Environmental Impact Assessment Report

Chapter 9 Landscape and Visual Impact Assessment

Grangemouth Flood Protection Scheme 2024
Falkirk Council

GRANGEMOUTH
Flood Protection Scheme
Protecting the heart of our communities

Grangemouth Flood Protection Scheme

Environmental Impact Assessment Report

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Acronyms

AOTV	Area of Townscape Value
EIA	Environmental Impact Assessment
FC	Falkirk Council
GLVIA3	Guidelines for Landscape and Visual Impact Assessment 3rd Edition
HES	Historic Environment Scotland
LCA	Landscape Character Areas
LLCA	Local Landscape Character Areas
LCT	Landscape Character Types
LDP	Local Development Plan
LLA	Local Landscape Areas
LLCZ	Local Landscape Character Zones
LNCS	Local Nature Conservation Site
LVIA	Landscape and Visual Impact Assessment
NCN	National Cycle Network
NPF	National Planning Framework
NS	NatureScot
SG	Supplementary Guidance
SINC	Site of Importance for Nature Conservation
SLA	Special Landscape Areas (now referred to as LLAs)
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WHS	World Heritage Site

9. Landscape and Visual Impact Assessment

9.1 Introduction

This chapter presents the results of the Landscape/ Townscape and Visual Impact Assessment (LVIA) undertaken for the Scheme with the detailed assessment provided in Appendix B9. The assessment is based on the Scheme as described in Chapter 4: The Scheme and as shown on Appendix A Figures A4.1 to A4.28 and A4.29 to A4.57.

Townscape refers to areas where the built environment is the dominant feature and is defined as *the landscape within the built-up area, including buildings, the relationships between them, the different types of urban spaces, including green spaces, and the relationship between buildings and open spaces* (GLVIA, 2013). Villages, towns and cities change and develop over time, and the relationship between the landscape and the historic elements contributes to the current character and form of the spaces. The relationship the towns have with their watercourses is a very important element to the local townscape character.

LVIA is a tool used to identify the likely effects of a proposed development on both the landscape/ townscape character and visual amenity. The two fundamental components of LVIA are:

- assessment of landscape/ townscape effects: assessing effects on the landscape/ townscape as the resource, reviewing the character of the area, and the interplay between the physical, natural and cultural elements of the landscape/ townscape; and
- assessment of visual effects: assessing effects on specific views and on the general visual amenity experienced by people.

Therefore, this LVIA presents separate sections for the baseline descriptions of the landscape/ townscape character (Section 9.4) and the visual assets in the study area (Section 9.5), and for the assessment of impacts on landscape/ townscape character (Section 9.7) and visual amenity (Section 9.8).

Impacts referenced in this chapter that are assessed in other chapters include:

- Chapter 6 Population and Human Health (impacts of changes in landscape and visual amenity on human health and wellbeing)
- Chapter 7 Biodiversity (impacts on natural heritage and sites designated for ecological importance)
- Chapter 13 Cultural Heritage (impacts on the setting of cultural heritage assets)
- Chapter 14 Traffic and Transportation (impacts on transient receptors, e.g. vehicle drivers, pedestrians, cyclists, equestrians)

The Scheme assessed in this chapter includes primary/embedded mitigation measures, which were incorporated during the early design stage to avoid/reduce impacts as noted in Chapter 4.2. Measures designed to help prevent or reduce landscape/ townscape and visual impacts included the following:

- General
  - The locations of the flood measures along the length of the Scheme have been reviewed and, in some locations moved, to allow for retention of as many trees as possible (see specific Flood Cell areas below) and/or set back to avoid severance impacts on watercourses.
  - The height of flood defences has been limited to an acceptable level (where possible), to avoid more significant effects in sensitive areas.

- Upstream floodplain storage capacity has been explored at appraisal stage to reduce potential downstream flood defence heights.
- Proposed embankments instead of flood walls where practical.

- **Flood Cell 1**
  - Removal of some proposed floodgates by using ground modelling to raise the adjacent ground to meet the path at the top of the embankments and help integrate the Scheme more fully into the landscape (also reduces maintenance and operational issues). Flood gates have only been used where it is not practical to raise ground levels.
  - Ground raising to reduce the relative wall height adjacent to the Core Path between the river and the Dawson Mission.
- **Flood Cell 4**
  - The Scheme design at Flood Cell 4 was redesigned to remove a proposed flood basin to reduce the impact of the scheme on the Antonine Wall WHS and avoid any Scheduled sections of the WHS.
  - Raised walkways (by an additional kerb height) north of Zetland Park to elevate the footpath slightly in key locations, thereby reducing the effect of the height of the walls and allowing views over the top and potential access to the riverbank in places.
  - Relocation of the wall inside the channel at Rannoch Park to enable retention of a long row of roadside mature trees. Due to the trees being infected with the Chalara Ash Dieback disease, as noted in the tree survey, these trees are now likely to be removed at some point in the future, however, the location of the trees are a key visual green element in the landscape, so would be replaced in the same location.
  - Relocation of the wall to the edge of the carriageway along the length of the northern bank of the Grange Burn opposite Grange Road to enable the retention of the riverbank planting, which will maintain the existing screening of the industrial units.
  - Redesign of the embankment in Zetland Park to make it look more naturalistic from within the park.
  - Relocation of the wall along the Grange Burn in Zetland Park to enable the retention of two rows of mature trees (one row will still need to be removed).
- **Flood Cell 6**
  - Change from rock armour coastal revetment to a soft engineered reinforced slope between the road and the existing woodland, at the far east of the Flood Cell (west of the water treatment plant), to better integrate with the existing landscape character.

9.2 Methodology

9.2.1 General

The LVIA provides an assessment of the impacts and effects of the Scheme within the six geographic areas that are consistent with the six Scheme Flood Cells (Figure 4.1 in Chapter 4: The Proposed Scheme, and also shown on Figure 9–1). These Flood Cells are discussed further in Section 9.2.4 below.

Early discussions with the project team and key stakeholders influenced the options appraisal stage, scoping, assessment methodology and the outline design of the Scheme (see Section 4.2), which addressed potential landscape and visual impacts at an early stage and identified primary/embedded mitigation measures.

9.2.2 Guidance

The LVIA has been completed in accordance with the guidance from the following publications: Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3) (Landscape Institute and IEMA, 2013) and; the Environmental Impact Assessment Handbook (Scottish Natural Heritage and Historic Environment Scotland, 2018).

Additional relevant documents and guidance are referenced throughout this chapter as appropriate.

9.2.3 Limitations and Assumptions

Photographs taken from publicly accessible locations on site walkovers are included in this chapter to represent existing views experienced by visual receptors in both public and non-public locations.

Where the visual receptor locations were not readily accessible (e.g. inside residential properties), it was necessary to estimate the likely visibility of the Scheme through a site walkover of the surrounding areas, assisted by web-based photography and mapping.

The assessment has been based on the Scheme outline design, as presented in Chapter 4: The Scheme and in Appendix C4.2: Construction Methodology Report. However, the detailed design (to be undertaken at a later date) will require to be not environmentally worse than the outline design as assessed and be compliant with any relevant planning conditions.

The flood defence heights referred to in the assessment have been based on Scheme information as detailed in Appendix A: Figures A4.29 - A4.56. These figures show the heights of the centre line of defences above existing ground levels. The heights within each section of flood defence can vary locally due to ground conditions, with the top of defence level remaining at a consistent height. The worst-case scenario (i.e. highest level) within a section may only be for a very small part of a longer length. The assessment also considered the context of proposed landform, i.e. the relative height of an embankment to its foot rather than the current ground level of the centre line. These elements have been taken into account in the assessment of landscape and visual impacts and effects.

9.2.4 Study Area and Flood Cell Extents

The overall study area for the assessment lies within the Falkirk Council (FC) local authority area and focuses on the Scheme areas encompassing the communities of Grangemouth and Carron from Kinneil to the east of the River Avon (Figure A1-1 in Appendix A). It is considered that there would be no significant effects beyond the study area boundaries due to the Scheme being located well within the boundaries of the flood cells and the defences and associated works only being clearly visible locally due to their relatively low height and screening from adjacent infrastructure.

The study area for the LVIA includes the environs of the proposed works along the water corridors for each Flood Cell, and the boundaries for these are shown in Figure 9–1 below. The study area has been divided into Local Landscape Character Zones (LLCZs) as shown on Figure 9-2 and discussed in Section 9.4.4 and Appendix B9.6. Due to the large size of Flood Cells 1, 4, 5 and 6, they have been subdivided, to focus around specific flood defence locations, or to reflect localised variations in character. The Flood Cells are described in the landscape and visual baseline in Sections 9.4.6 and 9.5.3 respectively.

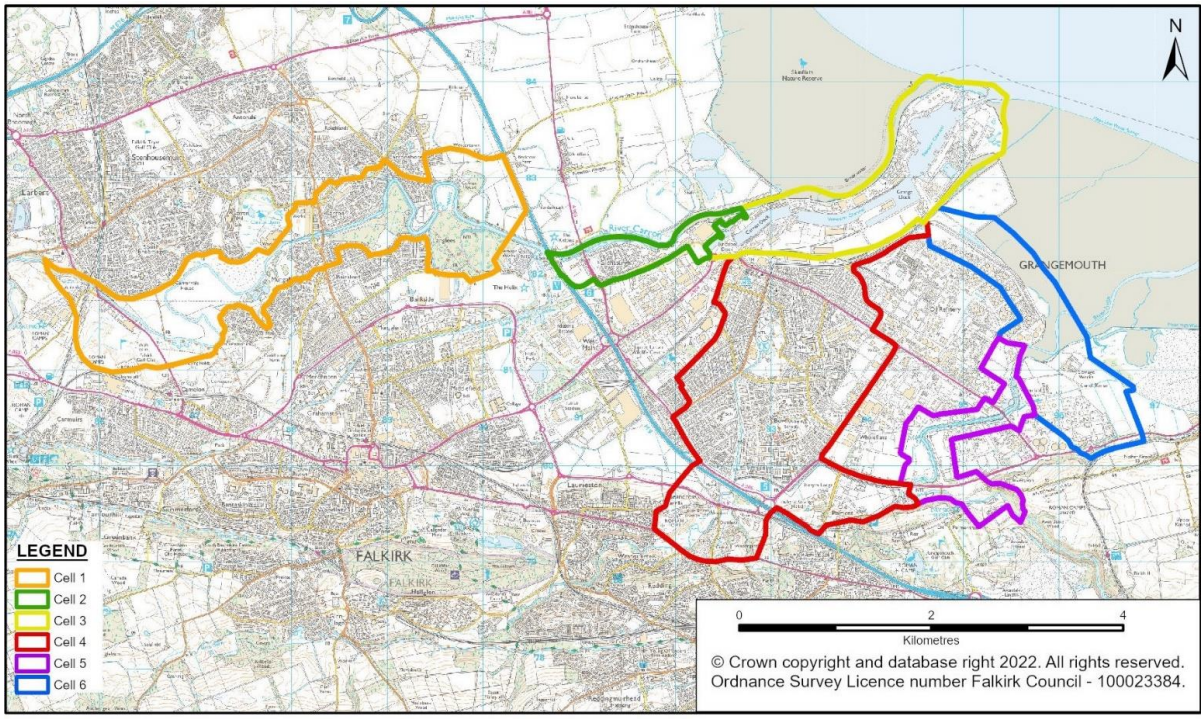

Figure 9–1: Flood Cell location plan

The six Flood Cells extend from the A9 at Stirling Road on the west, through Grangemouth town centre, to the industrial area on the Forth estuary coastline to the east. From Bothkennar Road in the north to the A803 at the Westquarter to the south.

The Scheme affects the following watercourses:

- River Carron (Flood Cells 1, 2 and 3)
- Chapel Burn (Flood Cell 1)
- Forth Estuary coastline (Flood Cells 2, 3 and 6)
- Grange Burn (Flood Cell 4)
- Westquarter Burn (Flood Cell 4)
- River Avon (Flood Cells 5 and 6)
- Millhall Burn (Flood Cell 5)

9.2.5 Assessment Methodology

The following tasks were undertaken:

- A review of relevant policy (Section 9.3)
- A detailed baseline study of the **landscape/ townscape character** (Section 9.4) including the following:
  - identification of relevant published information/documentation, such as the Inner Forth Landscape Initiative Report (RSPB Scotland, 2017), Antonine wall management plan (UNESCO, 2014);
  - consultation with FC's landscape architecture, built heritage and design officers;

  - consultation with statutory bodies such as FC, Historic Environment Scotland (HES) and Scottish Natural Heritage (SNH) (now NatureScot);
  - site inspection (including visits with engineers/consultees/photo record);
  - description of the existing baseline landscape/townscape character;
  - identification of relevant **landscape/townscape receptors** including features and or elements which combine to create the character along with landscape relating to the Frontiers of the Roman Empire (Antonine Wall) World Heritage Site (hereafter, The Antonine Wall WHS) and other designated monuments/landscapes; and
  - evaluation of the **sensitivity** of landscape/townscape receptors.
- A detailed baseline study for the **visual** environment (Section 9.5) including:
  - analysis of the existing visual baseline, based on site visits and photos;
  - identification of **visual receptors** (people experiencing views to and from The Antonine Wall WHS, designated monuments/landscapes, listed buildings, open and green spaces, public rights of way, residences, commercial properties, settlements and public roads);
  - identification of representative **key viewpoints** in agreement with Falkirk Council's landscape architect, followed by the production of artist's impressions of the proposals at each of those viewpoints, along with original photos to indicatively show the potential changes; and
  - evaluation of the **sensitivity** of visual receptors.
- Assessment of the magnitude and significance of **landscape/ townscape and visual effects** (Sections 9.7 and 9.8 and Appendices B9.7 and B9.8) during:
  - construction;
  - winter of year 1 with only primary mitigation;
  - winter of year 1 with the addition of secondary and tertiary mitigation; and
  - summer of year 15 after completion (when planting is established).

  Direct and indirect effects; short, medium, and long-term effects; permanent and temporary effects; positive and negative effects are considered as appropriate to each receptor.

Mitigation proposals to avoid/prevent, reduce or offset any significant effects are described, including consideration of any advance works (see Section 9.10). Primary, secondary and tertiary mitigation measures have been identified for the construction and operation phases of the Scheme.

Landscape and visual effects that contribute to **cumulative effects** are assessed (Section 9.9) and summarised in Chapter 15: Cumulative Effects. Effects which on their own may not be significant can become significant when combined with the effects of other proposed developments.

- **Cumulative landscape/ townscape effects** may result from changes to the physical fabric or character of the landscape/townscape, or any special values attached to it when two or more developments affect its components or introduce new features.
- **Cumulative visual effects** can be caused by combined visibility which *'occurs where the observer is able to see two or more developments from one viewpoint'* and or sequential effects which *'occur when the observer has to move to another viewpoint to see different developments'* (SNH, 2012: 11).

Residual landscape/ townscape and visual effects are summarised in Section 9.11 along with recommendations for monitoring of the Scheme (Section 9.12).

9.2.5.1 Baseline Data Sources

Baseline landscape/ townscape and visual information was produced via site walkovers and desk studies, including reviews of the following information sources:

- FC website and council contacts for FC documents and policy
- Government and statutory bodies documentation
- Landscape Character Areas and general information on the locality from a variety of sources (including noticeboards, leaflets and websites and those shown in Section 9.13 References)
- Historic data and designations – WHS, Scheduled Monuments, Garden and Designed Landscapes, Listed Buildings and Conservation Areas, etc.
- 1:5,000, 1:10,000, 1:25,000 and 1:50,000 Ordnance Survey mapping
- Aerial photography
- GIS datasets (including those obtained through consultation with relevant stakeholders)
- Site assessments made by landscape architects over a series of site visits 2017-2019
- Photographic information

9.2.6 Methodology Assessment Criteria

9.2.6.1 Introduction

This LVIA assesses both the construction and operational phases in general accordance with the GLVIA3, and with reference to the Environmental Impact Assessment Handbook (SNH and HES, 2018).

The methodology for assessing the significance of effects is in line with the general criteria described in Chapter 3 and is explained in more detail here.

Professional judgement is a very important part of LVIA. While there is some scope for quantitative measurement, much of the assessment replies on qualitative judgements, such as in the assessing of the sensitivity of and magnitudes of effect on the receptors where several factors are combined.

9.2.6.2 Landscape/ Townscape Character Impact Assessment Criteria

For the LVIA, the landscape/ townscape receptors are identified as:

- Designations
- LLCZs (refer to Appendix B9.6 for details)
- Flood Cells and Flood Cell areas.

The **sensitivity** of the landscape/ townscape receptors is defined in Table 9-1 below and is taken from Figure 5 in the Environmental Impact Assessment Handbook (SNH and HES, 2018).

Table 9-1: Sensitivity of landscape/ townscape receptors

Landscape/ Townscape Receptor	Sensitivity of Receptor
Key characteristics and features identified by systematic landscape/ townscape character assessment which contribute significantly to the distinctiveness and character of the landscape character type. Designated landscapes e.g. World Heritage Sites, Conservation Areas and Local Landscape Areas, and landscapes identified as having low capacity to accommodate proposed form of change.	High
Other characteristics or features of the landscape/ townscape that contribute to the character of the landscape/ townscape locally. Locally valued landscapes which are not designated. Landscapes identified as having some tolerance of the proposed change subject to elements such as design and mitigation.	Medium
Landscape characteristics and features that do not make a significant contribution to landscape/ townscape character or distinctiveness locally, or which are untypical or uncharacteristic of the landscape/ townscape type. Landscapes identified as being generally tolerant of the proposed change subject to elements such as design and mitigation.	Low

The magnitude of effect on the landscape/ townscape resource is based on the geographical extent of the area influenced, the duration, size or scale, and nature and reversibility of the change. The magnitude of the effect, or change in the landscape/ townscape resource, is defined as shown in Table 9-2 (taken from Figure 4 in Environmental Impact Assessment Handbook (SNH and HES, 2018).

The magnitude of effect is considered for three different time periods; during construction, the first winter after operation, and the summer 15 years after construction. The reason for these timescales is that at the winter of year 1 after completion, planting is unlikely to be established and therefore it does not reflect the final effect of the Scheme. By the summer of year 15, it is assumed that the planting will have established and therefore the full extent of the landscape and visual impact of the Scheme will be evident.

The Scheme is likely to be constructed in phases, with some parts being completed before others. Consequently, the assumption is made that the winter of year 1 timescale is when all the works at that location are assumed to be fully complete (i.e. including reinstatement and landscaping works).

Table 9-2: Magnitude of effect on landscape/ townscape resources

Potential Impact	Magnitude of Effect
Substantial changes, over a significant area, to key characteristics or features or to the landscape's/ townscape's character or distinctiveness for more than 2 years.	Major
Noticeable but not substantial changes for more than 2 years or substantial changes for more than 6 months but less than 2 years, over a significant area, to key characteristics or features or to the landscape's/ townscape's character or distinctiveness; OR Moderate or localised changes.	Moderate
Noticeable changes for less than 2 years, substantial changes for less than 6 months, or barely discernible changes for any length of time; OR Virtually imperceptible changes or changes within the capacity of the landscape/ townscape to absorb.	Minor/Negligible
No predicted changes.	No Change

Combining the two sets of analysis on the sensitivity of receptor with the magnitude of effect from Table 9-1 and Table 9-2, the significance of the effect can be derived through a simple matrix, as shown in

Table 9-3 below, which reflects Figure 6 of the EIA Handbook (SNH and HES, 2018).

Table 9-3: Matrix showing significance of effect related to the sensitivity of the receptor and magnitude of landscape/ townscape effect

Sensitivity of Receptor	Magnitude of Effect			
	Major	Moderate	Minor	Negligible/None
High	Major	Major	Moderate	Negligible/None
Medium	Major	Moderate	Minor	Negligible/None
Low	Moderate	Minor	Minor	Negligible/None

Effects of **Moderate significance or above** (based on the above matrix) are, in the context of this assessment, considered to have a likely **significant effect** on the landscape/ townscape character.

Effects on the landscape character can be adverse or positive (or in some cases neutral) and, as the landscape is constantly changing and evolving, effects assessed as adverse may not necessarily remain as such, 15 years after construction.

9.2.6.3 Visual Impact Assessment Criteria

For the assessment of visual effects, the sensitivity of the visual receptors is defined as shown in Table 9-4 below.

Table 9-4: Classification of the sensitivity of visual receptors

Visual Receptor	Sensitivity of Receptor
Residential properties, tourist hotels, users of designated places/public rights of way (foot/cycle), well used public viewpoints, users of local businesses (tourism), visitors to heritage assets	High
Parks, schools, travellers on roads, railway, and undesignated recreation routes (foot/cycle), users of the watercourses (i.e. fishing)	Medium
Sporting or recreational or other facilities not related to enjoyment of the views, industrial, office or other workplaces.	Low

As noted in GLVIA3, the magnitude of the visual effects is based on the size or scale of the change in view, the geographical extent and the duration and reversibility of the visual effects, as shown in Table 9-5 below.

Table 9-5: Classification of magnitude of effects on visual receptors

Potential Impact	Magnitude of Effect
Majority of viewers are affected, major change in view, where the scheme would cause a significant deterioration (or improvement) in the existing view.	Major negative or positive effect
Many/some viewers affected, moderate change in view where the scheme would cause a noticeable deterioration (or improvement) in the existing view.	Moderate negative or positive effect
Few viewers are affected, minor changes in view where the scheme would cause a barely perceptible deterioration (or improvement) in the existing view.	Minor negative or positive effect
No discernible deterioration or improvement in the existing view.	Negligible

The magnitude of effects is assessed for different time periods: during construction, the first winter after operation (with and without mitigation), and in summer, 15 years after construction. The reason for these timescales is that at the winter of year 1, planting is unlikely to have established. By the summer of year 15, it is assumed that the planting will have fully established, and the long-term effects of the Scheme will be apparent.

The Scheme is likely to be constructed in phases, with some parts of the Scheme being completed before others. Consequently, the assumption is made that the winter of year 1 timescale is when a particular phase of works is completed, and respective areas have been planted.

Combining the analysis on the sensitivity of visual receptors from Table 9-4 with the magnitude of effect from Table 9-5 generates the significance of the visual effect as shown in the matrix in Table 9-6 .

Table 9-6: Matrix showing significance of effect related to the sensitivity of the receptor and magnitude of visual effect

Sensitivity of Receptor	Magnitude of Effect			
	Major	Moderate	Minor	Negligible/None
High	Major	Major	Moderate	Negligible/None
Medium	Major	Moderate	Minor	Negligible/None
Low	Moderate	Minor	Minor	Negligible/None

Effects of **Moderate significance** or greater are, in the context of this assessment, considered to have a likely **significant effect** on views.

9.2.6.4 Mitigation

Primary/embedded mitigation (see Section **Error! Reference source not found.**) has been taken a ccount of in the landscape/ townscape and visual assessments, as this type of mitigation is intrinsic to the design of the Scheme. Secondary and tertiary mitigation methods are outlined in Section 9.10.2 for the construction phase and secondary mitigation methods are outlined in Section 9.10.3 for the operational phase. These are then considered within the assessment of residual effects in Section 9.11.

9.3 Landscape and Visual Planning Policy

9.3.1 Introduction

The relevant national and local policies to the LVIA are listed below as well as their implications to the Scheme. Details of these documents and the full wording of relevant policies are included in Appendix B9.1.

9.3.2 National Planning Policy

The Development Plan relevant to the Falkirk Council area is comprised of National Planning Framework 4 (NPF4) (The Scottish Government, 2023) and the Falkirk Local Development Plan 2 (LDP2) (Falkirk Council, 2020). LDP2 is considered in the Local Planning Policy section below (Section 9.3.3). NPF4 is the more recent publication, adopted by Scottish Ministers in February 2023. LPD2 was adopted by Falkirk Council in 2020. Both plans are read together, however where there is any difference in policy content the more recent publication takes precedence, in this case NPF4.

NPF4 includes the Grangemouth flood protection scheme as contributing to the Grangemouth investment zone, one of the 'Industrial Green Transition Zones' (national development), where plans are emerging for innovative industry which will support the generation of significant economic opportunities while minimising carbon emissions.

The NPF4 Policies relevant to the LVIA are listed below:

- Policy 1: Tackling the climate and nature crises;
- Policy 4: Natural places;
- Policy 6: Forestry, woodland and trees;
- Policy 7: Historic assets and places
- Policy 8: Green belts;
- Policy 14: Design, quality and place;
- Policy 20: Blue and green infrastructure;
- Policy 21: Play, recreation and sport; and
- Policy 22: Flood risk and water management.

Policies on placemaking, and the historic and natural environments are important to and considered in the assessment of the Scheme. Details of designated historic and natural areas are provided in Section 9.4.3 (Designations) and their contribution to the landscape character of the study area and each Flood Cell in Sections 9.4.4.3 and 9.4.6 (Local Landscape/Townscape Character Zones).

Designing Streets (The Scottish Government, 2010) and Creating Places (The Scottish Government, 2013) include policies on new streets and places, the protection of existing spaces, and how proposed developments can positively add to and conserve the environment. The Green Infrastructure: Design and Placemaking report (The Scottish Government, 2011) also includes guidance on the contribution of green spaces and features such as trees and woodland to placemaking. The initial and ongoing design development of the Scheme has considered these policy statements through the retention of trees and the materials and detail of flood walls (Section **Error! Reference source not found.**, primary m itigation and Appendix B9.9 Outline Design- Flood Wall Finishes and Gate Types).

9.3.3 Local Planning Policy

The Falkirk Local Development Plan 2 (LDP2) (Falkirk Council, 2020) was adopted on 07 August 2020 and will guide the future development of the FC area between 2020-2040. The relevant policies within LDP2 have been considered in the LVIA and listed below:

- Policy PE01 Placemaking;
- Policy PE02 Placemaking Tools;
- Policy PE05 Antonine Wall;
- Policy PE09 Areas of Townscape Value;
- Policy PE10 Historic Gardens and Designed Landscapes;
- Policy PE13 Green and Blue Network;
- Policy PE15 Green Belt;
- Policy PE16 Protection of Open Space;
- Policy PE18 Landscape;
- Policy PE20 Trees, Woodland and Hedgerows;
- Policy PE22 The Water Environment; and
- Policy IR06 Active Travel.

LDP2's Spatial Strategy notes that the objective of the Central Scotland Green Network (a key national development within NPF3 and subsequently NPF4) is to create Green and Blue Networks which make the area a more attractive place to live in, do business and visit; to help tackle climate change; to enhance biodiversity; and to promote active travel and healthy lifestyles. Examples of Green and Blue Networks include the countryside, woodland, parks, path networks, the coast and river and canal corridors. LDP2 identifies opportunities for enhancement within specific Green and Blue Networks and these are detailed in Appendix B9.1. Relevant ones to the Scheme are:

- GN06 – River Carron Corridor Improvements;
- GN09 – Zetland Park;
- GN17 – Larbert Open Space Corridors; and
- GN19 – River Avon Corridor.

These networks add to the character of the landscape and are identified within the Landscape baseline (Section 9.4.6). As in LDP2, the term Green and Blue Network relates to an area where there are both water and green spaces/ elements and Green Network where there are key green spaces. FC's green corridors, that is connected green spaces and woodland/trees as noted in LDP2 and the Falkirk Open Space Strategy (Falkirk Council, 2017), are also identified in the Landscape baseline within each Flood Cell.

As within national planning policy, the noted sections of LDP2 refer to the protection of designated and locally important landscapes and features. Guidance on how these local policies should be applied is detailed in the following Supplementary Guidance (SG) documents, which have been used to inform the assessment of the landscape and visual impacts of the Scheme:

- SG02 – Neighbourhood design (2020);
- SG05 – Green Infrastructure and New Development (2021);
- SG09 – Landscape Character Assessment and Landscape Designations (2021);
- SG10 – Trees and Development (2020); and
- SG11 – Frontiers of the Roman Empire (Antonine Wall) World Heritage Site (draft, 2022).

The relevant sections of the above SGs are detailed in Appendix B9.1 with their contribution to the LVIA noted. This guidance would also be taken through to the detailed design stage to inform the design process.

9.4 Landscape/ Townscape Baseline

9.4.1 Introduction

The Scheme runs through several different types of landscape characters, from the more rural areas to the residential and industrial sections of Grangemouth. The assessment therefore includes 'townscape' as well as the more traditional 'landscape' assessment covering the rural areas.

For the landscape/ townscape elements of the assessment, the following has been considered:

- setting of the rural and urban areas;
- topography and its relationship to the rural and urban form and the waterside;
- layout and scale of the buildings and their relationship with the watercourses;
- contribution of the watercourses to the town and countryside;
- nature and location of vegetation and green spaces;
- types and character of open spaces and public realm; and
- access and connectivity to and around the watercourses.

Additionally, information obtained from tree surveys carried out by Caledon Tree Consultants Ltd in October 2019 and Alan Motion Tree Consulting Ltd in September 2018 (refer to Appendix C9.1) on the quality of trees and how these add to the character of places has been considered. Category A trees are of high quality, Category B trees are of moderate quality; Category C trees are of low quality, and Category U trees are unsuitable for retention.

The landscape/ townscape character baseline has looked at historical context; designations; landscape character assessment; path networks and landscape receptors. Due to the extent of the Scheme, the landscape experience along the route of the Scheme is additionally split into the defined Flood Cells, where the specific character of the landscape is discussed in more detail (see Section 9.4.6).

9.4.2 Historical Context

Grangemouth originated in 1777 due to its proximity to the River Carron, Grange Burn and the Forth Estuary (Falkirk Local History Society Website, 2023). This proximity to water was fundamental to the development of the town and made for an ideal location for industrial advances due to the Forth and Clyde Canal, and it overtook Carronshore as the dominant landing port on the rivers.

The town has developed over the centuries from shipping to chemical works and finally the petro-chemical industry. It was the base for central Scotland's largest airport in the Bowhouse area in the 1930/40's. The town itself was laid out deliberately in a grid pattern in the 1800s, and then as it expanded it was controlled and carefully planned. A park was opened in 1882 and named after the Earl of Zetland. More details on the history of the town are provided in Chapter 13: Cultural Heritage.

9.4.3 Designations

9.4.3.1 Nature Conservation Designations

The Firth of Forth, which is located to the north boundary of the Scheme, is designated as a Special Protection Area (SPA), a Site of Special Scientific Interest (SSSI) and a Ramsar site (Wetlands of International Importance). Within Flood Cell 1, the Carron Dams is a Local Nature Reserve adjacent to the River Carron in Stenhousemuir, and there are two Local Nature Conservation Sites (LNCS): Camelon Riverside Wildlife Site (Flood Cell 1) and Polmont Woods Wildlife Site (Flood Cell 4). Further details on these and all other nearby nature conservation sites are provided in Chapter 7: Biodiversity.

9.4.3.2 World Heritage Site

Some extents of the work areas overlap with The Antonine Wall WHS buffer zone, and there is a general presumption against development within the vicinity of the zone that may adversely affect the line, setting or amenity of the Antonine Wall. However, proposals which can lead to a sympathetic use of the Antonine Wall for tourism, recreation or interpretation may be supported. Further details on these and all other nearby cultural heritage assets are provided in Chapter 13: Cultural Heritage.

9.4.3.3 Garden and Designed Landscapes

There are no Inventory Garden and Designed Landscapes within the Flood Cell areas. However, SG09 lists several non-Inventory historic designed gardens and landscapes (SG09 Falkirk Council, 2021, p91)) stating that development must not have an adverse effect on the character and setting of these sites and their remaining features. Those within or near the Scheme Flood Cells include Avondale House, Carron House and Zetland Park, and relevant potential impacts are addressed in this chapter.

9.4.3.4 Conservation Areas

There are nine Conservation Areas within the FC area, but they do not interface with the Scheme. However, as part of LDP2, FC created a local designation called Areas of Townscape Value (AOTV). AOTVs do not currently have Conservation Areas status but have been identified in LDP2 as having architectural and historic merit. The Scheme lies within or in close proximity to two AOTVs, both of which are located in Flood Cell 4, within and to the north of Zetland Park (see Figure 9–16 on p9-33) and at Old Polmont village (Figure 9–19 on p9-37). AOTVs are discussed below within each relevant area of Flood Cell 4 and included in the landscape/ townscape assessment.

9.4.3.1 Listed Buildings and Scheduled Monuments

There are a number of Listed Buildings and structures within the vicinity of the Scheme study area, including Carron House (Flood Cell 1), Zetland Park War Memorial and Park Gates (Flood Cell 4) and a number of bridges with datestones (see Chapter 13: Cultural Heritage for further details).

There are eight Scheduled Monuments located within the area and Scheduled Monument Consent may be required depending on the nature and extent of works and potential impacts on their setting. Further liaison with HES will be required, while the detailed design stage may be informed by current guidance on works within the vicinity of these sites as part of the design process.

Scheduled Monuments and any potential impacts of the Scheme on the fabric and setting of these listed features are considered Chapter 13: Cultural Heritage.

9.4.3.2 Local Landscape Areas

Local Landscape Areas (LLAs) are locally designated landscapes recognised for their cultural and/or historic assets, or for scenic value or natural features such as their geology or landform (NatureScot, 2020). SG09 (Falkirk Council, 2020) defines LLAs as locally valued special landscapes with particular qualities and characteristics relative to the surrounding area that merit designation by the local authority. Historically these have been called Special Landscape Areas and Areas of Great Landscape Value.

These designations help to protect a landscape from inappropriate development; encourage positive landscape management; help develop an awareness of the landscape qualities that make particular areas distinctive and promote a community's sense of pride in its surroundings.

There are three LLAs within the Falkirk Council area as noted in SG09. One of these, the South Bo'ness LLA, overlaps the edges of two of the Flood Cells (Flood Cell 5 and Flood Cell 6) near Inveravon and Nether Kinneil, however, it does not overlap any of the Scheme working areas (where the construction works will be undertaken).

9.4.4 Landscape/ Townscape Character Assessment

9.4.4.1 Introduction

The landscape/ townscape character of the study area has been identified following field and desk-based assessment, including a review of:

- NatureScot National Landscape Character Assessment (NatureScot, 2019); and
- Landscape Character Assessment and Landscape Designations. Supplementary Guidance SG09 (Falkirk Council, 2021).

These documents contain details of Landscape Character Types (LCTs) and Local Landscape Character Areas (LLCAs). The former defines the landscape broadly at a larger scale and in more generic terms while the latter describes the landscape in finer detail (refer to 9.4.4.2 below and Appendix B9.6 for additional information).

The LCTs and LLCAs within the study area have been further refined as Local Landscape Character Zones (LLCZs) to reflect the local character of the landscape in which the Scheme is located.

9.4.4.2 Landscape Character Assessment Terminology

Definitions below are mainly taken from GLVIA3 (Landscape Institute and IEMA, 2013), An Approach to Landscape Character Assessment (Tudor, 2014) and SG09.

- Landscape Character Types

These are distinctive types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes. Example LCTs include Highland Summits, Lowland River Valleys and Rolling Farmland.

- Local Landscape Character Areas

These are unique geographical areas in which landscape types occur. They are described in terms of characteristics which give an area its distinctive sense of place. SG09 notes that the names of the LLCAs normally reflect the names of local topographic features, settlements or water courses so that

they are locally identifiable and unique. Some technical publications use the term Landscape Character Area (LCA) instead of Local Landscape Character Area (LLCA), including SG09 (p10). Example LLCAs include Avon Valley or Denny Hills Fringe.

- Local Landscape Character Zones (LLCZ)

These are more specific local landscape/ townscape character areas defined as part of the smaller scale landscape/ townscape character assessment for this project.

9.4.4.3 Local Landscape Character Areas

The Flood Cells and Scheme elements lie within a number of Falkirk Council LLCAs, including those with a connection to watercourses, such as Avon Valley LLCA as well as the Lower Carron/Bonny Water LLCAs. The LLCAs defined in SG09 also include a large percentage of urban areas, which have diverse characters within themselves.

9.4.4.4 Local Landscape Character Zones

A detailed review and classification of the landscape character of the study area into different LLCZs (Figure 9–2 and Table 9-7) is provided in Appendix B9.6.

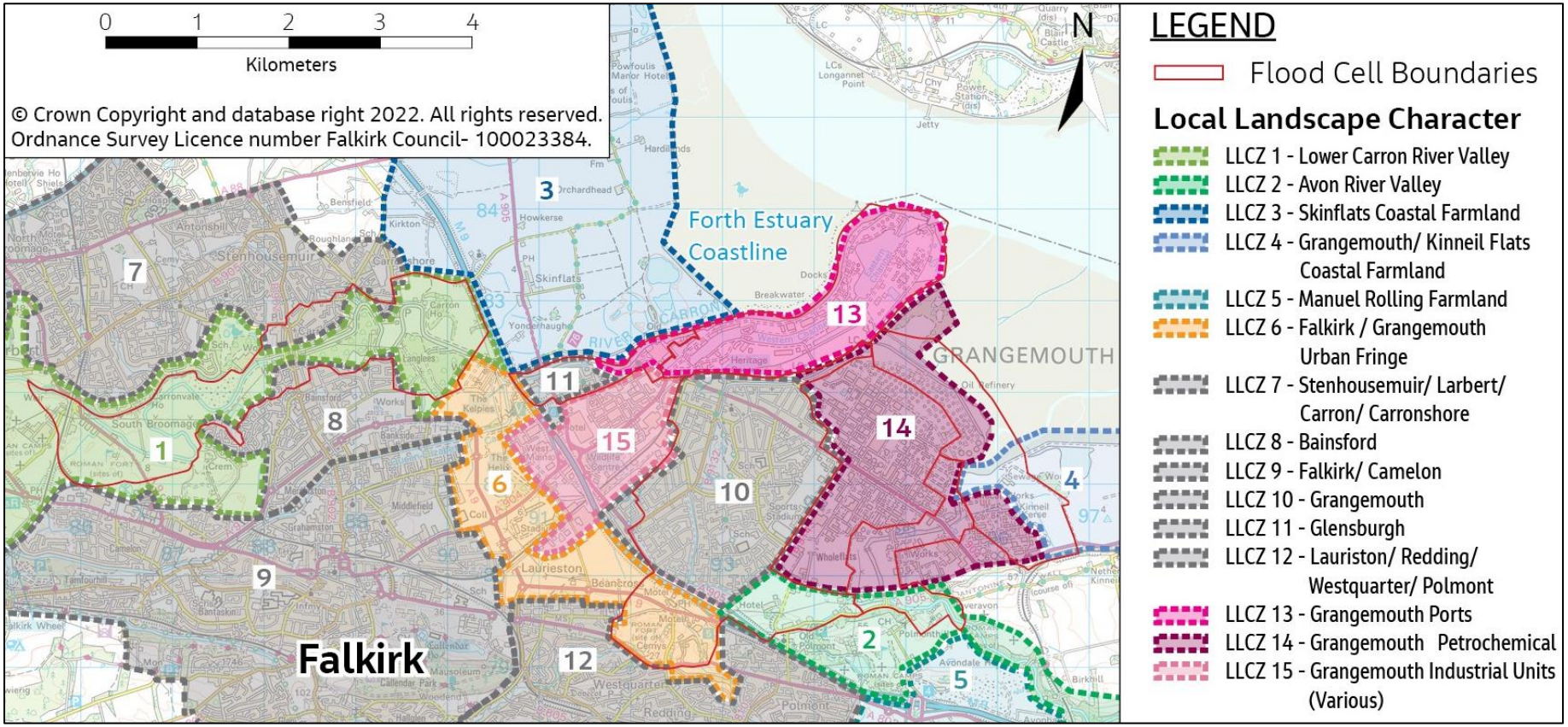

Figure 9–2: Local Landscape/ Townscape Character Zones

Table 9-7: Local Landscape Character Zones

Local Landscape Character Zones					
Zones	River Valley	Farmland	Urban Fringe	Urban	Industrial
	1. Lower Carron River Valley	3. Skinflats Coastal Farmland	6. Falkirk/ Grangemouth Urban Fringe	7. Stenhousemuir/ Larbert/ Carron/ Carronshore	13. Grangemouth Ports
	2. Avon River Valley	4. Grangemouth/ Kinneil Flats Coastal Farmland		8. Bainsford	14. Grangemouth Petrochemical
		5. Manuel Rolling Farmland		9. Falkirk/ Camelon	15. Grangemouth Industrial Units (Various)
				10. Grangemouth	
				11. Glensburgh	
				12. Lauriston/ Redding/ Westquarter/ Polmont	

Appendix B9.6 includes information on the key characteristics of each LLCZ (such as setting, prominent land use, open space, relationship/connection with watercourses); photographic information; as well as sensitivities within the LLCZs and their capacity to accommodate change.

9.4.5 Path Networks

Path networks within the Falkirk Council area include both Core Paths and other local path networks. Core Paths can be Rights of Way, farm tracks, promoted paths or other routes that provide public access to the countryside and urban areas. There are estimated to be over 617 km of paths in the Falkirk Council area with 387 km designated as Core Paths. Falkirk Council is also aiming to designate an additional 128 new paths, bringing the total Core Path network to 471 km (Core path network grows, Falkirk Council, 2019).

Plans showing the Falkirk Council Core Path network comprise:

- Falkirk Council Core Paths Plan (Falkirk Council, 2010); and
- Falkirk Council Core Paths Plan (Draft) (Falkirk Council, 2019).

The Core Paths relevant to the Scheme are discussed in Section 9.4.6 according to each of the Flood Cells (1-6). The landscape Flood Cell baseline maps show the Core Path network for context and specific paths are labelled where they are considered key to the character description, and all relevant Core Paths are shown in the visual baseline maps.

Those paths outwith the main Core Path network that interact with the Scheme include (but are not limited to):

- The paths in and around Larbert and Stenhousemuir (Falkirk Council, 2017);
- Walk, Ride and Cycle in and around Airth Parish (Falkirk Council, 2010);
- Nature Trails in the Falkirk Council Area (Falkirk Council, n.d.);
- River Carron Loop Path Network (Communities Along the Carron, n.d.);
- Antonine Wall Trail (Falkirk Council, 2009);
- The HArTT (Helix Around Town Tour) (The Helix, 2014);

- Bainsford Loop; and
- Helix Larbert Link cycle route.

Figure B9.3a in Appendix B illustrates the FC Core Paths Network Plan as well as the River Carron Loop Path and the Antonine Wall Trail, while the non-designated local path networks are listed within each of the Flood Cell specific sections below.

Cycle networks in and around the Scheme are noted in Figure B9.3b in Appendix B. For additional information and assessment of paths and cycle networks, refer to Chapter 14: Traffic and Transportation.

9.4.6 Flood Cell Specific Landscape/ Townscape Baseline Descriptions

The landscape/ townscape baseline descriptions are split into the six Flood Cells (see Figure 9–1), and sub-divided into smaller areas where a Flood Cell has several distinct areas.

At the end of each Flood Cell description, the specific constraints, which will be impacted by or impact on the Scheme, are summed up and the sensitivity of the landscape/ townscape receptor noted.

9.4.6.1 Flood Cell 1

The Scheme flood protection measures in Flood Cell 1 cover the River Carron corridor, from Stirling Road (A9) near South Broomage in the west, to the M9 motorway in the east (Figure 9–3).

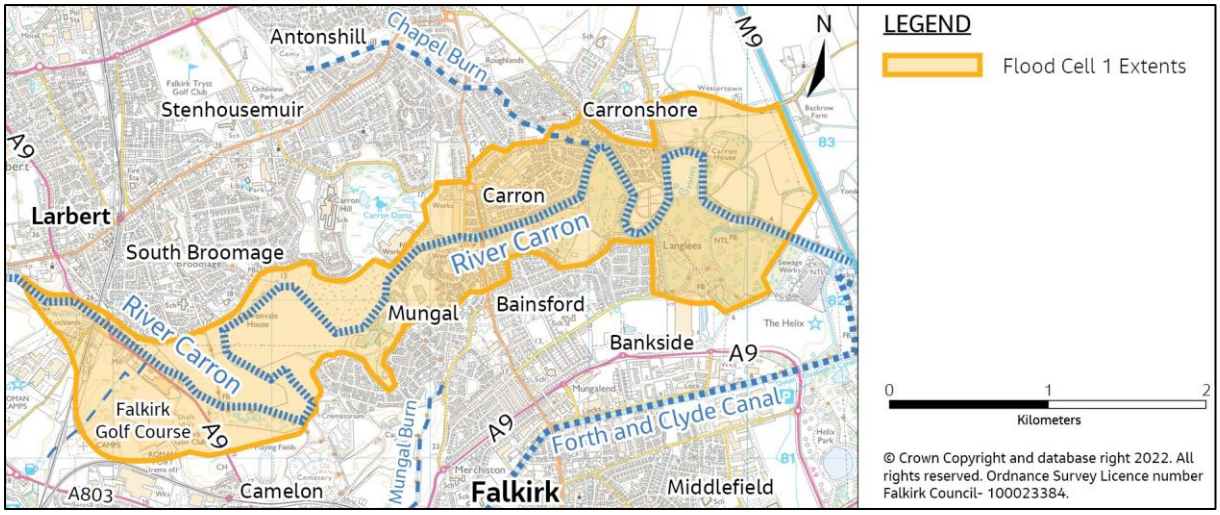

Figure 9–3: Extents of Flood Cell 1

The River Carron meanders from the west at the A9 through the Lower Carron River Valley LLCZ, with the urban LLCZs of Stenhousemuir, Larbert, Carron and Bainsford on either side of the watercourse (refer to Appendix B9.6). The river corridor, along this stretch, is accessible from the surrounding residential settlements.

There are a number of Core Paths within Flood Cell 1 (refer to 'Core Paths and other footpaths' plan in Appendix B9.3a).

Flood Cell 1 has been split as follows into five distinct areas focussed around the proposed flood scheme works along the River Carron:

- Area 1 Stirling Road;
- Area 2 Bainsford;
- Area 3 Bainsford/Carron;

- Area 4 East Carron/Chapel Burn; and
- Area 5 Carronshore/Riverside Stables (see Figure 9–4 below).

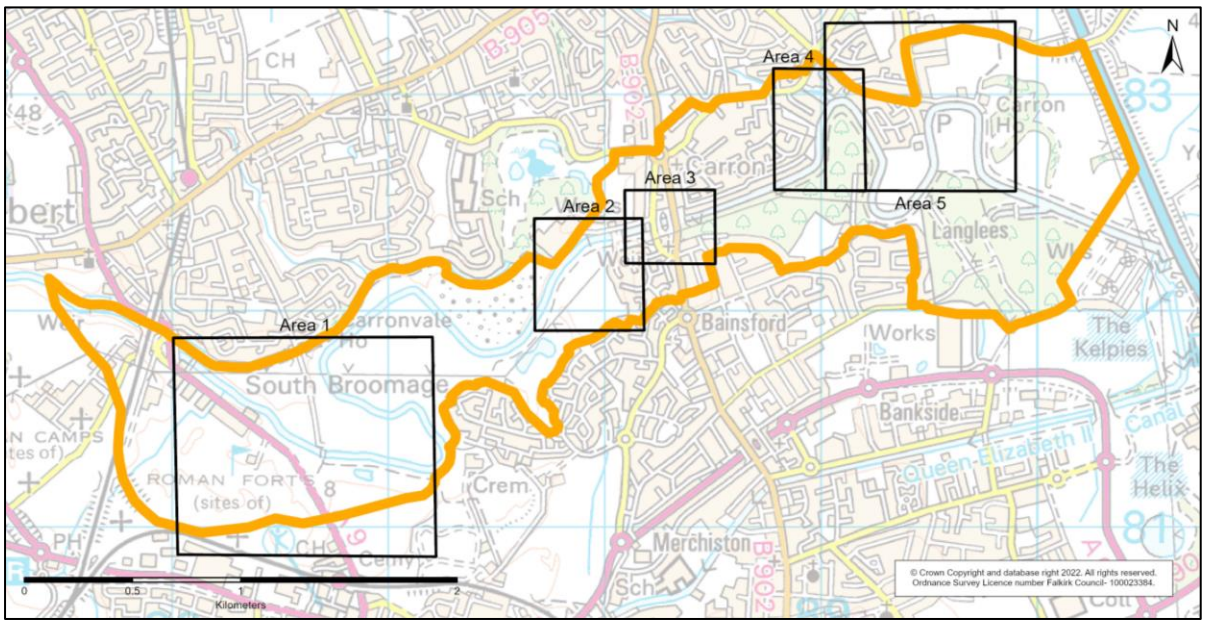

Figure 9–4: Flood Cell 1 Areas

A description of the landscape/ townscape character of these areas is noted below.

Flood Cell 1: Area 1 - Stirling Road

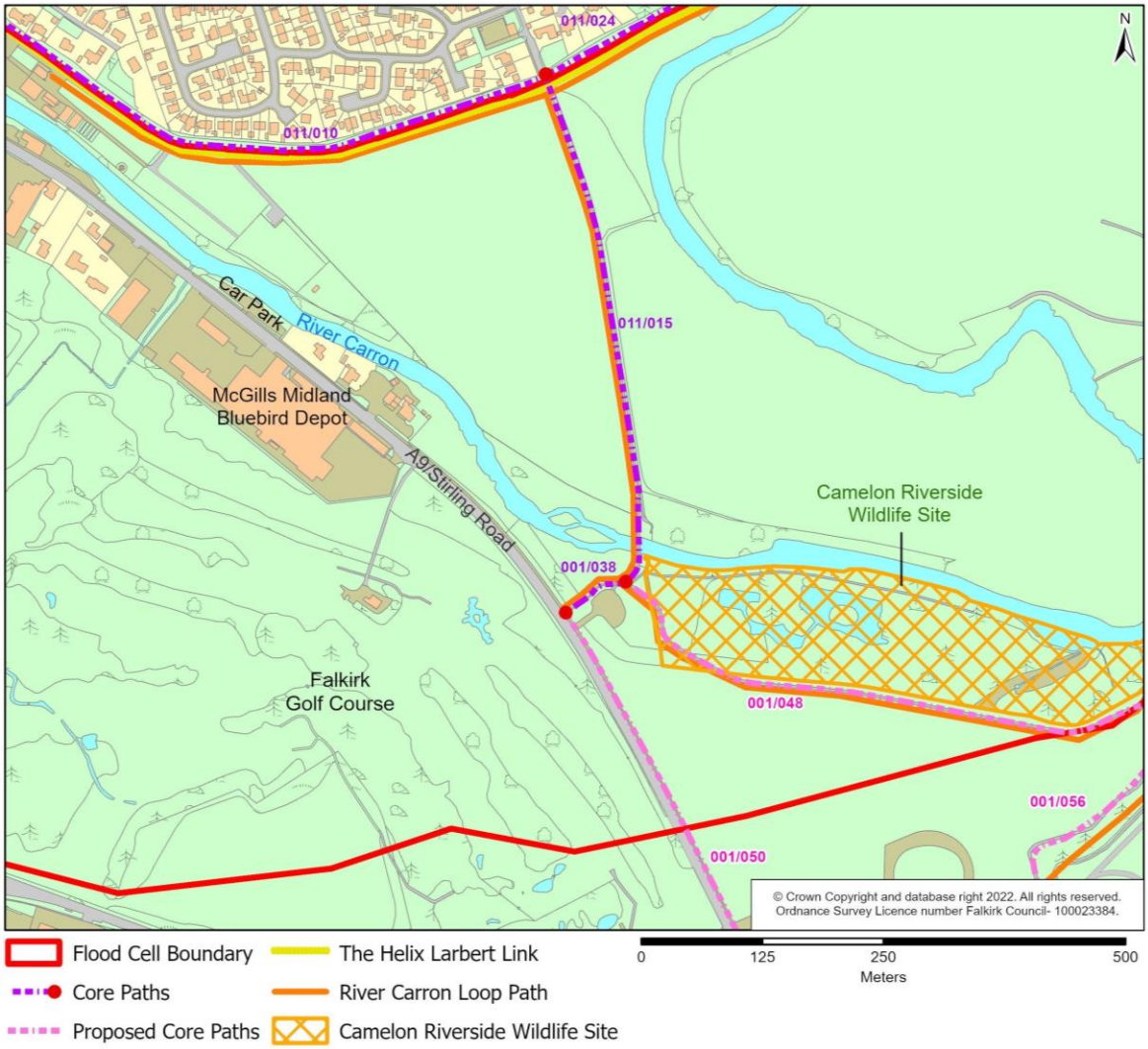

Figure 9–5: Flood Cell 1: Area 1 - Stirling Road Plan

Stirling Road is characterised as a semi-industrial area with the McGills Midland Bluebird Depot and some smaller businesses/warehouses on the west side of the A9 road. A small number of residential properties are located on the west side of the A9, north-west of the McGills Midland Bluebird Depot and there are a couple of residential properties on the east side of the road opposite the depot. Falkirk Golf Course is located behind the Depot, extending southwards alongside Stirling Road and is contained by railway lines to the south and west. A car park is located between the A9 and the river, north of the properties.

To the south there is a recreational area with access to walking trails, which include Core Path 001/038 (River Carron Path) and The River Carron Loop Path Network within the River Carron corridor. There is also a proposal to add Core Path 001/048 (River Carron Path: Dorrator Bridge to Camelon Cemetery), and Core Path 001/050 (Dorrator Bridge to Cemetery Loop) within the south part of this area. The Core Path proposals then connect up some of these paths to the existing Core Paths in Bainsford. The Core Paths run through Camelon Riverside Wildlife Site (a local LNCS designation).

Camelon Riverside Wildlife Site is located in the southeast of the Flood Cell. This is a non-statutory designation, but it is classed as a locally important site that is afforded some protection by Falkirk Council. It consists of broadleaved semi-natural woodland, mixed plantation woodland, neutral and semi-improved grassland, scrub and ponds, and it is a key site in the River Carron habitat corridor.

The tree-lined River Carron with its vegetated banks runs directly adjacent to the road to the north. A number of mature trees are located opposite the bus depot, which help to screen the road and the industrial units from the residential properties. Trees adjoining the road fall within FC's green corridor and Green and Blue Network (GN06), linking areas of woodland along the river further west to Camelon Riverside wildlife site and playing fields. The area is also designated as Green Belt.

***Constraints**:* A busy road, with existing vegetation forming a screen to properties and golf course; car park requires access in area between the road and river; designated sites of the Camelon Riverside wildlife site and Green Belt; and access routes/Core Path to River Carron.

Sensitivity of Landscape Receptors: Medium (locally valued landscape)

Flood Cell 1: Area 2 - Bainsford

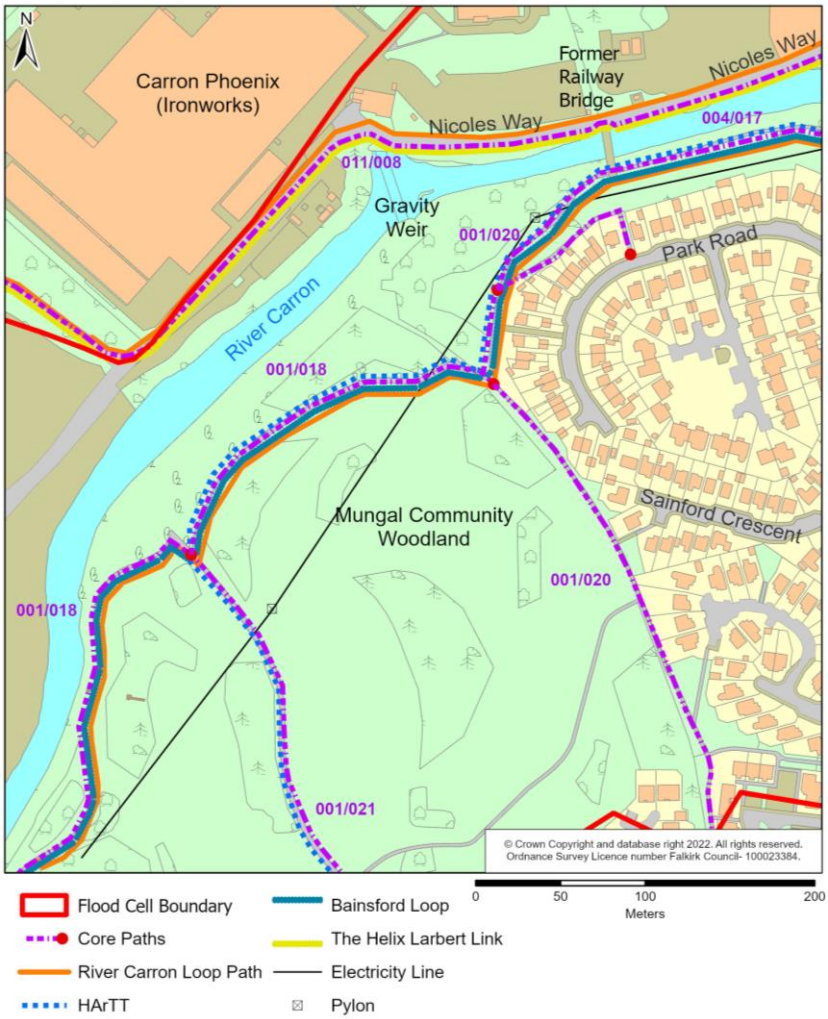

Figure 9–6: Flood Cell 1: Area 2 - Bainsford Plan

The River Carron runs through Mungal Community Woodland, an open parkland area, from the west. Predominately two-storey residential properties border the parkland to the south and east, with high fences backing onto the open space.

The whole area is identified as Green Belt and trees and woodland along the river corridor fall within FC's green corridor and Green and Blue Network (GN06), linking areas of woodland along the watercourse.

Core Path 001/20 (Mungal Riverside) runs along the back of the properties, and also Core Path 001/018 (Mungal Riverside) within the parkland, along with the River Carron Loop Path. Four of the

residential properties face out to a small grassed open space with a woodland backdrop at the northern edge of the area.

The HArTT (Helix Around Town Tour), Bainsford Loop and the Helix Larbert Link cycle routes and other Core Paths are located adjacent to the river.

There are notable listed structures in and around the River Carron in this area: 'Weir Carron Iron Work' (Listed reference: LB13305), which is a gravity weir across the River Carron; a former railway bridge across the River Carron (Listed reference: LB13306) and The Grahamston Cast Iron Gate (ref: LB31230). Further details can be found in Chapter 13: Cultural Heritage.

Other landmark buildings and structures include a pylon and electricity lines, which intrude into the landscape and the Carron Phoenix Ironworks. The Ironworks building is located to the north of the River Carron and this side of the river has a more industrial character to it, with an existing high stone wall between Nicole's Way road and the industrial buildings.

***Constraints**:* Changes to the locally valued open parkland character will be highly visible; access points into the residential area; designated Green Belt; Core Paths; and areas of woodland.

***Sensitivity of Landscape/ Townscape Receptors**:* Medium (locally valued landscape, but not designated)

Flood Cell 1: Area 3 – Bainsford / Carron

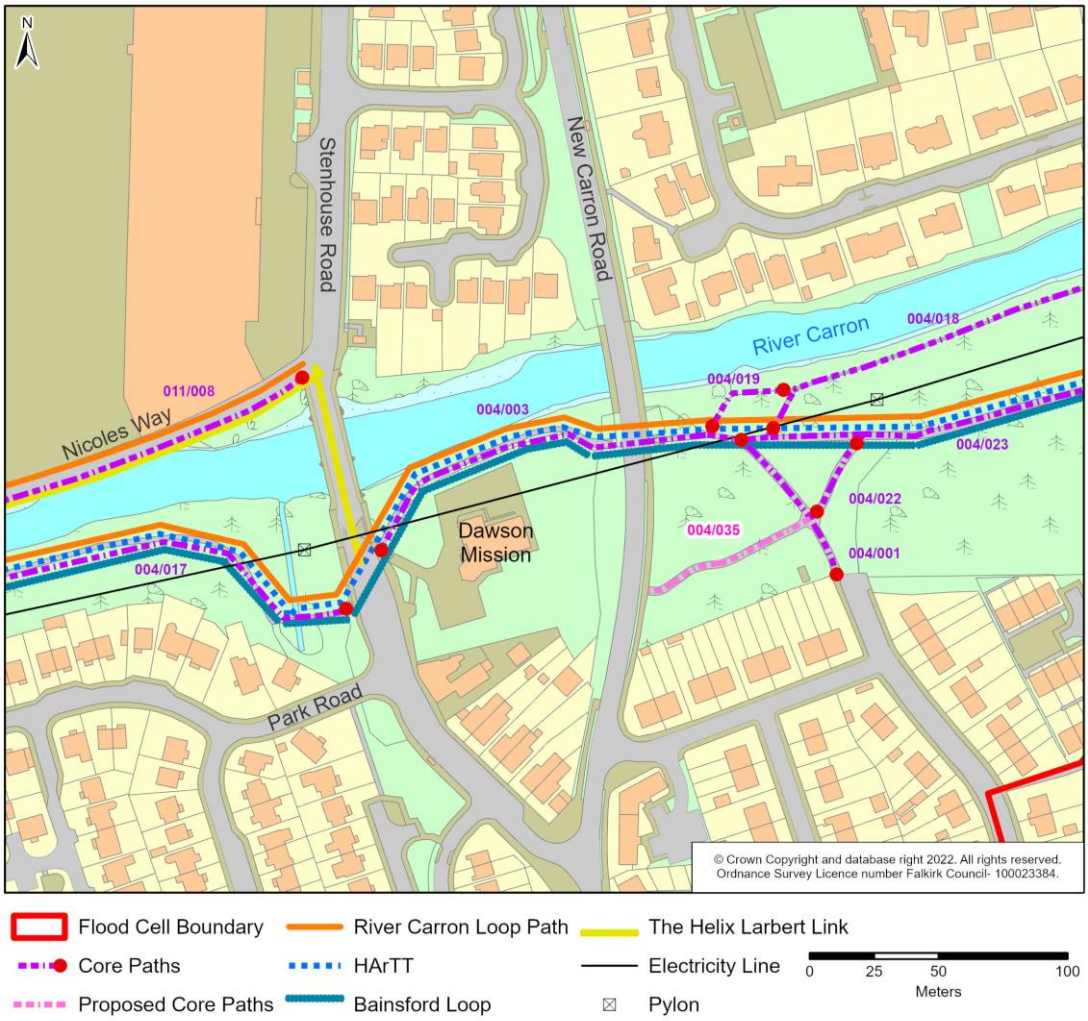

Figure 9–7: Flood Cell 1: Area 3 - Bainsford/Carron Plan

The River Carron flows through a wooded area adjacent to the residential estate in the north of the Bainsford/Mungal community, which has a wooded river valley character. Connectivity to the River Carron from the residential properties that back onto it, is limited in parts, given the level difference and intervening vegetation. Mature trees adjoining the river fall within FC's green corridor and Green and Blue Network (GN06) and the area is identified as Green Belt.

The Dawson Mission Church is located between the bridges on Stenhouse Road and the B902 (New Carron Road) to the south of the river and is currently partially protected by an embankment, which has a Core Path along its length. This area has a more open but green character. Carronbridge Inn/Soo Hoose Restaurant is located behind the mission on Carron Road.

South of the River Carron, a large pylon and associated power lines are located between the estate and the river, which slightly degrades the character. The north bank is more industrial in character along this stretch with large business depots and parking areas, and with a high wall bordering Nicole's Way Road adjacent to the tree-lined river.

The area is very accessible and well used with a number or Core Paths running through it. Core Paths 004/017 (River Carron to rear of Park Road), 004/003 (Dawson Mission Path) and the River Carron Loop Path run around the edge of the houses in the open parkland and along the southern bank of the river. Core Path 011/008 (Stenhouse Road to Mill Lade) is located on the north bank of the river.

Additional Core Paths are located east of New Carron Road connecting into the green space. As well as Core Paths, a number of cycle routes run through this area including the HArTT, Bainsford Loop, and the Helix Larbert Link.

***Constraints**:* Existing mature trees and vegetation along the riverside; Core Path network and access/connection to riverside; designated Green Belt; and privacy and river access for residential properties located alongside the river.

***Sensitivity of Landscape/ Townscape Receptors**:* Medium (locally valued landscape, but not designated)

Flood Cell 1: Area 4 - East Carron/Chapel Burn

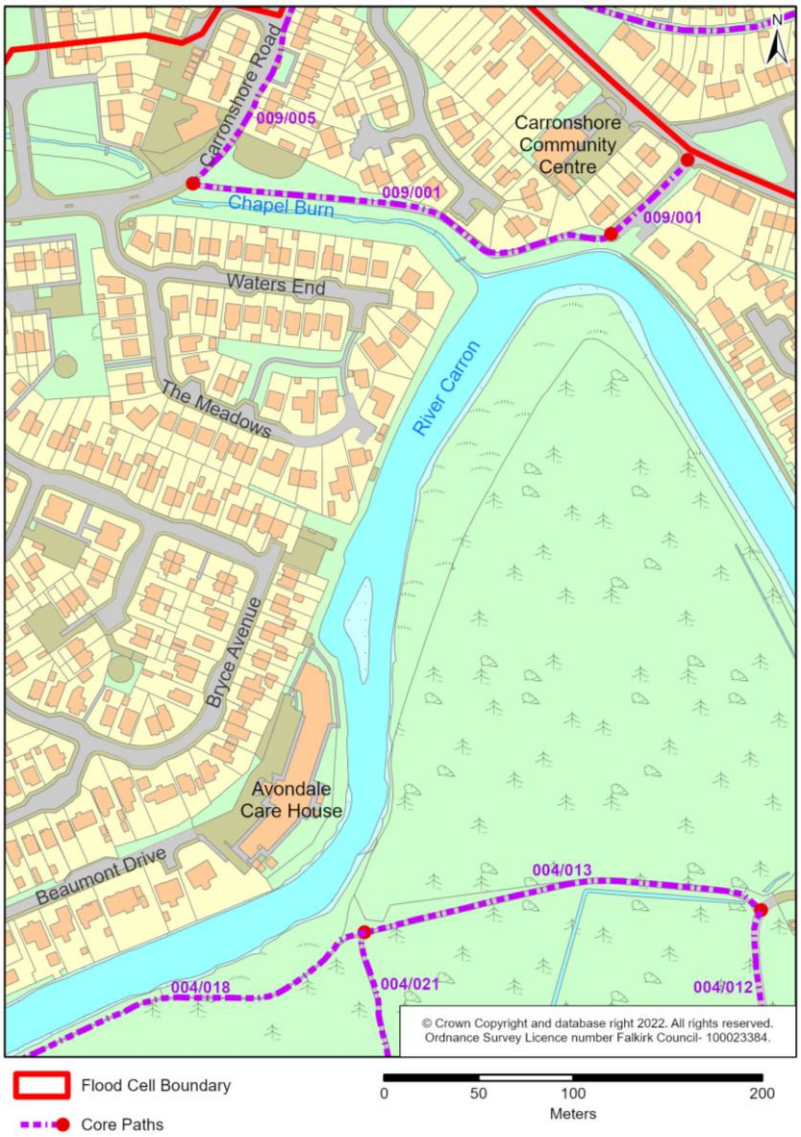

Figure 9–8: Flood Cell 1: Area 4 - East Carron/Chapel Burn Plan

This part of the river corridor curves dramatically, and the south of the river consists of a community woodland area, which extents further south and south-west with some informal paths. The whole area is identified as being Green Belt and trees within it fall within FC's green corridor and Green and Blue

Network (GN06). The river has a more open river valley character at this point, as the river is not as lower down from the banks.

Core Path 004/013 (Cobblebrae) runs through the community woodland (Figure 9–8). Additionally, there are informal paths which run through the woodland area north of the Core Path, adjacent to the river. The HArTT and Bainsford Loop cycle routes also run along the south of the river.

The adjoining residential area is similar in character to Bainsford, with predominately two-storey residential properties and the river is also within close proximity of Carrondale Care Home (Avondale Care) and Carronshore Community Centre. The housing is split by the Chapel Burn, which is a naturally vegetated watercourse, which has a neglected natural riverside character.

Core Path 009/001 (Carronshore 2000 path) runs alongside the Chapel Burn towards the river, as well as the FC's green corridor and Green and Blue Network (GN17).

The houses turn their back to the river, with high fences generally separating them from the burn.

***Constraints**:* Existing mature trees and vegetation along watercourses; designated Green Belt; Core Path network and access/connection to waterside particularly the Chapel Burn; and privacy and river access for residential properties located alongside the watercourses.

***Sensitivity of Landscape/ Townscape Receptors**:* Medium (locally valued landscape, although not designated)

Flood Cell 1: Area 5 – Carronshore and Riverside Stables

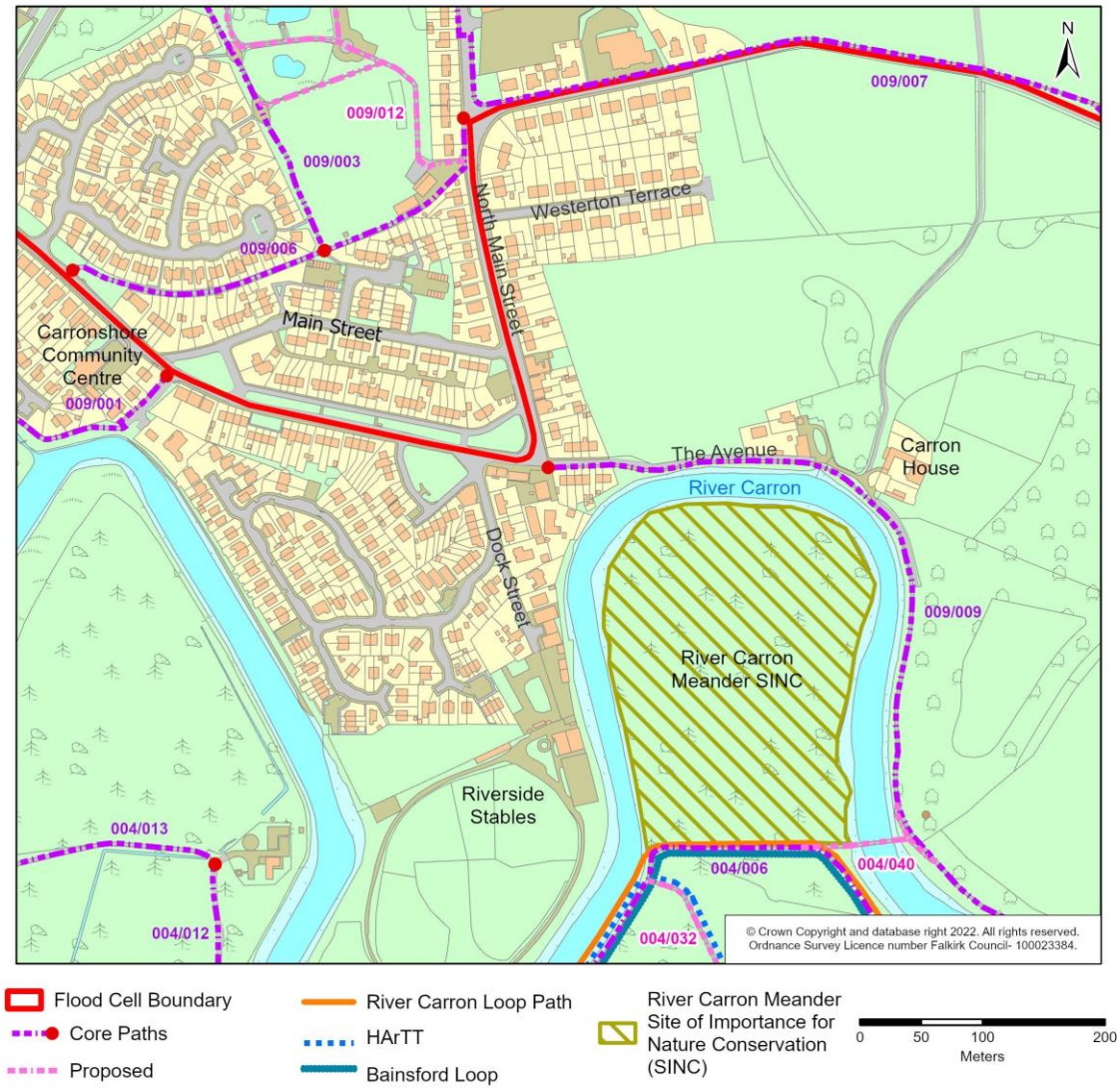

Figure 9–9: Flood Cell 1: Area 5 - Carronshore and Riverside Stables Plan

The river continues to meander, with an open river valley character, as it curves around the Riverside Stables and parade ground. Beside the stables, a residential area borders the parade ground with high timber fences, and some commercial properties lie adjacent to the stables. A few additional residential properties border the river between the stables and The Avenue, with their gardens open to the waterside. The whole area is identified as Green Belt and trees located along the river are within the Council's green corridor and Green and Blue Network (GN06).

To the east of this area, The Avenue runs adjacent to the driveway to Carron Lodge, along the river, up to this property and the Category B listed Carron House (ref: LB8313). Carron House is a two-storey mansion close to the river and has a dovecot and walled garden. The house has a filtered outlook towards the river, native woodland and marsh to the south, and it has a high brick boundary wall to the north. Carron House is noted in SG09 as having a 'Non - Inventory Designed Landscapes or Site with Remnant Designed Landscape Feature' and is a 17th-20th Century designed landscape. Grounds consist of mature woodland along field boundaries, clumps of trees and arable land.

Core Path 009/009 (The Avenue to Glensburgh Road) runs directly alongside the north of the River Carron in this stretch, allowing full access to the riverside. The River Carron Meander '' (SINC) is located between Core Path 004/006 (Abbotshaugh Community Woodland), the River Carron Loop Path and the river, and is an area of saltmarsh and poor semi-improved grassland. It is locally important for nature conservation (see Chapter 7: Biodiversity for more details). Abbotshaugh Community Woodland

is located to the south of the Core Path. The HArTT and Bainsford Loop cycle routes also run along the south of the river.

To the north of Carron House and Lodge are residential properties that address Westerton Terrace and Bothkennar Road. To the east of Westerton Terrace, there is an open green space and playpark used by local residents.

***Constraints**:* Existing mature trees and vegetation along watercourses (including the SINC); designated Green Belt; Core Path network and existing access/connection to waterside; recreation facilities; and access to the listed Carron House and its grounds.

***Sensitivity of Landscape/ Townscape Receptors**:* High (designated landscapes and listed building)

9.4.6.2 Flood Cell 2

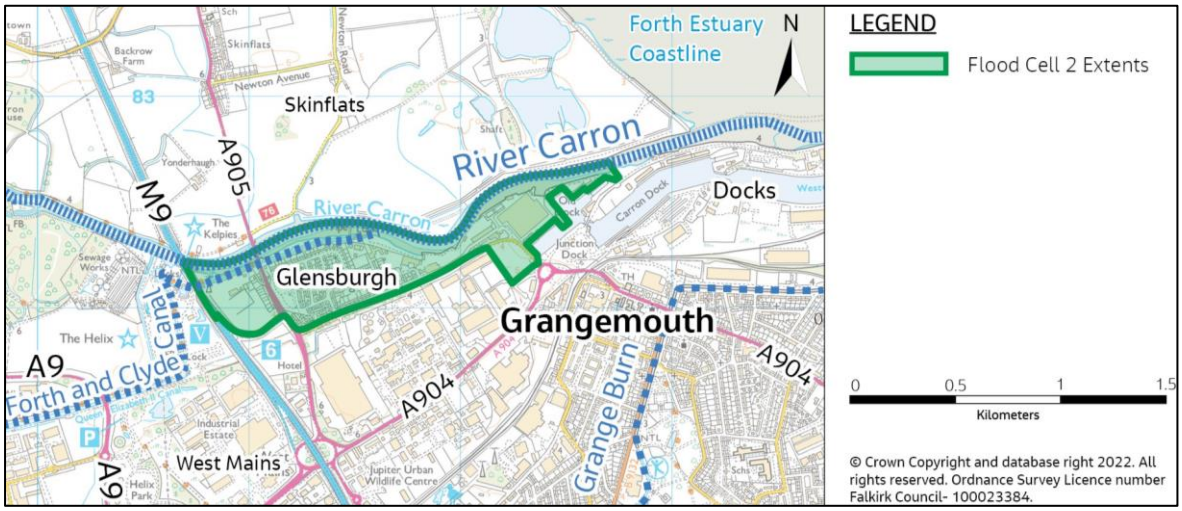

Figure 9–10: Extents of Flood Cell 2

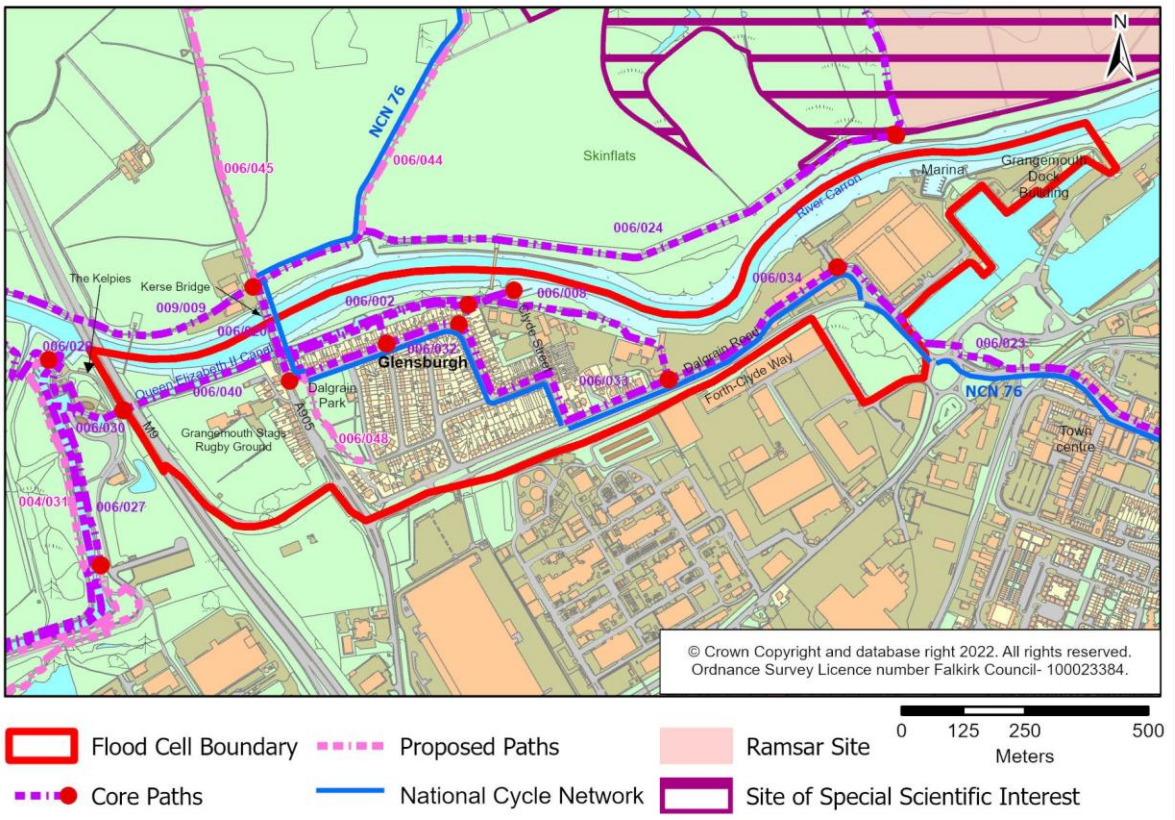

Figure 9–11: Flood Cell 2 Plan

Flood Cell 2 follows the River Carron from the M9 in the west along the estuarine stretch of the River Carron past the Glensburgh residential area to the mouth of the river, where the area has a mainly industrial character. A new section of the Forth and Clyde Canal runs from the Kelpies adjacent to the river and terminates at a lock near the end of Clyde Street (Figure 9–11).

The river meanders through LCA 6 (iii) Skinflats (SG09 as in Appendix B9.6) and lies between Skinflats Coastal Farmland LLCZ to the north and Glensburgh Urban LLCZ and Grangemouth Ports Industrial LLCZ to the south (Appendix B9.6). The river widens as it heads towards the Firth of Forth with intertidal mud along the banks. Overgrown scrub/woodland is located on the southern bank east of the canal lock, adjacent to Core Path 006/008 and the river, with filtered views allowing some connectivity with the river. On the northern banks of the river the character is of more open scrubland, with public access along Core Paths.

The eastern section of the Flood Cell is a Core Business Area (in the Grangemouth Investment Zone as identified in LDP2) and is predominately industrial. It includes the listed feature of the Category C listed former Workshop Building (ref: LB50868) at Grangemouth Dock (see Chapter 13: Cultural Heritage) and a marina (see Figure 9–11 above). The marina has been scoped out of the landscape character assessment as it is currently located in a very industrial area, and the character will likely remain unchanged.

The character of Flood Cell transitions from industrial, on the east, to residential in central parts to more green space in the west. Residential properties and industrial units address the road network and have fences and high walls in parts, where they back onto the canal and river. An embankment was constructed as part of the new canal section to control flooding, which forms a physical and visual barrier from some properties to the canal and river from the houses in Glensburgh.

The far west of the Flood Cell is designated as Green Belt and there are a number of open spaces here including the Grangemouth Stags Rugby ground and Dalgrain Park. These spaces are bordered by the M9 and the A905 (Kerse Bridge over the River Carron). The Forth and Clyde Canal, a Scheduled

Monument (ref: SM6768) is located on the west, any works to or near the canal may require Scheduled Monument Consent (see Chapter 13: Cultural Heritage).

The National Cycle Network Route 76 (NCN 76) runs through the Flood Cell, crossing the river at the A905 (Kerse Bridge). This route is also part of the Core Path network, with several Core Paths running through the Flood Cell and to the north of it. Core Paths 006/002 and 006/008 (Rope Walk, Grangemouth Old town) run adjacent to the River Carron and the proposed Scheme.

Where the River Carron meets the Forth Estuary there are a number of sites designated for nature conservation including, Ramsar, SSSI and SPA (see Chapter 7: Biodiversity).

***Constraints**:* Existing vegetation along the south of the River Carron; far west of the Flood Cell designated as Green Belt; Core Path network and existing access/connection to waterside.

***Sensitivity of Landscape/ Townscape Receptors**:* Medium (locally valued landscape)

9.4.6.3 Flood Cell 3

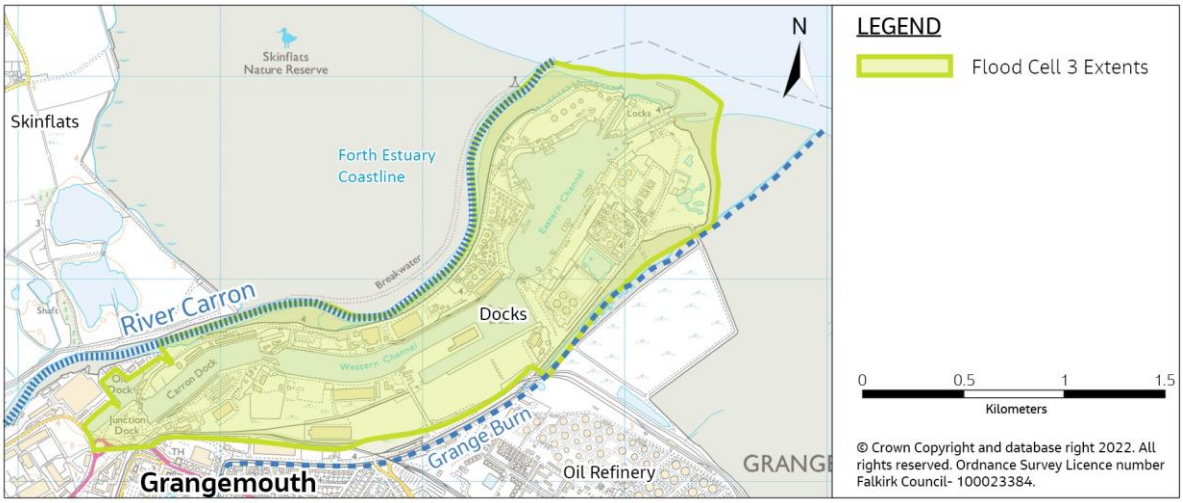

Figure 9–12: Extents of Flood Cell 3

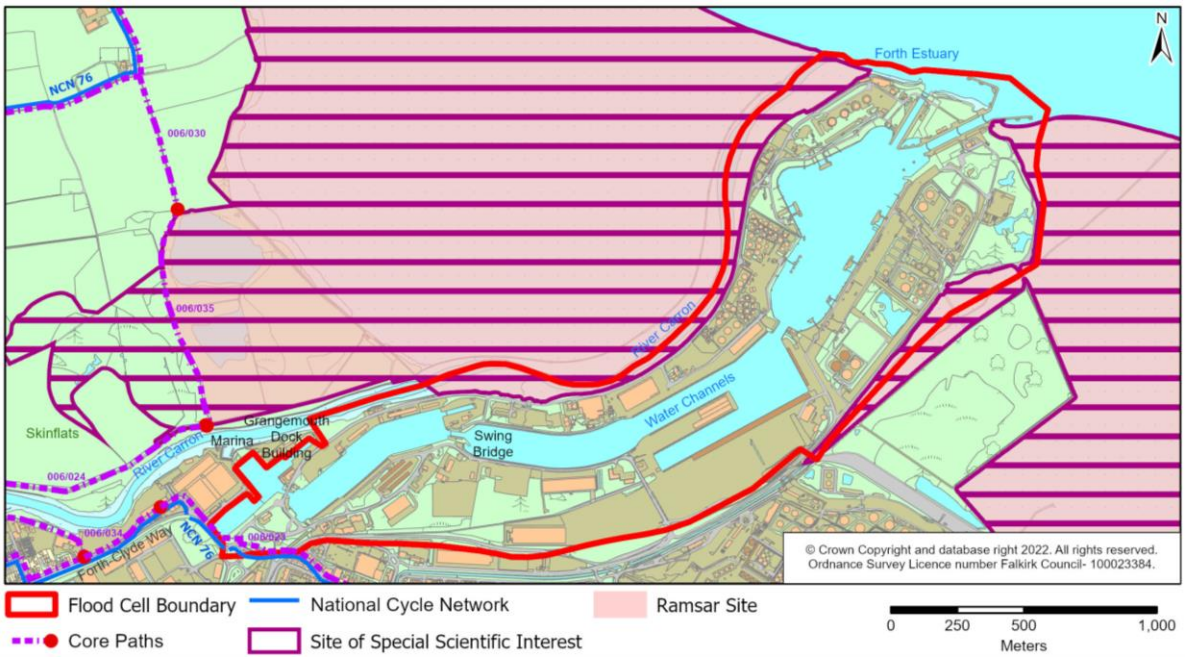

Figure 9–13: Flood Cell 3 Plan

Flood Cell 3 lies within an 'Urban/Village Limit' Character Type in SG09 and further defined as Grangemouth Ports LLCZ (Appendix B9.6). The Flood Cell covers the harbour area to the northeast of Grangemouth, which is an area of industrial character along the coast of the Forth Estuary. It consists of industrial buildings, storage containers, water channels, locks and other hard landscape, with little amount of green open space or vegetation. The Grange Burn enters the estuary to the south of the Flood Cell.

Where the River Carron meets the Forth Estuary there are significant environmental designations including Ramsar, SSSI and SPA (see Chapter 7: Biodiversity). There are listed structures within the Flood Cell; the Swing Bridge, Western Channel and Carron Dock (ref: LB34048), however these are not affected by the Scheme.

***Constraints**:* Technical constraints include the interface between defences / flood levels and the locks at the port. However, there are no specific landscape character constraints due to the industrial nature of the area (aside from the ecological designations, which are covered within Chapter 7: Biodiversity).

***Sensitivity of Landscape/ Townscape Receptors**:* Low (industrial character with tolerance to change)

9.4.6.4 Flood Cell 4

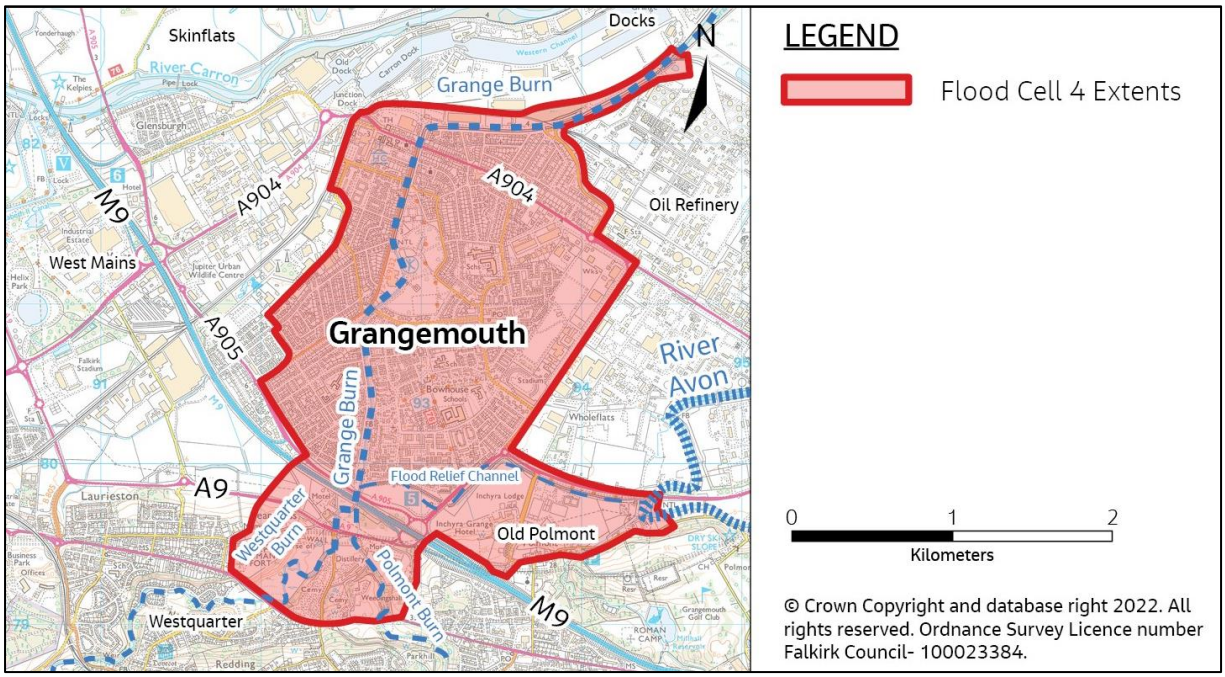

Figure 9–14: Extents of Flood Cell 4

Flood Cell 4 encompasses the area from the northern urban extent of Grangemouth following the Grange Burn to the southern extent of Grangemouth and onto Westquarter (Figure 9–14). The majority of the Flood Cell is considered to be of the Urban/Village Fringe Character Type (SG09). A small part of Local LCA 4(i) Avon Valley covers the area of the Flood Cell to the south of the A905, which consists mostly of open fields and sports facilities adjacent to the Grange Burn.

The LLCZs illustrated in Appendix B9.6 show that Flood Cell 4 encompasses the Grangemouth Urban LLCZ to the north, the Falkirk/Grangemouth Urban Fringe LLCZ to the southwest and the Avon River Valley LLCZ to the southeast.

The urban town centre of Grangemouth is located to the northwest of the Flood Cell, with the Grange Burn running through the busy residential heart of the town. The southern end of the Flood Cell opens up as it reaches the M9 to a more rural area containing part of the Antonine Wall WHS.

Flood Cell 4, it has been split into four distinct areas along the watercourses where the flood scheme works are proposed, namely Grangemouth town, Rannoch Park, Westquarter, and Inchyra/Wholeflats, each of which is described in detail in this chapter (see Figure 9–15 below for the area locations).

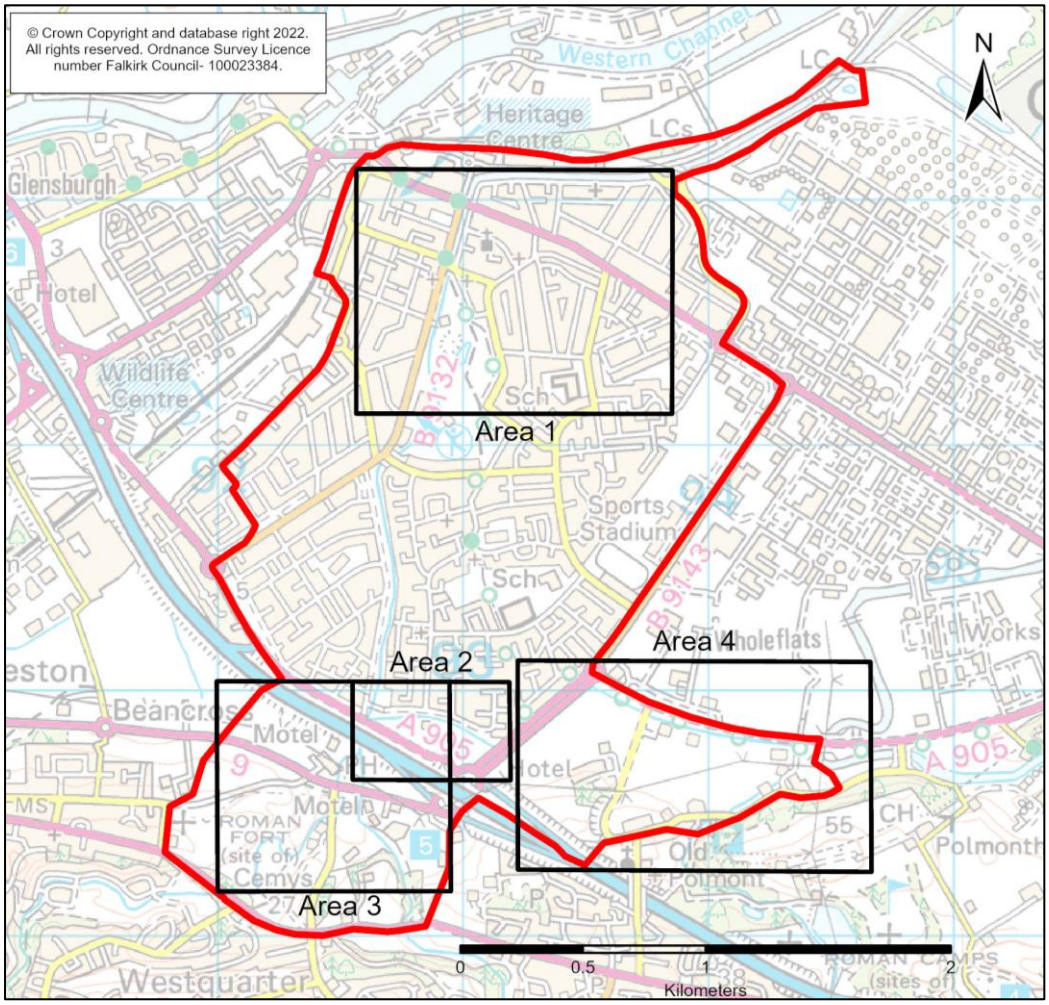

Figure 9–15: Flood Cell 4 Areas

Flood Cell 4: Area 1 – Grangemouth Town

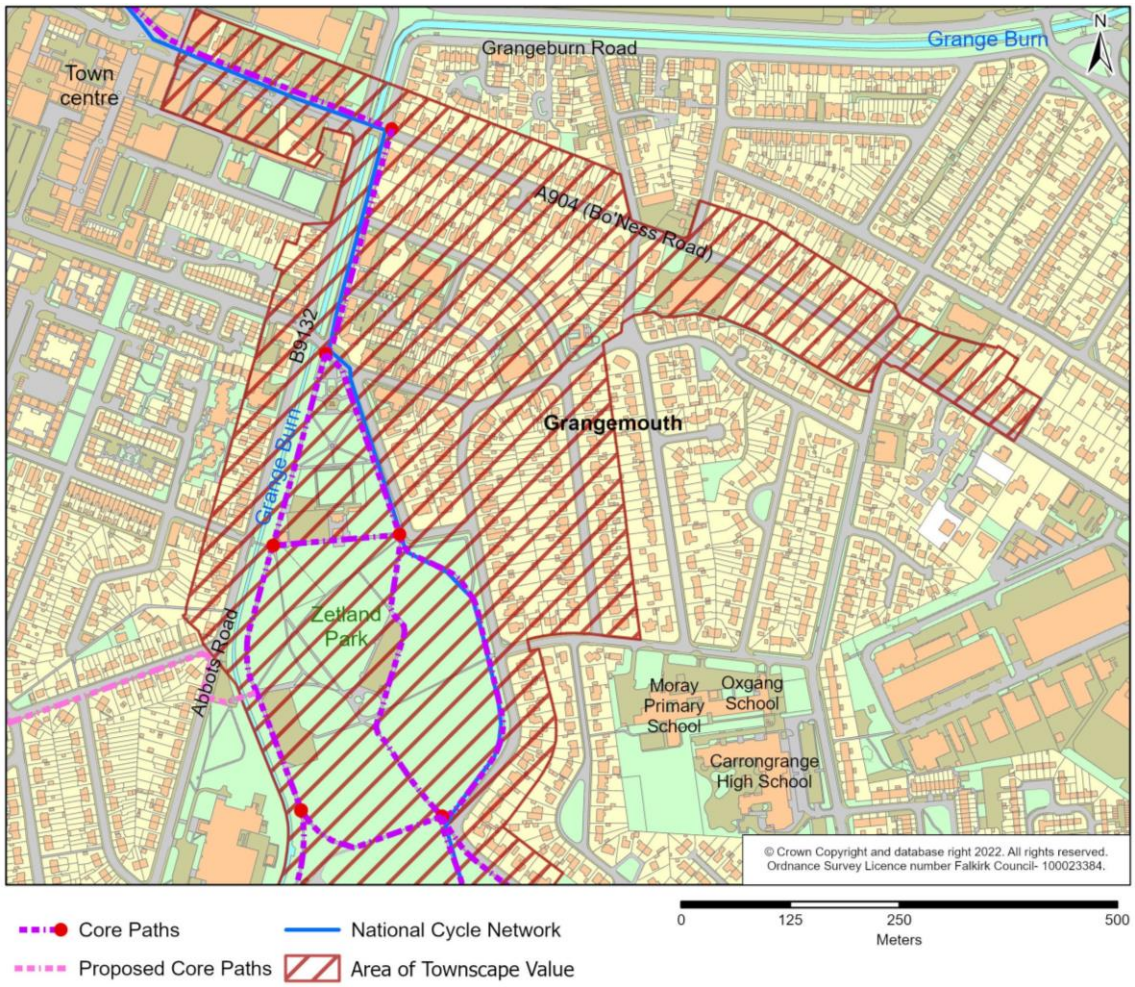

Figure 9–16: Flood Cell 4: Area 1 - Grangemouth Town Plan

The Grangemouth town area consists mostly of residential properties, with a compact town centre including shops and civic facilities to the northwest and a large park, leisure facilities and schools to the south. A large proportion of Area 1 falls within an AOTV, as shown on Figure 9–16. Features of the AOTV's urban landscape include Victorian houses, spacious streets and bridges over the Grange Burn. Buildings are set in a predominately grid pattern, surrounding and to the north of Zetland Park. An avenue of mature trees along the western side of the park and further north along the Grange Burn are landmark features, which create vistas along the burn and provide the setting for the park's green, open spaces, as well as softening views to the built form. Mature trees also contribute to the legibility of the area, as they form a connection between the town centre and Zetland Park. The existing flood defences form a low barrier to Grange Burn, although their height and the height of tree canopies allow visibility along and between roads.

Zetland Park, a 10.75 ha urban park, is the principal open space serving the town, and it is a green oasis in a central built-up area. The park is a well-used recreational facility and is the subject of a community organisation (Friends of Zetland Park). It is noted in SG09 as a Non-Inventory Designed Landscape, and it includes Category B Listed park gates, a war memorial and a C listed fountain, as well as many mature trees. Roads with residential properties and the Grangemouth Community Education Unit and sports centre form the perimeter around the park. Green Network opportunity GN09 is also identified for Zetland Park (refer to Appendix B9.1).

Abbots Road (B9132) is located along the western boundary of Zetland Park. It runs in a north-south direction alongside the Grange Burn, and the A904 runs east-west at the top end of the town.

Additional smaller residential roads run adjacent to the Grange Burn. After Powdrake Road, in the east of the area, the Flood Cell continues through private land, where the burn meets the estuary.

There are numerous Core Paths which run through Grangemouth, as well as NCN 76, as shown in Figure 9–16 with specific Core Path numbers shown on Figure 9–63 (within the visual baseline section). The Core Paths that follow the Grange Burn and route through Zetland Park include 006/028 (Dalratho Road to Bo'ness Road), 006/026 and 006/022 (both Zetland Park).

***Constraints**:* Existing mature trees/vegetation along the Grange Burn; listed structures in Zetland Park; access along Core Paths; access along roads adjacent to the burn; access and connection to the burn.

***Sensitivity of Landscape/ Townscape Receptors**:* High (valued and well used landscape with designations)

Flood Cell 4: Area 2 – Rannoch Park

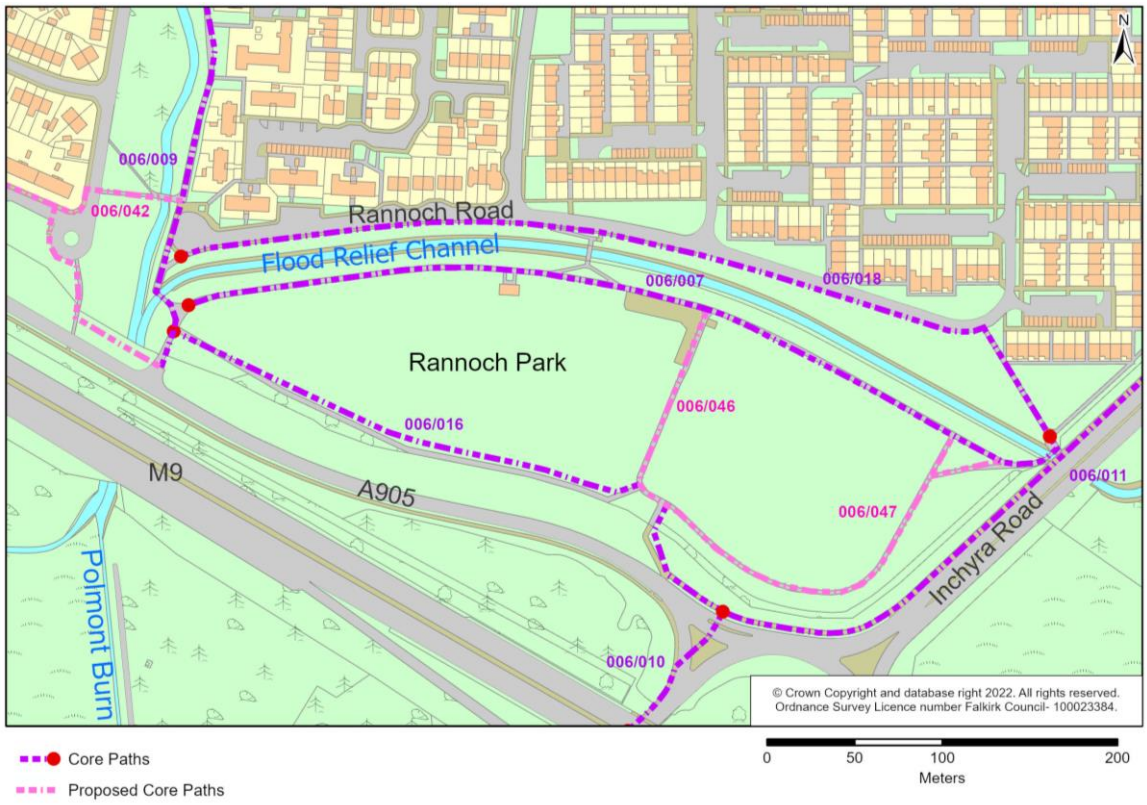

Figure 9–17: Flood Cell 4: Area 2 - Rannoch Park Plan

Rannoch Park is a large, open park at the southern boundary of Grangemouth, with football and rugby fields, a children's play area, an orchard, open grassed areas, and formal paths in good condition. Trees are mostly located around the perimeter of the park. The park is a well-used recreational facility in the part of the town and is the subject of a community organisation (Friends of Rannoch Park).

The flood relief channel runs along the northern boundary of the park with embankments on either side and a line of mature Ash trees along the boundary at Rannoch Road. The Ash trees along Rannoch Road are infected with Chalara Ash Dieback disease. They will need to be monitored and over time will likely need to be removed. The trees, embankment and channel form a physical barrier to the park from the local residential estate to the north and the channel is crossed via a pedestrian bridge halfway along, as well as by smaller bridge structures at each end of the park.

This part of the Flood Cell includes important infrastructure assets including the M9 motorway and the A905 to the south of the park, as well as a busy motorway junction. The park itself is set below the height of the motorway.

There are numerous existing and proposed Core Paths which run through or near to Rannoch Park including 006/007 (Rannoch Park), 006/007, 006/016 (Beancross Road) and 006/011 (Inchyra Road) (Figure 9–17 above).

***Constraints**:* Embankments adjacent to the Grange Burn and access into the park. Existing trees along the burn, although these will likely need to be replaced at some point in the next 10 years due to disease.

***Sensitivity of Landscape/ Townscape Receptors**:* Medium (locally valued landscape)

Flood Cell 4: Area 3 – Westquarter

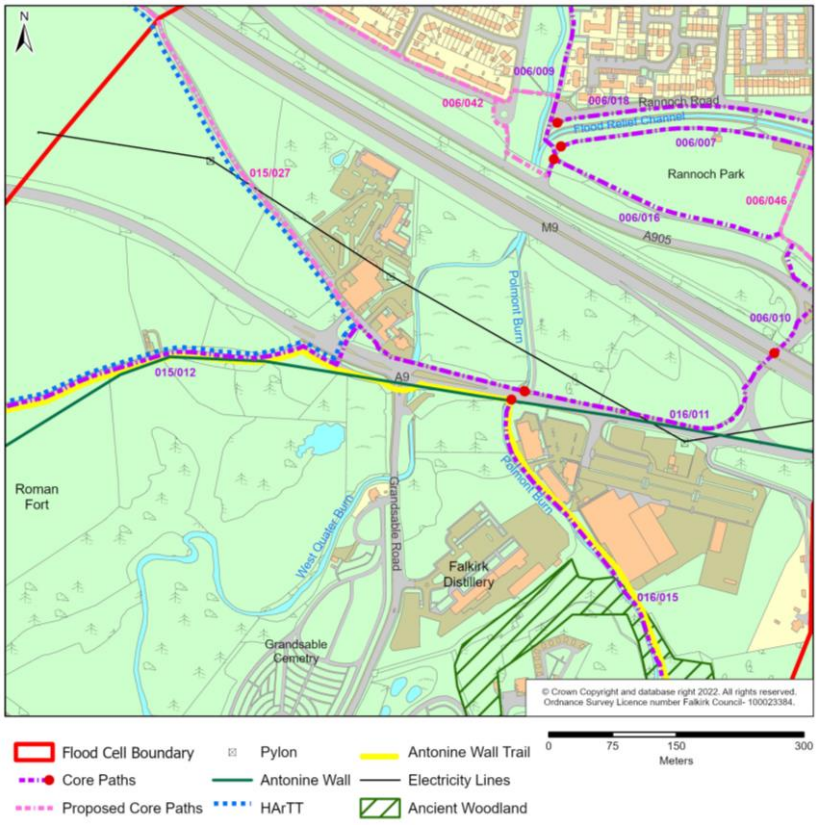

Figure 9–18: Flood Cell 4: Area 3 - Westquarter Plan

Westquarter (as defined in this chapter) is located to the south of the M9 motorway and has a more rural character with open fields on either side of the A9. The whole area is designated as Green Belt.

It also consists of a number of commercial enterprises, including restaurants, hotels and a garden centre located on both sides of the A9.

The Westquarter and Polmont Burns confluence to form the Grange Burn under the M9. To the south, the Polmont Burn flows through a field, under the A9 and past some commercial properties. It has dense vegetated banks, and a Core Path (16/015) runs alongside its left bank to the south of the A9. This path also forms part of the Antonine Wall Trail.

The Westquarter Burn is also densely vegetated, and it meanders past the back of Grandsable Cemetery, under the A9 road junction and alongside commercial properties before reaching the M9.

Additional Core Paths 15/012 (Mumrills Road) and 16/011 (Rannoch Road to Fairy Glen) cross the area with the former also being part of the Antonine Wall Trail. The HArTT cycle route also runs through this area.

In the south the Flood Cell, the site of a Roman Fort and Grandsable Cemetery are located to the west of Grandsable Road, and the new Falkirk Distillery has recently been built opposite the cemetery. The Fort forms part of the Antonine Wall WHS (SG07), and the line of the Antonine Wall WHS is shown in Figure 9–18 above, although it is not always a visible element in the landscape. The buffer zone for the Antonine Wall covers the whole of this area south of the M9. Further details can be found in Chapter 13: Cultural Heritage.

Landmark features include Falkirk Distillery as well as the electricity pylons and overhead lines which run through this Flood Cell, which degrade its character. Behind the distillery, there is an area of ancient woodland (approximately 3.39 ha), which partially follows the Polmont Burn.

***Constraints**:* Antonine Wall WHS and Scheduled Monument, including site of former Roman Fort; Ancient Woodland, treelined Grandsable Cemetery; designated Green Belt; and access to Core Paths.

***Sensitivity of Landscape/ Townscape Receptors**:* High (due to designations)

Flood Cell 4: Area 4 – Inchyra / Wholeflats

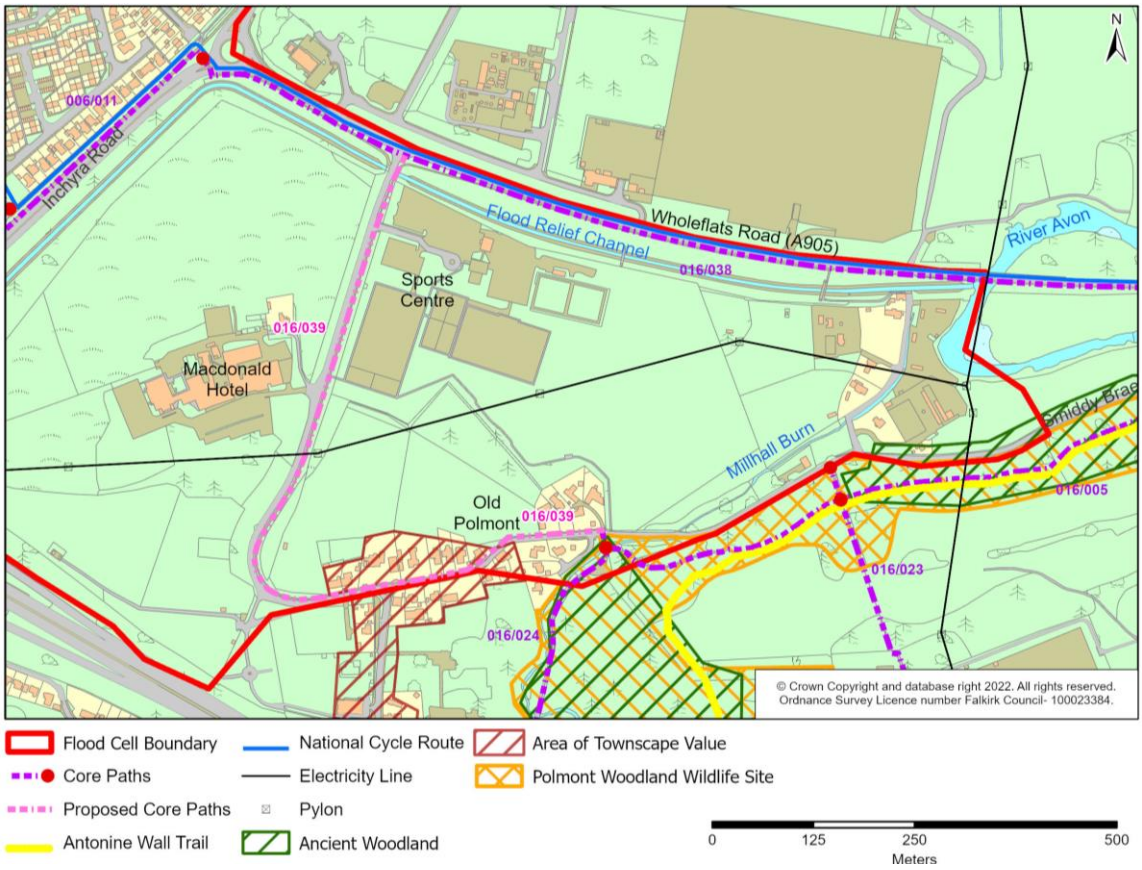

Figure 9–19: Flood Cell 4: Area 4 - Inchyra / Wholeflats Plan

This area is located north of the M9 motorway and east of Rannoch Park in the southeast of Grangemouth. The whole of the Flood Cell area is designed as Green Belt and is mainly characterised by large areas of green, open space with recreational facilities, a large hotel (Macdonald Inchyra Hotel and Spa) and a busy road adjacent to the flood relief channel. The area between the hotel and Inchyra Road is marshy grassland area that is relatively unused.

To the east of the hotel is Galaxy Sports, Little Kerse football pitches, which has a large number of sport pitches on a grassed area as well as artificial pitches. To the south of the pitches, the grassland area starts to rise towards Old Polmont Village. Old Polmont Village is located at the top of the hill to the south of this Flood Cell and is locally designated as an AOTV in the LDP. The newer housing to the east of the village is not however included within this designation.

Polmont Woods located just east of Old Polmont village are designated as ancient woodland and have a car park located at the northern end, accessed via a bridge over Millhall Burn. There is an additional unnamed area of ancient woodland located further east, just south of Smiddy Brae. The Polmont Woods Wildlife Site encompasses both of these areas of ancient woodland and comprises broadleaved, semi-natural woodland, conifer woodland, scrub, unimproved neutral grassland, as well as ponds and the Millhall Burn (see Chapter 6 – Wildlife Site Statements, area 39, of SG08) (Falkirk Council, 2020).

A small group of residential properties is located in the east of the Flood Cell along Reddoch Road, with a travellers' site located opposite, between the road and the River Avon. The Millhall Burn runs between the road and the travellers' site into the River Avon.

The busy road network and electricity pylons and overhead lines are prominent features in the landscape and in part, degrade its character. Between the A905 and the M9 is the buffer zone of The

Antonine Wall WHS, which covers the whole Flood Cell area (see Chapter 13: Cultural Heritage). The Grange Burn flood relief channel runs along the edges of Inchyra Road and then Wholeflats Road (A905) to where it discharges into the River Avon. The channel is lined with natural vegetation on both sides and is set lower than the road.

Core Paths run through this area within Polmont Woods and along Inchyra Road and Wholeflats Road and well as cycle route NCN 76. The Antonine Wall Trail is located just south of Flood Cell 4 to the south-east.

***Constraints**:* Existing road infrastructure and facilities, properties and designations of Green Belt and ancient woodland.

***Sensitivity of Landscape/Townscape Receptors**:* Low (generally an indistinctive landscape with tolerance to change)

9.4.6.5 Flood Cell 5

The Scheme follows the River Avon through this Flood Cell. The river flows from the southeast of the Flood Cell at Inveravon and joins the mouth of the Forth Estuary at the north (Figure 9–20), where there are a number of sites designated for nature conservation including the Firth of Forth Ramsar, SSSI and SPA (see Chapter 7: Biodiversity for further details).

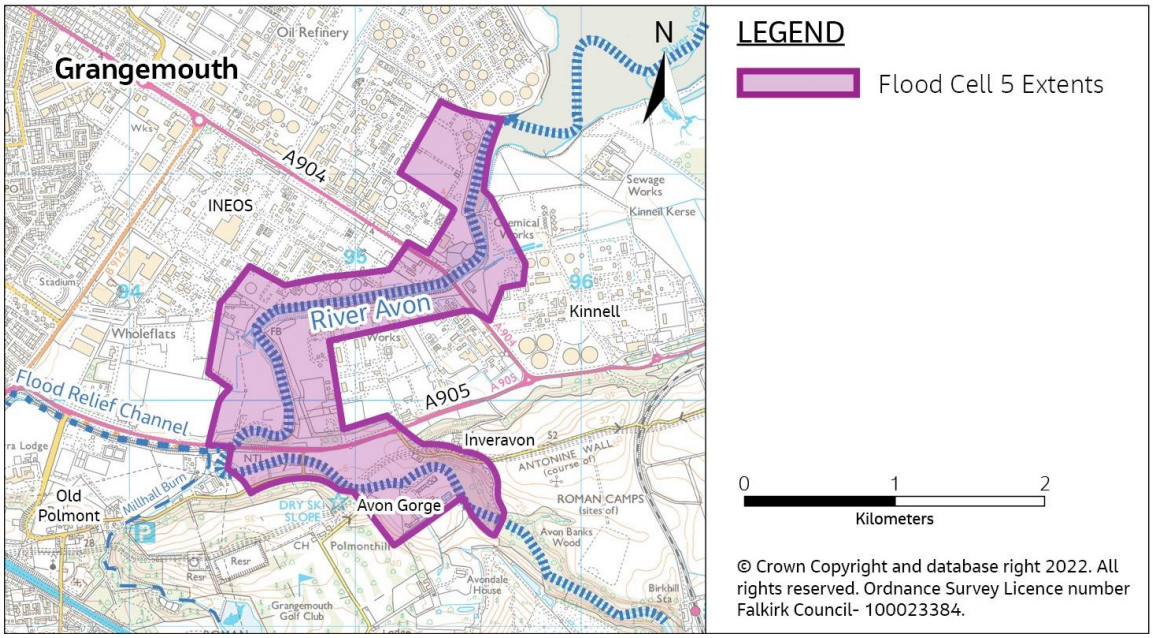

Figure 9–20: Extents of Flood Cell 5

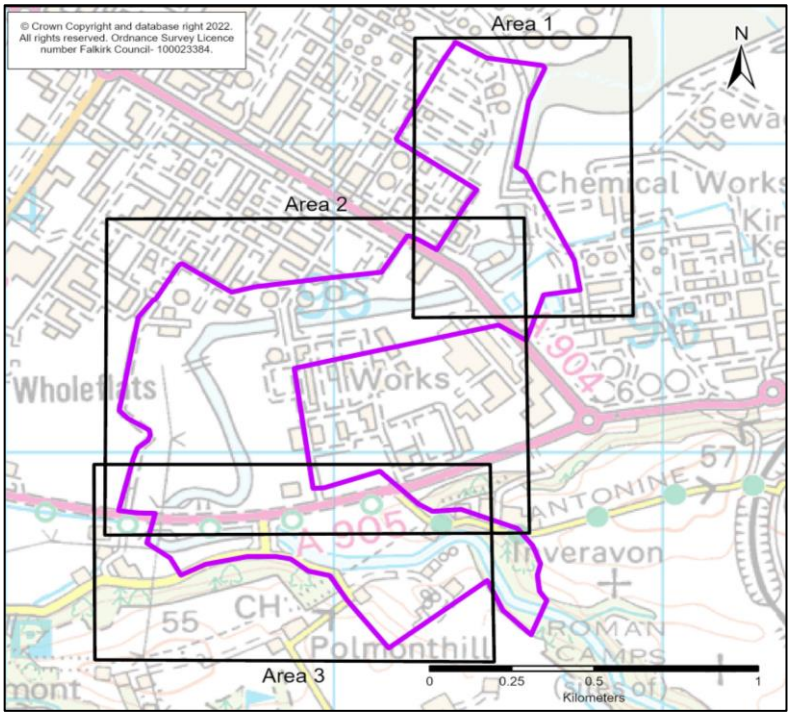

Figure 9–21: Cell 5 Areas

In SG09, the northern part of the Flood Cell is considered to be of the Urban/Village Fringe Character Type, while a small part of the southern section to the south of the A905 forms part of LCA 4(i) Avon Valley.

Within the LLCZ, the northern part of the zone is characterised as Grangemouth Petrochemical Industrial, with the area to the south of the A905 being The River Avon Valley character (see Appendix B9.6).

The Flood Cell is divided into three areas for the assessment and cover the Ineos site, the Versalis site and the Avon Valley respectively (Figure 9–21).

Area 1 is the site adjacent to the petrochemical plant east and west of the River Avon and inclusive of the Avon Bridge (A904). Area 2 is from the Avon Bridge to the northern edge of the A905 and Area 3 is from the A905 to the southern extents of the Flood Cell.

Flood Cell 5: Area 1 – Ineos

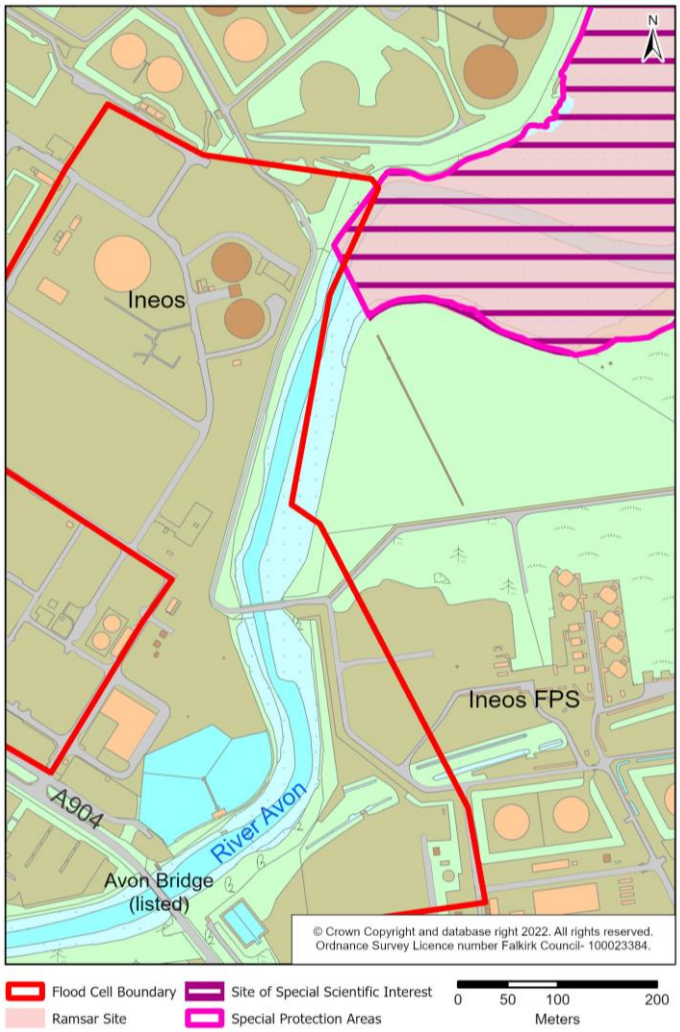

Figure 9–22: Flood Cell 5: Area 1 - Ineos Plan

This area is characterised as private industrial. It encompasses the industrial fringe of the petrochemical plants.

The River Avon abuts the Forth Estuary in the north of this area, which is designated as a Ramsar, SSSI and SPA (see Flood Cell 6). The river is bound on both sides by industrial buildings and infrastructure. There is no public access along the river, although there are some private tracks. The watercourse has some scattered vegetation on both banks.

The only existing public access to the river is where the A904 road crosses the watercourse to the south at the Avon Bridge, which is a mid-19th century Category C Listed feature (ref: LB4145). This however is only accessible by vehicle as there is no footpath on this stretch.

***Constraints**:* Listed bridge, and riverside vegetation.

***Sensitivity of Landscape/ Townscape Receptors**:* Low (industrial landscape tolerant of change)

Flood Cell 5: Area 2 – Versalis / Ineos

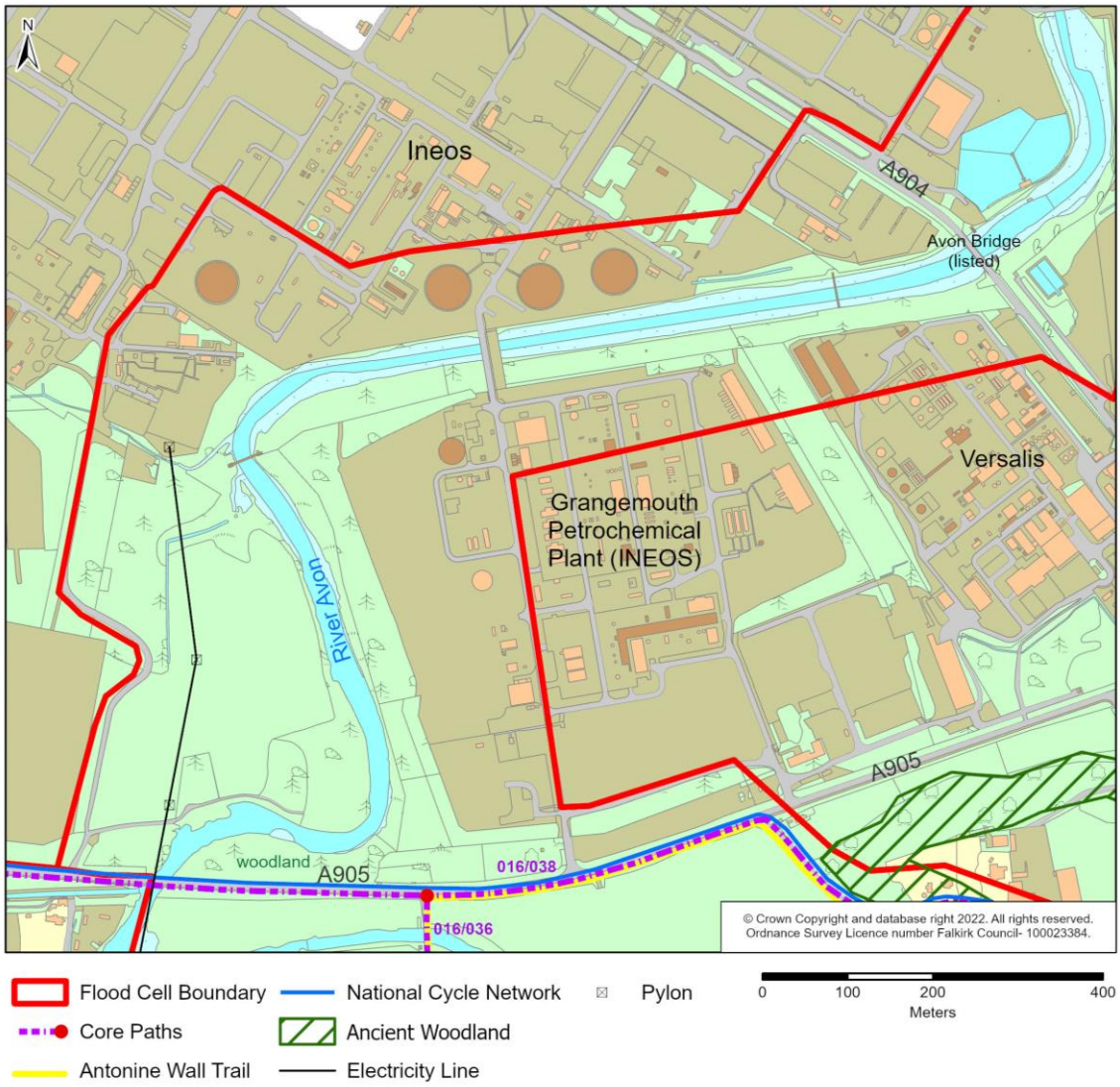

Figure 9–23: Flood Cell 5: Area 2 – Versalis / Ineos Plan

The A905 to the south and the A904 to the northeast define the boundary to this area. Again, this area is characterised as industrial with buildings and infrastructure from the Petrochemical plants either side of the River Avon forming the main features in the landscape. Additionally, large pylons run through this area, adding to the industrial character.

The River Avon meanders from the southwest to northeast towards the Forth Estuary. The area is also private land, although dog walkers occasionally use the open space alongside the river, which can be accessed via Wholeflats Road (A905). The area adjacent to the river is defined as semi-improved neutral grassland, with some swampy patches.

Between the A905 and the River Avon there is an area of semi-natural broadleaved woodland, which forms a screen between the road and the industrial area.

Constraints: Listed bridge, and riverside and roadside vegetation.

Sensitivity of Landscape/ Townscape Receptors: Low (industrial landscape tolerant of change)

Flood Cell 5: Area 3 – Avon Valley

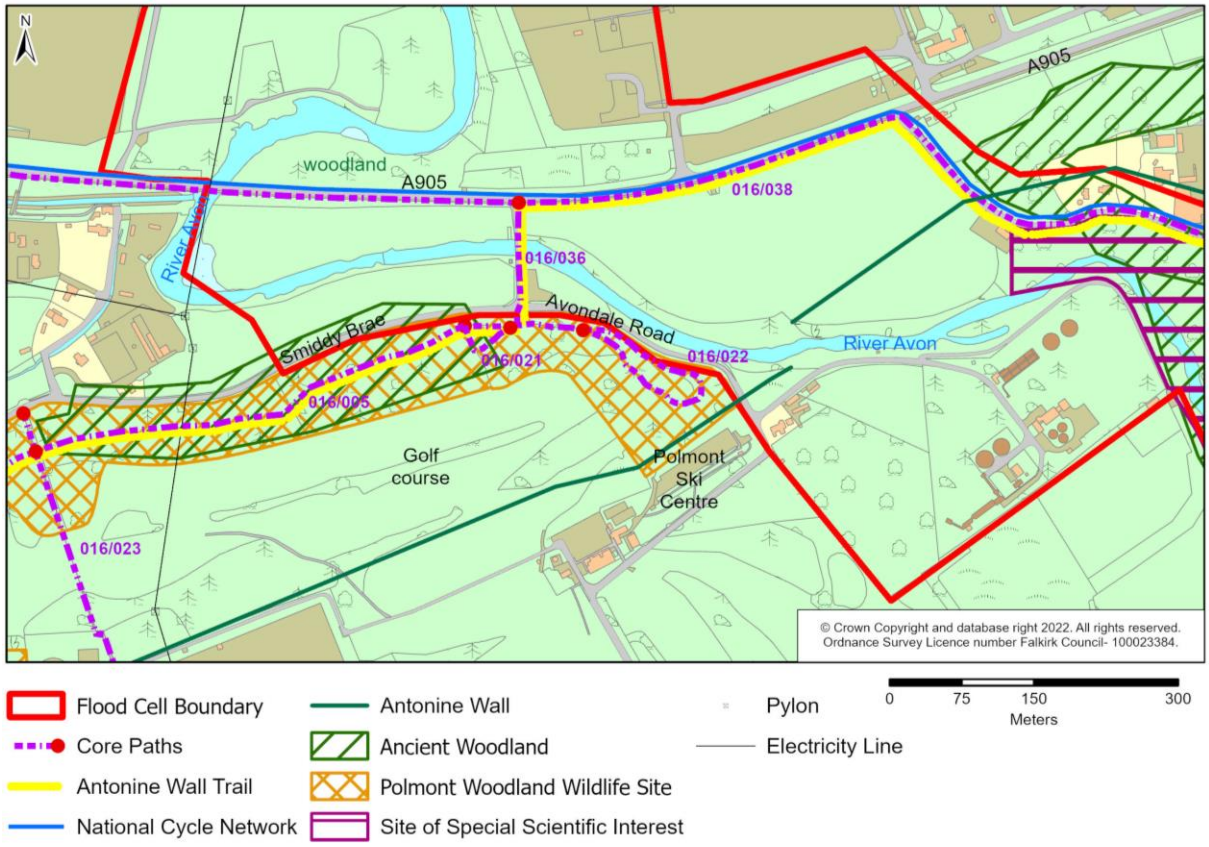

Figure 9–24: Flood Cell 5: Area 3 – Avon Valley plan

In contrast to the industrial areas to the north, this area has a river valley character, with recreation and farming being the prominent land uses. The River Avon meanders from the east through farmland towards the A905 behind some residential properties and forms part of the Council's Green and Blue Network (opportunity GN19). The whole area is identified as Green Belt and the Avon Gorge is a designated SSSI due to it being one of the few remaining sites of ancient semi-natural woodland in the Falkirk area. This designation is to the east of the Flood Cell and comprises the steep wooded banks of the River Avon and is 19.12 hectares in area (NatureScot, 1986).

There are two areas of ancient woodland within the area: 3.82 ha of woodland south of Smiddy Brae, which follows the line of the Antonine Wall WHS, and the 4.57 ha Avon Banks Wood near the River Avon at the east of the Flood Cell. The locally designated Polmont Woods Wildlife Site is located south of Smiddy Road, just outside the boundary to the Flood Cell.

The line of the Antonine Wall WHS runs through this Flood Cell south of the A905 and crosses the Flood Cell and the River Avon at the south-east side of the area. The buffer zone to the Antonine Wall WHS covers the whole area between the A905 and the M9 at this location (see Chapter 13: Cultural Heritage for further details). The Antonine Wall Trail is located in the south of the Flood Cell and runs parallel to FC's green corridor, forming part of the Green and Blue Network.

The A905 borders the northern part of the area, with local roads defining the southern limit of the Flood Cell. Core Path 016/038 (Inveravon to Wholeflats Roundabout) and NCN 76 follows the A905 road. The Core Path then diverts from the A905 and runs in an easterly direction close to the line of

the Antonine Wall WHS to the eastern boundary of the Flood Cell. Additionally, Core Path 016/036 (Jinkaboot bridge) crosses the river south of the A905.

Grangemouth Golf Course and Polmonthill Ski Centre recreational facilities are located to the south of the Flood Cell boundary. Avondale House and grounds are also located to the south of the Flood Cell near the River Avon Gorge and form Non-Inventory Designed Landscape and Site with Remnant Designed Landscape Features. Due to its location and severance via adjacent land and vegetation, it is not considered further.

***Constraints**:* Open green fields south of A905, riverside vegetation, Core Path access (designations noted above are not within the works area).

***Sensitivity of Landscape/ Townscape Receptors**:* High

9.4.6.6 Flood Cell 6

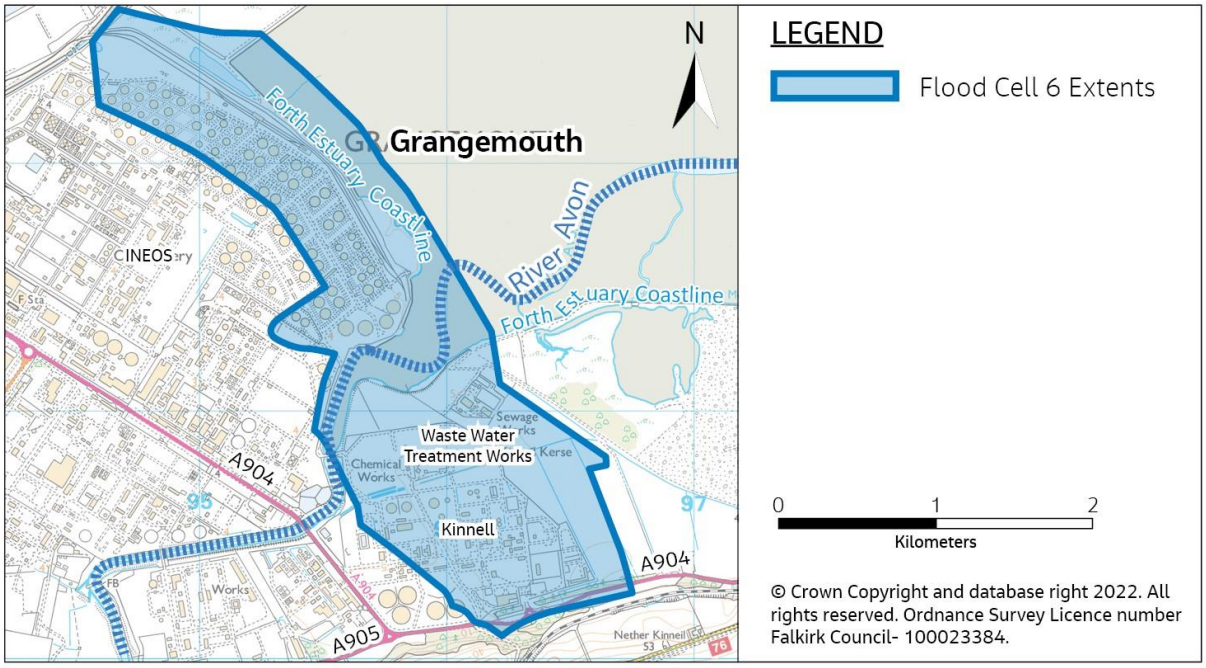

Figure 9–25: Extents of Flood Cell 6

Flood Cell 6 is mostly an industrial, coastal area which focusses on the industrial fringe and its relationship to the coast of the Forth Estuary. To the east of the Flood Cell the area is open farmland. The mudflats between the mean low and high-water tides of the Firth of Forth are designated Ramsar, SSSI and SPA status (see Chapter 7: Biodiversity for more details).

SG09 defines the southern part of the Flood Cell as LCA 6(ii) Grangemouth/Kinneil Flats, which lies south of the mouth of the river and excludes the Ineos works. The land is reclaimed from the Forth saltmarsh. The area further west of the Flood Cell is classed as urban. The LLCZ to the south is defined as Area 4 Grangemouth/Kinneil Flats Coastal Farmland, while the northern section of the Flood Cell is defined as Area 14 Grangemouth Petrochemical (Appendix B9.6).

The Flood Cell includes the mouth of the River Avon and estuarine coastal extents to the east and west, which are predominated by the Ineos petrochemical plant. There is also a wastewater treatment works within the Kinneil area that is accessible by public road. The A904 road is situated to the south and along this road is a strip of Ancient Woodland and part of the buffer zone to the Antonine Wall WHS which both follow the southern boundary of the Flood Cell.

The Flood Cell is divided into two areas: Area 1 (Petroineos) to the northeast of the River Avon and Area 2 (Kinneil) to the southwest of the river.

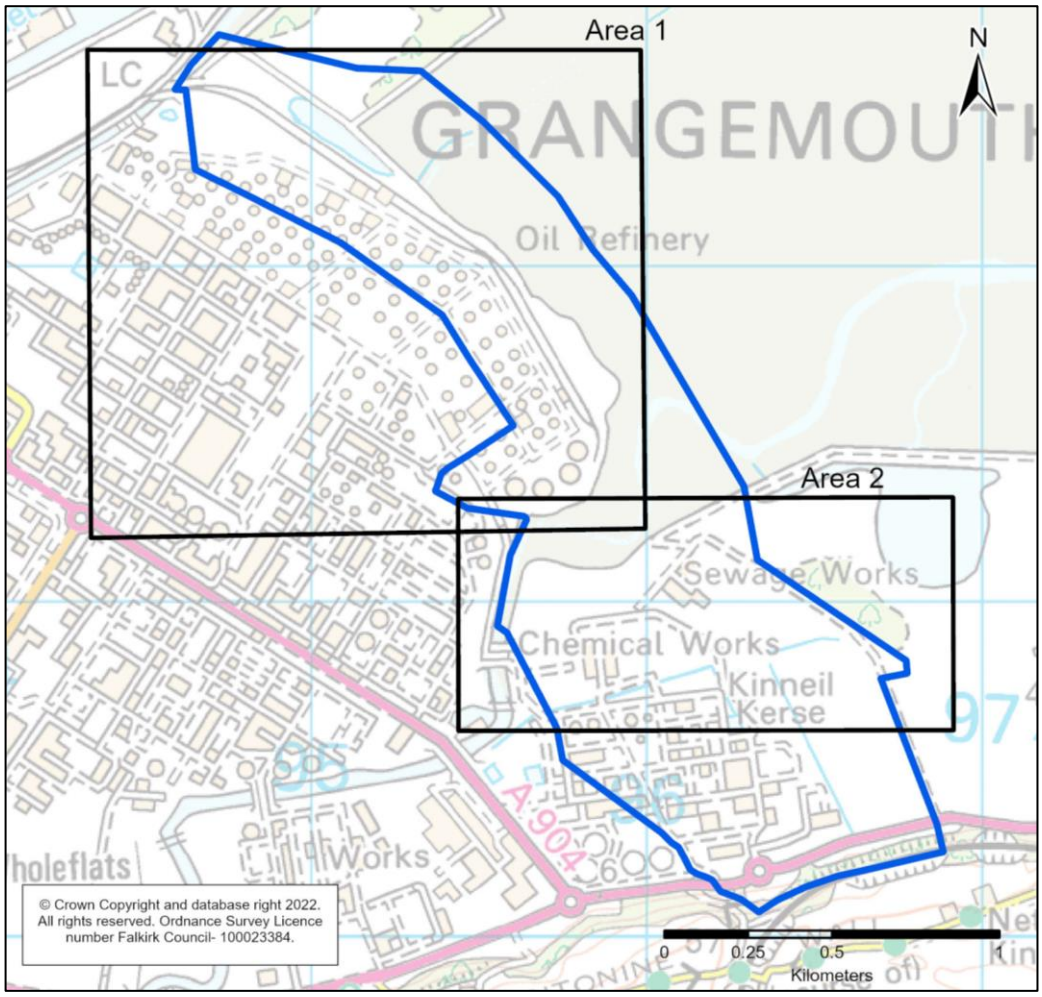

Figure 9–26: Flood Cell 6 Areas

Flood Cell 6: Area 1 – Petroineos

The character of Area 1 is predominately industrial; however, it abuts the Forth Estuary, which is a designated as a SPA, Ramsar and SSSI due to nature conservation interests (see Chapter 7: Biodiversity).

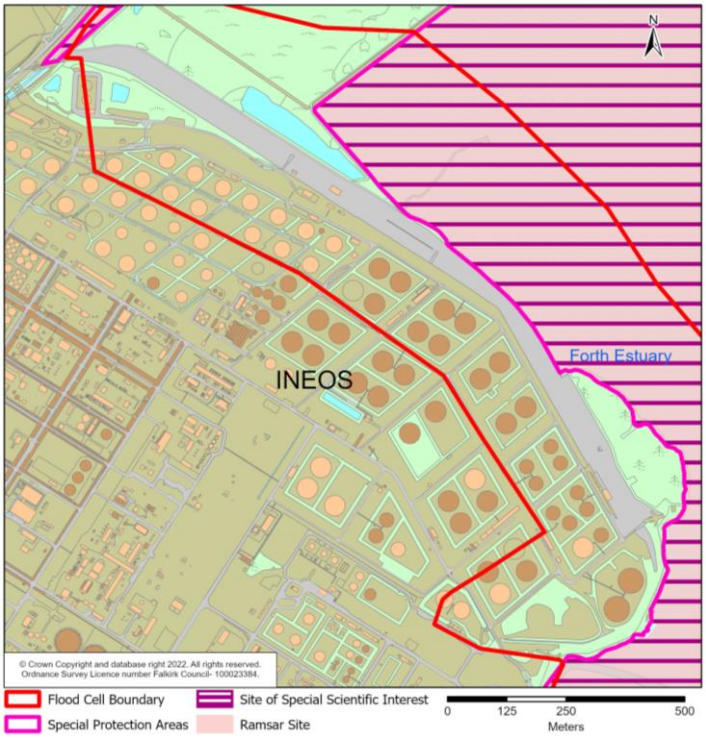

Figure 9–27: Flood Cell 6, Area 1- Petroineos plan

There is no public access to the area north of the River Avon.

There are green, vegetated areas along the banks of the estuary and the river, with a larger area of vegetation to the centre of the Flood Cell (shown in a light grey in Figure 9–27), which soften the industrial character at the edges.

***Constraints**:* Coastal vegetation.

***Sensitivity of Landscape/ Townscape Receptors**:* Low (industrial landscape tolerant of change)

Flood Cell 6: Area 2 – Kinneil

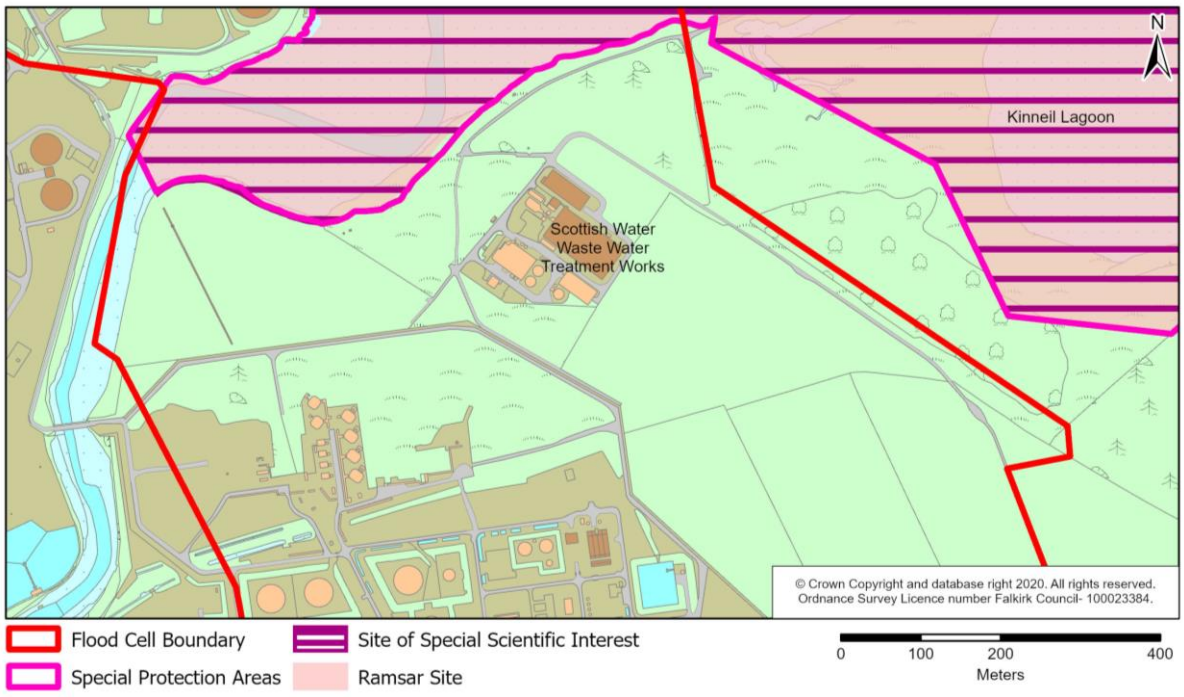

Figure 9–28: Flood Cell 6: Area 2 - Kinneil

Area 2 is located to the southeast of the River Avon and is also partly industrial in character, but it has a large amount of open space, some of which is farmland (Figure 9–28). The whole area is designated as Green Belt with a stand of semi-natural broadleaved woodland, Kinneil saline lagoon and farmland found in the east.

In north parts of Area 2, east of the River Avon, there are green spaces adjacent to the tracks, mainly used by dog walkers, along the coast are mainly semi-improved neutral grassland and swamp, with some scrub areas. There are also access routes over the bund to the water's edge.

A public access road runs from the southeast of the area (from the A904) to the Scottish Water wastewater treatment works and the estuarine fringe of the Forth Estuary. The estuary is designated as Ramsar, SSSI and SPA (see Chapter 7: Biodiversity).

***Constraints**:* Coastal vegetation, woodland, access.

***Sensitivity of Landscape/ Townscape Receptors**:* Low (industrial landscape tolerant of change)

The sensitivity of the landscape receptors for Flood Cells 1-6, as defined in Table 9-1 are summarised below.

Table 9-8: Summary of the Sensitivity of Landscape/ Townscape Receptors

Nature of Landscape Receptor		
Low	**Medium**	**High**
Flood Cell 3	Flood Cell 1 – Area 1	Flood Cell 1 – Area 5
Flood Cell 4 – Area 4	Flood Cell 1 – Area 2	Flood Cell 4 – Area 1
Flood Cell 5 – Area 1	Flood Cell 1 – Area 3	Flood Cell 4 – Area 3
Flood Cell 6 – Area 1	Flood Cell 1 – Area 4	
Flood Cell 6 – Area 2	Flood Cell 2	
	Flood Cell 4 – Area 2	
	Flood Cell 5 – Area 3	

9.5 Visual Baseline

9.5.1 Description of the Visual Envelope

The visual envelope of the Scheme is defined as the area from which individuals and/or groups of people have the potential to be affected by views of the proposed Scheme. The estimated visual envelope of the Scheme has been produced based on site visits and the visual assessment (see Figure B9.2 in Appendix B9), taking account of visual barriers including topography, existing and retained vegetation, and direction and distance of views to the proposed Scheme.

The visual envelope largely comprises the petrochemical plant site, taking in residential properties within the settlements of Grangemouth, Bainsford and Carron, and individual properties along the rivers Carron and Avon. In addition to these built receptor locations, there are a number of outdoor receptor locations including roads, and recreational walking and cycling routes. Areas in blue show visibility to the flood defences and tree loss, and those in pink tree loss only, in winter year 1. Given the linear form of the Scheme and proposed heights, views to the flood defences themselves are generally along and from areas adjoining the watercourses with greater and more distant views to tree loss.

9.5.2 Visual Receptors

The following sensitive visual receptors are identified as individuals or groups who would be affected by the changes in views and visual amenity at locations/areas within the study area. These include:

- residents of settlements and individual properties;
- travellers on public roads/bridges;
- users of Core Paths/footpaths and trails/Public rights of way/designated cycle paths;
- people visiting open spaces and recreational spaces/facilities; and
- people working at commercial and industrial properties.

Views experienced from pleasure cruisers, sailing boats and canoes on the estuary have been scoped out of the visual assessment due to the industrial nature of the coastline and because organised pleasure cruises do not generally reach this far up the estuary. There is a marina in Flood Cell 2 along the River Carron, adjacent to industrial buildings and warehouses. However, this is currently located in the industrial ports area of Grangemouth, and has been scoped out as views of the Scheme would be consistent with the existing industrial character.

The visual receptors are discussed below for each Flood Cell and sub-divided Flood Cell areas. Photo locations are shown on area plans at the start of each section. The visual assessment is also supported by other mapped information located in Appendix B9:

- Core Paths and other footpaths (Figure B9.3a); and
- National and Regional Cycle Routes (Figure B9.3b).

Information obtained from the tree surveys (Appendix C9.1) on the quality of trees and how these add to views and people's visual experience has also been considered.

Key viewpoints have been selected to represent a variety of locations, where the sensitivity of the receptor is considered to be **high**, and where there would be **noticeable changes** to existing views due to the proposed Scheme. In total, 15 key viewpoints have been agreed in consultation with planning officers at Falkirk Council, and these focus on key receptors and locations with the above criteria. Artist's impressions along with existing photos have been used to visually indicate the effects on these key viewpoints along the watercourses (refer to Appendix B9.5).

9.5.3 Flood Cell Specific Visual Baseline Descriptions

The visual baseline is set out in accordance with the six Flood Cells, with Flood Cells 1 and 4 being sub-divided into sub-areas for ease of navigation. Maps presented in each section show the locations of relevant visual receptors that are likely to have prominent views of the construction areas and the final Scheme once built.

9.5.3.1 Flood Cell 1

Flood Cell 1 is divided into five distinct sub-areas along the River Carron based on locations of the proposed defences: Stirling Road, Bainsford, Bainsford/Carron, East Carron/Chapel Burn and Carronshore/Riverside Stables (see Figure 9–29 below).

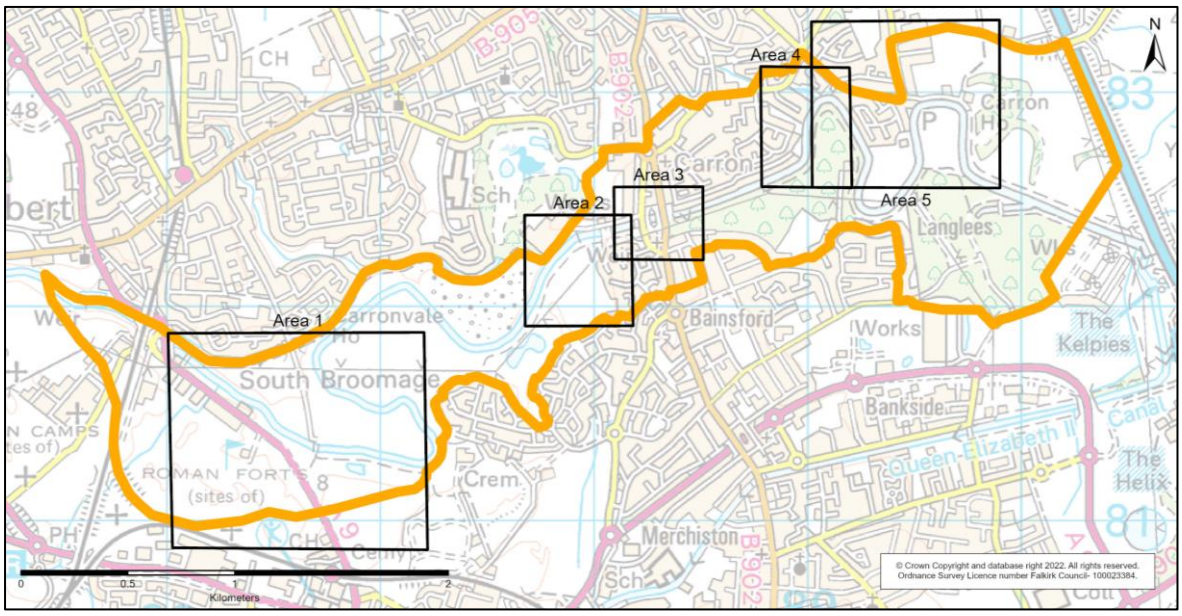

Figure 9–29: Flood Cell 1 Areas

Flood Cell 1: Area 1 – A9 / Stirling Road

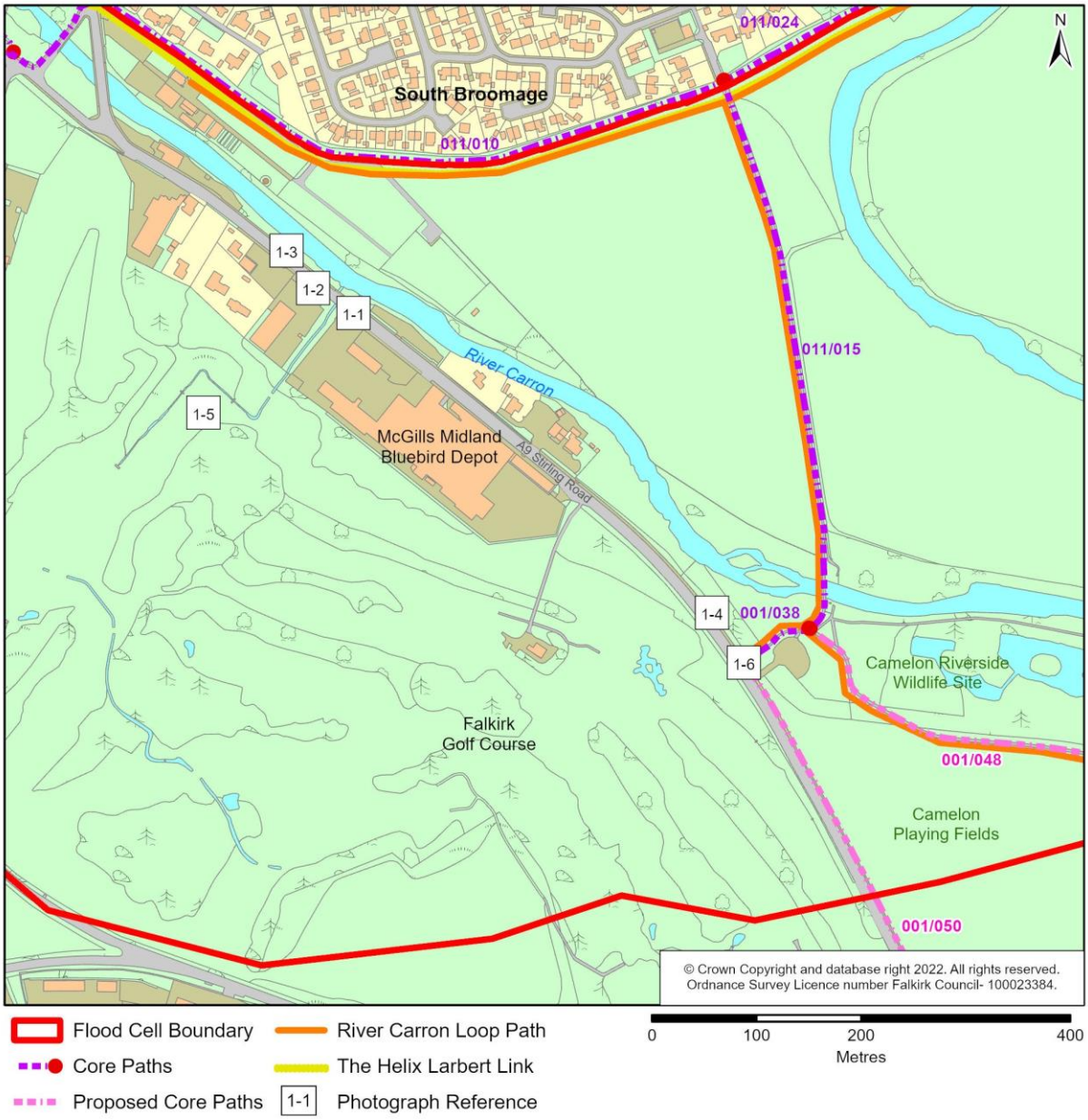

Figure 9–30: Flood Cell 1: Area 1 - Stirling Road Plan

Mature trees and shrubs run along the banks of the River Carron and limit views of the river (Figure 9–31: Photo 1-1). There is a predominant sense of visual enclosure along this section of the A9/Stirling Road created by stone and brick walls along parts and relatively high commercial buildings and warehouses. Views experienced by road users are directed along the road, although gaps in vegetation allow for short-distance views to and beyond the river (Figure 9–32: Photo 1-2).

Figure 9–31: Photo 1-1 - North end of Stirling Road, looking down the River Carron

Figure 9–32: Photo 1-2 - View south on Stirling Road

Figure 9–33: Photo 1-3 - View northwest on Stirling Road, to commercial and residential properties and along the River Carron

A number of commercial and residential properties that address the road in the north of this area have views towards the River Carron and of the houses in South Broomage further north, with greater visibility being achieved when trees are not in leaf (Figure 9–33: Photo 1-3 above).

Dense vegetation and the built form of the commercial properties along the south-eastern side of Stirling Road limit views along the road and footpaths, to the thoroughfare itself (Figure 9–34: Photo 1-4 below).

Figure 9–34: Photo 1-4 - View northwest on Stirling Road

The Falkirk Golf Club is located at the rear of the McGills Midland Bluebird depot and other commercial and residential properties along Stirling Road, as well as adjacent to the road itself further south. It is an open green space bounded by trees and lower vegetation on the north-east side. The buildings are mostly screened by vegetation, as is Stirling Road itself. In winter, however, the buildings, road and traffic are more prominent in views (Figure 9–35: Photo 1-5 below).

Figure 9–35: Photo 1-5 - View north-east within Falkirk Golf Course towards the bus depot

Existing and proposed Core Paths are located to the southeast and interface with the Camelon Riverside Wildlife Site and playing fields (Figure 9–36: Photo 1-6 below). Views from these paths are to surrounding woodland, along with views towards Stirling Road from a path to the west of the playing fields from the River Carron Loop Path, in addition to woodland, walkers experience views to adjoining fields, properties at South Broomage and a row of pylons.

Figure 9–36: Photo 1-6 – View north-east towards Camelon River Wildlife Site

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 1: Area 1 varies, with:

- residents and walkers on Core Paths within the wildlife site and along the River Carron being **High**;
- road travellers and recreational users of the River Carron and the Falkirk Golf Club being **Medium**; and
- recreational users of the playing fields and people working in commercial properties being **Low**.

Flood Cell 1: Area 2 - Bainsford

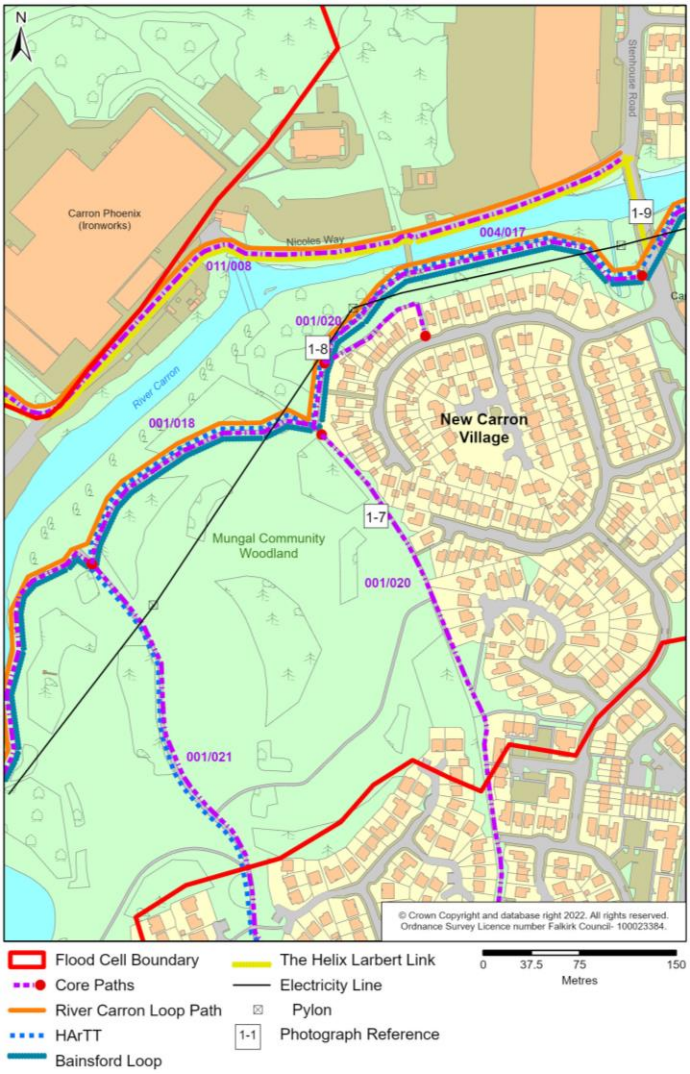

Figure 9–37: Flood Cell 1: Area 2 - Bainsford Plan

The Bainsford area of Flood Cell 1 consists of two-storey residential properties within New Carron village, parkland forming Mungal Community Woodland to the south of the River Carron and commercial properties. Views within the housing estate are generally restricted by the built form, with the exception of houses along the periphery, from which back gardens and upper floors have an outlook onto Mungal Community Woodland, gently rolling hills to the west and woodland along the River Carron (Figure 9–38: Photo 1-7 and Figure 9–39: Photo 1-8).

Figure 9–38: Photo 1-7 – View to New Carron Village Mungal Community Woodland

Figure 9–39: Photo 1-8 – Residential properties facing onto Mungal Community Woodland

Views experienced by road users within the residential development are generally limited, with those travelling along Nicole's Way/Stenhouse Road experiencing views to woodland along the river, a row of pylons and houses in the south of the Flood Cell area. Similar views are seen from commercial properties on Nicole's Way/ Stenhouse Road (Figure 9–40: Photo 1-9 from Stenhouse Road bridge). Greater visibility of the river and beyond is experienced by these receptors when trees are not in leaf.

Figure 9–40: Photo 1-9 - View west from Stenhouse Road bridge

In addition to Nicole's Way, Core Paths dissect and run along the periphery of the Mungal Community Woodland and towards the southern edge of the river. Walkers on these paths currently experience views towards dense woodland in parts, particularly along the river, with open views to parkland, the river and surrounding landscape in the west of the Flood Cell area. There is greater visibility when trees are not in leaf.

The HArTT, Bainsford Loop, and the Helix Larbert Link cycle routes also run through this area, with cyclists experiencing immediate views of the river and trees along its banks and the urban landscape beyond.

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 1, Area 2 varies, with:

- residents, walkers and horse riders on public rights of way along the river being **High**;
- road travellers being **Medium**; and
- people working at commercial properties being **Low**.

Flood Cell 1: Area 3 – Bainsford / Carron

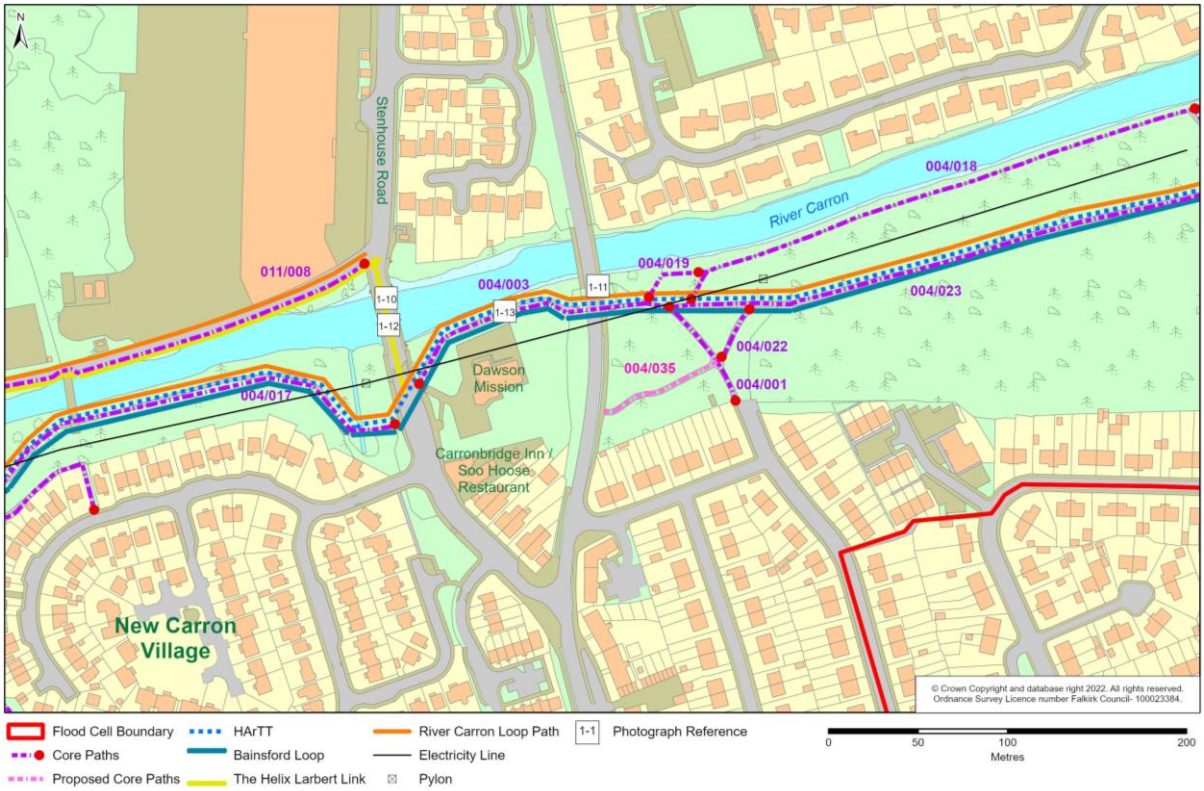

Figure 9–41: Flood Cell 1: Area 3 - Bainsford/Carron Plan

This area predominately consists of two-storey residential properties adjoining Area 2, Bainsford. Much like Area 2, the built form generally restricts views from these properties with those along the periphery, particularly the upper floors and gardens, having views to the surrounding road network,

pylons, woodland including trees along the River Carron and distant hills to the north (Figure 9–42: Photo 1-10 and Figure 9–43: Photo 1-11).

Figure 9–42: Photo 1-10 – View east from Stenhouse Road bridge

Figure 9–43: Photo 1-11 - View east from the B902/ New Carron Road bridge

In addition to residential properties, the Dawson Mission and Carronbridge Inn/Soo Hoose Restaurant are located to the south of the river. The Carronbridge Inn/Soo Hoose Restaurant addresses Stenhouse Road and the New Carron Village residential estate, with views also along the road corridor and to woodland adjoining the river. Similar views are experienced by people working at and visiting the Dawson Mission, although the main building is set slightly below the level of the road compared to adjoining buildings, and the surrounding road network (Figure 9–44: Photo 1-12).

Pylons are notable visible features from this location, whilst views to residential and commercial properties are screened or softened by intervening vegetation.

Figure 9–44: Photo 1-12 – View east, from Stenhouse Road bridge to Dawson Mission

Core Paths in this area, including the River Carron Loop Path, are generally located along the river (Figure 9–45: Photo 1-13), although there is an additional core path from the end of Carronside Street which meets up to these river paths. Travellers on these currently experience views to the river and its tributaries including the Mungal Burn and its adjacent woodland, which partly screens residential and commercial properties.

The HArTT, Bainsford Loop and the Helix Larbert Link cycle routes also run through this area, with cyclists experiencing views to the River Carron along these routes. Where the road network is bridged, the river is more visible given the level difference, with greater visibility beyond when the trees are not in leaf.

Figure 9–45: Photo 1-13 – View west from Core Path 004/003 and the River Carron Loop Path

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 1, Area 3 varies, with:

- residents and walkers on Core Paths being **High**;
- road users and people visiting Dawson Mission being **Medium**; and
- people working at and visiting the Carronbridge Inn/Soo Hoose Restaurant being **Low**.

Flood Cell 1: Area 4 – East Carron / Chapel Burn

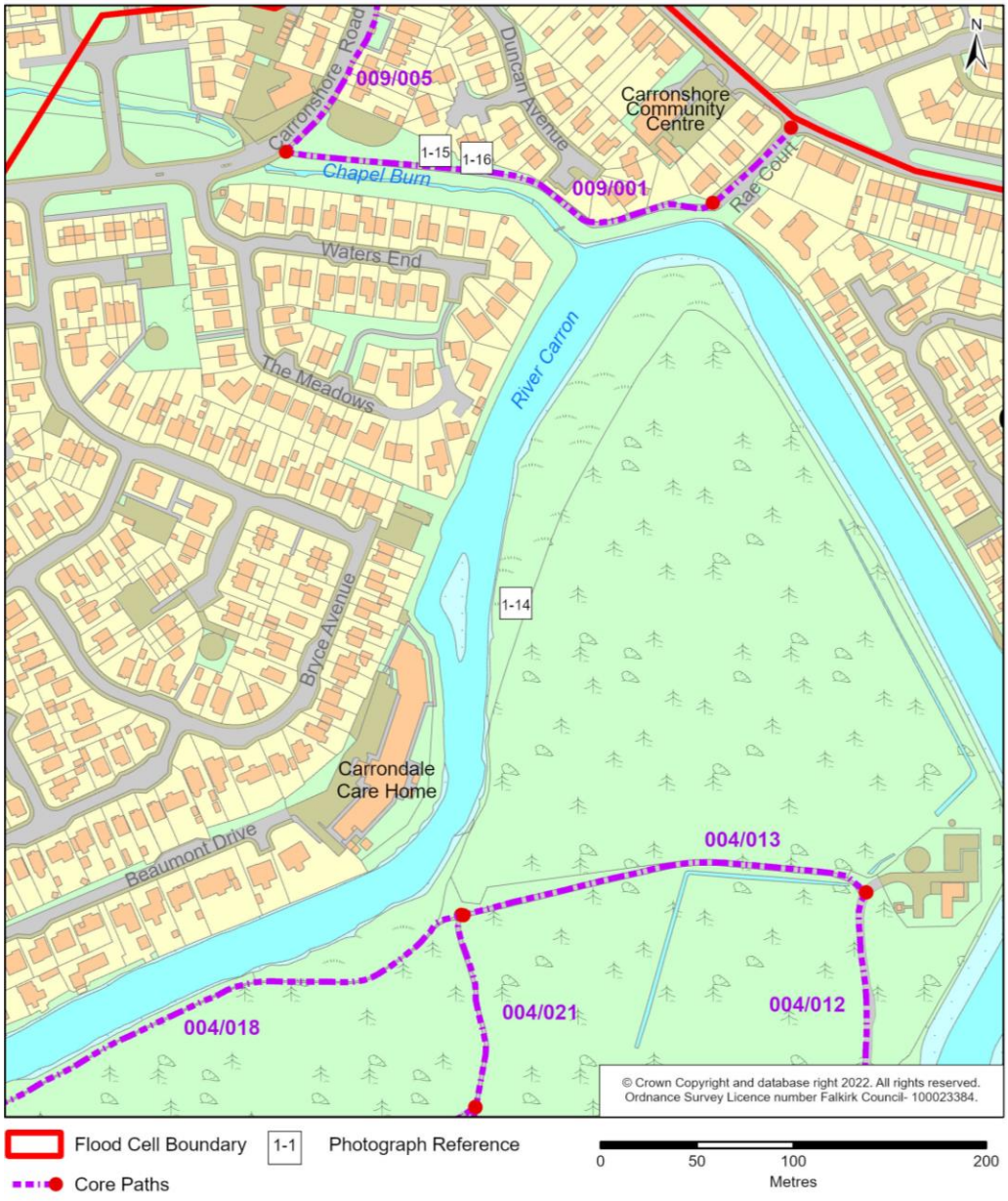

Figure 9–46: Flood Cell 1: Area 4 - East Carron/Chapel Burn Plan

At this location, the area to the north of the River Carron is predominately formed by two-storey residential properties along with Carrondale Care Home (Avondale Care) and the Carronshore Community Centre, while south of the river there is community woodland and open space (Figure 9–47: Photo 1-14).

Views within and beyond residential areas are generally limited by the built form and, given its setback location and the intervening built form, the community centre has limited visibility of the river and woodland.

From the care home, gardens and upper floors of houses backing onto the river, there are views towards the river, small to medium sized trees and more established vegetation in the community woodland area, as well as adjoining residential developments and gently rolling hills in the distance. Views experienced by residents and people working and visiting the care home are partly screened by boundary walls and fences and intervening vegetation with greater visibility of the water from upper floors.

Figure 9–47: Photo 1-14 – View west from informal footpath, River Carron Meander SINC

Views beyond the local road network are generally restricted by adjoining residential properties, although there are views towards the river and woodland along it from roads including Byrce Avenue, Duncan Avenue and Rae Court, with greater visibility when trees are not in leaf.

Walkers on Core Paths adjacent to Chapel Burn and the River Carron currently experience views to woodland and scattered trees adjoining the water, which partially screen houses and back garden fences (Figure 9–48: Photo 1-15 and Figure 9–49: Photo 1-16). Paths within the community woodland area, including the River Carron Loop Path, route through dense woodland and occasionally offers views to the river, such as to the south of the care home, where there are views towards residential properties, softened by intervening vegetation.

The HArTT and the Bainsford Loop cycle routes also run through this area, with cyclists experiencing views towards the river along these routes.

Figure 9–48: Photo 1-15 – View east from Carronshore car park to Core Path 009/001

Figure 9–49: Photo 1-16 – View west from Core Path 009/001, adjacent to Chapel Burn

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 1, Area 4 varies, with:

- residents, including those at Carrondale Care Home (Avondale Care) and walkers on Core Paths being **High**;
- road travellers on local roads being **Medium**; and

- people working at and visiting Carrondale Care Home (Avondale Care) and Carronshore Community Centre being **Low**.

Flood Cell 1: Area 5 - Carronshore/Riverside Stables

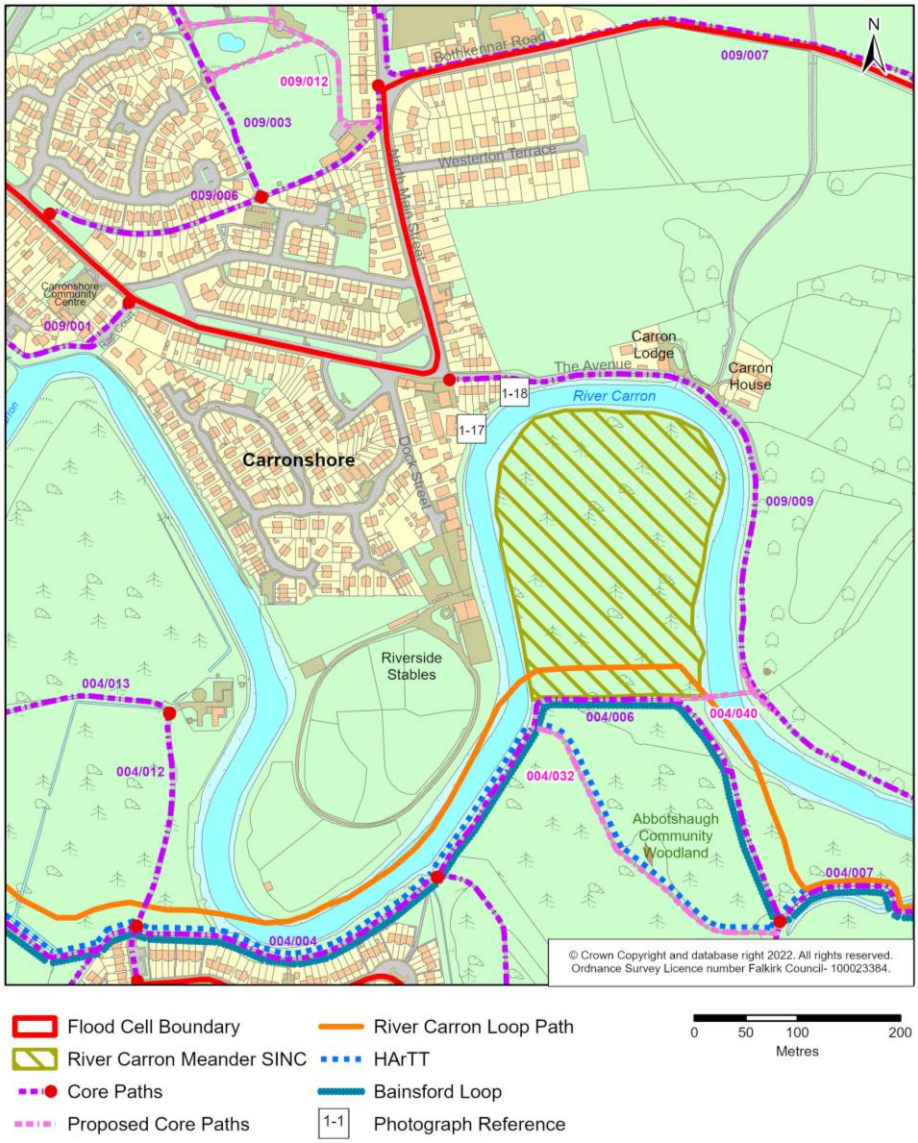

Figure 9–50: Flood Cell 1: Area 5 - Carronshore/Riverside Stables Plan

This area of Flood Cell 1 consists of commercial and residential properties to the south of Carronshore as well as Carron House and Lodge and the Riverside Stables and parade ground (private land). To the south of the river, there is some public open space and Abbotshaugh Community Woodland.

Views within and beyond residential areas are generally restricted by the built form, although some of the rear gardens have an open aspect towards the river. Upper floors of most houses that back onto the River Carron would also have views to the river itself and trees along it (Figure 9–51: Photo 1-17).

Greater visibility from residential properties in Carronshore to the river and Abbotshaugh Community Woodland is experienced when trees are not in leaf.

Figure 9–51: Photo 1-17 – View east, adjacent from the back gardens of houses at The Avenue, Carronshore

Views from the local road network are limited by the built form, although there are filtered views south and east towards the river and woodland beyond from North Main Street, The Avenue, Dock Street, between houses and where vegetation is sparse.

Views from Core Paths within this Flood Cell area vary, with stone walls, bunds and trees near and adjoining the River Carron Loop Path directing views along the river (Figure 9–52: Photo 1-18). Walkers on paths within the public open space adjoining Abbotshaugh Community Woodland and visitors to Riverside Stables and parade ground experience more open views towards the river with some intervening vegetation.

The HArTT and the Bainsford Loop cycle routes also runs through this area, with cyclists experiencing views along these routes.

Figure 9–52: Photo 1-18 – View east from The Avenue and Core Path 009/009

***Sensitivity of Visual Receptors**:*

The sensitivity of visual receptors in Flood Cell 1, Area 5 varies, with:

- residents, and walkers and horse riders on designated rights of way being **High**;
- road users on local roads and people visiting Riverside Stables and parade ground being **Medium**; and
- people working at commercial properties being **Low**.

9.5.3.2 Flood Cell 2

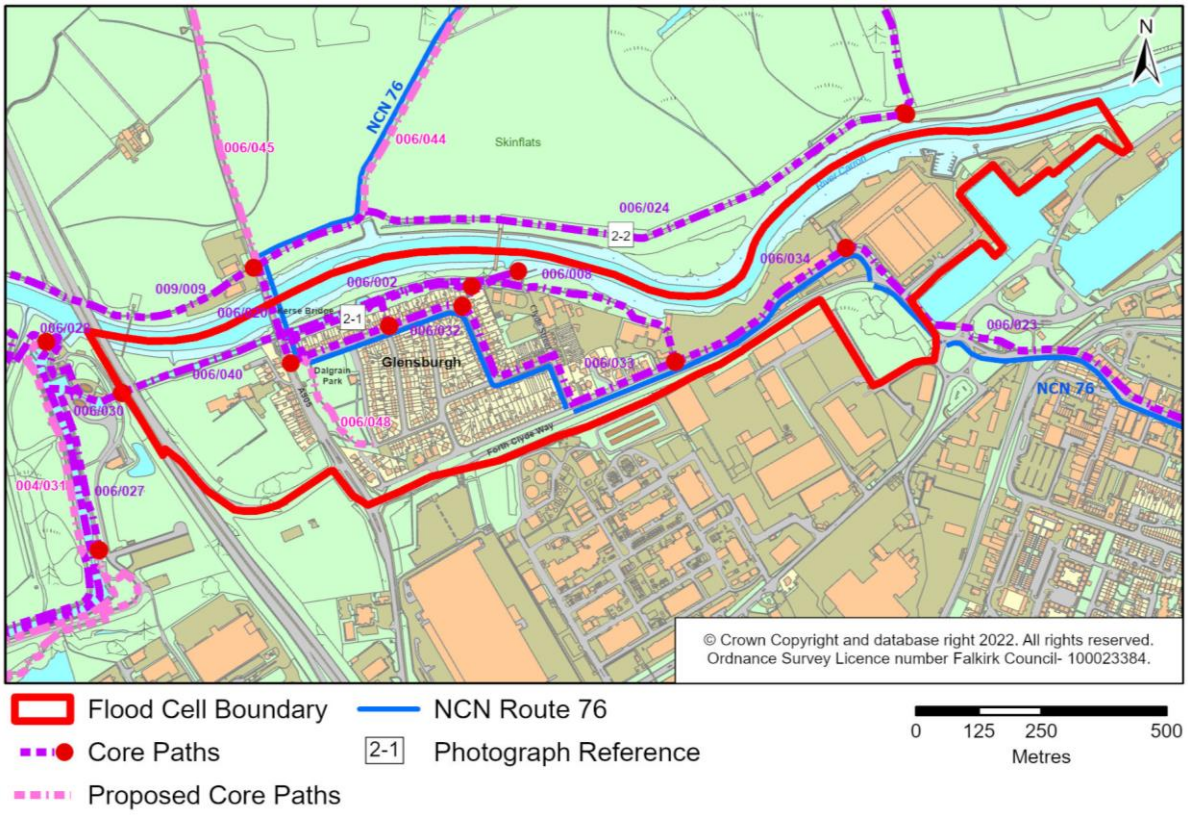

Figure 9–53: Flood Cell 2 Plan

Figure 9–53 shows the location for visual impacts at Glensburgh and Skinflats. The Flood Cell is characterised by commercial and industrial buildings including large warehouses and the storage of shipping containers located to the south of the River Carron. Views currently experienced from these buildings and properties are towards and along the river and fields and scrubland beyond, with visibility in places screened and softened by trees along the water's edge. Similar views are experienced by cyclists on NCN76 and walkers on footpaths along the Forth-Clyde Way road and Core Paths, where these routes run adjacent to the river (Figure 9–54: Photo 2-1).

Residential properties in Glensburgh are located in the west of the Flood Cell with the back gardens and upper floors of properties on Bank Street, Clyde Street and Kelvin Street experiencing views towards the River Carron and fields and scrubland on Skinflats, backed by distant wooded slopes. Views from the roads themselves are generally restricted by the surrounding built form, with small

gaps between buildings from Devon Street and Clyde Street, allowing for glimpsed views to trees and scrub to the north.

NCN76 and Core Paths run adjacent to the northern side of the river, from which there are open views to grass and scrubland on the Skinflats areas. Outwith the Flood Cell and to the north of the River Carron at Skinflats, there are several Core Paths along field boundaries (Figure 9–55: Photo 2-2). Walkers on these paths currently experience views towards residential properties in Glensburgh and adjoining industrial buildings to the south. An embankment along the northern river bank restricts visibility to the River Carron, although given the limited vegetation and relatively flat landform, there are open views to The Kelpies, pylons and industrial stacks, all of which form features in the landscape.

Figure 9–54: Photo 2-1 – View east from Core Path 006/002

Figure 9–55: Photo 2-2 – View south from Core Path 006/024 to the Flood Cell area

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 2 varies, with:

- Residents (towards the River Carron), and walkers and cyclists on designated public rights of way being **High**;
- road travellers and recreational users of the River Carron being **Medium**; and
- people working at commercial and industrial properties being **Low**.

9.5.3.3 Flood Cell 3

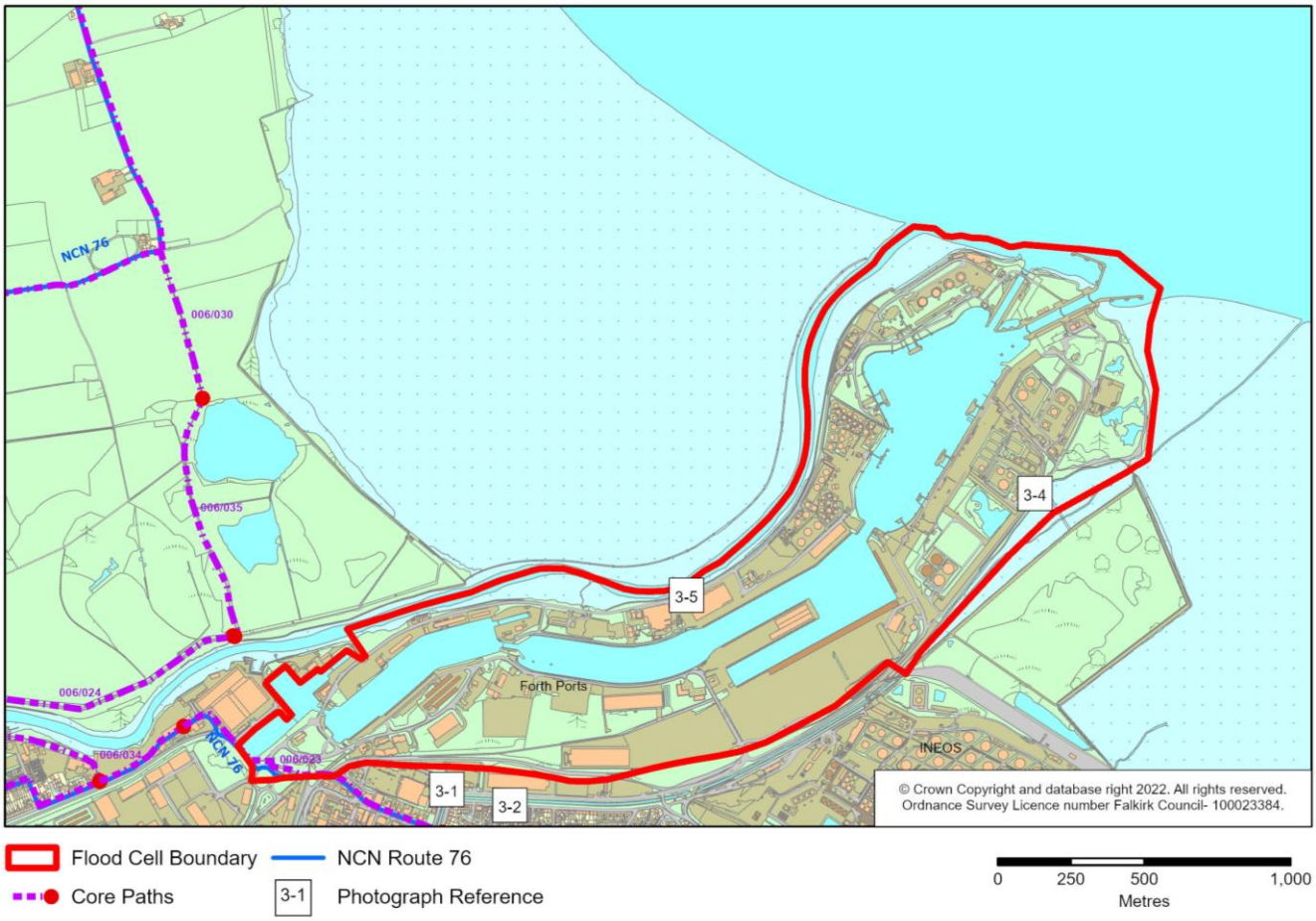

Figure 9–56: Flood Cell 3 Plan

The character of Flood Cell 3 is defined by buildings and structures forming the industrial petrochemical complex and Grangemouth Port (Figure 9–57: Photo 3-1). Figure 9–56 above shows the greatest areas of visibility beyond industrial spaces. Views beyond the plant and port are generally screened by the built form except from at the periphery, where there is visibility to residential properties and the industrial areas to the south.

Figure 9–57: Photo 3-1 - View East of Forth Ports site from South Shore Road

There is partial screening of the industrial buildings by intervening vegetation including trees along Grange Burn and Grangeburn Road (see Figure 9–58: Photo 3-2).

Figure 9–58: Photo 3-2 – View west along Grangeburn Road

Figure 9–59: Photo 3-3 Aerial facing west across the petrochemical works and Grangemouth Port (photo credited to Ineos)

Figure 9–59: Photo 3-3 above shows an overall view of the industrial area with Flood Cell 3 towards the top of the photo. In the north and east of the Flood Cell, given the lack of vegetation along the coastal edge, there are expansive views towards the Firth of Forth (Figure 9–60: Photo 3-4). From industrial and commercial properties in the north and west of the Flood Cell, there are views to scrubland and fields with scattered trees beyond the River Carron (Figure 9–61: Photo 3-5).

Figure 9–60: Photo 3-4 – View north-east along South Shore Road

Figure 9–61 : Photo 3-5 - View west along North Shore Road

Core Paths are located outside of the Flood Cell. Views from the northern river edge towards the Flood Cell are mostly restricted by large bunds, although along stretches, there are views to industrial structures including stacks. Core Paths to the south of the Flood Cell in the town have no views into the Flood Cell.

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 3 varies, with:

- residents being **High**; and
- people working at commercial and industrial properties being **Low**.

9.5.3.4 Flood Cell 4

Flood Cell 4 covers a large area, although the works themselves are only within three parts of this area. Figure 9–62 below shows how the area is split up for the description in the text below (these areas slightly differ to the ones defined in Section 9.4.6.4 for the character descriptions).

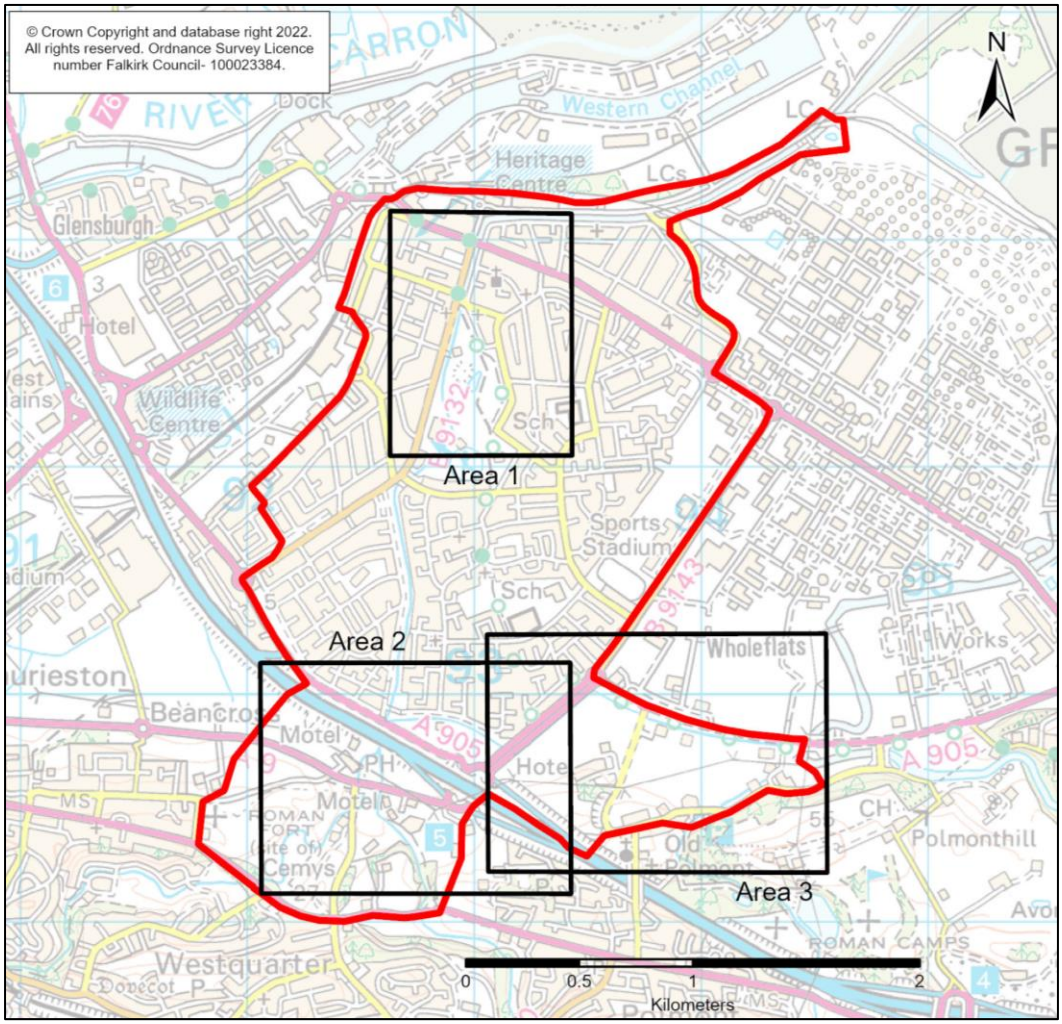

Figure 9–62: Flood Cell 4 Areas

Flood Cell 4: Area 1 - Grangemouth

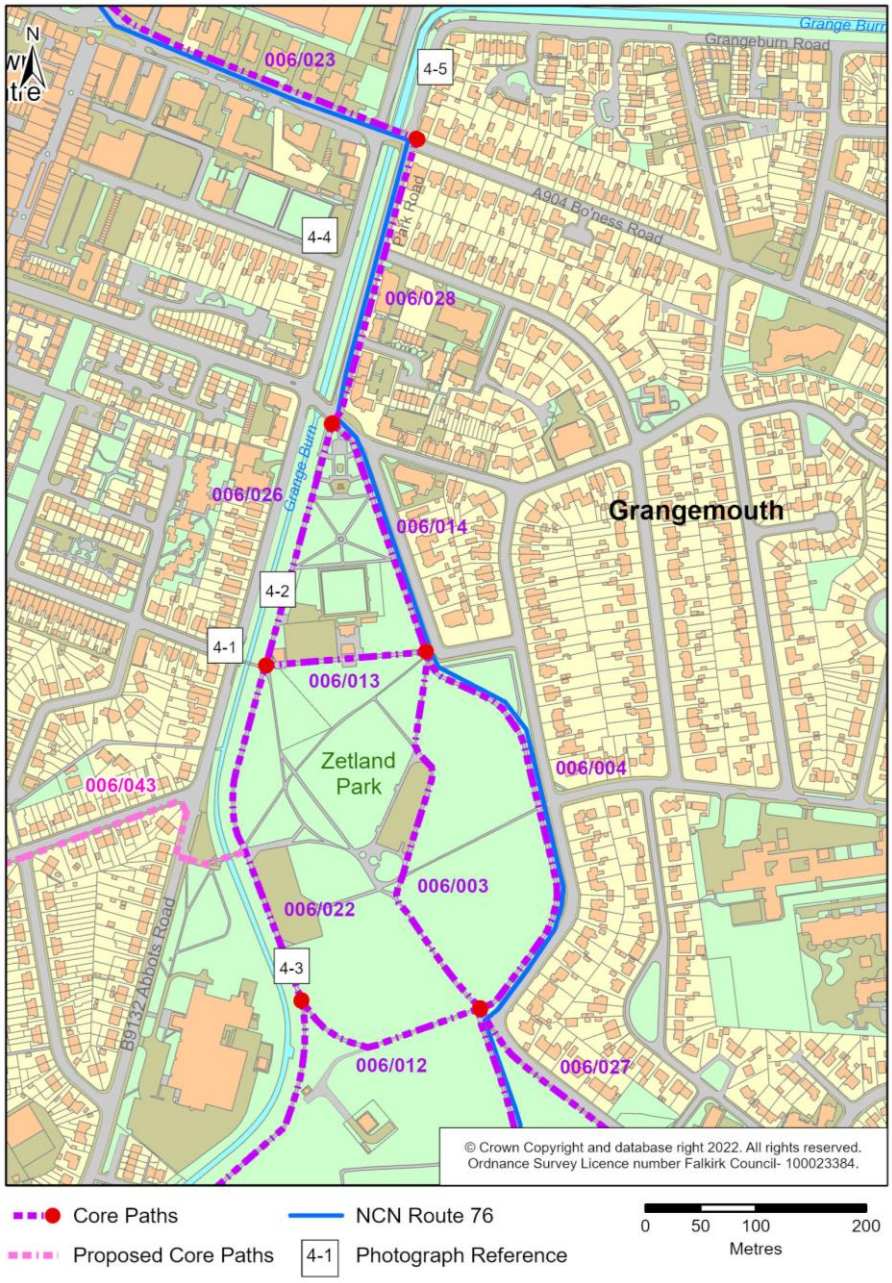

Figure 9–63: Flood Cell 4: Area 1 - Grangemouth plan

Area 1 is generally characterised by residential properties, mature avenue trees and open space areas including Zetland Park with buildings associated with Forth Ports bordering the north and the petrochemical plant to the east.

Abbots Road/B9132 and Park Road run in a south - north direction parallel to the Grange Burn. Residential properties that address these roads in the south of this area, along with the users of the roads and footpaths, have views towards the Grange Burn and Zetland Park, which includes rows of mature trees along the burn, with more distant views being limited due to the relatively flat nature of the land (Figure 9–64: Photo 4-1). Similar views are experienced from properties that adjoin or are

near to the park and the burn to the north of these roads. A number of bridges cross the Grange Burn, both pedestrian and vehicular, offering views of the watercourse.

Figure 9–64: Photo 4-1 – Abbots Road looking south to Zetland Park

NCN76 and Core Paths dissect Zetland Park and run along parts of the Grange Burn with cyclists and walkers experiencing views across the mainly grassed park and lines of mature trees that run parallel to paths and houses beyond the periphery. There is greater visibility through the vegetation to houses in winter when trees are not in leaf, and there are some rows of flowering cherry trees that form seasonal features (Figure 9–65: Photo 4-2 and Figure 9–66: Photo 4-3).

Figure 9–65: Photo 4-2 - Mature trees (in summer) along the boundary of Zetland Park

Figure 9–66: Photo 4-3 - Avenue trees (in winter) in Zetland Park

Grangemouth Bowling Club is located on the corner of Abbots Road/B9132 and Talbot Street. It has open views from the bowling green and car park and partial views from the club house of the mature trees on the bunds along Grange Burn (Figure 9–67: Photo 4-4). Similar views are experienced from places of worship and commercial properties along Abbots Road/B9132 and Park Road.

Figure 9–67: Photo 4-4 - View north along Abbots Road/B9132 in summer with Grangemouth Bowling Club car park on left

Views from houses and footpaths along Grangeburn Road to the north are mainly of the trees along the embankment that follows the Grange Burn, and vegetation with filtered view of buildings on the other side (Figure 9–68: Photo 4-5). The embankment has a non-designated path along its length that is popular with walkers given its width and green outlook to mature trees along the burn.

Figure 9–68: Photo 4-5 - View west from Grangeburn Road in winter

People working at industrial properties in the north of the Flood Cell area currently have views of the vegetation along the Grange Burn, with filtered views of the houses behind.

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 4, Area 1 varies, with:

- residents, and walkers and cyclists on designated public rights of way being **High**;
- road travellers, recreational users and visitors to Zetland Park being **Medium**; and
- recreational users and visitors to Grangemouth Bowling Club, people working at commercial and industrial properties and visitors to places of worship being **Low**.

Flood Cell 4: Area 2 – Rannoch Park and Westquarter

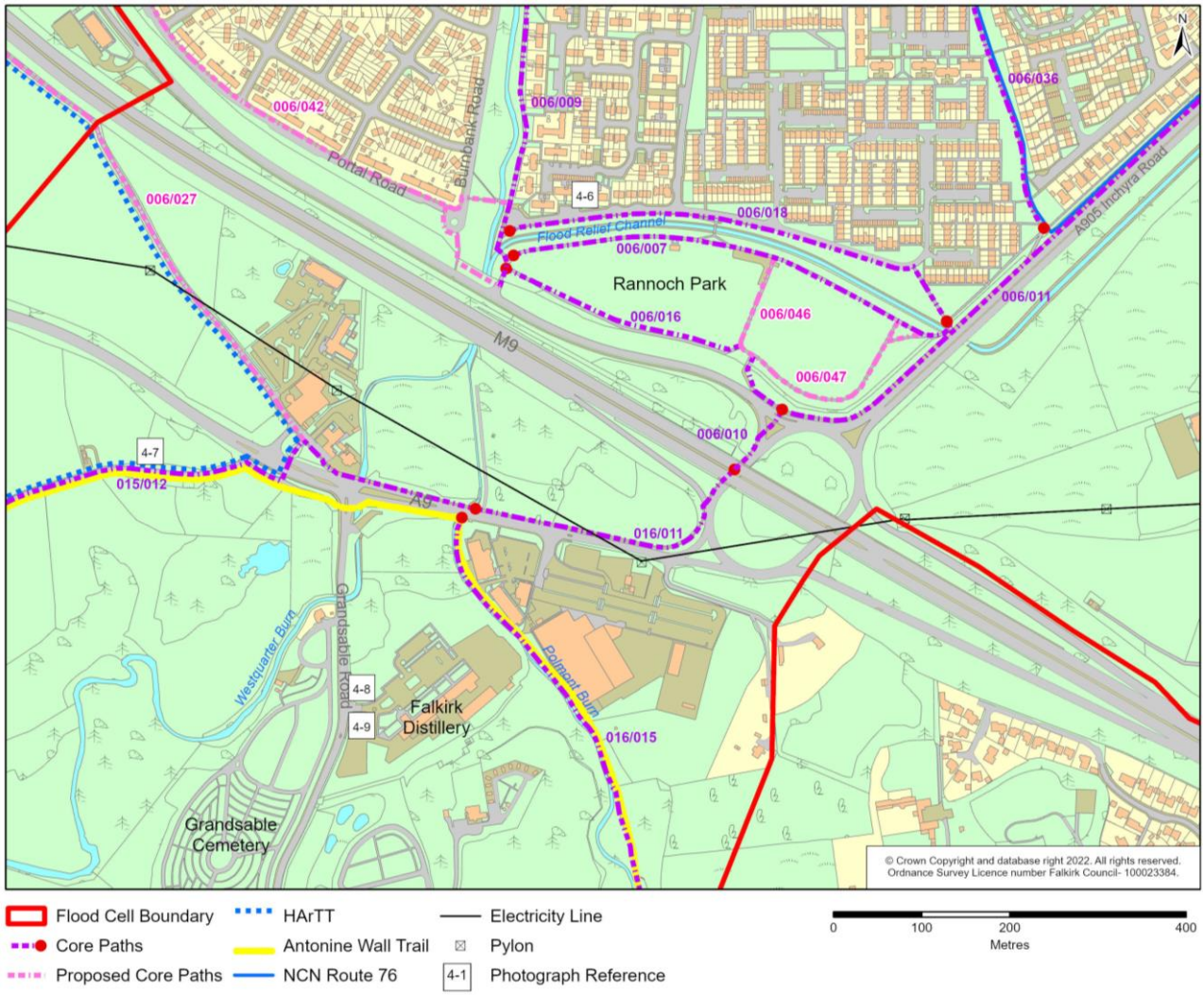

Figure 9–69: Flood Cell 4: Area 2 - Rannoch Park and Westquarter plan

Area 2 is mainly characterised by residential properties, recreational and open space areas with mature woodland adjoining Westquarter and Polmont Burns, field boundaries and the road network. Residential properties to the north of Rannoch Park, particularly those on Rannoch Road, have views to the park itself and woodland in the distance. Immediate views are screened and softened by a bund along the northern edge of the park and a row of trees on the park boundary (Figure 9–70: Photo 4-6).

The road network and a row of pylons are key elements in views experienced by residents to the west of Rannoch Park, including those on Portal Road and Burnbank Road. Views to these elements are filtered by intervening vegetation, with greater visibility in winter when trees are not in leaf.

Figure 9–70: Photo 4-6 – View east from embankment along northern edge of Rannoch Park

Rannoch Park is set below the level of the A905 and M9 and has open and partially screened views to these roads, vehicles on them and adjoining woodland beyond. Within the park and towards the northern and western extents, there are views to houses and distant rolling hills, which are softened by a line of/and scattered trees.

Core Paths are located throughout the Flood Cell area including in and around Rannoch Park, with varying views including along the road corridor and residential properties. Some views from the Core Paths are restricted by woodland and trees, such as along the NCN76 and Polmont Burn in the south.

Walkers on the Antonine Wall Trail take in views of the nearby road network and woodland with more extensive and distant views to the wider landscape in the west, where it runs adjacent to Sandy Loan and Mumrills Road. The view from the highpoint across the Westquarter carse (boggy grassland) is adjacent to the Core Path network and a section of the HArTT cycle route and is a key point of visual reference for the Antonine Wall WHS alignment (Figure 9–71: Photo 4-7). The viewpoint is therefore popular with users of the Antonine Wall Trail as well as local dog walkers as it is easily accessed.

Figure 9–71: Photo 4-7 – View south-east across Westquarter carse to Falkirk Distillery

Commercial and business properties as well as hotels and restaurants are located on either side of the A9 in the south of the Flood Cell area. Views from these buildings are generally toward the row of pylons and the A9, M9 and vehicles on them with surrounding woodland limiting views to the wider landscape, except through occasional gaps in vegetation and from elevated points. Polmont and Westquarter Burns are generally not visible from these properties, although bankside woodland along them is.

Falkirk Distillery and Grandsable Cemetery are located on Grandsable Road and visitors to both experience elevated views, north to intervening woodland and trees, pylons and rolling hills beyond (Figure 9–72: Photo 4-8 and Figure 9–73: Photo 4-9).

Figure 9–72: Photo 4-8 – View north along Grandsable Road

Figure 9–73: Photo 4-9 – View north-east from the entrance of Falkirk Distillery towards commercial properties on the A9

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 4, Area 2 varies, with:

- residents, visitors to the Falkirk Distillery, as well as walkers and cyclists on designated public rights of way being **High**;
- road travellers, and recreational users and visitors of/to Rannoch Park, being **Medium**; and
- people working at and visiting commercial and industrial properties, and hotels and restaurants along the A9 and visitors to Grandsable Cemetery being **Low**.

Flood Cell 4: Area 3 – Inchyra / Wholeflats

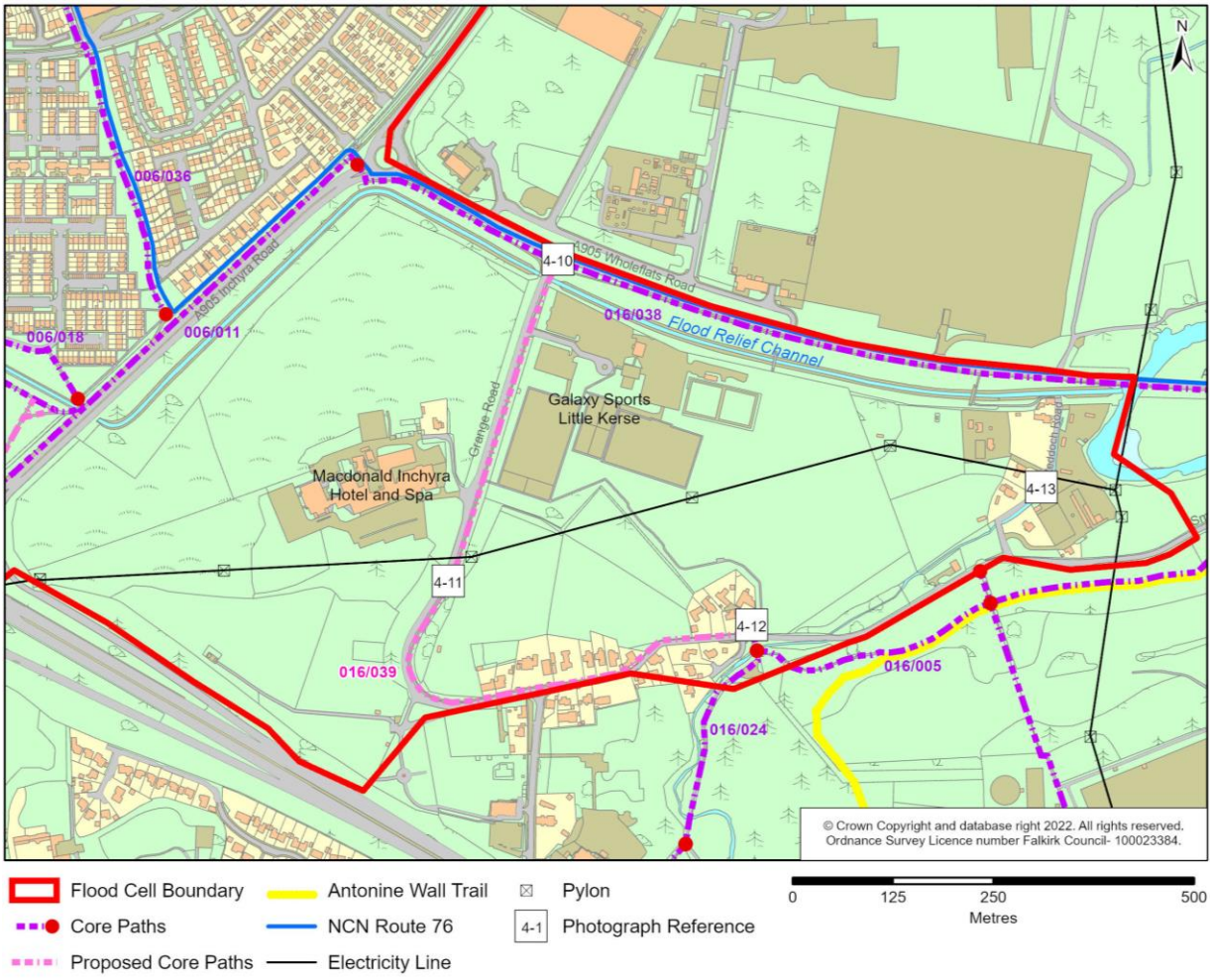

Figure 9–74: Flood Cell 4: Area 3 - Inchyra/Wholeflats Plan

Area 3 is mainly characterised by green open space, recreation facilities, a large hotel, and the busy Wholeflats and Inchyra roads running alongside the Grange Burn flood relief channel (Figure 9–75: Photo 4-10). Old Polmont village is located at the top of the hill to the south.

Galaxy Sports, Little Kerse football pitches are located at the intersection of Grange Road and the A905/Wholeflats Road. As with Rannoch Park (in Area 2), the football pitches are set below the height of the surrounding road network, and views to these roads, the wooded slopes to the south and stacks in the petrochemical complex area to the north are partly screened by trees (Figure 9–76: Photo 4-11).

From Inchyra Road/A905, road users and some residents experience views east and southeast towards the road network and the Macdonald Inchyra Hotel and Spa buildings and grounds. Views of the hotel are mostly screened by trees along the road, and the Grange Burn flood relief channel is not visible as it is set lower than road level. From the hotel buildings, there are views to surrounding scrubland grassy areas and fields with pylons, and further toward the surrounding roads and houses from upper floor windows. Dense woodland to the south screens and filters views in this direction. Scattered

residential properties are also located in the south of Area 2, with trees and woodland limiting views beyond the property boundary of most.

Core Paths and a proposed core path run through this area, mainly as footpaths along roads, as well as The Antonine Wall Trail and NCN76. Views from these receptors vary along the routes.

Figure 9–75: Photo 4-10 - View west along Wholeflats Road at Grange Road

Figure 9–76: Photo 4-11 – View looking north on Grange Road (adjacent to proposed Core Path 016/027) with MacDonald Inchyra Hotel and Galaxy Sports playing pitches visible

Millhall Gardens is a new housing development located to the south-east of Polmont Village. There are filtered views experienced by residents, over Millhall Burn, of Polmont Woods and the associated car park. The car park is accessed over a narrow bridge from Smiddy Brae and is surrounded by woodland on all other sides. The burn, located on the north-west side of the car park, is lower down than the car park level and can only be seen when directly next to it.

Figure 9–77: Photo 4-12 - View west towards Millhall Gardens from Smiddy Brae

Reddoch Road is a remote cul-de sac located to the east of the Flood Cell with the continuation of the Millhall Burn located on the eastern side of the road. Residential properties to the west of the road mostly have a high vegetation boundary and don't have a visual connection with the burn. The boundary of the last property at the south-west end is more open, with views of the road and the vegetation along the burn.

To the north-east side of Reddoch Road there is a travellers' site, which has limited views towards the burn due to the vegetation and boundary fence on the eastern side of the burn.

Residents also experience longer views towards dense woodland to the south at Polmont Woods and more open views northward to the A905 and the petrochemical complex site.

Users of the road have localised views the burn and its vegetation, however it is only likely to be the residents, and their visitors, who actually use this road.

Figure 9–78 : Photo 4-13 - View south down Reddoch Road

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 4, Area 3 varies, with:

- residents, visitors to the Macdonald Inchyra Hotel and Spa and walkers and cyclists on designated public rights of way being **High**;
- road travellers being **Medium**; and
- recreational users and visitors of/to Galaxy Sports Little Kerse playing fields being **Low**.

9.5.3.5 Flood Cell 5

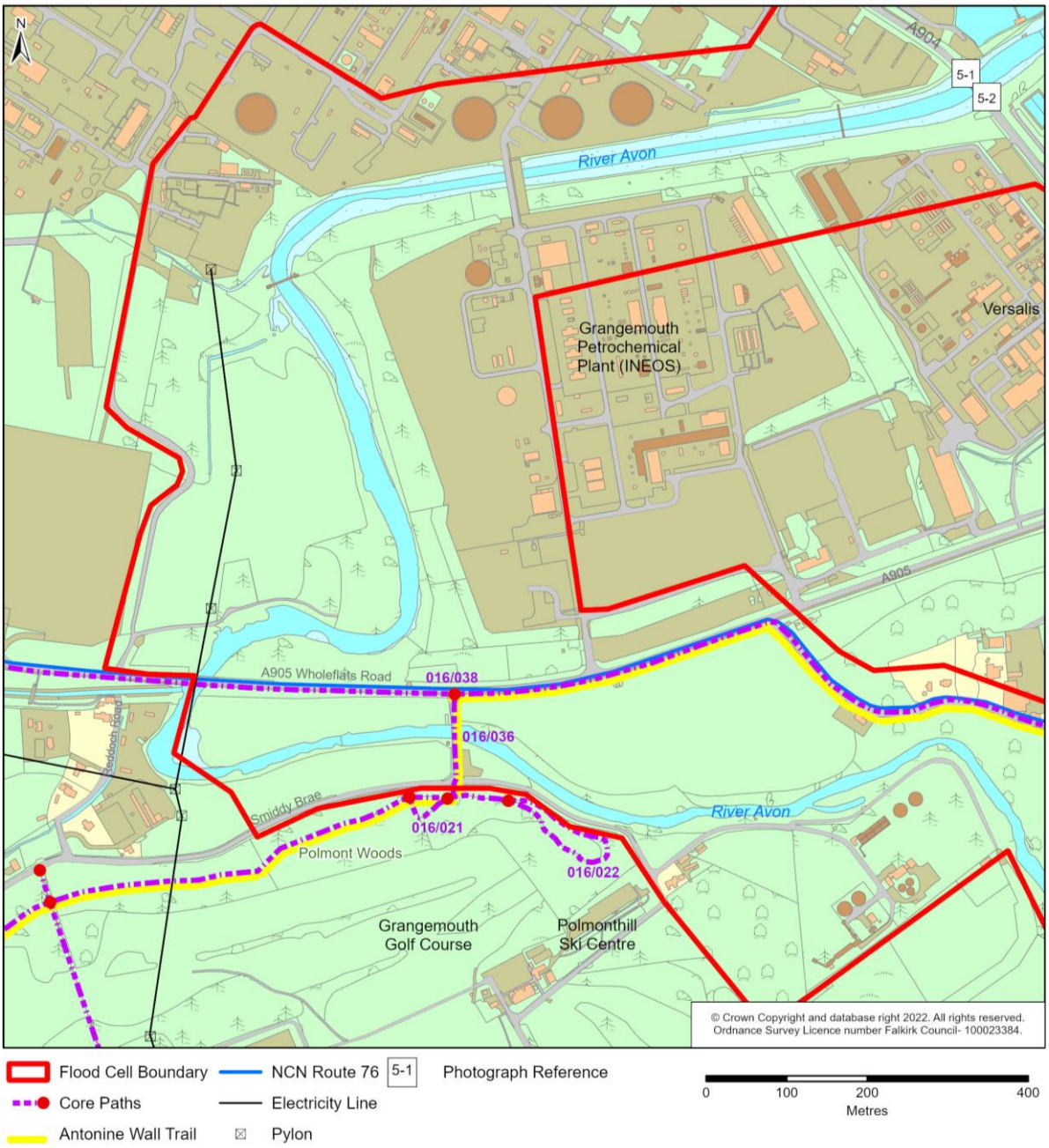

Figure 9–79: Flood Cell 5 Plan

Grangemouth petrochemical plant is located in the north and central parts of Flood Cell 5, with the southern area being characterised by rural and recreational landscapes (Figure 9–79). From within the petrochemical plant, the scale and height of buildings and structures generally restrict views beyond, although gaps in vegetation allow for views from the periphery to the A905 road and NCN76 and to fields and woodland backed by wooded slopes further south.

Views from the A905 are somewhat softened by intervening vegetation along its length and the River Avon (Figure 9–80: Photo 5-1 and Figure 9–81: Photo 5-2).

Figure 9–80: Photo 5-1 – View east where the A904 is bridged, over the River Avon

Figure 9–81: Photo 5-2 - View west where the A904 is bridged, over the River Avon

Dense woodland surrounds Grangemouth Golf Course, Polmonthill Ski Centre and, in part, visibility beyond these recreational sites is limited except from elevated areas including the dry ski slope, where there are views north to the tops of industrial structures including pylons and stacks within the petrochemical complex site. Greater visibility is experienced in winter when trees are not in leaf.

Scattered residential properties are located on either side of the golf course, with those to the east having similar views to those experienced from the golf course and ski centre.

The Antonine Wall Trail and Core Path 016/038 (Inveravon to Wholeflats Roundabout) path are located in the south of Flood Cell 5. In part, these paths run parallel to the A904 and, as the area is quite flat, there are several sections where direct views towards the River Avon can be achieved. The Antonine Wall Trail continues west through a field and past Smiddy Brae, where walkers can experience a sense of enclosure, with Polmont Woods and trees along the river on either side. Pylons and the tops of petrochemical complex buildings and structures are also visible from this section of the trail.

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 5 varies, with:

- residents, and walkers and cyclists on designated public rights of way, including those on the Antonine Wall Trail being **High**;
- road travellers and recreational users of the River Avon being **Medium**; and
- recreational users of Grangemouth Golf Course, Polmonthill Ski Centre and people working at commercial and industrial properties being **Low**.

9.5.3.6 Flood Cell 6

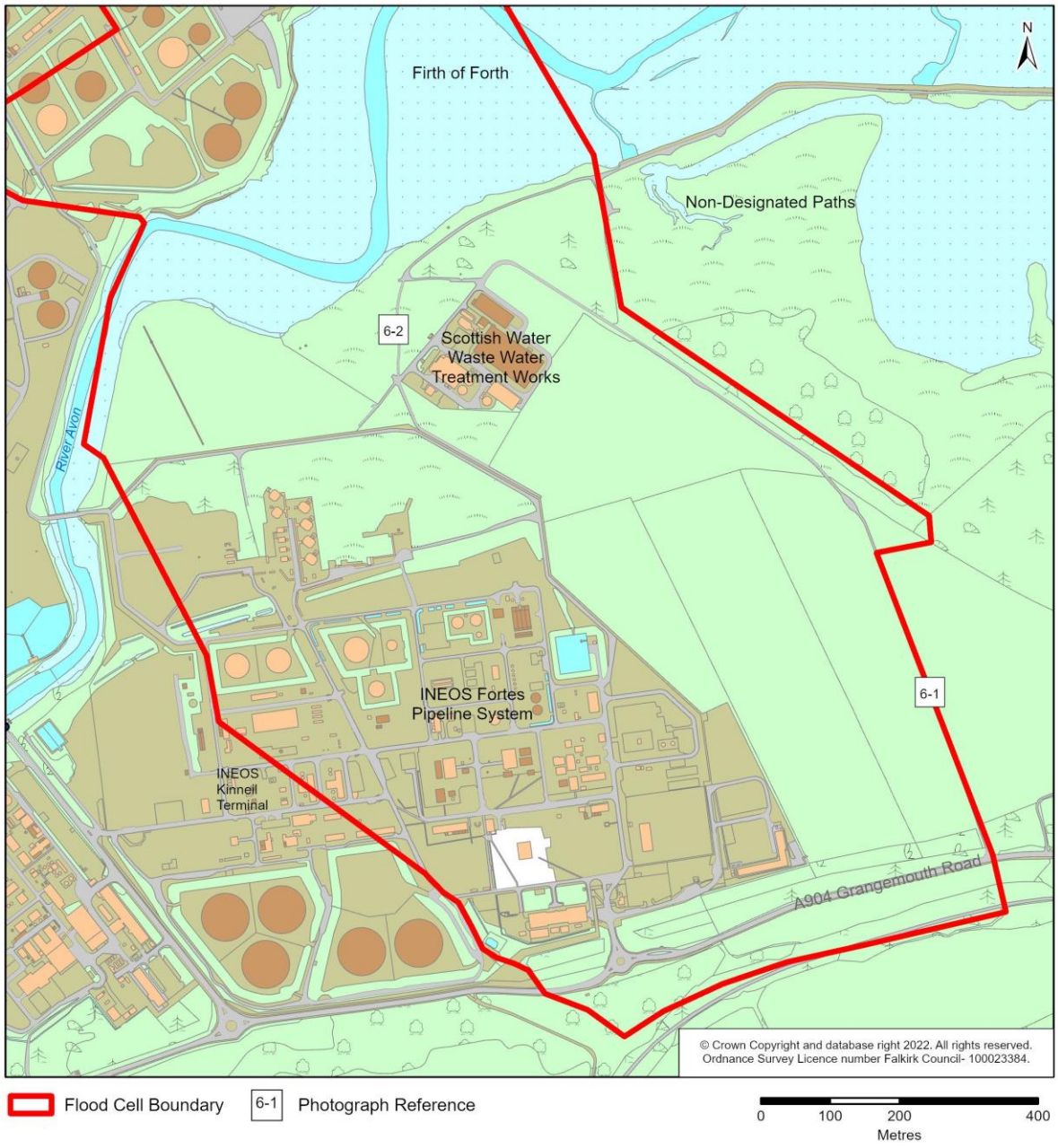

Figure 9–82: Flood Cell 6 Plan

Flood Cell 6 is characterised by the petrochemical plant, open spaces, the waste water treatment plant and the estuarine coast. Figure 9–82 shows the southern area of the Flood Cell beyond industrial spaces. The scale and height of buildings and structures within the petrochemical plant generally restrict views beyond it. To the north and northeast periphery of the site and along the coastal stretches, generally uninterrupted and expansive views across the Firth of Forth and along the coast can be achieved due to the even landform and limited vegetation.

Figure 9–83: Photo 6-1 - View north from the Scottish Water access road to Grangemouth Petrochemical Complex

The A904 road is located to the south of Flood Cell 6 and runs in an east to west direction before turning northwest, where is meets the A905 and enters the petrochemical plant. Intermittent views of the coast and wooded slopes in the distance are experienced from the road where there are gaps in vegetation and when trees are not in leaf, particularly near the waste water treatment plant (Figure 9–83: Photo 6-1 and Figure 9–84: Photo 6-2). Similar and more elevated views are experienced by residents in scattered properties out-with the Flood Cell to the east and south, from where flood defences would not be discernible in views dominated by the industrial landscape.

A bund with a large area of woodland behind it is located directly adjacent to the local road to the waste water treatment works, providing some visual green height to a flat landscape (Figure 9–83: Photo 6-1 – middle left of photo).

Figure 9–84: Photo 6-2 - View east from the Scottish Waste Water Treatment Works

Sensitivity of Visual Receptors:

The sensitivity of visual receptors in Flood Cell 6 varies, with:

- road travellers being **Medium,** and
- people working at the petrochemical complex and the waste water treatment works being **Low**.

The sensitivity of the visual receptors for Flood Cells 1-6, as defined in Table 9-4 are summarised in Table 9-9.

Table 9-9: Summary of the Sensitivity of Visual Receptors

Flood Cell and Area Location	Sensitivity of Visual Receptor
Flood Cell 1 – Area 1	
Residents and walkers on Core Paths within the wildlife site and along the River Carron	High
Road travellers and recreational users of the River Carron and the Falkirk Golf Club	Medium
Recreational users of the playing fields and people working in commercial properties	Low
Flood Cell 1 – Area 2	
Residents, walkers and horse riders on public rights of way along the river	High
Road travellers	Medium
People working at commercial properties	Low

Flood Cell and Area Location	Sensitivity of Visual Receptor
Flood Cell 1 – Area 3	
Residents and walkers on Core Paths	High
Road users and people visiting Dawson Mission	Medium
People working at and visiting the Carronbridge Inn/Soo Hoose Restaurant	Low
Flood Cell 1 – Area 4	
Residents, including those at Carrondale Care Home (Avondale Care) and walkers on Core Paths	High
Road travellers on local roads	Medium
People working at and visiting Carrondale Care Home (Avondale Care) and Carronshore Community Centre	Low
Flood Cell 1 – Area 5	
Residents, and walkers and horse riders on designated rights of way	High
Road users on local roads and people visiting Riverside Stables and parade ground	Medium
People working at commercial properties	Low
Flood Cell 2	
Residents (towards the River Carron), and walkers and cyclists on designated public rights of way	High
Road travellers and recreational users of the River Carron	Medium
People working at commercial and industrial properties	Low
Flood Cell 3	
Residents	High
People working at commercial and industrial properties	Low
Flood Cell 4 – Area 1	
Residents, and walkers and cyclists on designated public rights of way	High
Road travellers, recreational users and visitors to Zetland Park	Medium
Recreational users and visitors to Grangemouth Bowling Club, people working at commercial and industrial properties and visitors to places of worship	Low
Flood Cell 4 – Area 2	
Residents, visitors to the Falkirk Distillery, as well as walkers and cyclists on designated public rights of way	High

Flood Cell and Area Location	Sensitivity of Visual Receptor
Road travellers, and recreational users and visitors of/to Rannoch Park	Medium
People working at and visiting commercial and industrial properties, and hotels and restaurants along the A9 and visitors to Grandsable Cemetery	Low
Flood Cell 4 – Area 3	
Residents, visitors to the Macdonald Inchyra Hotel and Spa and walkers and cyclists on designated public rights of way	High
Road travellers	Medium
Recreational users of Grangemouth Golf Course, Polmonthill Ski Centre and people working at commercial and industrial properties	Low
Flood Cell 5	
Residents, and walkers and cyclists on designated public rights of way, including those on the Antonine Wall Trail	High
Road travellers and recreational users of the River Avon	Medium
Recreational users of Grangemouth Golf Course, Polmonthill Ski Centre and people working at commercial and industrial properties	Low
Flood Cell 6	
Road travellers	Medium
People working at the petrochemical complex and the waste water treatment works	Low

9.6 Future Baseline

9.6.1 Introduction

The future baseline sets out future trends and committed development as if the Scheme was not constructed.

The potential effects of climate change, including increased flooding from sea level rise and heavy rainfall resulting in inundation of water on land is a key factor in why the Scheme is being constructed.

9.6.2 Future Baseline included in LDP2

The following includes developments currently under construction, committed development and potential developments as detailed in LDP2 (Falkirk Council, 2020). These have been divided into respective Flood Cells where developments are either located or nearby and will potentially affect the landscape character and views:

Flood Cell 1:

- Improvements to the River Carron corridor as part of the Green and Blue Network. Potential to promote the river as recreational resource, create the River Carron Trail and improve green open spaces along the river including an outdoor learning site at Carron Dams Local Nature Reserve.
- Opportunities to improve the function and quality of open spaces in Larbert, including those along Chapel Burn from the River Carron and Bellsdyke Road.

Flood Cell 2:

- Expansion of the Grangemouth Investment Zone including land at Glensburgh where there is land allocated to business and industrial use.
- The consented Grangemouth Biomass Electricity Generating Station.
- Upgrade of the A904/A9 at and around the Falkirk Gateway and Stadium.
- Improvements to the Green Network at Bothkennar/Skinflats, north of the mouth of the River Carron, where there are opportunities to realign the coast, create new habitats for birds and a new visitor facility.
- River Carron Corridor Improvements including promoting the river as a recreational resource and potential to create River Carron Trail.
- Potential use of Green Belt to the east of Falkirk Gateway and Stadium to be used for outdoor leisure and recreation, to the complement the Helix.
- Potential to improve, extend and connect habitats and recreational spaces along the River Carron corridor near the Helix.
- Potential small-scale retail and leisure facilities and new housing (up to 30 houses) at Glensburgh.

Flood Cell 3:

- Expansion of the Grangemouth Investment Zone with business and industrial uses.
- The consented Grangemouth Biomass Electricity Generating Station.

Flood Cell 4:

- The consented Grangemouth Biomass Electricity Generating Station.
- Expansion of the Grangemouth Investment Zone, including Wholeflats Business Park, with business and industrial uses.
- Redevelopment of Grangemouth Town Centre.
- Improvements to Inchyra Road and Wholeflats Road including a new footpath on the eastern edge of Inchyra Road, between Wholeflat Road and Kersiebank Avenue.
- Retention of structure planting along the A905/ Wholeflats Road (between the intersection of Inchyra Road and Wholeflats Road to the intersection of the A905 and the A904) which acts as a landscape buffer zone should be retained.
- Falkirk Distillery on Grandsable Road is currently under construction and includes a visitor centre and restaurant. The distillery has been considered in this LVIA.
- Zetland Park masterplan has identified a number of improvements. There is also potential to incorporate other uses as the park can also be a community growing site and outdoor learning area.
- Potential for a new housing on a small site on Bo'ness Road, Grangemouth.

- Potential development of 3G pitches and associated facilities at Little Kerse, Grangemouth, which would part of a network of sports pitch hubs.
- Opportunity to create Roman themed play spaces along the Antonine Wall Trail in association with HES and the Rediscovering the Antonine Wall project.
- Opportunities to improve the function and quality of open spaces in the Braes area, including those along Polmont Burn and Westquarter Burn.

Flood Cell 5:

- Expansion of the Grangemouth Investment Zone with the clearance of a large area of land at Ineos and increasing business and industrial uses.
- Retention of structure planting along the A905/ Wholeflats Road (between the intersection of Inchyra Road and Wholeflats Road to the intersection of the A905 and the A904) which acts as a landscape buffer zone should be retained.
- Opportunity to create Roman themed play spaces along the Antonine Wall Trail in association with HES and the Rediscovering the Antonine Wall project.

Flood Cell 6:

- Expansion of the Grangemouth Investment Zone with the clearance of a large area of land at Ineos and increasing business and industrial uses.
- Landfill restoration at Kinneil Kerse, including the creation and enhancement of bird habitats and potential new visitor facilities for bird watching.
- New footpath along the A904, between Grangemouth and Bo'ness.

The future expansion of industrial, business and housing developments within each Flood Cell where it already exists is not seen to greatly change the character of LLCZs, but it may impact on adjoining character zones and will introduce additional receptors. Improvements and additions to the Green Network, river corridors and open space are positive developments on the landscape and these changes, and the associated receptors are considered in the assessment of the Scheme.

9.6.3 Future Baseline identified as Part of the LVIA

As part of this assessment, a number of serious pathological conditions/diseases affecting trees have been identified in the tree surveys (Appendix C9.1). Chalara Ash Dieback (*Hymenoscyphus fraxineus)* has been identified in Ash trees across the study area, particularly at Rannoch Park and Grangeburn Road, and this has now reached epidemic proportions in the wider area.

Whilst the pathology of this disease is not yet fully defined, it is to be expected that smaller/younger trees will be lost in the near/present timeframe, and that older/larger specimens will die over a longer period of time and will need monitoring. There are no practical remediation measures available. This will impact on the landscape character and views within the study area.

9.7 Landscape/ Townscape Character Impact Assessment

9.7.1 Introduction

This section provides the outcome of the assessment of the significant potential landscape effects during construction and at winter of year 1 with primary (embedded) mitigation included. A detailed assessment of all potential impacts on the landscape character is presented in Appendix B9.7.

Table 9-11 presents effects of **Moderate or greater** significance at the winter of year 1 with primary (embedded) mitigation included. Receptors with a minor or less effect are not considered to be significantly impacted by the Scheme and these are discussed further in Appendix B9.7.

9.7.2 Landscape/ Townscape Character Effects at Construction

The following are anticipated to cause temporary adverse effects of significance on landscape/ townscape receptors:

- construction traffic
- presence and movement of large-scale machinery
- ramps, in-channel working (temporary flood measures such as steel sheet piles will be installed to ensure in-channel working areas are kept dry during works) and temporary culverting of watercourses
- construction of walls, embankments, bridges, coastal revetment and ground raising
- demolition of buildings
- site compounds
- reduced access along the watercourses requiring diversion routes
- removal of existing vegetation.

While Scheme impacts on each character area differ, the effects at construction are generally due to the amount of localised construction disturbance and temporary changes to the landscape (i.e. removal of trees/vegetation and presence of construction site hoarding, plant, bare earth).

Such effects are of more significance to some landscape character types than others, for instance:

- construction works are generally industrial in nature and are therefore more easily absorbed into an area of industrial character; or
- the removal of mature trees in a quality green space (e.g. Zetland Park) will have a more detrimental effect to the area's character.

The significant impacts during construction are assessed as follows:

Table 9-10 Significant landscape/ townscape effects at construction

Landscape/ Townscape Receptor (Designations, Landscape Character and Flood Cells)	Sensitivity of Landscape Receptor	Magnitude of Effect during Construction	Significance of Effect at Construction
Designated Areas – refer to Section 9.4.3			
Antonine Wall WHS	High	Moderate	Major adverse
UNESCO Antonine Wall World Heritage Site Buffer zone	Medium	Moderate	Moderate adverse
Zetland Park	High	Moderate	Major adverse
Grangemouth AOTV	Medium	Major	Major adverse

Landscape/ Townscape Receptor (Designations, Landscape Character and Flood Cells)	Sensitivity of Landscape Receptor	Magnitude of Effect during Construction	Significance of Effect at Construction
Local Landscape Character Zones (LLCZ) – refer to Figure 9–2			
Lower Carron River Valley LLCZ	High	Moderate	Major adverse
Avon River Valley LLCZ	High	Minor	Moderate adverse
Grangemouth Urban LLCZ	High	Minor	Moderate adverse
Grangemouth/ Kinneil Flats Coastal Farmland LLCZ	High	Minor	Moderate adverse
Falkirk/ Grangemouth Urban Fringe LLCZ	Medium	Major	Major adverse
Flood Cells and Flood Cell areas – refer to Section 9.4.6 for figures			
Flood Cell 1 Area 1	Medium	Moderate	Moderate adverse
Flood Cell 1 Area 2	Medium	Major	Major adverse
Flood Cell 1 Area 3	High	Major	Major adverse
Flood Cell 1 Area 4	Medium	Major	Major adverse
Flood Cell 1 Area 5	High	Major	Major adverse
Flood Cell 4 Area 1 (Nth of Zetland Park along the Grange Burn and Zetland Park)	High	Major	Major adverse
Flood Cell 4 Area 1 (Zetland Park)	High	Moderate	Major adverse
Flood Cell 4 Area 2	Medium	Moderate	Moderate adverse
Flood Cell 4 Area 3	High	Moderate	Major adverse
Flood Cell 4 Area 4	Low	Major	Moderate adverse
Flood Cell 5 Area 3	High	Moderate	Major adverse

9.7.3 Landscape/ Townscape Character Effects at Winter of Year 1 (Operation) with Primary Mitigation

The likely effects of the Scheme on landscape receptors that are assessed as having **Moderate or greater** significance during the winter of year 1 with primary mitigation in place are listed in Table 9-11.

Significant adverse effects on landscape/ townscape character with primary mitigation in place at the winter of year 1 would result from:

- loss of riverside vegetation creating a less green and more open landscape quality;
- loss of mature trees degrading the green character of an area;
- loss of areas of woodland reducing the quality and greenness of the area;
- loss of screening vegetation reducing privacy to residents;
- greater visibility of commercial properties due to vegetation loss, resulting in a degradation of the area's character;
- the size of the large flood measures in some locations (both in height and width), creating large new features in the landscape; and
- generic finishes (sheet pile or plain concrete wall) or embankment landscaping (grass only), resulting in the features being out of place in the landscape context.

Table 9-11: Significant landscape/ townscape effects at the winter of year 1 with primary mitigation

Landscape/ Townscape Receptor (Designations, Landscape Character and Flood Cells)	Sensitivity of Landscape Receptor	Magnitude of Effect during Operation – Winter of Year 1 with Primary Mitigation	Significance of Effect at Winter of Year 1
Designated Areas – refer to Section 9.4.3			
Antonine Wall WHS	High	Minor	Moderate adverse
Zetland Park (Non-inventory Designed Landscapes and Sites with Remnant Designed Landscape Features)	High	Moderate	Major adverse
Grangemouth AOTV	Medium	Major	Major adverse
Local Landscape Character Zones (LLCZ) – refer to Figure 9–2			
Zone 1 Lower Carron River Valley	High	Moderate	Major adverse
Zone 2 Avon River Valley	High	Minor	Moderate adverse
Zone 10 Grangemouth Urban LLCZ	Medium	Major	Major adverse
Flood Cells and Flood Cell areas – refer to Section 9.4.6 for figures			

Landscape/ Townscape Receptor (Designations, Landscape Character and Flood Cells)	Sensitivity of Landscape Receptor	Magnitude of Effect during Operation – Winter of Year 1 with Primary Mitigation	Significance of Effect at Winter of Year 1
Flood Cell 1 – Area 1 Stirling Road	Medium	Moderate	Moderate adverse
Flood Cell 1 – Area 2 Bainsford	Medium	Major	Major adverse
Flood Cell 1 – Area 3 Bainsford/Carron	High	Major	Major adverse
Flood Cell 1 - Area 4 East Carron/Chapel Burn	Medium	Major	Major adverse
Flood Cell 1 - Area 5 Carronshore/ Riverside Stables	High	Moderate	Major adverse
Flood Cell 4 - Area 1 Area north of Zetland Park along the Grange Burn	High	Major	Major adverse
Flood Cell 4 - Area 1 Zetland Park	High	Moderate	Major adverse
Flood Cell 4 - Area 2 Rannoch Park	Medium	Moderate	Moderate adverse
Flood Cell 4 - Area 3 Westquarter	High	Major	Major adverse
Flood Cell 5 – Area 3 Avon Valley (south of the A905)	High	Major	Major adverse

During the winter of year 1 with primary mitigation in place there would be **Moderate** adverse landscape/ townscape effects on four landscape receptors and **Major** adverse landscape effects on 12 landscape receptors.

9.8 Visual Impact Assessment

9.8.1 Introduction

This section provides the outcome of the assessment of the significant (**Moderate or greater**) potential visual effects during construction and at winter of year 1 with primary (embedded) mitigation included. A detailed assessment of all potential visual effects (including those of minor or lesser significance and not considered to be significant) is presented in Appendix B9.8.

9.8.2 Visual Effects during Construction

The following are anticipated to have temporary adverse effects on views during construction:

- construction traffic and large-scale machinery;
- ramps, in-channel working (temporary flood measures such as steel sheet piles will be installed to ensure in-channel working areas are kept dry during works) and temporary culverting of watercourses;

- construction of walls, embankments, bridges, coastal revetments and ground raising;
- demolition of any buildings;
- site compounds;
- reduced access along the watercourses requiring diversion routes and thereby temporarily limiting views to the river along sections; and
- removal of existing vegetation, which reduces screening.

In general, the effects at construction are due to the amount of localised visual disturbance resulting from construction activities such as vegetation clearance and the presence of construction plant and features.

Key visual receptors subjected to visual effects of **Moderate or greater** adverse significance during construction mainly consist of residents, users of Core Paths and people using public open spaces close to construction works.

The loss of woodland and mature trees during construction is key to the assessment of visual receptors as these form vistas along paths, roads and key amenity areas (such as Zetland Park), generally soften views to roads and the built landscape; and provide privacy and a green outlook for residential properties.

During construction Moderate adverse visual effects would be experienced at 33 receptor locations and Major adverse visual effects at 74 receptor locations (refer to Appendix B9.8 for details).

9.8.3 Visual Effects at Winter of Year 1 (with Primary Mitigation)

The main significant visual effects with only primary mitigation at the winter of year 1 would result from:

- loss of riverside vegetation creating a less green and more visually stark landscape;
- loss of woodland and mature trees, opening and increasing visibility to the industrial and urban landscapes and the surrounding road network and reducing the existing green outlook;
- loss of screening vegetation reducing privacy to residents;
- greater visibility of commercial properties due to vegetation loss;
- visibility of the large basic flood measures in some locations (both in height and width), which can be seen from a large area and block views;
- lack of replacement vegetation, creating barren views with little greenery; and
- basic concrete wall finishes and embankments resulting in the features being visually intrusive.

The likely effects of the proposed Scheme on visual receptors that are assessed as having **Moderate or greater** significance with primary mitigation in place are listed in Table 9-11 and Table 9-12.

Table 9-12: Significant visual effects at the winter of year 1 with primary mitigation

Visual Receptor	Sensitivity of Visual Receptor	Magnitude of Effect during Operation – Winter of Year 1 with Primary Mitigation	Significance of Effect at Winter of Year 1
Flood Cell areas – refer to Section 9.5.3 for figures			
Flood Cell 1 – Area 1 A9/Stirling Road			
Residents	High	Moderate	Major adverse
Users of Falkirk Golf Course	Medium	Major	Major adverse
People using Core Path 001/038 / River Carron Loop Path	High	Minor	Moderate adverse
People using on Core Path 011/010 / River Carron Loop Path / The Helix Larbert Link	High	Minor	Moderate adverse
Flood Cell 1 – Area 2 Bainsford			
Residents	High	Major	Major adverse
People using on Core Path 011/008 / River Carron Loop Path/ The Helix Larbert Link	High	Minor	Moderate adverse
People using Core Path 001/018 / River Carron Loop Path/ Bainsford Loop / HArTT	High	Moderate	Major adverse
People using Core Path 001/020	High	Moderate	Major adverse
People using Core Path 001/021 / HArTT	High	Minor	Moderate adverse
People using the western part of Core Path 004/017 / River Carron Loop Path/ Bainsford Loop / HArTT	High	Minor	Moderate adverse
Flood Cell 1 - Area 3 Bainsford/Carron			
Residents	High	Major	Major adverse
Users on non-designated footpaths (Carron Road, Stenhouse Road, B902)	Medium	Moderate	Moderate adverse
People working at and visiting the Dawson Mission	Medium	Major	Major adverse
People using Core Paths 004/022 and 004/001	High	Minor	Moderate adverse
People using Core Path 004/003 River Carron Loop Path / Bainsford Loop / HArTT	High	Major	Major adverse
People using Core Paths 004/019 and 004/018	High	Minor	Moderate adverse

Visual Receptor	Sensitivity of Visual Receptor	Magnitude of Effect during Operation – Winter of Year 1 with Primary Mitigation	Significance of Effect at Winter of Year 1
People using proposed Core Path 004/035	High	Minor	Moderate adverse
Flood Cell 1 - Area 4 East Carron/Chapel Burn			
Residents (Carronshore, Carrondale Care Home)	High	Moderate	Major adverse
Users of Core Path 009/001	High	Moderate	Major adverse
Users of Core Path 009/005	High	Minor	Moderate adverse
Flood Cell 1 - Area 5 Carronshore/ Riverside Stables			
Residents	High	Moderate	Major adverse
Road travellers	Medium	Moderate	Moderate adverse
People visiting Riverside Stables and parade ground	Medium	Moderate	Moderate adverse
Users of Core Path 009/009	High	Minor	Moderate adverse
Flood Cell 2			
Users of Core Path 006/008	High	Moderate	Major adverse
Flood Cell 4 - Area 1 Grangemouth			
Residents on the western side of Abbots Road (B9132), between Wallace Street and Talbot Street	High	Major	Major adverse
Residents on Abbots Road (B9132), Park Road and Grangeburn Road (excluding those assessed above)	High	Major	Major adverse
Road travellers	Medium	Moderate	Moderate adverse
Users of the grassed strip/ embankment adjacent to Grange Burn, Grangeburn Road	Medium	Moderate	Moderate adverse
Recreational users and visitors to Zetland Park	High	Major	Major adverse
Users of NCN76 and Core Paths 006/014 and 006/028	High	Major	Major adverse
Users of Core Path 006/003	High	Minor	Moderate adverse
Users of Core Path 006/013	High	Major	Major adverse
Users of Core Path 006/023	High	Moderate	Major adverse
Users of Core Paths 006/022 and 006/026	High	Major	Major adverse

Visual Receptor	Sensitivity of Visual Receptor	Magnitude of Effect during Operation – Winter of Year 1 with Primary Mitigation	Significance of Effect at Winter of Year 1
Flood Cell 4 - Area 2 Rannoch Park and Westquarter			
Residents (by Rannoch Park)	High	Major	Major adverse
Recreational users and visitors to Rannoch Park	Medium	Moderate	Moderate adverse
Residents (Grandsable Cottage)	High	Major	Major adverse
Users of Core Path 006/009	High	Minor	Moderate adverse
Core Paths 006/018 and 006/007	High	Major	Major adverse
Core Paths 006/016 and 006/010	High	Minor	Moderate adverse
Users of Core Path 016/015	High	Moderate	Major adverse
Users of Core Path 015/012	High	Minor	Moderate adverse
Users of HArTT Route on Laurieston A9 By-Pass	High	Minor	Moderate adverse
Users of Antonine Wall Trail	High	Minor	Moderate adverse
Core Paths 006/046 and 006/047	High	Minor	Moderate adverse
Flood Cell 4 - Area 3 Inchyra/Wholeflats			
Residents (A905/ Inchyra Road)	High	Minor	Moderate adverse
Residents (Reddoch Road, Smiddy Brae)	High	Minor	Moderate adverse
Users of NCN76 and Core Path 016/038	High	Minor	Moderate adverse
Users of proposed Core Path 016/039	High	Minor	Moderate adverse
Flood Cell 5			
Users of NCN76, Core Path 016/038 and Antonine Wall Trail	High	Moderate	Major adverse
Users of Core Path 016/036 and Antonine Wall Trail	High	Moderate	Major adverse
Key Viewpoint Locations – refer to Appendix B9.4 and Appendix B9.5			
Key Viewpoint 1 - Flood Cell 1 (Area 1) Footpath on Falkirk Golf Club	Medium	Moderate	Moderate adverse
Key Viewpoint 2 - Flood Cell 1 (Area 2) Footpath onto Mungal Community Woodland, New Carron Village	Medium	Moderate	Moderate adverse
Key Viewpoint 3 - Flood Cell 1 (Area 2) Core Path 001/018, Mungal Community Woodland	High	Moderate	Major adverse

Visual Receptor	Sensitivity of Visual Receptor	Magnitude of Effect during Operation – Winter of Year 1 with Primary Mitigation	Significance of Effect at Winter of Year 1
Key Viewpoint 4 - Flood Cell 1 (Area 2) Residential property, New Carron Village	High	Minor	Moderate adverse
Key Viewpoint 5a Users of the footpath - Flood Cell 1 (Area 3) Stenhouse Road Bridge, Carron	Medium	Moderate	Moderate adverse
Key Viewpoint 5b Road travellers - Flood Cell 1 (Area 3) Stenhouse Road Bridge, Carron	Medium	Moderate	Moderate adverse
Key Viewpoint 6 - Flood Cell 1 (Area 3) Core Path 004/003, the Dawson Mission, Carron	High	Major	Major adverse
Key Viewpoint 7 - Flood Cell 1 (Area 4) Core Path 009/001, adjacent to the Chapel Burn, Carronshore	High	Moderate	Major adverse
Key Viewpoint 8 - Flood Cell 1 (Area 4) Informal path adjacent to the River Carron, Carronshore	Medium	Moderate	Moderate adverse
Key Viewpoint 9a Users of the footpaths - Flood Cell 4 (Area 2) Southern end of Bowhouse Road, adjacent to Rannoch Park	Medium	Major	Major adverse
Key Viewpoint 9b Road travellers - Flood Cell 4 (Area 2) Southern end of Bowhouse Road, adjacent to Rannoch Park	Medium	Moderate	Moderate adverse
Key Viewpoint 10a Users of the footpath - Flood Cell 4 (Area 1) Abbots Road (B9132), adjacent to Zetland Park	Medium	Major	Major adverse
Key Viewpoint 10b Road travellers - Flood Cell 4 (Area 1) Abbots Road (B9132), adjacent to Zetland Park	Medium	Moderate	Moderate adverse
Key Viewpoint 11 - Flood Cell 4 (Area 1) Core Path 006/026 at the northern entrance to Zetland Park	High	Major	Major adverse
Key Viewpoint 12a Users of the Core Paths - Flood Cell 4 (Area 1) Dalratho Bridge, Zetland Park	High	Major	Major adverse
Key Viewpoint 12b Road travellers - Flood Cell 4 (Area 1) Dalratho Bridge, Zetland Park	Medium	Moderate	Moderate adverse

Visual Receptor	Sensitivity of Visual Receptor	Magnitude of Effect during Operation – Winter of Year 1 with Primary Mitigation	Significance of Effect at Winter of Year 1
Key Viewpoint 13a Users of the footpaths - Flood Cell 4 (Area 1) Ronaldshay Crescent, Grangemouth	Medium	Major	Major adverse
Key Viewpoint 13b Road travellers - Flood Cell 4 (Area 1) Ronaldshay Crescent, Grangemouth	Medium	Moderate	Moderate adverse
Key Viewpoint 14a Users of the footpaths - Flood Cell 4 (Area 1) Grangeburn Road, Grangemouth	Medium	Major	Major adverse
Key Viewpoint 14b Road travellers - Flood Cell 4 (Area 1) Grangeburn Road, Grangemouth	Medium	Moderate	Moderate adverse
Key Viewpoint 15a Users of the footpaths - Flood Cell 4 (Area 1) Taylor Court, Grangemouth	Medium	Major	Major adverse
Key Viewpoint 15b Road travellers - Flood Cell 4 (Area 1) Taylor Court, Grangemouth	Medium	Moderate	Moderate adverse

During the winter of year 1 with primary mitigation in place there would be **Moderate** adverse visual effects experienced at 39 visual receptor locations and **Major** adverse visual effects at 35 receptor locations.

9.9 Cumulative Effects

9.9.1 Introduction

An assessment of potential cumulative effects is discussed in Chapter 15: Cumulative Effects.

The assessment considers cumulative effects in combination with impacts identified in other discipline sections of the EIA Report (same project, additive and synergistic effects), as well as other projects which have been granted planning permission or applicable notices.

9.9.2 Same Project

9.9.2.1 Additive Effects

As set out in Chapter 15, the assessment has concluded that there are no anticipated additive cumulative effects on the landscape but there will be additive visual effects combined with noise, air quality, access and vibration on receptors closest to construction works. In addition, residents at Stirling Road, Grandsable Cottage and Reddoch Road (located within Flood Cells 1, 4 and 5) would experience significant residual effects on their visual amenity with the loss of mature vegetation combined with increased peak flood depths.

9.9.2.2 Synergistic Effects

Synergistic effects are considered in Chapter 15, which considers the combined effect of impacts from all environmental disciplines considered in the EIA Report to determine whether there may be an additional effect on receptors than that individually assessed by each discipline.

Construction phase synergistic cumulative effects on human receptors are considered in Chapter 6: Population and Human Health.

Some synergistic effects during the first few years of Scheme operation may be anticipated for LVIA receptors associated with the combination of adverse effects on cultural heritage (setting of historic features) and natural heritage assets (temporary habitat loss and associated species such as birds). Given the scale and duration of the effects, any additive synergistic effect is anticipated to be of minor significance on receptors during operation.

9.9.3 Other Projects

Chapter 15 lists approved developments in Appendix B15; Table B15-1: List of reasonably foreseeable developments. If the existing approved planning consents which are close to the Scheme were to go ahead, it is considered that once built there would be no additional visual and landscape impacts to the existing receptors or to the new developments themselves. This also applies to any proposals which are over 1ha which are further away from the Scheme.

If construction of the proposals close to the Scheme were to happen concurrently with the Scheme, there may be limited visual disruption, due to the movement of construction traffic in and around the same areas. This however is considered unlikely to have more than a negligible cumulative effect.

9.10 Mitigation

9.10.1 Introduction

Mitigation has been divided into three categories:

- Primary/embedded mitigation, which is an intrinsic part of the project design.
- Construction Phase - secondary and tertiary mitigation are commitments which set out the actions the contractor is required to take during the construction phase of the Scheme to avoid or reduce any landscape or visual impacts.
- Operation Phase - secondary mitigation is concerned with the design of the Scheme and how the final scheme sits within the existing landscape character, and the impacts on views within the Scheme extents.

9.10.2 Construction Phase - Secondary and Tertiary Mitigation

A number of secondary mitigation measures require to be developed at detail design stage and implemented during the enabling works period or by the contractor during construction to help reduce the impact of the construction works. These will comprise as a minimum:

- **Mitigation Item LV01** Refine the extent of the required working areas and review the locations of construction compounds at detailed design to avoid features of biodiversity, landscape and amenity interest.

- **Mitigation Item LV02** Restore habitats lost or damaged to facilitate construction to the same or better condition as the original habitat.
- **Mitigation Item LV03** Use sensitive hoarding to reduce the visual impact of the construction works.
- **Mitigation Item LV04** Provide advanced planting of offset vegetation, including the establishment of alternative amenity sites and planting of trees in open parkland to offset amenity greenspace and tree loss.
- **Mitigation Item LV05** Provide opportunities for local communities to be consulted to help minimise disruption at key locations or during key events.
- **Mitigation Item LV06** Appoint an Environmental Clerk of Works to ensure that all the contractors robustly implement all committed mitigation at the appropriate time and to the appropriate specification.

Additionally, tertiary mitigation to meet standards or legislative requirements and best working practices relating to landscape mitigation will comprise as a minimum:

- **Mitigation Item LV07** BS 5837:2012 - Trees in relation to design, demolition and construction: To ensure the appointed (sub-) contractor takes full care to avoid impacts on trees to be retained. Any tree felling and vegetation clearance to be carried out by experienced contractors and in accordance with the guidance.
- **Mitigation Item LV08** BS 3882:2015 - Specification for topsoil: Any new planting to be installed in appropriate soil (import as required).
- **Mitigation Item LV09** BS 8601:2013 - Specification for subsoil and requirements for use: To ensure all soils are lifted, transported, stored and spread carefully to avoid damage during handling.
- **Mitigation Item LV10** BS 4428:1969 - Code of practice for general landscape operations (excluding hard surfaces): To ensure current appropriate techniques, equipment and materials for general landscape operations are adopted.
- **Mitigation Item LV11** Construction Design and Management (CDM) Regulations, 2015 - Site accesses, compounds and working areas must be kept clean and tidy to avoid any visual disruption and temporary lighting controlled to avoid light spill into adjacent landscape and visual receptors.
- **Mitigation Item LV12** CDM Regulations, 2015 - Provision of diversion routes which would be required for all cycle/footpath/road closures.
- **Mitigation Item LV13** Review of the LVIA baseline at the pre-construction stage and an assessment made of how any changes to the local environment, which have occurred since this LVIA was undertaken, will affect the outcome of this LVIA, to ensure no greater significance of effects in relation to the LVIA.

9.10.3 Operational Phase - Secondary Mitigation

Secondary mitigation measures to be developed further as part of the design process to avoid or reduce landscape/ townscape and visual impacts are set out below.

9.10.3.1 Secondary Mitigation

- **Mitigation Item LV14**: Replacement planting on riverbanks which have been cleared as part of the Scheme works where possible, which will also form a screening element to reduce the long-

term effects of the walls/embankments. The riverbanks will be vegetated by a mixture of natural regeneration of riverbank vegetation and careful planting of native species of wetland, grassland, low shrubs and scrub cover to support the biodiversity of the designated nature conservation sites. This will be established rapidly to maintain a wildlife corridor and minimise visual impact in the short term.

- **Mitigation Item LV15** Replacements of trees (project policy, as agreed with the Local Authority):
  - 1 for 1 basis in sensitive areas using large replacement trees.
  - 3 for 1 basis, either individual trees or measured in hectares for woodland, of replacement trees/woodland trees either within the areas affected or in areas nearby. Offsite areas to address cumulative impacts on biodiversity, landscape, views, amenity, and greenspace provision.
- **Mitigation Item LV16** Review of the side from which the walls will be constructed (i.e. from the river or the land) to reduce the effect on existing vegetation where possible, although the final decision on this may lie with the contractor (unless there is a particularly sensitive area which needs protecting).
- **Mitigation Item LV17** Addition of coir matting along the riverbanks, instead of a basic earth finish, as part of bank erosion protection and planting.
- **Mitigation Item LV18** Ensuring a softening of the river's edge in certain areas with additional planting, or wetland habitat creation to improve the riverside's visual appearance, improved habitat connectivity, and to support recreation and education benefits (subject to further design and consultation during detailed design stage).
- **Mitigation Item LV19** In order to ensure a degree of vegetative maturity at the earliest opportunity replacement trees will include a percentage of larger tree stock to augment smaller whip and feathered tree planting.
- **Mitigation Item LV20** For embankment slopes, the gradient to be amended to be as shallow and varied as possible using the land available, thereby reducing the landscape and visual impact of it within the space (this will be subject to further design and consultation during detailed design stage).
- **Mitigation Item LV21** Identification of appropriate wall materials and bridge finishes, as agreed with the Local Authority (and HES where appropriate), to integrate the walls and bridges into the local landscape and reduce the visual effect of the scheme, as well as protect the setting and qualities of designated landscapes – refer to Appendix B9.9 for a list of proposed wall and bridge finishes.
- **Mitigation Item LV22** It is important that the finish of the walls is appropriate to its location and context. It is advised that a limited palette of materials and cope details be agreed as a design guide to ensure this is achieved – refer to Appendix B9.9 for a list of proposed wall finishes.
- **Mitigation Item LV23** Provision of higher boundary treatments in locations where residents require privacy and where the proposed flood wall boundaries are lower than 1.8m high (standard privacy fence height). This would likely be a fence next to the flood wall, to be agreed with Falkirk Council and affected residents.
- **Mitigation Item LV24** Using art or artistic elements to help integrate the Scheme into the townscape/landscape to be considered and agreed with FC.
- **Mitigation Item LV25** Widen pavements, where possible to reduce the feeling of enclosure.

Outline Landscape Ecology & Habitat Management Plan (LEHMP) (Mitigation Item LV26)

The outline LEHMP (Appendix B9.10) details the overall soft landscaping requirements for the Scheme as well as laying out the associated maintenance and management operations.

The aim of the LEHMP is to mitigate/offset potentially significant (cumulative) adverse effects on amenity, trees, open/greenspace provision, recreation opportunities, views and landscape, woodland/scrub habitat, biodiversity, channel morphology, water quality, surface water flooding and climate change and includes any relevant secondary mitigation, as noted in this chapter.

The final LEHMP will cover a 10-year maintenance period following implementation. This will be prepared alongside the general arrangement drawings and associated soft landscape details and specification, as part of detail design. These will form the client's documentation on future maintenance of the Scheme.

Detailed Design Approach (Mitigation Item LV27)

To make sure there is continuity throughout the Scheme and to help reduce potential adverse landscape and visual effects, specific designed elements need to have connectivity and structure along the length of the Scheme. The key to the good design of these elements is appropriateness and robustness. The elements should be in harmony with their environment yet provide the service that they are designed for.

The following designed elements will require to be considered at detailed design, as follows:

1) Flood Walls, Gates and Bridges - Types and Finishes: Key information on the finishes and types of flood protection walls and bridge finishes to be fully designed so that their appearance, finish and detailing is appropriate to the character of the adjacent landscape – refer to Appendix B9.9 for a list of proposed wall finishes.
2) Embankments: slope gradients, seed types/vegetation, constraints on planting for operation/maintenance activities.
3) Footpaths and Hard Landscape: High quality yet robust and durable surface finishes are important to respond to or create the appropriate setting for the rivers and other watercourses. The paths will need to accord with active travel/Core Path expansion aspirations to avoid abortive design/construction work. Co-ordination with FC will be key to achieving this.
4) Soft Landscape: New planting will be important for the integration of the Scheme into the adjoining landscape and will help to re-establish soft landscaped areas which have been affected by the construction of the Scheme. Replacement planting will comprise native species of local provenance where possible.

9.10.4 LVIA Effects of Mitigation Measures proposed by Other Disciplines

Mitigation measures noted in other environmental chapters that could have landscape/ townscape and visual effects include (but are not limited to) the following:

- removal of vegetation along the Flood Relief Channel, which opens up views, which had been intended to be used as a screen (Chapter 10 Water Environment);
- removal of vegetation throughout the Scheme (not related directly to the defences), which would in turn increase the amount of trees/vegetation needed to be replaced as part of the mitigation strategy (Chapter 10 Water Environment);
- noise barriers, which create an adverse effect on views (Chapter 8 Noise and Vibration); and

- diversion routes for vehicles and pedestrians, which may have an adverse effect on views or landscape character and disrupt active travel networks (Chapter 6 Population and Human Health/Chapter 14 Traffic and Transport).

The proposed mitigation measures in other chapters are unlikely to change the significance of residual effects as assessed in this chapter.

9.11 Residual Effects

9.11.1 Introduction

This section provides an assessment of the residual effects of the Scheme on landscape/ townscape and visual receptors, assuming that all proposed mitigation measures are effectively implemented as part of planning conditions. For the purposes of the assessment, residual effects of Moderate significance and above are considered to be significant.

9.11.2 Construction phase

With secondary mitigation implemented during the enabling works period or by the contractor during construction, along with tertiary mitigation (completed to meet standards or legislative requirements and best working practices relating to landscape), it is envisaged that there will be a general reduction in the significance of effects during construction.

However due to the amount of localised disturbance during construction (i.e. loss of trees/vegetation and addition of construction site hoarding, plant, bare earth etc) and the potential temporary changes to the landscape and views within the area, the overall level of residual significance of effects during construction will not change from that identified in Sections 9.7.2 and 9.8.2.

9.11.3 Operational Phase

9.11.3.1 Introduction

Embedded (primary) mitigation is considered within the landscape/ townscape and visual assessments in Sections 9.7 and 9.7. Secondary mitigation measures as identified in Section 9.10.3 will help to reduce the significance of effects and are considered below.

9.11.3.2 Residual Landscape/ Townscape Character Effects at Winter of Year 1 and after 15 Years with Mitigation

Effects on landscape/ townscape receptors of **Moderate or greater** significance with the implementation of secondary and tertiary mitigation are identified in Table 9-13.

Table 9-13: Significant landscape/ townscape effects with secondary mitigation (residual effects)

Landscape/ Townscape Receptor (Character Area)	Sensitivity of Landscape Receptor	Magnitude of Effect during Operation – Winter of Year 1	Significance of Effect at Winter of Year 1	Magnitude of Effect during Operation – Summer of Year 15	Significance of Effect at Summer of Year 15
Designated Areas – refer to Section 9.4.3					
Antonine Wall WHS	High	Minor	Moderate adverse	Negligible	Negligible
Zetland Park Designation	High	Minor	Moderate adverse	Minor	Moderate adverse

Landscape/ Townscape Receptor (Character Area)	Sensitivity of Landscape Receptor	Magnitude of Effect during Operation – Winter of Year 1	Significance of Effect at Winter of Year 1	Magnitude of Effect during Operation – Summer of Year 15	Significance of Effect at Summer of Year 15
Grangemouth AOTV	Medium	Moderate	Moderate adverse	Minor	Minor adverse
Local Landscape Character Zones (LLCZ) – refer to Figure 9–2					
Zone 1 Lower Carron River Valley	High	Moderate	Major adverse	Minor	Moderate adverse
Zone 2 Avon River Valley	High	Minor	Moderate adverse	Negligible	Negligible
Zone 10 Grangemouth Urban LLCZ	Medium	Moderate	Moderate adverse	Minor	Minor adverse
Flood Cell areas – refer to Section 9.4.6 for figures					
Flood Cell 1 – Area 2 Bainsford	Medium	Moderate	Moderate adverse	Minor	Minor adverse
Flood Cell 1 – Area 3 Bainsford/Carron	High	Moderate	Major adverse	Minor	Moderate adverse
Flood Cell 1 - Area 4 East Carron/Chapel Burn	Medium	Moderate	Moderate adverse	Minor	Minor adverse
Flood Cell 1 - Area 5 Carronshore/ Riverside Stables Area	High	Minor	Moderate adverse	Negligible	Negligible
Flood Cell 4 - Area 1 Area north of Zetland Park along the Grange Burn	High	Moderate	Major adverse	Negligible	Negligible
Flood Cell 4 - Area 1 Zetland Park	High	Minor	Moderate adverse	Minor	Moderate adverse
Flood Cell 4 - Area 3 Westquarter	High	Moderate	Major adverse	Negligible	Negligible
Flood Cell 5 – Area 3 Avon Valley	High	Moderate	Moderate adverse	Negligible	Negligible

The residual significant landscape/ townscape character effects with secondary mitigation in place at the winter of year 1 would result from:

- loss of riverside vegetation creating a less green/bare and more open landscape character, with replacement vegetation unlikely to be established at this stage;

- loss of areas of woodland, with replacement vegetation unlikely to be established at this stage, thereby reducing the greenness of the area;
- loss of screening vegetation, with replacement vegetation unlikely to be established at this stage, reducing privacy to residents;
- greater visibility of commercial properties due to vegetation loss, degrading the character of the area, with replacement vegetation unlikely to be established at this stage; and
- substantial flood measures in some locations (both in height and width), creating large new features in the landscape, although some of these can be partially mitigated with ground modelling as noted in the assessment.

The introduction of secondary mitigation would reduce the number of locations with significant effects in winter of year 1 (from 16 with only primary mitigation in place) to 14. In winter of year 1 the number of receptors affected by Major effects is reduced (from 12 with primary mitigation in place - Table 9-11) to four with secondary mitigation in place, with effects at three locations reduced to minor or lesser significance.

Over the next few years, post construction, the planting will grow, helping to screen the defences (where applicable) and restore and enhance the local environment. This will be noticeable after just a few years.

After 15-years the Scheme landscaping measures will have settled into the surrounding landscape, resulting in a reduction in significance of effects across many areas from that assessed after one year. Planting will have substantially developed, and existing tree growth will help to embed the Scheme into the area. The landscape character of many Scheme areas will change compared to the existing baseline, but the overall changes may not necessarily be adverse, with some being neutral and accepted as a changed landscape.

By summer of Year 15 the significance of effects would have reduced such that significant Moderate effects would be confined to four locations and there would be no residual Major effects.

9.11.3.3 Residual Visual Effects at Winter of Year 1 and after 15 Years with Mitigation

Visual effects of **Moderate or greater** significance with the implementation of secondary mitigation are identified in Table 9-14.

Table 9-14: Significant visual effects with secondary mitigation (residual effects)

Visual Receptor	Sensitivity of the Receptor	Magnitude of Effect during Operation – Winter of Year 1	Significance of Effect at Winter of Year 1	Magnitude of Effect during Operation – Summer of Year 15	Significance of Effect at Summer of Year 15
Flood Cells and Flood Cell areas – refer to Section 9.5.2 for figures					
Flood Cell 1 – Area 1 A9/Stirling Road					
Residents	High	Moderate	Major adverse	Minor	Moderate adverse
People using Core Path 001/038/ River Carron Loop Path	High	Minor	Moderate adverse	Negligible	Negligible

Visual Receptor	Sensitivity of the Receptor	Magnitude of Effect during Operation – Winter of Year 1	Significance of Effect at Winter of Year 1	Magnitude of Effect during Operation – Summer of Year 15	Significance of Effect at Summer of Year 15
People using on Core Path 011/010 / River Carron Loop Path / The Helix Larbert Link	High	Minor	Moderate adverse	Negligible	Negligible
Flood Cell 1 – Area 2 Bainsford					
Residents	High	Moderate	Major adverse	Minor	Moderate adverse
People using Core Path 011/008	High	Minor	Moderate adverse	Negligible	Negligible
People using Core Path 001/018 / River Carron Loop Path / Bainsford Loop / HArTT	High	Moderate	Major adverse	Minor	Moderate adverse
People using Core Path 001/020	High	Moderate	Major adverse	Minor	Moderate adverse
People using Core Path 001/021 / HArTT	High	Minor	Moderate adverse	Negligible	Negligible
People using the western part of Core Path 004/017 / River Carron Loop Path / Bainsford Loop / HArTT	High	Minor	Moderate adverse	Negligible	Negligible
Flood Cell 1 - Area 3 Bainsford/Carron					
Residents	High	Moderate	Major adverse	Minor	Moderate adverse
Users of non-designated footpaths (Carron Road, Stenhouse Road, B902	Medium	Moderate	Moderate adverse	Negligible	Negligible
People working at and visiting the Dawson Mission	Medium	Moderate	Moderate adverse	Minor	Minor adverse
People using Core Paths 004/022 004/1191	High	Minor	Moderate adverse	Negligible	Negligible
People using Core Path 004/003 / River Carron Loop Path / Bainsford Loop / HArTT	High	Major	Major adverse	Moderate	Major adverse
People using Core Paths 004/019 and 004/018	High	Minor	Moderate adverse	Negligible	None
People using proposed Core Path 004/035	High	Minor	Moderate adverse	Negligible	None
Flood Cell 1 - Area 4 East Carron/Chapel Burn					
Residents (Carronshore, Carrondale Care Home)	High	Moderate	Major adverse	Negligible	Negligible

Visual Receptor	Sensitivity of the Receptor	Magnitude of Effect during Operation – Winter of Year 1	Significance of Effect at Winter of Year 1	Magnitude of Effect during Operation – Summer of Year 15	Significance of Effect at Summer of Year 15
Users of Core Path 009/001	High	Moderate	Major adverse	Minor	Moderate adverse
Users of Core Path 009/005	High	Minor	Moderate adverse	Negligible	Negligible
Flood Cell 1 - Area 5 Carronshore/ Riverside Stables					
Residents	High	Moderate	Major adverse	Minor	Moderate adverse
Users of Core Path 009/009	High	Minor	Moderate adverse	Negligible	Negligible
Flood Cell 2					
Users of Core Path 006/008	High	Minor	Moderate adverse	Negligible	Negligible
Flood Cell 4 - Area 1 Grangemouth					
Residents on the western side of Abbots Road (B9132), between Wallace Street and Talbot Street	High	Moderate	Major adverse	Minor	Moderate adverse
Residents on Abbots Road (B9132), Park Road and Grangeburn Road (excluding those assessed above)	High	Moderate	Major adverse	Minor	Moderate adverse
Recreational users and visitors to Zetland Park	High	Moderate	Major adverse	Minor	Moderate adverse
Users of NCN76 and Core Paths 006/014 and 006/028	High	Moderate	Major adverse	Minor	Moderate adverse
Users of Core Path 006/003	High	Minor	Moderate adverse	Negligible	Negligible
Users of Core Path 006/013	High	Moderate	Major adverse	Minor	Moderate adverse
Users of Core Path 006/023	High	Minor	Moderate adverse	Negligible	Negligible
Users of Core Paths 006/022 and 006/026	High	Moderate	Major adverse	Minor	Moderate adverse
Flood Cell 4 - Area 2 Rannoch Park and Westquarter					
Residents (by Rannoch Park)	High	Moderate	Major adverse	Minor	Moderate adverse
Residents (Grandsable Cottage)	High	Moderate	Major adverse	Negligible	Negligible
Core Paths 006/018 and 006/007	High	Moderate	Major adverse	Negligible	Negligible

Visual Receptor	Sensitivity of the Receptor	Magnitude of Effect during Operation – Winter of Year 1	Significance of Effect at Winter of Year 1	Magnitude of Effect during Operation – Summer of Year 15	Significance of Effect at Summer of Year 15
Users of Core Path 006/016 and 006/010	High	Minor	Moderate adverse	Negligible	Negligible
Users of Core Path 016/015	High	Minor	Moderate adverse	Negligible	Negligible
Users of Core Path 015/012	High	Minor	Moderate adverse	Negligible	Negligible
Users of HArTT Route on Laurieston A9 By-Pass	High	Minor	Moderate adverse	Negligible	Negligible
Users of Antonine Wall Trail	High	Minor	Moderate adverse	Negligible	Negligible
Users of proposed Core Paths 006/046 and 006/047	High	Minor	Moderate adverse	Negligible	Negligible
Flood Cell 4 - Area 3 Inchyra/Wholeflats					
Residents (A905/ Inchyra Road)	High	Minor	Moderate adverse	Negligible	Negligible
Residents (Reddoch Road, Smiddy Brae)	High	Minor	Moderate adverse	Negligible	Negligible
Users of NCN76 and Core Path 016/011	High	Minor	Moderate adverse	Negligible	Negligible
Flood Cell 5					
Users of NCN76, Core Path 016/038 and Antonine Wall Trail	High	Minor	Moderate adverse	Negligible	Negligible
Users of Core Path 016/036, 016/022 and Antonine Wall Trail	High	Minor	Moderate adverse	Negligible	Negligible
Key Viewpoint Locations – refer to Appendix B9.4 and Appendix B9.5					
Key Viewpoint 2 - Flood Cell 1 (Area 2) Footpath onto Mungal Community Woodland, New Carron Village	Medium	Moderate	Moderate adverse	Minor	Minor adverse
Key Viewpoint 3 - Flood Cell 1 (Area 2) Core Path 001/018, Mungal Community Woodland	High	Moderate	Major adverse	Minor	Moderate adverse
Key Viewpoint 4 - Flood Cell 1 (Area 2) Residential property, New Carron Village	High	Minor	Moderate adverse	Negligible	Negligible

Visual Receptor	Sensitivity of the Receptor	Magnitude of Effect during Operation – Winter of Year 1	Significance of Effect at Winter of Year 1	Magnitude of Effect during Operation – Summer of Year 15	Significance of Effect at Summer of Year 15
Key Viewpoint 6 - Flood Cell 1 (Area 3) Core Path 004/003, the Dawson Mission, Carron	High	Moderate	Major adverse	Minor	Moderate adverse
Key Viewpoint 7 - Flood Cell 1 (Area 4) Core Path 009/001, adjacent to the Chapel Burn, Carronshore	High	Moderate	Major adverse	Minor	Moderate adverse
Key Viewpoint 8 - Flood Cell 1 (Area 4) Informal path adjacent to the River Carron, Carronshore	Medium	Moderate	Moderate adverse	Negligible	Negligible
Key Viewpoint 9a Users of footpath - Flood Cell 4 (Area 2) Southern end of Bowhouse Road, adjacent to Rannoch Park	Medium	Moderate	Moderate adverse	Minor	Minor adverse
Key Viewpoint 10a Users of footpath - Flood Cell 4 (Area 1) Abbots Road (B9132), adjacent to Zetland Park	Medium	Moderate	Moderate adverse	Minor	Minor adverse
Key Viewpoint 11 Users of the Core Path and recreational users of the park - Flood Cell 4 (Area 1) Core Path 006/026 at the northern entrance to Zetland Park	High	Moderate	Major adverse	Minor	Moderate adverse
Key Viewpoint 12a Users of the Core Path Residents - Flood Cell 4 (Area 1) Dalratho Bridge, Zetland Park	High	Moderate	Major adverse	Minor	Moderate adverse
Key Viewpoint 12b Road travellers - Flood Cell 4 (Area 1) Dalratho Bridge, Zetland Park	Medium	Moderate	Moderate adverse	Minor	Minor adverse
Key Viewpoint 13a Users of footpath - Flood Cell 4 (Area 1) Ronaldshay Crescent, Grangemouth	Medium	Moderate	Moderate adverse	Minor	Minor adverse
Key Viewpoint 14a Users of footpath - Flood Cell 4 (Area 1) Grangeburn Road, Grangemouth	Medium	Moderate	Moderate adverse	Minor	Minor adverse

Visual Receptor	Sensitivity of the Receptor	Magnitude of Effect during Operation – Winter of Year 1	Significance of Effect at Winter of Year 1	Magnitude of Effect during Operation – Summer of Year 15	Significance of Effect at Summer of Year 15
Key Viewpoint 15a Users of footpath - Flood Cell 4 (Area 1) Taylor Court, Grangemouth	Medium	Moderate	Moderate adverse	Minor	Minor adverse

The residual significant visual effects at the winter of year 1 with secondary and tertiary mitigation in place would result from:

- loss of riverside vegetation creating a visually stark landscape;
- loss of woodland and mature trees opening and increasing visibility to the industrial and urban landscapes and the surrounding road network and reducing the existing green outlook;
- loss of screening vegetation reducing privacy to residents; and
- visibility of the large flood measures in some locations (both in height and width).

At winter of year 1 the replacement vegetation would not have grown significantly and the landscape will appear bare; replacement large trees would have some effect on the quality of the space (refer to Appendix B9.8 for details). Moderate adverse effects would be experienced at 35 locations (compared to 39 with only primary mitigation in place – see Table 9-12) and Major effects at 23 locations (compared to 35 with only primary mitigation in place).

Over the years following construction, the planting would grow, helping to screen the defences (where applicable) and restore and enhance the local environment, with benefits occurring after just a few years.

During the summer of year 15, it is assessed that **Moderate** adverse visual effects would be experienced at 19 receptor locations and **Major** adverse visual effects at one location. The Scheme would have generally become integrated into the surrounding landscape as shrub planting would have matured, new trees would have developed substantially and existing tree growth would have helped to embed it into the landscape, resulting in a reduction of the significance of adverse effects.

9.11.4 Summary of Landscape/ Townscape and Visual Impacts and Significant Effects

A full summary of the landscape/ townscape and visual impacts and residual assessment of significant effects is provided in Table 9-15.

Table 9-15: Summary of the landscape/ townscape and visual impacts and significant residual effects

Receptor	Impacts	Significance	Mitigation	Significant (Moderate or Greater) Residual Effects
Construction				
Landscape Receptors	• Construction traffic and large-scale machinery • Ramps, in-channel working (temporary flood measures such as steel sheet piles will be installed to ensure in-channel working areas are kept dry during works) and temporary culverting of watercourses • Construction of walls, embankments, bridges, coastal revetment and ground raising • Demolition of buildings • Locations of potential site compounds • Reduced access along the watercourses requiring diversion routes • Removal of existing vegetation	**Construction** <u>Moderate adverse:</u> 8 receptor locations <u>Major adverse:</u> 12 receptor locations	**All Mitigation** • Refine the extent of the required working area and review the locations of construction compounds at detailed design to avoid features of biodiversity, landscape and amenity interest • Sensitive hoarding to reduce the visual impact of the construction works • Advanced planting of offset vegetation ahead of construction works, which may include establishing / improving alternative amenity sites ahead of construction to offset temporary amenity greenspace loss • Providing opportunities for local communities to be involved in the process and how to avoid further disruption, such as community workshops with community groups e.g. Friends of Zetland Park • The appointment of an Environmental Clerk of Works to ensure that all the consultants robustly implement all committed mitigation at the appropriate time and to the appropriate specification • Standard working practices as indicated in mitigation chapter	**Construction** With secondary and tertiary construction mitigation as developed as part of detailed design and during the construction process, the significance of residual effects may reduce
Visual Receptors	• Views of construction traffic and large-scale machinery	<u>Moderate adverse:</u>	• Refine the extent of the required working area and review the locations of	With secondary and tertiary construction mitigation as

Receptor	Impacts	Significance	Mitigation	Significant (Moderate or Greater) Residual Effects
	• Views of ramps, in-channel working (temporary flood measures such as steel sheet piles will be installed to ensure in-channel working areas are kept dry during works) and temporary culverting of watercourses • Views towards the construction of walls, embankments, bridges, coastal revetments and ground raising • View of the demolition of any buildings • View of potential site compounds • Reduced access along the watercourses requiring diversion routes and thereby temporarily limiting views to the river along sections • Removal of existing vegetation, which opens up public and private	33 receptor locations <u>Major adverse:</u> 74 receptor locations	construction compounds at detailed design to avoid features of biodiversity, landscape and amenity interest • Sensitive Hoarding to reduce the visual impact of the construction works • Advanced planting of offset vegetation ahead of construction works, which may include establishing / improving alternative amenity sites ahead of construction to offset temporary amenity greenspace loss • Providing opportunities for local communities to be involved in the process and how to avoid further disruption, such as community workshops with community groups e.g. Friends of Zetland Park • The appointment of an Environmental Clerk of Works to ensure that all the consultants robustly implement all committed mitigation at the appropriate time and to the appropriate specification • Standard working practices as indicated in mitigation chapter	developed as part of detailed design and during the construction process, the significance of residual effects may reduce.
Operation				
Landscape Receptors	• Loss of riverside vegetation creating a less green and more open landscape quality	**Winter Year 1- with primary mitigation**	**Secondary Mitigation**	**Winter Year 1 - with secondary mitigation**

Receptor	Impacts	Significance	Mitigation	Significant (Moderate or Greater) Residual Effects
	• Loss of mature trees potentially changing the character of an area • Loss of areas of woodland reducing the quality and greenness of the area • Loss of screening vegetation reducing privacy to residents • Greater visibility of commercial properties due to vegetation loss, degrading the character of the area • The size of the large flood measures in some locations (both in height and width), creating large new features in the landscape • Lack of replacement vegetation, resulting the landscape character not being restored • Basic concrete wall finishes and embankments resulting the features being out of place in the landscape context	Moderate adverse: Antonine Wall WHS, LLCZ 2 - Avon River Valley, Flood Cell 1 – Area 1 Stirling Road, Flood Cell 4 - Area 2 Rannoch Park, Flood Cell 5 – Area 3 Avon Valley (south of the A905) Major adverse: Grangemouth AOTV, Zetland Park Designation, LLCZ 1 - Lower Carron River Valley, LLCZ 10 - Grangemouth Urban, Flood Cell 1 – Area 2 Bainsford, Flood Cell 1 – Area 3 Bainsford/ Carron, Flood Cell 1 - Area 4 East Carron/ Chapel Burn, Cell 1 – Area 5 Carronshore/Riverside Stables, Flood Cell 4 - Area 1 Area north of Zetland Park along the Grange Burn, Flood Cell 4 - Area 1 Zetland Park, Flood Cell 4 - Area 3 Westquarter	Secondary mitigation, measures that require further activity and are to be incorporated into the proposed Scheme: • Replacement planting on riverbanks, which will also form screening to reduce the long-term effects of the walls/embankments. Riverbanks will be vegetated by a mixture of natural regeneration of riverbank vegetation and careful planting of native species of wetland, grassland, low shrubs and scrub cover to support the biodiversity of the designated nature conservation sites. This will be established rapidly to maintain a wildlife corridor and minimise short-term visual impacts • Replacements of trees (project policy, as agreed with the local authority): - 1 for 1 basis in sensitive areas using large replacement trees - 3 for 1 basis, measured as individual trees or in hectares, of replacement trees and/or woodland either within the areas affected or in areas nearby the site. Offset sites areas to address cumulative impacts on biodiversity, landscape, views, amenity, and greenspace provision. The extent and location of these sites are to be agreed with the council. • Reviewing the side from which the walls will be constructed (i.e. from the river or the land) to reduce the effect on existing vegetation where possible, although the	Moderate adverse: Antonine Wall WHS, Zetland Park Designation, Grangemouth AOTV, LLCZ 2 - Avon River Valley, LLCZ 10 Grangemouth Urban LLCZ, Flood Cell 1 – Area 2 Bainsford, Flood Cell 1 - Area 4 East Carron/Chapel Burn Flood Cell 1 - Area 5 Carronshore/ Riverside stables Area, Flood Cell 4 – Area 1 Zetland Park Major adverse: LLCZ1 - Lower Carron River Valley, Flood Cell 1 – Area 3 Bainsford/ Carron, Flood Cell 4 - Area 1 Area north of Zetland Park along the Grange Burn, Flood Cell 4 - Area 3 Westquarter **Summer Year 15 - with secondary mitigation** Moderate adverse: Zetland Park Designation, LLCZ1 – Lower Carron River Valley, Flood Cell 1 – Area 3 Bainsford/Carron, Flood Cell 4 – Area 1 Zetland Park

Receptor	Impacts	Significance	Mitigation	Significant (Moderate or Greater) Residual Effects
			final decision on this will lie with the contractor • Addition of coir matting along the riverbanks, instead of a basic earth finish, as part of erosion protection and planting • Potential to soften the river's edge in certain areas with additional planting, or wetland habitat creation to improve the riverside's aesthetic appearance, improved connectivity, and to support recreation and education benefits, subject to further design and consultation during detailed design stage • In order to ensure a degree of vegetative maturity at the earliest opportunity replacement trees will include a percentage of larger tree stock to augment smaller whip and feathered tree planting • Appropriate wall materials to integrate the Scheme into the local landscape/ reduce visual effects as well as in keeping with designated landscapes – see Appendix B9.9 Finish of the walls is appropriate to its location and context. Advised that a limited palette of materials and cope details be agreed as a design guide – See Appendix B9.9 • Potential use of art/ artistic elements to integrate the Scheme into the townscape/ landscape	<u>Major adverse:</u> None

Receptor	Impacts	Significance	Mitigation	Significant (Moderate or Greater) Residual Effects
			• Widen pavements to reduce the feeling of enclosure • Effective implementation of Landscape and Habitat Management Plan (LEHMP)	
Visual Receptors				
Visual Receptors	Effects include: • Loss of riverside vegetation creating a visually stark landscape • Loss of woodland and mature trees, opening and increasing visibility to the industrial and urban landscapes and the surrounding road network and reducing the existing green outlook • Loss of screening vegetation reducing privacy to residents • Greater visibility of commercial properties due to vegetation loss • Visibility of the large flood measures in some locations (both in height and width), which can be seen from a large area and block views • Lack of replacement vegetation, creating barren views with little greenery • Basic concrete wall finishes and embankments resulting the features being out of place visually	**Winter Year 1- with primary mitigation** <u>Moderate adverse:</u> Core Path 001/038 /River Carron Loop Path, Core Path 011/010 /River Carron Loop Path, The Helix Larbert Link, Core Path 011/008 on Nicole's Way, River Carron Loop Path/ HArTT, Core Path 001/021 /HArTT , Core Path 004/017/River Carron Loop Path /Bainsford Loop /HArTT, non-designated footpaths (Carron Road, Stenhouse Road, B902), Core Paths 004/022 and 004/001, Core Paths 004/019 and 004/018, Core Path 004/035, Core Path 009/005, Road travellers (Flood Cell 1, Area 5), Riverside Stables, Core Path 009/009, Road travellers (Flood Cell 4, Area 1), Grassed strip/ embankment adjacent to Grange Burn, Grangeburn Road / Core Path 006/003, Rannoch	**Secondary Mitigation** Secondary mitigation, measures that require further activity and are to be incorporated into the proposed Scheme, and that are likely to be considered as part of the HLMP include: • Replacement planting on riverbanks, which will also form screening to reduce the long-term effects of the walls/embankments. Riverbanks will be vegetated by a mixture of natural regeneration of riverbank vegetation and careful planting of native species of wetland, grassland, low shrubs and scrub cover to support the biodiversity of the designated nature conservation sites. This will be established rapidly to maintain a wildlife corridor and minimise short-term visual impacts • Replacements of trees (project policy, as agreed with the local authority): - 1 for 1 basis in sensitive areas, including Zetland Park, Park Road/ Grangeburn Road and Rannoch Park, using large replacement trees - 3 for 1 basis, measured as individual trees or in hectares, of replacement	**Winter Year 1- with secondary mitigation** <u>Moderate adverse:</u> Core Path 001/38 /River Carron Loop Path, Core Path 011/010 /River Carron Loop Path, The Helix Larbert Link, Core Path 011/008, Core Path 001/021 /HArTT, Core Path 004/017 /River Carron Loop Path /Bainsford Loop /HArTT, non-designated footpaths (Carron Road, Stenhouse Road, B902), Dawson Mission, Core Paths 004/022 and 004/1191, Core Paths 004/019 and 004/018, Core Path 004/035, Core Path 009/005, Core Path 009/009, Core Path 006/008, Core Path 006/003, Core Path 006/023, Core Paths 006/016 and 006/010, Core Path 016/015, Core Path 015/012, HArTT Route on

Receptor	Impacts	Significance	Mitigation	Significant (Moderate or Greater) Residual Effects
		Park, Core Paths 006/009 and 006/016, Core Path 015/012, HArTT Route on Laurieston A9 By-Pass, Antonine Wall Trail (Flood Cell 4, Area 2), Core Paths 006/046 and 006/047, Flood Cell 4, Area 3 Residents (A905/ Inchyra Road), Residents (Reddoch Road, Smiddy Brae), NCN76, Core Path 016/038, Antonine Wall Trail, proposed Core Path 016/039, Key Viewpoints 1, 2, 4, 5a, 5b, 8, 9b, 10b, 12b, 13b, 14b, 15b <u>Major adverse:</u> Flood Cell 1, Area 1 Residents, users of Falkirk Golf Club, Flood Cell 1, Area 2 Residents (Bainsford), Core Path 001/018, River Carron Loop Path / Bainsford Loop/HArTT, Core Path 001/20, Flood Cell 1 Area 3 Residents (Bainsford/Carron), Dawson Mission, Core Path 004/003 /River Carron Loop Path/Bainsford Loop/HArTT, Flood Cell 1 Area 4 Residents (East Carron/ Chapel Burn), Core Path 009/001, Flood Cell 1 Area 5 Residents (Carron House), Core Path 006/008, Flood Cell 4 Area 1 Residents on the western side of Abbots	trees and/or woodland either within the site areas or nearby sites. Offset sites areas to address cumulative impacts on biodiversity, landscape, views, amenity, and greenspace provision. The extent and location of these sites are to be agreed with the council • Reviewing the side from which the walls will be constructed (i.e. from the river or the land) to reduce the effect on existing vegetation where possible, although the final decision on this will lie with the contractor • Addition of coir matting along the riverbanks, instead of a basic earth finish, as part of erosion protection and planting • Potential to soften the river's edge in certain areas with additional planting, or wetland habitat creation to improve the riverside's aesthetic appearance, improved connectivity, and to support recreation and education benefits, subject to further design and consultation during detailed design stage • In order to ensure a degree of vegetative maturity at the earliest opportunity replacement trees will include a percentage of larger tree stock to augment smaller whip and feathered tree planting	Laurieston A9 By-Pass, Antonine Wall Trail (Flood Cell 4, Area 2), Proposed Core Paths 006/046 and 006/047, Flood Cell 4, Area 3 Residents (A905/ Inchyra Road), Residents (Reddoch Road, Smiddy Brae), NCN76, Core Path 016/011, Core Path 016/038 and Antonine Wall Trail, Key Viewpoints 1, 4, 8, 9a, 10a, 12b, 13a,14a, 15a <u>Major adverse:</u> Flood Cell 1, Area 1 Residents, Flood Cell 1, Area 2 Residents (Bainsford), Core Path 001/018/ River Carron Loop Path/ Bainsford Loop/ HArTT, Core Path 001/020, Area 3 Residents (Bainsford/Carron), Core Path 004/003 /River Carron Loop Path/Bainsford Loop/HArTT. Flood Cell 1, Area 4 Residents (East Carron/ Chapel Burn), Core Path 009/001, Flood Cell 1, Area 5 Residents (Carron House), Flood Cell 4, Area 1 Residents on the western side of Abbots Road (B9132), between Wallace Street and Talbot Street, Flood Cell 4, Area 1 Residents on Abbots

Receptor	Impacts	Significance	Mitigation	Significant (Moderate or Greater) Residual Effects
		Road (B9132) between Wallace Street and Talbot Street, Flood Cell 4 Area 1 Residents on Abbots Road (B9132), Park Road and Grangeburn Road (excluding those assessed above), Recreational users of Zetland Park, NCN76 and Core Paths 006/014 and 006/028, Core Path 006/013, Core Path 006/023, Core Paths 006/022 and 006/026, Flood Cell 4 Area 2 Residents (by Rannoch Park), Flood Cell 4 Area 2 Residents (Grandsable Cottage), Core Path 006/018, Core Paths 006/007 and 016/015, NCN76, Core Path 016/038 and Antonine Wall Trail, Core Path 016/036 and Antonine Wall Trail, Key Viewpoints 3, 6, 7, 9a, 10a, 11, 12a, 13a, 14a, and 15a	• Appropriate wall materials to integrate the Scheme into the local landscape/ reduce visual effects • Finish of the walls is appropriate to its location and context. Advised that a limited palette of materials and cope details be agreed as a design guide • Potential use of art/ artistic elements to integrate the Scheme into the townscape/ landscape • Widen pavements to reduce the feeling of enclosure • Effective implementation of Landscape and Habitat Management Plan (LEHMP)	Road (B9132), Park Road and Grangeburn Road (excluding those assessed above), Recreational users of Zetland Park, NCN76 and Core Paths 006/014 and 006/028, Core Path 006/013, Core Paths 006/022 and 006/026, Flood Cell 4, Area 2 Residents (by Rannoch Park), Flood Cell 4, Area 2 Residents (Grandsable Cottage), Core Paths 006/018 and 006/007, Key Viewpoints 3, 6, 7, 11 and 12a **Summer Year 15 with secondary mitigation** <u>Moderate adverse:</u> Flood Cell 1, Area 1 Residents, Flood Cell 1, Area 2 Residents, Core Path 001/018/ River Carron Loop Path / Bainsford Loop / HArTT, Core Path 001/020, Flood Cell 1, Area 3 Residents (Bainsford/Carron), Core Path 009/001, Flood Cell 1, Area 5 Residents (Carronshore), Flood Cell 4, Area 1 Residents on Abbots Road (B9132), Park Road and Grangeburn Road, Flood Cell 4, Area 1 Residents on the

Receptor	Impacts	Significance	Mitigation	Significant (Moderate or Greater) Residual Effects
				western side of Abbots Road (B9132), between Wallace Street and Talbot Street, Recreational users of Zetland Park, NCN76 and Core Paths 006/014 and 006/028, Core Path 006/013, Core Paths 006/022 and 006/026, Flood Cell 4, Area 2 Residents (by Rannoch Park), Viewpoints 3, 6, 7, 11, and 12a <u>Major adverse:</u> Core Path 004/003/River Carron Loop Path/Bainsford Loop/HArTT

9.12 Monitoring

9.12.1 Construction Phase

An onsite presence by a landscape architect during the implementation of any landscape specific construction works, particularly planting, is proposed to facilitate the effective delivery of specified measures and to advise accordingly. In addition, it is proposed that an arboriculturist checks any proposed tree protection plan and arboricultural method statement as well as being on-hand to advise and supervise the measures implemented on-site.

9.12.2 Operational Phase

A follow-up maintenance plan should be developed to ensure the measures delivered as part of the LEHMP are effective over time and to remediate any unsuccessful landscaping measures. The planting will need to be monitored to ensure healthy establishment for both riparian planting and more formal planting. It is important that replacement planting is undertaken effectively to ensure that the significant effects on visual and landscape receptors are avoided or reduced.

9.13 References

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