumed to be of Minor beneficial significance overall, but could be enhanced where measures are put in place to require that the Contractor's procurement of services deliver community benefits. There would be the short-term adverse health, safety and well-being impacts associated with traffic, noise, dust, mud, health and safety, disruption during the construction period would require close monitoring of compliance with contractual obligations imposed upon contractors to minimise potential impacts and ensure sensitive working and compound area phasing. With effective mitigation in place, the nuisance impact is anticipated to be reduced in magnitude to small, resulting in an impact of Minor adverse significance, which is again consistent with the effectiveness of impact mitigation described in the relevant technical sections (i.e. Air, Landscape & Visual and Noise) of the ES. There would be short-term adverse recreation & amenity impacts associated with disrupted/ reduced access to community services, angling opportunities, greenspace & pathway provision. Noise, dust, visual impact during the construction period would have the same mitigation as for safety and well-being above, also resulting in a temporary residual effect of Minor adverse significance.

## 7.6 Noise & Vibration

Once the Proposed Scheme is constructed and in operation, there would be no anticipated noise or vibration impacts, therefore the overall significance of the operational noise and vibration effects of the Proposed Scheme is assessed as Negligible.

Based on the likely magnitude of the construction noise impacts and the sensitivity of the identified receptors, the overall significance of construction noise effects is assessed at worst as Minor Negative, assuming the developed mitigation strategy is in place.

Based on the likely magnitude of the construction vibration impacts and the sensitivity of the closest identified receptors, the overall significance of construction vibration effects is assessed as Negligible.

The piling and site clearance works have been identified as the construction activities with the greatest potential to generate noise and vibration. A range of good practice mitigation measures have been identified. Adherence to the limits outlined within the ES, should ensure that construction noise and vibration impacts are kept to a minimum.

## 7.7 Drainage & the Water Environment

The water environment associated with the Shimna catchment can be considered of very high importance, particularly as it is designated both as a salmonid waterbody and an ASSI, and thus would be acutely sensitive to change. With mitigation measures outlined in the ES, the residual effect of the Proposed Scheme would be Minor Adverse, as the changes to the drainage regime in the long-term would be minimal.

Whilst the Proposed Scheme would have the potential to impact upon groundwater by altering flow paths, with mitigation measures implemented, the effect of changes to groundwater flow movements would be very localised and negligible.

The Proposed Scheme shall facilitate the through flow of water within the Shimna catchment, however in itself, shall not be a source of emissions that would constitute any perceptible change in terms of biological elements, physiochemical elements, specific pollutants or priority elements associated with WFD objectives. On this basis, the significance of effect would be Negligible.

From a hydrological perspective, the significance of effect is likely to be Minor Beneficial, as whilst there would be a localised narrowing of the floodplain, the Proposed Scheme would limit the encroachment of flood waters into the urban area. The reduction in flooding as a result of implementing measures would reduce the risk of pollution incidents given the fact that flooding often results in pollution problems from oil tanks, sewerage overflows, etc.

From a hydromorphology perspective, whilst the scheme would result in the modification of the Tullybranigan River, it is on a stretch that has already been modified. With mitigation measures, the change to the bankside is considered Negligible, if not Minor Beneficial as it is currently formed by way of two-tier stone-filled gabion baskets which have limited benefit in terms of the naturalisation of this watercourse and provide little cover from a fisheries point of view. On this basis, the affected section of the Tullybranigan River is already heavily modified and thus the modifications associated with the scheme would not constitute a deterioration or derogation from this perspective. The Proposed Scheme presents an opportunity to improve the hydromorphology within this stretch of the river and may include riprap to form the bankside to improve cover and a possible two-stage channel in its upper reach to improve bed conditions, even though the effects of the downstream impoundment would limit the benefits of this.

Without prescriptive and stringent mitigation measures being effectively implemented on-site, the adverse risk to the Shimna River and Tullybranigan River during the construction phase could potentially be Very Large Adverse. Even with minor impacts, the significance of effect that the associated works would have on the water environment could potentially be 'Moderate Adverse' considering the high value and sensitivity of the environment that would be affected.

With effective mitigation, the majority of potential effects are assessed as being Minor/Negligible, however measures would be prescriptive and stringent, and clearly written into the construction contract Specifications and Employer's Requirements. Nevertheless, the significance of effect would entirely depend upon committed applications on-site through continuous monitoring, reporting and communication before, during and after the construction phase.

## 7.8 Geology & Soils

There would be no designated or non-designated sites of geological or geomorphological interest affected by the Proposed Scheme. From a geology and soils perspective, there would be relatively few key issues. There would be no significant impacts on solid or drift geology, or on soils of the region and thus the significance of effect is likely to be neutral.

Potential areas of contaminated land are unlikely to be encountered. If contaminated land is encountered, further investigation would be necessary, including a contaminated land risk assessment to assess the appropriate remediation/mitigation measures.

## 7.9 Biodiversity – Fisheries & Aquatic Ecology

The Shimna River is one of seven Index Rivers monitored by the Department of Agriculture, Environment & Rural Affairs (DAERA) to provide the basis for salmon management throughout Northern Ireland. It is also a renowned recreational fishery with stocks of salmon and sea trout.

Both the Shimna and Tullybrannigan reaches were assessed as of at least High sensitivity due to the presence of juvenile salmon in significant numbers, but the Shimna reach was elevated to Very High sensitivity due to its ASSI designation.

The risk of potential negative impacts is associated mainly with the construction phase of the scheme, although there is some potential for negative impacts during the operational phase.

Impacts during the construction phase were assessed with regard to sediment run-off and the release of other pollutants, loss of river habitat and resultant fish mortality, and noise and vibration from construction of flood defences. Similarly, impacts during the operation phase related to loss of river habitat, removal of bankside tree cover and reduced access for recreational angling.

It was concluded that where potential negative impacts were identified, they would be mitigated in the project design phase through inclusion of a range of measures which would ensure that the scheme would have a neutral effect on fisheries and the aquatic environment in general.

## 8. Construction Effects

Temporary and permanent effects from construction and associated mitigation measures are considered in each technical chapter of the ES. In addition, there are also many mandatory and good practice requirements and guidelines related to protection of the environment, which the Contractor would need to consider during construction. As part of the construction contract, the appointed Contractor would be required to implement all committed mitigation measures including those set out in the ES, and incorporate these into their methods of working. The Contractor would have to demonstrate formal adoption of these commitments, requirements and measures and include them in their Construction Environmental Management Plan. The commitments, requirements and measures, contained therein would require approval from the relevant statutory bodies and also be audited during the construction phase by on-site environmental representative(s).

## 9. Summary & Conclusions

The ES provides a comprehensive assessment of the potential impacts for all the component parts of the Proposed Scheme. It sets out proposed mitigation measures to neutralise or reduce their potential adverse impact to an acceptable level.

The ES has been produced by a team of competent and experienced specialists in each of their respective technical disciplines, grouped into a comprehensive assessment as a result of a programme of close interaction within and between the environmental team and the engineering design team. The approach has resulted in a thorough understanding of the combined effects of the different impacts.

The main environmental impacts resulting from the scheme are likely to be experienced during the construction phase of the works, and are therefore temporary, or transient in nature.

The local community would benefit from the Proposed Scheme, in terms of the protection of over 300 residential properties from flooding, as well as the protection of essential services such as mains water, electricity and transport disruption, which can also result from flood events. Property and possessions can be damaged and most seriously, flooding can result in injury and death.

## 10. Review and Comment

Copies of the ES may be inspected free of charge during office hours at the following deposit locations from 14<sup>th</sup> August to 30th September 2018:

- Newry, Mourne and Down District Council, District Council Offices, O'Hagan House, Monaghan Row, Newry, BT35 8DJ;
- Newcastle Centre, 10-14 Central Promenade, Newcastle, Co Down, BT33 0AA; and
- DfI - Rivers HQ, 49 Tullywiggan Road, Loughry, Cookstown, BT80 8SG.

The ES can also be viewed on the Department's website at [www.infrastructure-ni.gov.uk/publications](http://www.infrastructure-ni.gov.uk/publications)

A bound paper copy of the ES may be purchased at a cost of £200; and is also available on CD free of charge, by writing to the address provided below. The NTS is available free of charge from the same address.

Mr Ian Coulter  
DFI - Rivers  
49 Tullywiggan Road  
Loughry,  
**COOKSTOWN**  
Co. Tyrone  
BT80 8SG

Or email [ian.coulter@infrastructure-ni.gov.uk](mailto:ian.coulter@infrastructure-ni.gov.uk) by no later than 30th September 2018.

Information provided in response, including personal information, could be published or disclosed under the Freedom of Information Act 2000. For further information on confidentiality and this Act, please refer to [www.ico.gov.uk](http://www.ico.gov.uk).