



# Stonehaven Flood Protection Scheme

345087\_017 Environmental Assessment -  
Scoping and Consultation Summary

May 2015

Aberdeenshire Council





# Stonehaven Flood Protection Scheme

345087\_017 Environmental Assessment -  
Scoping and Consultation Summary

May 2015

Aberdeenshire Council



# Issue and revision record

<b>Revision</b>	<b>Date</b>	<b>Originator</b>	<b>Checker</b>	<b>Approver</b>	<b>StandardStandard andDescriptio</b>
A	14.05.2015	N Levy	L Mair L Cload	S Robertson	Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it..



# Contents

<b>Chapter</b>	<b>Title</b>	<b>Page</b>
1	Introduction	1
2	The Proposed Scheme	4
3	Environmental Assessment Methodology	8
4	Overview of Environmental Scoping	11
5	Environmental Assessment Scope	12
6	Summary	44
7	References	45

# 1 Introduction

## 1.1 Introduction

- 1.1.1 Aberdeenshire Council are proposing a Flood Protection Scheme in the town of Stonehaven to prevent damage caused by flooding from the Carron Water, Burn of Glaslaw, and overland flow. The proposed scheme along with other minor work seeks to modify the flow regime of the lower watercourse of the river to reduce out of bank flooding.
- 1.1.2 The Scheme is being delivered under the Flood Risk Management (Scotland) Act 2009. Under this Act the requirement for an Environmental Impact Assessment (EIA) is set out in the Flood Risk Management (Scotland) (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) Regulations 2010. An EIA Screening Opinion was submitted to Aberdeenshire Council in January 2015 to gain their opinion on whether an EIA was required for the scheme. The Screening outcome confirmed that an EIA would not be required. However, the Council recommended that an Environmental Assessment be undertaken to address potential environmental effects associated with the scheme.
- 1.1.3 This Environmental Assessment Scoping and Consultation Summary Report outlines the proposed scope and methodology for the Environmental Assessment (EA) for the proposed Flood Protection Scheme. It identifies all relevant topics that are considered appropriate for inclusion within an EA, as well as identifying those topics which, based on sound reasoning and judgement, can be scoped out. The report will also provide an audit trail for the informal scoping consultation process and responses.
- 1.1.4 This Scoping Report will be submitting to the Local Planning Authority, Aberdeenshire Council, for them to consider the proposed scope of the EA.

## 1.2 Background

- 1.2.1 A request for a screening opinion was previously submitted in April 2013, under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011 (Ref: ENQ/2013/0727). However, the Stonehaven Flood Protection Scheme is now being delivered under the Flood Risk Management (Scotland) Act 2009 and the scheme design has been amended. Therefore, a new Environmental Impact Assessment (EIA) screening opinion was submitted to Aberdeenshire Council in January 2015 under the Flood Risk Management (Scotland) (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) Regulations 2010.
- 1.2.2 A number of previous studies have been undertaken for the preliminary Stonehaven Flood Protection Scheme design, primarily by JBA Consulting. These reports have been referenced in the relevant topic section of this report. Existing baseline data from these reports has been reviewed and updated for this Scoping Report. Due to the time lapse since the reports were produced and the updated scheme design the surveys and assessments will need to be redone to inform the Environmental Assessment. Further details are provided in the relevant topic sections in Chapter 5.



### 1.3 Purpose of Scoping

- 1.3.1 This Environmental Assessment Scoping and Consultation Summary Report comprises the initial stage of the EA process. Further information of the EA process is presented in Chapter 3 of this report. Each technical chapter within this report will provide high level information on the assessment methodology to be implemented at the EA stage, high level baseline information for the site and identify the potential environmental effects to be assessed at the EA stage.
- 1.3.2 The purpose of this report is to identify the range of environmental topics to be assessed in the EA. This report aims to focus the EA on the potentially significant environmental effects. Environmental topics where no significant environmental effects are likely to be generated by the proposed Scheme are to be ‘scoped out’ (see Table 6.1). Matters which are ‘scoped out’ are proposed to not be considered further in the EA for the proposed Scheme.
- 1.3.3 This report will also document the scoping consultation process and responses from Consultation Bodies and other stakeholders.

### 1.4 Consultation

- 1.4.1 Comments on the proposed scheme were sought during a Consultation Workshop held on 22 April 2015. Where appropriate, the views and information provided by statutory and non-statutory consultees will help to form the basis of the EA for the scheme. Table 1.1 shows the list of statutory consultees proposed to be consulted and indicates those organisations who attended the Consultation Workshop:

**Table 1.1: Proposed Consultees to be consulted during the Scoping Consultation**

List of Statutory and Non-Statutory Consultees	Attended workshop
Aberdeenshire Council	Yes
Castle Hill Housing Association	Yes
Emergency Services	Yes
Forestry Commission	Yes
Scottish Environment Protection Agency (SEPA)	Yes
Stonehaven Flood Action Group	Yes
Stonehaven Town Partnership	Yes
Scottish Natural Heritage (SNH)	
Historic Scotland	
Stonehaven and District Angling Association	
Dee District Salmon Fishery Board	

- 1.4.2 It should be noted that consultation with Historic Scotland, Scottish Natural Heritage (SNH), the Stonehaven and District Angling Association and the Dee District Salmon Fishery Board who did not attend the Consultation Workshop is ongoing.
- 1.4.3 Table 1.2 shows a summary of the comments received from the Consultation Workshop.

Table 1.2: Summary of Consultee comments following Consultation Workshop

Topic	Summary of Comments
<b>Ecology</b>	<p>Trees</p> <p>Other Issues</p> <p>Opportunities</p>
<b>Visual/Historic Environment</b>	<p>Listed Buildings – Directly Affected</p> <p>Listed Buildings – Visual Impact</p> <p>Listed Structures – White Bridge</p> <p>Listed Structures – Stone Boundary Walls</p> <p>Open Spaces</p> <p>Trees</p> <p>Bridges</p>
<b>Hazards in Operation (HAZOP)</b>	<p>Concerns were raised over increased pedestrian and vehicle traffic during construction.</p> <p>Concerns over access and parking arrangements. Details of the Contractors site compound would be welcomed</p> <p>Concerns over potential for children to use culverts it as play sites. As such, a safety grill was proposed. However this may cause issues i.e blockages etc.</p> <p>It was suggested that any accidents involving the river may become a Coast Guard issue due to the flow sweeping the person out to sea / beach.</p> <p>It was suggested that bathing water quality should be considered, in addition to concerns that if migratory fish are present, then the culvert would be a problem during construction.</p> <p>Concerns were raised about the potential for maintenance needed to be carried out from within the river</p> <p>It was highlighted that many near flood events in the past may cause issues for the Contractor.</p>
<b>Social</b>	<p>Concerns raised over increased noise during construction, in particular from generators.</p> <p>Visual impact of walls is a concern in terms of height and materials. Also, consideration of upstream flood water storage requested. However, there would still be a requirement for the walls despite the upstream storage. Visualisations would prove helpful during further consultation.</p> <p>Queries raised over construction schedule. Displays on local information board would be welcomed.</p> <p>Beach Bridge is locally considered to be a choke point.</p> <p>Walkways between the beach and the Bridgefield street to provide amenity value were well received. An extension of paths between the sea and woodland were suggested.</p> <p>Development within private gardens was of concern and will require careful consultation with the local community.</p> <p>Access ramps for bridges were discussed but no comment.</p> <p>Concerns raised over potential reductions in sought after car parking in town centre.</p> <p>Local tourist office suggested as consultee with reference to preferred walking route to Dunotter Castle.</p> <p>Maintaining access across the river near White Bridge is thought to be important. However, restricting access during flood events was not perceived to be a problem.</p> <p>The suggestion of providing additional seating was thought to be a good idea.</p>

## 2 The Proposed Scheme

### 2.1 Project Need

2.1.1 Stonehaven Old Town has been subject to repeated flooding with recent events occurring in 2009 and 2012, which caused considerable damage. The catchment of Carron Water has experienced many large flood events. The Carron Water catchment is short and small with an area of 43km<sup>2</sup>. Aberdeenshire Council are proposing a Flood Protection Scheme to prevent damage caused by flooding from the Carron Water, Burn of Glaslaw, and overland flow. The proposed scheme along with other minor work seeks to modify the flow regime of the lower watercourse of the river to reduce out of bank flooding.

### 2.2 Description of the Site

2.2.1 Carron Water and Glaslaw Burn flow through the south of the town of Stonehaven. Where visible the presence of the Carron Water offers a dynamic, natural feature within the settled, urban character of the town. The small but valued open spaces next to White Bridge and Green Bridge act as green buffers from which it is possible to appreciate the context of the river within the overall setting and provide visual links with the semi-rural, wooded hinterland.

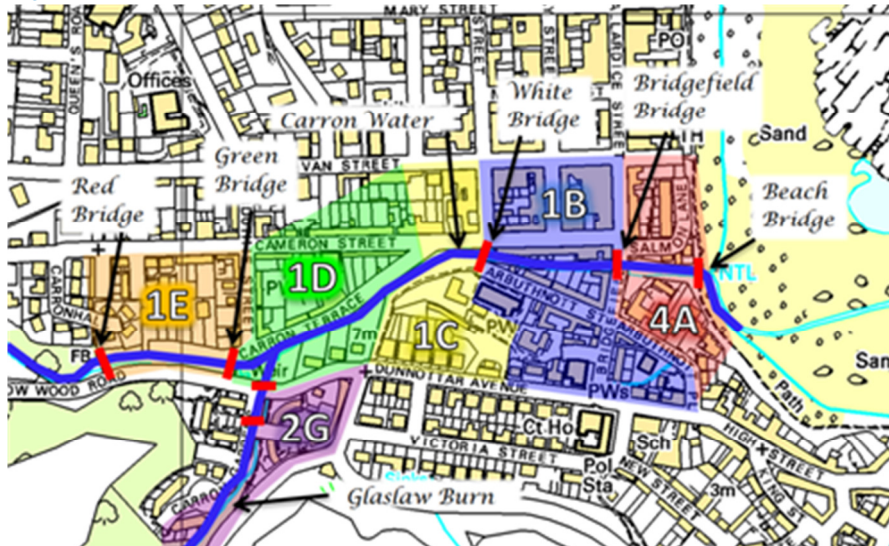
2.2.2 The Carron Water and its tributaries are important for aquatic wildlife including trout, salmon, European Eel, Lamprey, and otters. The watercourse, banks, and surrounding trees, park, and woodland are important habitats for a variety of species including bats and breeding birds. Loch of Lumgair Site of Special Scientific Interest (SSSI) is the only statutory protected nature conservation site within the catchment, located along a tributary of the Burn of Glaslaw 4km upstream from the works. Fowlsheugh Special Protection Area (SPA) lies approx. 4km south along the coast and Garron Point SSSI lies approx. 2km north along the coast.

2.2.3 The sections of the proposed scheme from Green Bridge to Beach Bridge are within the Stonehaven Conservation Area. White Bridge, 19 Bridgefield, and the river walls (all of which will undergo alteration as part of the scheme) are Category C listed. There are a number of other Category A, B, and C Listed Buildings within 150m of the proposed works. Of particular note is the Category A listed St James the Great Episcopal Church on Arbuthnott Street approx. 20m south of the works at White Bridge.

2.2.4 Fluvial flooding risk from the Carron Water results from heavy or prolonged rainfall and/or snowmelt in the Carron catchment causing river levels to rise, with the potential for the river banks to be overtopped and flooding to land and properties to occur. Stonehaven is also at risk from surface water flooding. The topography of Stonehaven means that surface water will be shed from the higher areas in the central, west, and north-west parts of the town towards the lower areas at the coast and the Carron and Cowie valleys.

2.2.5 The proposed Stonehaven Flood Protection Scheme covers an area from the Burn of Glaslaw at Carron Gardens to Beach Bridge. The scheme can be divided into six zones (see Figure 2.1):

Figure 2.1: Indicative zones within Stonehaven Flood Protection Scheme



Source: Base map: © Crown copyright and database rights 2014. Ordnance Survey License 0100020767

- Burn of Glaslaw (Zone 2G) - runs south-north along the Burn of Glaslaw from the Woods of Dunottar, alongside modern housing;
- Red Bridge to Green Bridge (Zone 1E) - lies west of the Green Bridge to White Bridge section, with pedestrian crossings to the west (the Red Bridge) and east (the Green Bridge). South of this area is the main road and modern housing, with a continuation of Carron Terrace to the north;
- Green Bridge to White Bridge (Zone 1D and Zone 1C) – this section extends eastwards from the Green Bridge to White Bridge. Carron Terrace with its avenue of trees lies to the north, and a public footpath follows a grassed area for a distance along the south bank, also flanked by an avenue of trees;
- White Bridge to Bridgefield Bridge (Zone 1B) - lies between White Bridge and Bridgefield; private properties extend to the water on both north and south banks; and
- Bridgefield Bridge to Beach Bridge (Zone 4A) – lies between Bridgefield and the beach where Carron Water flows into the sea.

## 2.3 Description of the Proposed Scheme

2.3.1 The proposed works and their footprint are shown on Figure 2.2. The work is anticipated to last approximately two to three years and is likely to involve the following:

### 2.3.2 Burn of Glaslaw

- Replacement of culverts at Woodview Court and Dunottar Avenue;
- Construction of walls along both banks adjacent to Woodview Court;
- Slope stabilisation on the right hand bank adjacent to Woodview Court
- Waterproofing and strengthening works to basement level of properties adjacent to the river, i.e. 58 Carron Gardens
- Works in channel to construct walls
- Construction of an embankment at the upstream end

2.3.3 Red Bridge to Green Bridge

- Replacement of Red Bridge and installation of new abutments
- New walls along the Low Wood Road and Carron Terrace
- Works in channel to construct walls
- Demolition and replacement of garages

2.3.4 Green Bridge to White Bridge

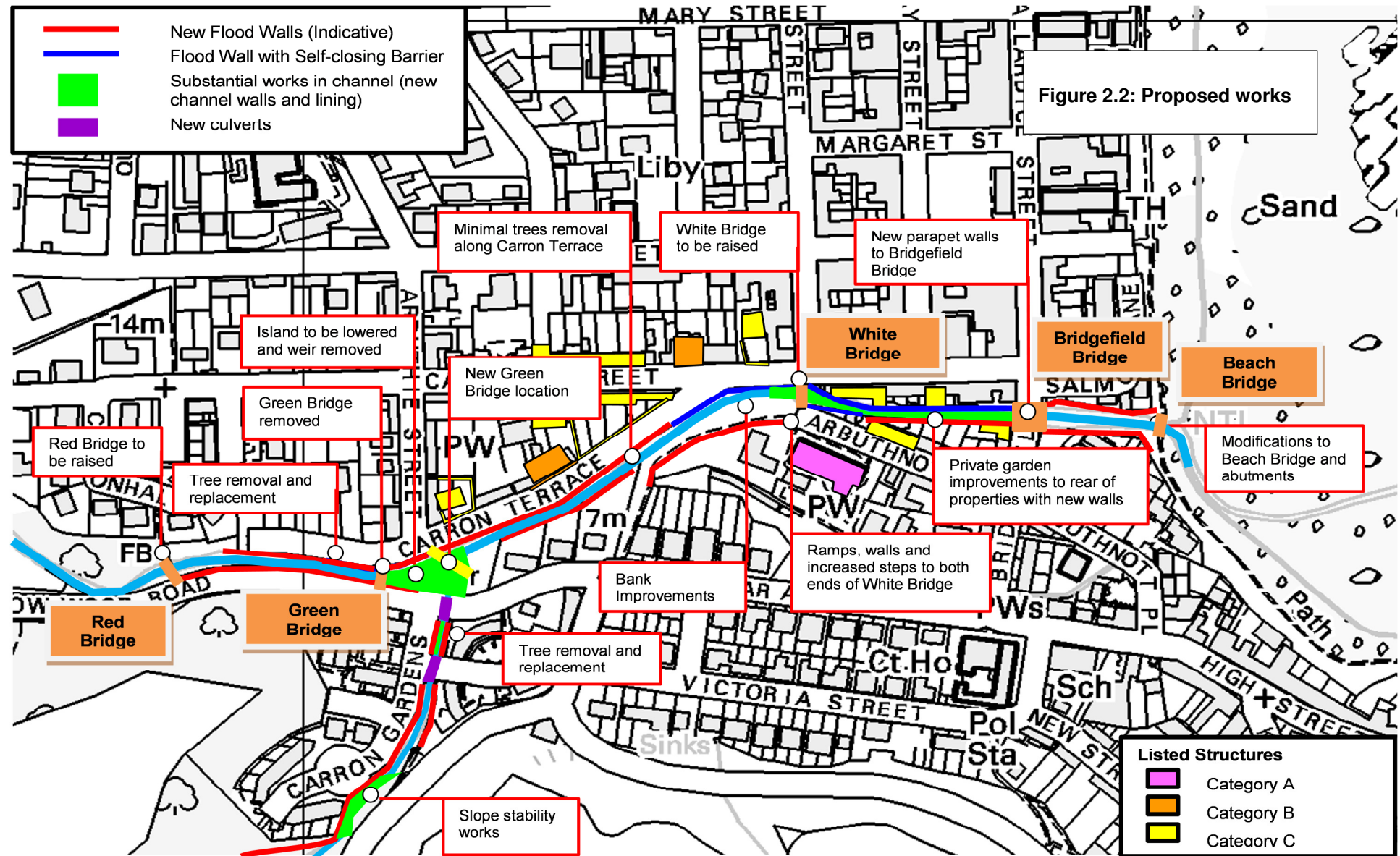
- New self-closing barrier walls on Cameron Street near White Bridge
- Construction of new walls along Carron Terrace
- Lowering of island downstream of Green Bridge
- Removal of Green Bridge
- New replacement crossing downstream of Green Bridge
- Replacement of boundary wall of Abbeyfield House;
- Alteration of weir and lowering of bed levels
- Works in channel to construct walls

2.3.5 White Bridge to Bridgefield Bridge

- New self-closing barrier walls and culvert at the rear of 1-37 Cameron Street
- Works in channel for replacement of existing channel walls and works construction
- Raising of White Bridge
- Lowering of bed of the river.
- Construction of a pumping station outfalling to the river

2.3.6 Bridgefield Bridge to Beach Bridge

- Modification to Bridgefield Bridge parapets to increase freeboard
- Modifications to Beach Bridge and abutments
- Works in channel to construct walls and lower bed.
- Raising or replacement of existing boundary walls of properties on Arbuthnott Place and Salmon Lane



# 3 Environmental Assessment Methodology

## 3.1 Introduction

3.1.1 This chapter of the report identifies the general approach which will be undertaken to deliver the EA for the proposed Scheme.

## 3.2 The EA Process

3.2.1 As previously discussed an EIA is not required for the proposed Scheme. However, an EA is being undertaken to address potential environmental effects and consider environmental issues during the design of the Scheme. The EA will identify the significant environmental effects (both adverse and beneficial) of the proposed scheme and identify opportunities for reducing any adverse effects. This will be communicated to the public, the relevant competent authorities, statutory authorities and other interested parties.

## 3.3 Planning and Legislative Context

3.3.1 It is recommended that the EA provides a summary of current relevant planning and development policy and that the scheme proposals are assessed against this. Planning policy relevant to each topic will be highlighted in each topic chapter. General key policy considerations are as follows:

### 3.3.2 National Planning and Legislative Context

- Flood Risk Management (Scotland) Act 2009;
- Flood Risk Management (Scotland) (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) Regulations 2010;
- The National Flood Risk Assessment (SEPA, December 2011);
- National Planning Framework 3 (2014);
- Scottish Planning Policy (2014); and
- Planning Advice Notes.

### 3.3.3 Regional and Local Planning and Legislative Context

- North East Draft Flood Risk Management Plans (SEPA and Aberdeenshire Council, 2015)
- Aberdeen City and Shire Strategic Development Plan 2014;
- Aberdeenshire Local Development Plan 2012; and
- Proposed Aberdeenshire Local Development Plan 2016.
- Baseline
- The baseline conditions of the site and its surroundings form the basis of the assessment for the EA. The likely significant environmental effects will be identified through a comparison of the proposed works with the baseline that comprises both the current and future situations. The exact current and future baseline will be defined on an environmental topic basis for the purposes of the EA.

### **3.4 Assessment of Effects**

3.4.1 The EA will report the likely significant environmental effects (whether beneficial or adverse) that may result from the construction and operation of the proposed Scheme. There is no statutory definition of what constitutes a significant effect. Each technical discipline will identify the criteria used to define significance of effects within the EA. The definition of significance will be informed by industry best practice guidance and professional judgement.

### **3.5 Mitigation**

3.5.1 The EA will also include a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment. The identification of such measures is an iterative process which will be undertaken in parallel with the design to aid the incorporation of measures into the design during project development. This early adoption of appropriate mitigation will help reduce significant environmental effects to a practicable minimum.

3.5.2 Within the assessments and throughout the duration of the Scheme, mitigation measures will be considered in the following hierarchy:

- first, avoid adverse effects as far as possible by use of preventative measures during scheme design;
- second, minimise or reduce adverse effects to 'as low as practicable' levels; and
- third, remedy or compensate for adverse effects which are unavoidable and can be reduced further.

### **3.6 Assumptions and Limitations**

3.6.1 Each topic chapter of the EA will include a section to explain key assumptions and limitations made in undertaking the assessments.

3.6.2 During the preparation of the EA there could be some circumstances that result in factors that may limit the information available to inform the assessment process. Any limitations, and the consequences on the completeness or potential accuracy of conclusions, will be described in the relevant environmental topic chapter within the EA.

### **3.7 Alternatives**

3.7.1 Alternatives to the proposed Scheme will be considered. The assessment of alternatives will consider alternative Scheme layout and flood protection options.

### **3.8 Cumulative Effects**

3.8.1 The EA will consider other relevant committed developments with the potential for cumulative effects which might arise from the proposal in conjunction with other development proposals in the vicinity. For the EA, committed development is defined as developments which have outline/full planning consent or allocation in the Local Plan but have not started construction work.



- 3.8.2 The final list of cumulative schemes (other developments) to be included in the assessment would be agreed in consultation with Aberdeenshire Council. Information on the schemes would be drawn from Aberdeenshire Council and their online planning application register. Where detailed information on schemes is not available to enable quantitative assessment, qualitative assessments would be undertaken.

## 4 Overview of Environmental Scoping

### 4.1 Introduction

4.1.1 This section outlines the proposed spatial, temporal and technical scope of the EA. .

### 4.2 Spatial Scope

4.2.1 The boundary for the proposed flood protection scheme is provided in Appendix A. It is envisaged that this boundary will form the basis of the standard spatial scope of the EA, although the study areas for those topics proposed to be included in the EA will vary according to the topic of assessment, taking into account the baseline environment and the nature of the impact, e.g. direct or indirect. The study areas have been defined for each topic within this Report.

### 4.3 Temporal Scope

4.3.1 The EA will consider the construction and operation of the Scheme. For the construction phase, the impacts will be assessed from when the enabling works are scheduled to commence (June 2016) until the period immediately prior to the flood protection scheme, being completed (December 2018). Operational impacts will be assessed from the year of opening to 100 years in line with the proposed design life of the scheme.

4.3.2 The EA will not cover decommissioning of the Scheme as it has been assumed that it will remain part of the flood protection indefinitely. The infrastructure will be regularly maintained and upgraded as required to ensure that it could be continuously operational.

### 4.4 Technical scope

4.4.1 As part of the scoping process, the relevant environmental topics for the flood protection scheme have been identified for further assessment. Further details regarding the proposed technical scope of the Scheme EA are presented in Chapter 5 of this Report, with a scoping summary Table in Chapter 6 (Table 6.1).

4.4.2 Climate change effects have not been considered in this report as they will be inherent in the design of the scheme, e.g. it will be designed to a 1 in 200 year flood event plus climate change.

## 5 Environmental Assessment Scope

### 5.1 Introduction

5.1.1 This chapter presents the environmental disciplines considered as part of the scoping exercise. These include:

- Air Quality;
- Ecology (Flora & Fauna);
- Historic Environment;
- Landscape and Visual;
- Material Assets;
- Noise (& Vibration);
- Socio-Economic;
- Soil, Land Quality / Ground Conditions;
- Transport, Access, and Traffic; and
- Water Environment.

5.1.2 The section for each environmental discipline includes an outline of the key planning policy and guidance documents; a summary of baseline conditions; assessment methodology, potential environmental effects, and a summary.

### 5.2 Air Quality

#### **Legislation, Policy and Guidance**

5.2.1 Activities relating to the monitoring and management of air quality in the UK are primarily driven by European (EU) legislation. The 2008 ambient air quality directive (2008/50/EC) sets legally binding limits for concentrations in ambient (outdoor) air of major air pollutants that are known to have a significant impact on human health. It was transposed into Scottish law through the Air Quality Standards (Scotland) Regulations 2010. Part IV of The Environment Act 1995 sets provisions for protecting air quality in the UK and for local air quality management.

5.2.2 Scotland's third National Planning Framework (NPF3), the Scottish Planning Policy (SPP), and the Planning Advice Note - PAN 51: Planning, Environmental Protection, and Regulation (2006), aim to protect air quality through the planning process. There is no directly applicable local policy for air quality for the Scheme.

#### **Baseline**

5.2.3 Aberdeenshire Council monitors levels of nitrogen dioxide (NO<sub>2</sub>) using a number of automatic analysers and passive diffusion tubes. During 2012 the Council measured NO<sub>2</sub> concentrations in Stonehaven using a passive diffusion tube and the 2013 Air Quality Progress Report demonstrated compliance with the annual mean NO<sub>2</sub> air quality objective. After a year of compliance with the air quality objective in 2012 (23ugm-3) the Council has now stopped monitoring in Stonehaven as the measurements were found to be well below the objective which is 40ugm-3. Currently there is no monitoring in Stonehaven (according to the 2014

Council air quality report). The Defra background for 2014 is very low ( $\text{NO}_2$  –  $6\text{ugm}^{-3}$ ,  $\text{PM}_{10}$  –  $11\text{ugm}^{-3}$ ).

## Assessment Methodology

### Study Area

- 5.2.4 The proposed Scheme has the potential to cause air quality effects during the construction phase. The key pollutants for consideration within the assessment of air quality effects are:
- dust (defined as particulate matter in the size range 1-75 microns in diameter);
  - nitrogen oxides ( $\text{NO}_x$ ), particularly nitrogen dioxide ( $\text{NO}_2$ ); and
  - fine particles (particulate matter defined as those less than 10 and 2.5 microns in diameter;  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  respectively).
- 5.2.5 No assessment is considered necessary for emissions of any pollutants other than those identified above. During operation there will be inspection and maintenance vehicles but no other pollution emitting activities will be introduced by the proposed Scheme. Therefore air quality impacts during Scheme operation are highly unlikely and it is proposed that operational air quality is scoped out of the EA.
- 5.2.6 'Guidance on the assessment of dust from demolition and construction' from the Institute of Air Quality Management (IAQM) published in 2014 will be used to assess the potential impacts of dust emissions during the construction of the proposed Scheme. The assessment of construction dust emissions will be assessed at sensitive receptors within 350m of the proposed works and 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s), as recommended by the IAQM guidance.
- 5.2.7 Emissions associated from on-site construction plant are considered to be temporary in nature and are not expected to give rise to significant environmental effects.

### Significance Criteria

- 5.2.8 Guidance is available from a range of regulatory authorities and advisory bodies on how best to determine and present the significance of effects within an air quality assessment. It is generally considered good practice that, where possible, an assessment should communicate effects both numerically and descriptively.
- 5.2.9 A number of approaches can be used to determine whether the potential air quality effects of the Scheme are significant. However, there remains no universally recognised definition of what constitutes 'significance' for air quality effects. Significance criteria from the IAQM guidance will be adopted for the construction phase.

## Potential Environmental Effects

### Receptors

- 5.2.10 Sensitive residential receptors are located less than 10m to the north and south of the scheme corridor. There are areas of parkland adjacent to the south bank of the river. Residential

receptors, user of parkland areas, and aquatic and terrestrial wildlife may be affected during the construction phase from dust and vehicle emissions. As mentioned in section 5.2.6 the dust assessment will take account of sensitive receptors within 350m from the construction site boundary.

#### Construction effects to be assessed at EA

- 5.2.11 Table 5.1 identifies aspects of the proposed Scheme of relevance to potential effects on air quality during construction.

Table 5.1: Likely construction effects

Aspects of the proposed works that may cause construction effects	Construction impact	Potential significant effect
Construction activities – alterations to structures, excavations, piling	Temporary dust emissions	Effects on residential, parkland users, and wildlife receptors
Construction vehicles	Vehicle emissions to atmosphere	Temporary in nature. Not considered to be significant

#### Operation effects to be assessed at EA

- 5.2.12 It is proposed that the assessment of operation effects on air quality will be scoped out of the EA as the proposed scheme will have little impact on air quality during its operation. There will be inspection and maintenance activities which will involve infrequent visits by van. Emissions from this activity are likely to be negligible.

### Summary

- 5.2.13 The proposed Scheme has the potential to affect local air quality during construction through dust generation which may cause a short term nuisance; this will be assessed in accordance with guidance provided by the IAQM. It is unlikely that construction traffic will have a significant air quality effect given the amount of construction HGV movements.
- 5.2.14 Operational activities will include inspection and maintenance. These are likely to be low frequency and consist of one or two small vans at a time. As such, it is proposed that operational air quality effects are scoped out of the EA.

## 5.3 Ecology

### Legislation, Policy, and Guidance

- 5.3.1 MML understands the most recent ecological assessment was carried out in the Spring/Summer of 2013. As this previous ecological assessment is now out of date, ecological assessment will be needed before planning permission in principle can be provided, to ensure that the planning authority, in this case Aberdeenshire Council, discharges its 'biodiversity duty' under the terms of the Nature Conservation (Scotland) Act 2004 and also complies with Scottish Planning Policy. In addition, any proposed development must comply with:
- The Wildlife and Countryside Act 1981 (as amended in Scotland);

- The Conservation (Natural habitats &c.) Regulations 1994 (as amended in Scotland);
- The Protection of Badgers Act 1992;
- The Wild Mammals (Protection) Act 1996; and
- Other relevant Scottish and UK conservation legislation and policy.

5.3.2 Regional and Local planning policy and guidance includes:

[Aberdeenshire Local Development Plan \(2012\):](#)

- Policy 11 – Natural Heritage:
  - Policy SG Natural Environment 1: Protection of Nature Conservation Sites;
  - Policy SG Natural Environment 2: Protection of the Wider Biodiversity and Geodiversity;
- Policy Safeguarding of Resources and Areas of Search:
  - Policy SG Safeguarding 2: Protection and Conservation of Tress and Woodland.

[Aberdeenshire Proposed Local Development Plan \(2016\)](#)

- Policy E1 – Natural Heritage;
- Policy PR1 – Protecting Important Resources (includes trees and woodland).

### **Baseline**

5.3.3 The Carron Water and its tributaries are important for Atlantic salmon *Salmo salar* and Sea trout *Salmo trutta* spawning, with European Eel *Anguilla anguilla* and River Lamprey *Lampetra fluviatilis* also recorded within the catchment.. The river also supports otters *Lutra lutra* throughout, with water vole *Arvicola amphibious* recorded on the Carron River. The riparian corridor provides important foraging habitats for bats. Trees along Low Wood Road, Carron Terrace, and Carron Gardens may provide suitable roosting opportunity, together with bird nesting potential.

5.3.4 An Ecological Walkover survey was carried out by JBA Consulting in April 2011 and further surveys (otter, bats, and invasive species) were undertaken in July 2013 (JBA Consulting). The surveys confirmed the presence of otters using the River Carron, with sprainting recorded during the survey. There was no evidence to suggest the presence of an otter holt and/or resting site within the areas proposed for flood protection works. A bat activity survey conducted on the 5<sup>th</sup> April 2013 (JBA Consulting), confirmed the presence of bats (predominantly Daubenton's *Myotis daubentonii*, common and soprano Pipistrelle *Pipistrellus Spp.*) using habitats along the length of the river likely to be affected by the flood protection scheme. The surveys also demonstrated that the majority of infestations of invasive species, including all incidences of Japanese Knotweed *Fallopia japonica*, and stands of giant hogweed *Heracleum mantegazzianum* and Himalayan balsalm *Impatiens glandulifera* were found to occur upstream of the scheme<sup>1</sup>.

5.3.5 Due to the date of the original JBA Consulting surveys and the mobile nature of some species, the baseline gathered by JBA Consulting will be updated through further surveys identified below:

---

<sup>1</sup> River Carron, Stonehaven – Further Ecological Surveys (JBA Consulting, October 2013)

- Ecological constraints survey – updating the baseline for sensitive habitats and invasive species of flora, protected species, including bat assessment of trees and structures potentially impacted by the scheme;
- Bat surveys (as required) for individual trees and structures based on the findings of constraints survey results;
- Breeding Birds survey;
- Phase 1 / National Vegetation Classification (NVC) survey (as required); and
- Fish Habitat Survey.

5.3.6 A Tree Survey and Arboriculture Report were produced by Langton Tree Specialists (October 2013). One hundred and eight individual trees and two groups of trees were surveyed on and immediately adjacent to the site. The most commonly found species across the site are lime *Tilia sp*, sycamore *Acer pseudoplatanus*, and elm *Ulmus sp* were the next most commonly found trees (predominantly near the Burn of Glaslaw and account for another 20%. Other species include: Norway maple *Acer platanoides*, whitebeam *Sorbus aria*, wild cherry *Prunus avium*, horse chestnut *Aesculus hippocastanum*, and red oak *Quercus rubra*. The tree cover included four distinct areas:

- Trees on the south bank of the Carron Water near White Bridge;
- Pollarded Lime trees beside Carron Terrace;
- Trees on raised embankment west of Green Bridge; and
- Trees near the Burn of Glaslaw.

5.3.7 Loch of Lumgair Site of Special Scientific Interest (SSSI) is the only statutory protected nature conservation site within the catchment. The SSSI is located along a tributary of the Burn of Glaslaw 4km upstream from the works. Fowlsheugh Special Protection Area (SPA) lies approximately 4km south along the coast and Garron Point SSSI lies along the coast to the north of Stonehaven Bay approximately 2km from Beach Bridge.

## Assessment Methodology

### Study Area

5.3.8 Current guidance from the Institute of Ecology and Environmental Management (IEEM) 'Guidance for Ecological Impact Assessment in the UK' (2006) recommends that all ecological features that occur within a Zone of Influence (ZOI) around the proposed Scheme are investigated (IEEM, 2006). The ZOI is a buffer around the site and could potentially include:

- Areas directly within the land take for the Scheme and access;
- Areas which will be temporarily affected during construction;
- Areas likely to be impacted by hydrological disruption; and
- Areas where there is a risk of pollution and noise disturbance during construction and/or operation.

5.3.9 The ZOL depends on the sensitivity of the habitat or species to disturbance and change in biophysical conditions resulting from the construction and operation of the proposed Scheme. The ZOL for the ecological features along the route of the flood protection scheme are in Table 5.2.

Table 5.2: Ecological features and ZOL

Ecological Receptor	Zol/Survey Area
Designated statutory and non-statutory Sites	Working area plus 2km
Sensitive Habitats	Working area plus 100m radius
Otters	Working area plus 250m upstream and downstream, incl. tributaries within Zol
Water Voles	Working area plus 250m upstream and downstream, incl. tributaries within Zol
Bats	Working area plus 50m radius
Reptiles	Working area plus 50m radius
Birds	Working area plus 50m radius
Great Crested Newts (GCN)	Working area plus 500m radius
Invasive Species	Working area plus 50m radius

### Significance Criteria

- 5.3.10 The IEEM guidance states that professional judgement should be used when evaluating the importance of ecological features and the magnitude of potential impacts.
- 5.3.11 In accordance with the IEEM guidelines, a significant effect, in ecological terms, is defined as an impact (whether negative or positive) on the integrity of a defined site (or ecosystem), and/or the conservation status of habitats (or species) within a given geographical area, including any cumulative effects.
- 5.3.12 The significance of any potential ecological effect is determined based on a discussion of the factors which characterise it. It is not dependent on the value of the feature in question. This approach to determining effects significance is consistent with the IEEM guidelines.
- 5.3.13 The effects of the Scheme on the ecological receptor in question will be discussed in terms of the following:
- Description of feature and ecological value;
  - Proposed activity;
  - Mitigation and enhancement;
  - Impact of Scheme on ecological receptors; and
  - Effect on integrity or conservation status and confidence level.

### Potential Environmental Effects

#### Receptors

- 5.3.14 Sensitive receptors, including flora and fauna, have the potential to be impacted during the proposed Scheme at the construction and operation phases.



## Construction effects to be assessed at EA

Table 5.3: Likely construction effects

Aspects of the proposed works that may cause construction effects	Construction impact	Potential significant effect
Removal of tress and vegetation	Removal of habitat. Removal of potential roosts and nesting sites	Breeding birds, bats, red squirrels, invertebrates and flora
Works to private gardens	Removal / Improvements to habitat	Flora and fauna
Raising and alterations to bridges and structures	Removal of potential roosts and nesting sites	Breeding birds, overwintering birds, bats
Works in the river channel	Disturbance of aquatic wildlife. Pollution to river	Species present in/on the river and its banks (e.g. Otter, Water Vole, Dipper, Atlantic Salmon, River Lamprey, European Eel)
Construction works	Pollution to river. Increase in lighting, noise, vibration, dust and human presence	Species present in or surrounding construction works

## Operation effects to be assessed at EA

Table 5.4: Likely operational effects

Aspects of the proposed works that may cause operational effects	Operational impact	Potential significant effect
New tree planting	Increased biodiversity	Increase in habitats suitable for breeding birds, invertebrates, bats, b and flora.
Changed geomorphology of river	Altered river geomorphology and river flows	Effects on aquatic and terrestrial wildlife

- 5.3.15 The site and surrounding area has the potential to contain breeding birds, bats, small mammals (e.g. otter), invertebrates, reptiles, fish and other aquatic species of fauna and flora. Ecological surveys will be undertaken to inform the assessment process.

### Summary

- 5.3.16 The proposed Scheme has the potential to have effects on aquatic and terrestrial habitats and protected species. The EA will consider the effects on fauna and flora during construction and operation of the proposed Scheme.

## 5.4 Historic Environment

### Legislation, Policy, and Guidance

- 5.4.1 The overarching legislation in relation to heritage management in Scotland is provided by the Historic Environment (Amendment) (Scotland) Act 2011. The Act amends three pieces of primary legislation:
- The Historic Buildings and Ancient Monuments Act 1953;

- The Ancient Monuments and Archaeological Areas Act 1979; and,
    - The Planning (Listed Buildings and Conversation Areas) (Scotland) Act 1997.
- 5.4.2 Scotland's third National Planning Framework (NPF3), the Scottish Planning Policy (SPP), and Our place in time – Scotland's Historic Environment Policy (2014), aim to protect the Historic Environment.

5.4.3 Relevant regional and local planning policy and guidance includes:

**Aberdeenshire Local Development Plan (2012):**

- Policy 13 – Protecting, Improving, and Conserving the Historic Environment:
  - Policy SG Historic Environment 1: Listed Buildings;
  - Policy SG Historic Environment 2: Conservation Areas;
  - Policy SG Historic Environment 3: Historic Gardens and Designed Landscapes;
  - Policy SG Historic Environment 4: Archaeological Sites and Monuments;

**Aberdeenshire Proposed Local Development Plan (2016)**

- Policy HE1 – Protecting Historic Buildings, sites, and Monuments;
- Policy HE2 – Protecting Historic and Cultural Areas.

**Baseline**

- 5.4.4 Much of Stonehaven is a conservation area. The sections of the proposed Scheme from Green Bridge to Beach Bridge are within the conservation area.
- 5.4.5 White Bridge, which is to be raised as part of the Scheme, is a Category C Listed Building. 19 Bridgefield, is a Category C Listed Building. Some of the river walls are Category C Listed. There are a number of other Listed Buildings within 150m of the proposed works (See Table 5.5).
- 5.4.6 A search of the Canmore<sup>2</sup> database and the Aberdeenshire Sites and Monuments Record highlights additional heritage assets of local importance including Green Bridge; Invercarron site of corn mill (destroyed); and Stonehaven woollen mills.

**Table 5.5: Designated Heritage Assets within 150m of the Proposed Works**

Type of Heritage Asset	Name of Asset	Distance from Proposed Works
Category A Listed	Arbuthnott Street, St James the Great Episcopal Church including boundary walls, gatepiers and gates	20m south of the works
	85 Cameron Street, Carronbank House, including terraced garden, boundary walls, gatepiers and gates	100m north–west of the works
Category B Listed	74 Cameron Street, South Church manse including boundary wall sand gatepiers	145m north of the works
	82 Cameron Street, Rosebank Cottages including ancillary buildings, boundary walls and railings	140m north of the works
	7 and 8 (Burnside) Carron terrace including boundary walls and gatepiers	20m north of the works
	Arbuthnott Place, Roman Catholic Church of the	85m south of the works

<sup>2</sup> Royal Commission on the Ancient and Historical Monuments of Scotland

Type of Heritage Asset	Name of Asset	Distance from Proposed Works
	Immaculate Conception including boundary walls, gates, railings and soup kitchen	
	10 Barclay Street	55m north of the works
	26 and 28 Cameron Street, Cameron House including boundary walls	35m north of the works
	20 Cameron Street, Carron Restaurant including terraced garden, boundary walls, gatepiers and gates	23m north of the works
	5-16 (inclusive no.'s) Bridgefield Terrace, The Mill Inn	60m south of the works
	1, 2 and 3 Market Square	85m north of the works
Category C Listed	There are approximately 39 Category C Listed Buildings within 150m of the proposed works. Three Listed Buildings are included as part of the scheme: Arbuthnott Street, White Bridge; 19 Bridgefield including milestone and bridge pier; and River Walls.	-

### Assessment Methodology

- 5.4.7 FAS Heritage undertook a Heritage Assessment in January 2014<sup>3</sup> for the previous Stonehaven scheme design. It is proposed that the baseline information from the 2014 report will be verified and used to form the baseline for the new assessment. Although the previous assessment will be referred to, a new assessment will be required to identify potential effects of the new scheme design.

### Study Area

- 5.4.8 Historic environment information for the EA will be gathered within a 1km radius of the site boundary. The study area is considered sufficient to compile a comprehensive baseline, identifying statutory and non-statutory designated heritage assets. This will allow a full understanding of the setting of any heritage assets within the study area and allow an assessment of the archaeological potential of the site.

### Significance Criteria

- 5.4.9 Significance of effects will take into consideration embedded mitigation associated with the proposed Scheme. The overall significance of effect (Table 5.6), taking account for embedded mitigation, is determined by cross referencing the sensitivity of the receptor and the magnitude of effect. Moderate or major effects are considered to be significant.

<sup>3</sup> Stonehaven Flood Prevention Scheme – Heritage Assessment (FAS Heritage, January 2014)

Table 5.6: Significance of effect

Magnitude of impact	Sensitivity of Heritage asset			
	Negligible	Low	Medium	High
Neutral	Insignificant	Insignificant	Insignificant	Insignificant
Minor	Insignificant	Insignificant	Minor	Minor
Moderate	Insignificant	Minor	Moderate	Moderate
Major	Insignificant	Minor	Moderate	Major

## Potential Environmental Effects

### Receptors

- 5.4.10 Three Category C Listed Buildings/Structures (White Bridge, 19 Bridgefield, underpinning works at 19 Cameron Street and 29-37 Cameron Street and the river walls) will be directly affected by the proposed scheme and Listed Building Consent will be obtained for the alterations. There are a number of Category A, B and C Listed Buildings located within 200m of the proposed works. None of these listed buildings will be directly affected by the proposed Scheme; however there is the potential for the setting of the heritage assets to be affected during the construction and operation phases. The value and sensitivity of the listed buildings and their setting will be determined during the EA.
- 5.4.11 Unknown assets such as below-ground archaeological remains have the potential to be impacted during the construction phase through excavation and ground works. The potential for the site to contain buried archaeological remains or historic structures (either statutory or non-statutory designated assets) will be identified through desk based research during the EA.

### Construction effects to be assessed at EA

Table 5.7: Likely construction effects

Aspects of the proposed works that may cause construction effects	Construction impact	Potential significant effect
Raising of White Bridge	Alteration of listed structure. Effect on setting of Category A Listed Church of St James, work within the conservation area	Effect on statutory designated heritage assets
External works to the property at 19 Bridgefield	Conceal the historic fabric of the listed building	Effect on statutory designated heritage assets
Removal of river walls at Arbuthnott Street	Alteration of listed structure, work within the conservation area and setting of listed buildings	Effect on statutory designated heritage assets
New walls on the riverbank	Change in setting of heritage assets including 19 Bridgefield and Church of St James, work within the conservation area	Effects on statutory or non-statutory designated heritage assets
Works within a Conservation Area	Change in setting of Conservation area and Listed buildings through construction of	Effects on statutory or non-statutory designated heritage assets

Aspects of the proposed works that may cause construction effects	Construction impact proposed Scheme	Potential significant effect
Removal of Green Bridge (New bridge constructed in different area)	Alteration of locally important structure, work within the conservation area	Effects of statutory and non-statutory designated heritage assets
Ground works	Removal of buried archaeological remains	Effects on non-statutory heritage assets

### Operation effects to be assessed at EA

Table 5.8: Likely operation effects

Aspects of the proposed works that may cause operational effects	Operational impact	Potential significant effect
New and permanently altered walls and structures	Permanent alteration of listed structures. Effects on setting and/or character of statutory and non-statutory heritage assets	Effects on statutory and non-statutory heritage assets

### Summary

- 5.4.12 Impacts to both statutory and non-statutory designated heritage assets are likely to occur during both construction and operation phase. The key potential effects are the alterations to listed buildings/structures, the effect on the character of the conservation area, and the change in setting to statutory designated assets. The EA will consider effects on the historic environment during construction and operation of the proposed scheme.

## 5.5 Landscape and Visual

### Legislation, Policy, and Guidance

- 5.5.1 Guidance documents include:
- Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition (Landscape Institute (LI) with the Institute of Environmental Management and Assessment) 2013;
  - Natural Heritage Zones – A National Assessment of Scotland’s Landscapes (Scottish Natural Heritage) 2002; and
  - South and Central Aberdeenshire: Landscape Character Assessment (ERM) 1998.
- 5.5.2 Scotland’s third National Planning Framework (NPF3) and the Scottish Planning Policy (SPP) contain policies that aim to protect the landscape.

5.5.3 Relevant regional and local planning policy and guidance includes:

[Aberdeenshire Local Development Plan \(2012\):](#)

- Policy 12 – Landscape Conservation:
  - Policy SG Landscape 1: Landscape Character;
  - Policy SG Landscape 2: Valued Views;
- Policy Safeguarding of Resources and Areas of Search:
  - Policy SG Safeguarding 9: Open Space.

[Aberdeenshire Proposed Local Development Plan \(2016\)](#)

- Policy E2 – Landscape;
- Policy PR1 – Protecting Important Resources (includes open space).

## Baseline

### Landscape Baseline

5.5.4 A Landscape and Visual Assessment was undertaken on the previous Stonehaven Flood Protection Scheme design by JBA Consulting (October 2014)<sup>4</sup>. The baseline description of the area states that the town of Stonehaven developed as a fishing village within the sheltered Stonehaven Bay, at the mouths of the Carron and Cowie Waters. The Carron Water flows from west to east, rising around 12km inland and forming the southern boundary to much of the town as it passes under the railway and A90 bypass. The Burn of Glaslaw is a smaller watercourse, rising around 5km southwest of the town and broadly following the A90 before joining the Carron at Breen Bridge near the centre of the town. Both channels have a strong wooded character that permeates into and provides a contrast with the urban fabric of the town, creating an attractive backdrop and creating popular local recreational areas.

5.5.5 The landscape character of each section of the proposed works along the river corridor is further described below:

- **Burn of Glaslaw** – the Burn of Glaslaw runs alongside Carron Gardens and Woodview Court, and is generally screened by low retaining walls and culverted underneath roads, it is more open along Carron Gardens where it borders the pavement and a line of ornamental trees. The character of the area is mainly modern, suburban development, with residential flats and houses but set within a wooded valley by Dunottar Woods;
- **Red Bridge to Green Bridge** - south of this area is the main road and modern housing, with a continuation of Carron Terrace to the north. Green Bridge itself has a utilitarian appearance but provides views up and downstream. Red Bridge is a small footbridge that links Carronhall with Low Wood Road. The character between these two structures is dominated by tall, mature trees to the north bank and the dense deciduous woodland of Dunottar Woods. This provides a distinctive rural appearance that contrasts with the largely suburban, modern development immediately to the east;
- **Green Bridge to White Bridge** – this section extends eastwards from the Green Bridge to White Bridge. Carron Terrace lies to the north, and a public footpath follows a grassed area for a distance along the south bank, flanked by an avenue of trees. The Category A Listed St James Church lies immediately south of White Bridge, which itself is a distinctive wrought iron structure that is also listed. Carron Terrace is a quiet narrow riverside road

---

<sup>4</sup> Stonehaven Flood Protection Scheme: Landscape and Visual Assessment (JBA Consulting, October 2014)

with regularly spaced pollarded lime trees and attractive listed buildings at the western end. The section of Cameron Street that lies within this area offers open views across the Carron towards the White Bridge and church. This is further enhanced by the striking Art-deco elevation of the Carron Restaurant;

- **White Bridge to Bridgefield Bridge** - lies between White Bridge and Bridgefield and includes properties to the south side of Cameron Street and the north side of Arbutnott Street. Gardens of residential properties back onto the river on both north and south banks but public views are available from the two bridges. Many of these properties are listed and within the Conservation Area. However, boundary treatments and walls are of varied quality and material which creates a slightly discordant character. Cameron Street is a moderately busy route with bus traffic, with residential properties interspersed with a few small shops. In contrast Arbutnott Street is a quiet, residential cul-de-sac. There are views towards the mature trees at White Bridge; and
- **Bridgefield Bridge to Beach Bridge** – this is a short section between Bridgefield Bridge and Beach Bridge. A few residential properties along Salmon Lane and Arbutnott Place back onto the river. Bridgefield (the A957) is the former main road through the town, still relatively busy despite the A90 bypass. Although the bridge has a functional appearance it provides a view of the coast and beach, glimpsed views upstream, and a setting for the historic brick and stone listed building. Beach Bridge is a small timber pedestrian bridge over Carron Water which links the boardwalk along the beach from the town to the harbour. It provides views upstream and of Stonehaven Bay. After Beach Bridge Carron Water flows out into the sea.

- 5.5.6 A large section of the proposed scheme is within a Conservation Area and there are numerous listed buildings along the river corridor. Heritage assets are described in detail in Section 5.4.

#### Visual Baseline

- 5.5.7 The Landscape and Visual Assessment notes that the character of the proposed site varies and this is reflected in the visual quality, which depends on location or context.
- 5.5.8 Where visible the presence of the Carron Water offers a dynamic, natural feature within the settled, urban character of the town. Views up and down the river complement and contrast with the regular, often grid-like form of the town. The small but valued open spaces next to White Bridge and Green Bridge act as green buffers from which it is possible to appreciate the context of the river within the overall setting and provide visual links with the semi-rural, wooded hinterland. Features close to the river, such as White Bridge and St James Church, form prominent, identifiable, and memorable landmarks within the grid of streets. Away from the centre, views are of a more local, residential value but again Carron Water and Glaslaw Burn define views and vistas into and out of the town, often in association with nature trees or woodland.

## Assessment Methodology

### Study Area

- 5.5.9 The extent of the zone of theoretical visibility (ZTV) will be used to establish the spatial scope of the study area. The ZTV is defined as the approximate area from which the assessed development will be visible at eye level of a person standing on the ground. The ZTV for the LVIA will be determined at the EA stage.

### Significance Criteria

- 5.5.10 The significance of landscape/townscape and visual effects is determined by using a matrix that considers the interplay between impact magnitude and receptor sensitivity (Table 5.9). These effects can be beneficial or adverse and temporary or permanent depending on the nature of the proposed Scheme, embedded mitigation measures and any enhancement measures proposed. Negative impacts identified with major or moderate effects are considered significant.

Table 5.9: Significance of effect on landscape resource and visual amenity

Magnitude of Impact	Receptor Sensitivity		
	High	Medium	Low
High	Major*	Major*/moderate*	Moderate*/minor
Medium	Major*/moderate*	Moderate*	Moderate*/Minor
Low	Moderate*/minor	Minor	Minor/negligible
Negligible	Minor/negligible	Minor/negligible	Negligible

Based on GLVIA, IEMA and LI, 2013

\* Major and Moderate effects are considered significant

## Potential Environmental Effects

### Receptors

- 5.5.11 Changes to landscape/townscape and visual amenity can affect a range of receptors. Receptors will include:
- Residential receptors – residences that can reasonably be assumed to have views of the site and may receive notable effects;
  - Roads receptors – roads adjacent to the site area;
  - Recreational routes and footpaths – walkers represent a key receptor with the area. Pedestrian routes within the proposal area and those routes that may reasonably be expected to be impacted upon; and
  - Visitor destination receptors – notable visitor attractions and prominent buildings such as St James Church and riverside open space areas.



## Construction effects to be assessed at EA

Table 5.10: Likely construction effects

Aspects of the proposed works that may cause construction effects	Construction impact	Potential significant effect
General construction activities including plant and transport	Impact on the landscape character and visual amenity	Effects on residents, visitors, road users, and pedestrian's views and landscape character of riverside
Construction of new walls and reinforcement of existing walls. Installation of new flood walls with self-closing barriers	Impact on existing fabric and riverside townscape along the Carron Water	Effects on residents views and landscape of river
Raising and/or modifications to Red Bridge, Bridgefield Bridge and Beach Bridge.	Impact on existing fabric and riverside townscape along the Carron Water	Effects on pedestrians, residents and visitors. Change in views to/from river
Raising of White Bridge and construction of ramped and stepped access to White Bridge	Impact on existing fabric and riverside townscape along the Carron Water	Effects on users and views from/to St James Church, Carron Restaurant, and open green area
Replacement of Green Bridge with new crossing to the east	Impact on existing fabric and riverside townscape along the Carron Water	Effects on pedestrians, residents and visitors. Change in views to/from river and setting of open green area
Vegetation and tree removal	Impact on the landscape character and visual amenity	Effects on residents and visitors. Change in views along river
Replacement of culverts	Impact on visual amenity	Effects on residents

## Operation effects to be assessed at EA

Table 5.11: Likely operational effects

Aspects of the proposed works that may cause operational effects	Operational impact	Potential significant effect
Tree planting	Impact on the landscape character and visual amenity	Beneficial effect on landscape character
New or altered structures (bridges, walls)	Impact on the landscape character and visual amenity	Effects on residents and visitors. Change in views.
Changed river morphology	Impact on the landscape character and visual amenity	Change in river flows affecting character and visual amenity. Protection of townscape/landscape from flood effects

## Summary

- 5.5.12 The construction and operation of the proposed flood protection scheme are likely to result in effects on the landscape/townscape character of the town and riverside area and views to and from the river. Key issues which will be considered further in the EA in terms of their landscape and visual impacts on receptors include:

#### Construction

- General construction activities;
- Removal of vegetation and trees;
- Construction of new structures; and
- Modifications to existing structures.

#### Operation

- Tree planting;
- New and altered structures; and
- Changed river morphology.

## 5.6 Material Assets

### Policy Context

- 5.6.1 Scotland's third National Planning Framework (NPF3) and the Scottish Planning Policy (SPP) contain provision for protection and development of material assets such as utilities and infrastructure. There is no directly applicable local policy for material assets for the Scheme.

### Baseline

- 5.6.2 Material assets can include property, infrastructure, and utilities. The river and proposed works run through the town of Stonehaven and are adjacent to a number of local roads including Carron Gardens, Low Wood Road, Carron Terrace, Cameron Street, Arbuthnott Street and Bridgefield. Within the area of the proposed works four footbridges and one road-bridge cross over the river. (See Section 5.10 Transport, Access, and Traffic for further information)
- 5.6.3 There are a number of properties along the banks of the river, some with gardens backing onto the river. There are a couple of community facilities along the river including two churches and areas of parkland/green space (see Section 5.8 Socio-Economics for further information).

### Assessment Methodology

- 5.6.4 Effects on property and infrastructure such as roads are addressed under the Socio-Economic; Historic Environment; and Transport, Access, and Traffic sections of this report.
- 5.6.5 Sewer and power cables will need to be diverted. However, it is likely that this will be possible without disruption to normal services.
- 5.6.6 It is therefore proposed to scope out material assets from the Environmental Assessment.

## 5.7 Noise and Vibration

### Legislation, Policy, and Guidance

- 5.7.1 The following legislation, standards and guidelines are relevant to the proposed scheme:
- Sections 60 and 61 of The Control of Pollution Act 1974;
  - The Environmental Protection Act 1990;
  - British Standard (BS) 5228 Code of practice for noise and vibration control on construction and open sites - Part 1: Noise 2009, amended 2014;
  - BS5228 'Code of construction practice for noise and vibration control on construction and open sites - Part 2: Vibration' 2009; and
  - BS4142 Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas 1997.
- 5.7.2 The above list is not exhaustive and further guidance will be referred to if necessary. Information on noise and vibration will also be sought from Aberdeenshire Council.

### Baseline

- 5.7.3 The proposed works follow the course of the river which flows through the town of Stonehaven. As such the site corridor is subject to typical noise levels associated with an urban environment. Roads and areas of parkland run adjacent to the river and residential properties back onto sections of the river. Residences and users of the parkland areas are potential sensitive receptors. Other sensitive receptors include two places of worship: St James the Great Episcopal Church located 20m from the proposed works and South Church located 50m from the proposed works.

### Assessment Methodology

#### Study Area

- 5.7.4 In terms of construction noise, the assessment would be limited to areas where the calculated total noise (construction noise plus pre-construction ambient noise) is expected to exceed the pre-construction ambient noise level by 5 dB or more subject to the following threshold values:
- 45 dB(A) during the night periods defined as 23:00 to 07:00 on any day of the week;
  - 55 dB(A) during evenings and weekends defined as 19:00 to 23:00 on weekdays; 13:00 to 23:00 on Saturdays and 07:00 to 23:00 on Sundays; and
  - 65 dB(A) during the daytime periods defined as 07:00 to 19:00 on weekdays and 07:00 to 13:00 on Saturdays.

#### Significance Criteria

- 5.7.5 Construction noise will be assessed in accordance with BS 5228, particularly in relation to the following:
- 5.7.6 "Noise level generated by construction activities are deemed to be significant if the total (pre-construction ambient plus construction noise) exceeds the pre-construction ambient noise by

5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB  $L_{Aeq,Period}$ , from construction noise alone, for the daytime, evening and night-time periods, respectively and a duration of one month or more, unless works of a shorter duration are likely to result in significant impact”.

- 5.7.7 For assessment of construction noise, noise impacts determined as significant in accordance with the above definition will be regarded as resulting in a significant adverse effect.
- 5.7.8 For construction vibration, BS5228-2:2014 advises that at vibration levels of 0.3mm/s, “vibration might be just perceptible in residential environments”, and at 1.0mm/s “It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents”
- 5.7.9 For assessment of construction vibration, a peak particle velocity (PPV) of 1.0 mm/s or more, will therefore be considered to have a major adverse impact and will be deemed to produce a significant adverse effect. Lower vibration magnitudes will be assumed to have progressively less significant effects.

### Potential Environmental Effects

#### Receptors

- 5.7.10 Key sensitive receptors likely to be affected by temporary construction noise and vibration effects are those in close proximity to the proposed works which include:
  - Residences along Carron Gardens, Carron Terrace, Cameron Street, and Arbutnott Street;
  - St James the Great Episcopal Church 20m from the proposed works and South Church 50m from the proposed works;
  - Aquatic and terrestrial wildlife; and
  - Parkland along on the opposite side of the river to Carron Terrace and adjacent to Low Wood Road.

#### Construction effects to be assessed at EA

Table 5.12: Likely construction effects

Aspects of the proposed works that may cause construction effects	Construction impact	Potential significant effect
Alterations and works to existing structures	Noise and vibration	Effects on local residences and St James the Great Episcopal Church
Construction of new river walls and structures	Noise and vibration	Effects on local residences and wildlife
Landscape, park, and garden improvements	Noise and vibration	Effects on local residences, users of park areas, and wildlife
In Channel works	Noise and vibration	Effects on properties backing onto the river and wildlife
Construction activities e.g. piling	Noise and vibration	Effects on local residences, places of worship, and wildlife

Aspects of the proposed works that may cause construction effects	Construction impact	Potential significant effect
Construction traffic	Noise and vibration	Effects on local residence and road users

#### Operation effects to be assessed at EA

Table 5.13: Likely operational effects

Aspects of the proposed works that may cause operational effects	Operational impact	Potential significant effect
Maintenance and repair activities	Noise and vibration	Occurrence of maintenance and repair activities anticipated to be low. Effects likely to be temporary and minor.

### Summary

- 5.7.11 The proposed Scheme has the potential to affect sensitive receptors through temporary noise and vibration nuisance associated with construction.
- 5.7.12 Operational activities will include maintenance and repair. These are likely to be low occurrence and temporary in nature. As such, it is proposed that operational noise and vibration effects are scoped out of the EA.

## 5.8 Socio-Economic

### Legislation, Policy, and Guidance

- 5.8.1 Scotland's third National Planning Framework (NPF3) and the Scottish Planning Policy (SPP) contain provisions to help protect communities from nuisance caused by development and to encourage sustainable, vibrant, and inclusive communities.

### Baseline

- 5.8.2 There are a number of properties along the banks of the river that either have gardens backing onto the river or have view across a road to the river. In particular:
  - Flats at Carron Gardens with views of the river;
  - Properties along Arbuthnott Street and Cameron Street backing onto the river;
  - Properties on Cameron Street at White Bridge with views across the road to the river; and
  - Properties along Carron Terrace with views across the road to the river, although views are partially shielded by a tree line.
  - Dunnottar Avenue properties.
- 5.8.3 The majority of buildings along the river are residential properties. However, there are a few commercial buildings including:

- Carron Restaurant – located on Cameron Street with views of the river;
  - Simpson Playhouse – located next to Carron Restaurant on Cameron Street with views of the river;
  - Citizens Advice Bureau – located on Cameron Street backing onto the river;
  - The Carron Fish Bar – located on Bridgefield (first building on north side of the bridge); and
  - Country Furniture store – located on Bridgefield (first building on south side of the bridge).
- 5.8.4 There are a couple of community facilities along the river including two churches, a sheltered housing complex and areas of parkland/green space.

### **Assessment Methodology**

- 5.8.5 It is proposed that socio-economics is scoped out of the EA. Therefore, the proposed assessment methodology has not been included in this Scoping Report.
- 5.8.6 It is proposed that socio-economics is scoped out because issues covered in this topic are addressed elsewhere in the report. For example, construction dust and noise nuisance for residents and businesses are covered in the air quality and noise sections; access issues are covered in the transport, access, and traffic section, and effects on views is covered in the landscape and visual section.
- 5.8.7 Other socio-economic impacts will be beneficial. The scheme itself will provide flood protection for properties and businesses. Properties along Cameron Street and Arbuthnott Street will benefit from improvements to their private gardens where new walls are to be incorporated. As part of the scheme waterproofing and strengthening works to the basement level of properties adjacent to the river, (i.e. 58 Carron Gardens, 17 Arbuthnott Street, and 19 Bridgefield) will be undertaken. The scheme may also include improvements to green space (parkland) east of the relocated Green Bridge, increasing its amenity value.
- 5.8.8 In research conducted in the USA<sup>5</sup>, a positive effect has been identified between the reduction of flood risk in a flood plain and an uplift in property values of up to 5%. This supports the beneficial nature of the socio-economic impacts on property owners generally and the 5% figure is provided as an illustration only.
- 5.8.9 Similarly, the potential inclusion of improvements to green space (parkland) in the scheme can also deliver positive benefits, not all of which are quantifiable. In study published in 2014<sup>6</sup>, it was reported that property located on the edge of a park could attract a premium of between 0.44% and 19%. Again this is an illustrative point reinforcing the potential positive benefits to local households from enhanced or additional open space or parkland in the area.

---

<sup>5</sup> ECONorthwest (2007) *The Economics of Low Impact Development*; and, ECONorthwest (2011) *Economic Benefits of Green Infrastructure in the Chesapeake Bay Region*

<sup>6</sup> Natural England (2014) *Microeconomic Evidence for the Benefits of Investment in the Environment*

## 5.9 Soil, Geology, and Ground Contamination

### Legislation, Policy, and Guidance

- 5.9.1 The following legislation and guidance will be taken into consideration when undertaking the assessment:
- Environment Agency (EA)/Department for the Environment, Food and Rural Affairs (Defra) Contaminated Land Report (CLR) 11 Model Procedures for the Management of Land Contamination, 2004;
  - Defra's 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites';
  - BS 10175: 2011 +(A1:2013) ' Investigation of Potentially Contaminated Sites, Code of Practice';
  - Construction and Industry Research and Information Association (2001) Contaminated Land Risk Assessment – A Guide to Good Practice CIRIA Report C552;
  - CIRIA C665 Assessing risks posed by hazardous ground gases to buildings, 2007;
  - CEN, BS EN 1997-1:2004 Eurocode 7: Geotechnical design- Part 1: General;
  - Contaminated Land (Scotland) Regulations, 2000 (SSI 2000/178);
  - Contaminated Land (Scotland) Regulations, 2005 (SSI 2005/658);
  - Department for Environment, Food and Rural Affairs, Environmental Protection Act 1990: Part IIA;
  - The National Planning Framework (NPF2), 2009; and
  - Planning Advice Note 33.

### Baseline

- 5.9.2 An intrusive ground investigation (GI) was undertaken across the site by Costain Environmental Services (Costain) between October and November 2013 for site characterisation purposes and to ascertain geotechnical properties of the ground. A factual report was produced by Costain<sup>7</sup> and an interpretive report subsequently prepared by JBA Consulting<sup>8</sup>. Assessment of the risk posed by contaminated land was out with the scope of the Costain GI.
- 5.9.3 Mott MacDonald undertook a Phase 1 Preliminary Contaminated Land Risk Assessment in January 2015. The objective was to identify pollutant linkages which could potentially exist at the site following the planned development and to undertake a preliminary Contaminated Land Risk Assessment. The Phase 1 preliminary Contaminated Land Risk Assessment recommended that an intrusive GI was undertaken to further inform the contaminated land risks of the development to identify sensitive receptors, which has not been undertaken at this stage.
- 5.9.4 Baseline conditions pertaining to ground conditions have been compiled from the following sources and are summarised in Sections 5.9.5 to 5.9.14 below:

---

<sup>7</sup> Costain Environmental Services, Factual Report on Ground Investigation, Volume 1 of 2, (January 2014)

<sup>8</sup> Jeremy Benn Associates Ltd (JBA), 'Ground Investigation Interpretive Report' (September 2014).

- Costain Environmental Services, 'Factual Report on Ground Investigation, Volume 1 of 2', (January 2014);
- Jeremy Benn Associates Ltd (JBA), 'Ground Investigation Interpretive Report' (September 2014); and
- Mott MacDonald, 'Phase 1 Preliminary Contaminated Land Risk Assessment' (January 2015).

### Geology and Ground Conditions

- 5.9.5 The superficial geology for the site is alluvium consisting of clay, silt, sand and gravel, which is indicated to be present across the majority of the site associated with the Carron Water and Burn of Glaslaw. River Terrace deposits consisting of sand and gravels are included in the northern parts of the site within the area just before White Bridge to Beach Bridge. Raised marine beach deposits of the Drumlithie Sand and Gravel Formation and the Mill of Forest Till Formation are also located in close proximity of the site. Although not recorded on the geological maps, made ground of unknown thickness is anticipated to be present overlying the natural deposits due to the historical development of the site and the surrounding area. Solid geology beneath the entire site is reported to comprise sandstone of the Carron Sandstone Formation.<sup>9</sup>

### Hydrogeology and Hydrology

- 5.9.6 The BGS Hydrogeology Map Viewer records the site to be underlain by a moderately productive aquifer, where groundwater flow is virtually all through fractures and other discontinuities. The Groundwater Vulnerability Map, indicates the geology beneath the west of the site (between Red Bridge and White Bridge) to be highly permeable. No information is available for the east of the site (between White Bridge and Beach Bridge), however, as there is no change in the solid geology it is thought the permeability may be similar across the site.
- 5.9.7 The Carron Water flows in an easterly direction, from Red Bridge (adjacent to Low Wood Road) before reaching Stonehaven Bay (the eastern extent of the site). The Burn of Glaslaw flows in a northerly direction before joining the Carron Water downstream of the Green Bridge. Two individual mill lades associated with the former Corn Mill located on Dunnottar Avenue flow in an easterly direction before discharging into the Carron Water at the rear of Arbuthnott Place.<sup>10</sup>
- 5.9.8 Further details on hydrogeology and hydrology are presented within Section 5.11 'Water Environment'.

### Mining and Quarrying

- 5.9.9 The solid geology beneath the site is not a coal bearing strata and consequently the risk associated with abandoned mine workings below the site is considered to be negligible. In

---

<sup>9</sup> Phase 1 Preliminary Contaminated Land Risk Assessment (Mott MacDonald, January 2015)

<sup>10</sup> Phase 1 Preliminary Contaminated Land Risk Assessment (Mott MacDonald, January 2015)



addition, Stonehaven is not listed in the Coal Authority 'Scotland Coal Mining and Brine Search Gazetteer'<sup>11</sup>.

- 5.9.10 There are no records of quarrying activity within the site boundary; however an opencast sand and gravel mine is recorded c.30m south east of the site<sup>12</sup>. It is unknown when the mine ceased operation and it should be noted that it is not recorded on the available historical maps.

#### Land Contamination

- 5.9.11 Based on the historical land use and available information relating to the ground conditions, a number of potential pollutant linkages were identified by the Mott MacDonald Phase 1 Contaminated Land Risk Assessment relating to potential contaminant sources within the site and surrounding area. The pollutant linkages are currently considered to pose a moderate to low to moderate risk to sensitive receptors.

#### Assessment Methodology

- 5.9.12 The Mott MacDonald Phase 1 Preliminary Contaminated Land Risk Assessment recommended that a Phase 2 Intrusive Ground Investigation is undertaken. The assessment in the EA will be informed by this investigation and will be based on the findings of the resulting Contaminated Land Risk Assessment.

#### Study Area

- 5.9.13 The study area for Soils, Geology and Ground Contamination assessment would encompass the site and the area within 1km of the site boundary.

#### Significance Criteria

- 5.9.14 The significance criteria is informed by a review of qualitative descriptions of magnitude of impact based on CIRIA C552(7) and the published Contaminated Land Report (CLR11). A descriptive meaning for the severity of effects from land contamination and the corresponding significance of the impact is detailed in Table 5.14.

Table 5.14: Description of Effects and Corresponding Significance (Land Contamination)

Severity of Effect	Description	Significance
Large Beneficial	Remediation of soils resulting in major improvements to overall soil and groundwater quality in the vicinity of a medium or high value receptor.	Significant
Moderate Beneficial	Remediation of soils resulting in moderate improvements to overall soil and groundwater quality in the vicinity of a medium or high value receptor.	
Slight Beneficial	Remediation of soils resulting in slight improvements to overall soil and groundwater quality.	Not significant

<sup>11</sup> Coal Authority, Scotland Coal Mining and Brine Search Gazetteer

<sup>12</sup> Jeremy Benn Associates Ltd (JBA), 'Site Investigation – Desk Study' – Including Appendix A. Envirocheck Report No. 44862644\_1\_1 (April 2013)

Severity of Effect	Description	Significance
	Re-use of excavated soils (through treatment) to avoid disposal to landfill.	
Neutral	No discernible negative effects.	
Slight Adverse	Easily preventable health effects on humans Localised and easily repairable damage to buildings/ infrastructure and foundations (on or off Site) but not resulting in them being unsafe for occupation. Damage to services but not sufficient to impair their function. Low-level and localised contamination of on-Site soils	
Moderate Adverse	Medium / long term (chronic) risk to human health Moderate damage to buildings / infrastructure (on or off Site) including services infrastructure impairing their function. Contamination of off-Site soils	Significant
Large Adverse	Short term (acute) risk to human health Damage to buildings / infrastructure including the services infrastructure (e.g. explosion) Generation of significant quantities for excavated soils for disposal to landfill.	
Very large adverse	Catastrophic damage to buildings / infrastructure including the services infrastructure (e.g. explosion)	

## Potential Environmental Effects

### Receptors

#### *Human Health (Future site users and construction workers)*

- 5.9.15 Future site users such as residents and visitors could be at risk in the event that construction results in creation of new direct contact pathways which weren't there previously. This will only be applicable to certain areas of the development. Construction workers could be at risk during the construction phase. Short term exposure to contaminants through handling impacted soils may pose a risk to construction workers.

#### *The Water Environment*

- 5.9.16 The potential lateral/vertical migration of contamination associated with historical land use poses a potential risk to the water environment and risk of impacted groundwater entering excavations.

#### *Flora and Fauna*

- 5.9.17 Plants and vegetation present on and within proximity of the site are potential receptors. Toxins may impact plants and vegetation through root uptake from contaminated soils or contaminated waters.

## Built Environment

- 5.9.18 There are numerous buildings adjacent to the banks of the river, including Listed Buildings. Potential contaminative historical land use and made ground are a potential risk to the built environment.

### Construction effects to be assessed at EA

Table 5.15: Likely construction effects

Aspects of the proposed works that may cause construction effects	Construction impact	Potential significant effect
Earthworks and excavations	Exposure of potentially contaminated soils and groundwater, creation of new contaminant pathways, generation of contaminated and uncontaminated arisings	Impact on health of construction workers and future site users, water environment, built environment and buried services, and flora and fauna
Disposal of soils	Movement of contaminated and uncontaminated arisings	Impact on health of sensitive receptors both on-site and off-site
In-channel works	Contaminant migration to water environment	Impacts on riparian and aquatic habitats and species
General construction works	Contamination of site soils and / or the water environment from spills and leaks	Impact on health of construction workers and future site users, water environment, built environment and buried services, and flora and fauna

### Operation effects to be assessed at EA

Table 5.16: Likely operation effects

Aspects of the proposed works that may cause operation effects	Operational impact	Potential significant effect
New planting and landscaping	Potential risk to establishment of new flora and fauna	Impact on flora and fauna
Sheet pile / secant pile walls	Creation of new contaminated pathways	Impact on the water environment and human health
Change in land use	Creation of new pollution linkages	Impact on health of construction workers and future site users, water environment, built environment and buried services, and flora and fauna

## Summary

- 5.9.19 The potential presence of contaminated materials and made ground encountered during construction presents a risk to subsurface soil, water environment, ecology, built environment and buried services, and to the health and safety of construction workers and future site users. This will be considered further in the EA and appropriate mitigation measures will be identified.

- 5.9.20 During operation future site users and new landscaping could be impacted by changes in land use creating linkages with areas of recorded industrial land uses. This will be further investigated in the EA and appropriate mitigation measure will be identified.

## 5.10 Transport, Access and Traffic

### Legislation, Policy, and Guidance

- 5.10.1 The following policy and guidance documents will be used to inform the traffic and transport assessment:
- Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment / IEMA) (1993), Guidelines for the Environmental Assessment of Road Traffic, Guidance Notes No. 1 [referred to as the IEMA Guidelines];
  - Institution of Highways and Transportation (IHT) (1994), Guidelines for Traffic Impact Assessment;
  - Highways Agency / Scottish Government (2008), The Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment;
  - Transport Scotland (2012), Transport Assessment Guidance;
  - The Scottish Government (2010), Scottish Planning Policy; and
  - The Scottish Executive (2005), PAN 75: Planning for Transport.

### Baseline

- 5.10.2 The river and proposed works run through the town of Stonehaven and are adjacent to a number of local roads including Carron Gardens, Low Wood Road, Carron Terrace, Cameron Street, Arbuthnott Street, Woodview Court and Bridgefield.
- 5.10.3 Carron Gardens, Carron Terrace, Woodview Court and Arbuthnott Street are quiet residential roads. Cameron Street is a moderately busy route with bus traffic.
- 5.10.4 Bridgefield (the A957) is the former main road through the town and is still relatively busy despite the A90 bypass which passes round the western edge of Stonehaven. Route 1 of the National Cycle Network passes along the A957 and across Bridgefield Bridge.
- 5.10.5 Within the area of the proposed works four footbridges and one road bridge cross over the river, as follows:
- Red Bridge – footbridge – small pedestrian bridge linking Carronhall with Low Wood Road;
  - Green Bridge – footbridge – important pedestrian route linking residential area around Low Wood Road, Carron Gardens, and Dunottar Avenue with Carron Terrace and Arduthie Street which provides access into the town centre and to the railway station;
  - White Bridge – footbridge – provides an attractive pedestrian route from the town to residential areas along the south side of Carron Water, linking Cameron Street and Arbuthnott Street;
  - Bridgefield Bridge – road bridge – former main road through town; and
  - Beach Bridge – footbridge - small pedestrian bridge forming part of the boardwalk which runs along the beach from the town to the harbour.

## Assessment Methodology

### Study Area

- 5.10.6 The study area for assessment of transport, access and traffic will comprise those roads likely to be used by construction traffic on the approach to and within the vicinity of construction works within Stonehaven as identified above. The site compound location is currently unclear at the moment.
- 5.10.7 A site visit will be undertaken to assess key roads that will be utilised by construction traffic. Constraints will be identified and sensitive road links determined (i.e. locations which are likely to be more vulnerable to changes in traffic flow or profile).
- 5.10.8 Consultation will be undertaken with Aberdeenshire Council to ascertain their views on the assessment, environmental impacts relating to transport, access, and traffic, as well as any particular concerns they may have relating to the proposed works.
- 5.10.9 Traffic count data will be obtained for relevant roads, which will be used as a baseline against which volume of construction traffic will be assessed.
- 5.10.10 National Road Traffic Forecasts (NRTF) will be identified appropriate to the construction / assessment year. The application of NRTF factors to existing traffic flow data will allow traffic flow for the year of construction to be forecast.

### Significance Criteria

- 5.10.11 Significance of effect will be determined through consideration of the magnitude of change against the baseline (if the baseline information is available) and the sensitivity of the receiving environment. Mitigation measures will be identified, where required, with the aim of reducing potentially significant effects.

#### *Magnitude*

- 5.10.12 The magnitude of change will be calculated as the proportional change in traffic anticipated on key roads within the study area. This calculation will compare the forecast development traffic generation against the anticipated traffic baseline during the assumed construction year.

#### *Sensitivity*

- 5.10.13 In respect of this assessment, sensitive road sections are those which are likely to be vulnerable to changes in traffic flow and volume and the presence of construction traffic.

#### *Significance of Effect*

- 5.10.14 The predicted significance of the effect will be determined through a standard method of assessment based on professional judgement, considering both sensitivity of route section and magnitude of change (increase/decrease in traffic flows).

- 5.10.15 The IEMA Guidelines (IEMA, 1993) are intended for the assessment of the effect of road traffic associated with new developments and as such these guidelines are defined as suitable to assess the construction phase of the proposed development.
- 5.10.16 The IEMA Guidelines (IEMA, 1993) suggest that two broad rules can be used as a screening process to delimit the scale and extent of the assessment of road traffic. These are:
- Rule 1 - Include highway links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%); and
  - Rule 2 - Include any other specifically sensitive areas where traffic flows would increase by 10% or more.
- 5.10.17 As such, where traffic is expected to increase by less than 30% (as per Rule 1) or 10% in 'sensitive' areas (as per Rule 2), the potential effects will not be considered in detail.
- 5.10.18 The significance criteria are set out in Table 5.17.

Table 5.17: Significance Criteria

Significance of Effect	Increase in Total Traffic or HGV Traffic Volume by Route Sensitivity	
	Standard Route Section	Specifically Sensitive Route Section
Major	Greater than or equal to 60%	Greater than or equal to 60%
Moderate	Greater than or equal to 30% and less than 60%	Greater than or equal to 10% and less than 60%
Minor	Greater than or equal to 10% and less than 30%	Greater than or equal to 5% and less than 10%
Negligible	Less than 10%	Less than 5%

#### *Cumulative Effects*

- 5.10.19 Consideration will also be given to the cumulative effects of construction traffic in addition to traffic generated by relevant external projects. External developments will be included where known and if they have the potential to add notable volumes of traffic to roads within the study area during the proposed project construction programme.

### **Potential Environmental Effects**

#### **Receptors**

- 5.10.20 The most sensitive issues identified to date include the potential impact of construction traffic on local road users and local residents, as well as the impact of bridge works and closures during construction on vehicular and pedestrian access.

## Construction effects to be assessed at EA

Table 5.18: Potential construction effects

Aspects of the proposed works that may cause construction effects	Construction impact	Potential significant effect
Construction related deliveries causing increase in HGV levels	Pedestrian amenity/ Fear and intimidation Increased congestion	Driver delay Accidents and road safety
Increase in private car use levels associated with staff attending site	Parking issues Increased congestion	Driver delay
Works to footbridges (Red Bridge, Green Bridge, White Bridge, Beach Bridge)	Severance/ restricted access across the river. Bridge footpath closures	Pedestrian delay
Works to Bridgefield Bridge	One-lane road closure/ congestion	Driver delay
Works to river walls	Road and footpath closure	Driver and pedestrian delay
Pumping station installation	Road and footpath closure Increased congestion	Driver and pedestrian delay

## Operation effects to be assessed at EA

- 5.10.21 It is proposed that assessment of operational effects will be scoped out of the EA because there is likely to be little effect on transport, traffic and access as a result of the operation of the scheme. There will be a minimal number of vehicles associated with inspection and maintenance activities and the number of visits is likely to be low. There will be access benefits to Green Bridge through replacement of the existing bridge with a new Equality Act compliant bridge which will form a continuous route between Arduthie Street and Carron Gardens.

### Summary

- 5.10.22 Environmental issues relevant to access, traffic, and transport are likely to be predominantly associated with the construction phase. Effects to be considered further in the EA include effects of construction traffic, footbridge closures and a one-lane closure at Bridgefield Bridge.
- 5.10.23 Operational activities will include inspection and maintenance. These activities are likely to be low in frequency and require access for only one or two small vans at any time. Accordingly It is proposed that operational assessment is scoped out of the EA.

## 5.11 Water Environment

### Legislation, Policy, and Guidance

- 5.11.1 Scotland's third National Planning Framework (NPF3) and the Scottish Planning Policy (SPP) contain policies that aim to protect the water environment through the planning process.
- 5.11.2 Relevant planning policy and guidance includes:

[Aberdeenshire Local Development Plan \(2012\):](#)

- Policy Safeguarding of Resources and Areas of Search:
  - Policy SG Safeguarding 1: Protection and Conservation of the Water Environment.

[Aberdeenshire Proposed Local Development Plan \(2016\)](#)

- Policy PR1 – Protecting Important Resources (includes the water environment).

**Baseline**

- 5.11.3 Carron Water and Glaslaw Burn flow through the south of the town of Stonehaven. Scottish Environment Protection Agency (SEPA) River Basin Management Plan (RBMP) interactive mapping shows that Carron Water has a moderate status (2008 classification status), with a 2027 target of good status. The Burn of Glaslaw is culverted in small sections where it goes under roads in the residential area of Carron Gardens. It should also be noted that Cowie Water and Maxie Burn flow round the north side of the town approximately 500m from Carron Water and the proposed works.
- 5.11.4 The bathing water quality is an important local issue and will be considered in the assessment in relation to construction works.
- 5.11.5 The groundwater body is the Stonehaven bedrock and localised sand and gravel aquifers. This water body has a quantitative class of good, and a groundwater chemistry class of poor. It has a target of good, good by 2015. The area is also a drinking water protection zone.
- 5.11.6 A geomorphological audit of Carron Water was undertaken was undertaken by JBA Consulting in 2010. The report classified Carron Water as a moderately active single thread river displaying morphological features such as riffles and bars which are associated with temporary storage of the cobble and gravel bed material. The report noted that the river has been extensively altered through Stonehaven with a number of crossings, bank protection structures, and grade control structures which have disrupted sediment balance.
- 5.11.7 The catchment of Carron Water to the Stonehaven tidal boundary covers an area of approximately 43km<sup>2</sup>. Carron Water rises in low coastal hills with the highest elevation in the catchment at 321 mAOD on the Hill of Trusta. It flows from its source in the Brae of Glenberrie in a south easterly direction before passing under the A90 which marks the western boundary of Stonehaven. Carron Water passes along the southern periphery of the town centre where it merges with the Burn of Glaslaw before reaching its coastal outfall.<sup>13</sup>
- 5.11.8 Fluvial flooding risk from Carron Water results from heavy or prolonged rainfall and/or snowmelt in the Carron catchment causing river levels to rise, with the potential for the river banks to be overtopped and flooding to land and properties to occur.
- 5.11.9 Stonehaven is also at risk from surface water flooding. The topography of Stonehaven means that surface water will be shed from the higher areas in the central, west, and north-west parts of the town towards the lower areas at the coast and the Carron and Cowie valleys.

---

<sup>13</sup> Stonehaven River Carron Flood Alleviation Study (JBA Consulting, July 2012)



## Assessment Methodology

### Study Area

- 5.11.10 The assessment will be based upon the identification of surface water and groundwater features and abstractions within 250m of the proposed works, except where there is clearly no hydraulic connectivity. Outside this distance it is unlikely that direct impacts upon the water environment would be attributable to the proposed scheme. The 250m study area assumes that no large-scale dewatering is planned during scheme construction.

### Significance Criteria

- 5.11.11 The significance of an effect is defined by the magnitude of the impact and the overall value of the receiving water body or receptor (the 'attribute') (see Table 5.19). With regards to EA, significant effects on the water environment are those that are anticipated to have a moderate significance of effect or greater.

Table 5.19: Significance of effects

Value of receptor				
Magnitude of Impact	Low	Moderate	High	Very high
Negligible	Neutral	Neutral	Neutral	Neutral
	Not significant	Not significant	Not significant	Not significant
Minor	Neutral	Slight	Moderate	Moderate/ Large
	Not significant	Not significant	Significant	Significant
Moderate	Slight	Moderate	Moderate/ Large	Large/ Very Large
	Not significant	Significant	Significant	Significant
Major	Slight	Large	Large/ Very Large	Very Large
	Not significant	Significant	Large Significant	Significant

## Potential Environmental Effects

### Receptors

- 5.11.12 Two surface water receptors are within the site of the proposed works, Carron Water and Glaslaw Burn.
- 5.11.13 There is potential for these water bodies to be affected at the construction stage, primarily through the deterioration of water quality resulting from in channel works and works on river banks and bridges over the river. Appropriate mitigation measures will be considered and assessed as part of the EA to address any potential construction effects on the water resources.
- 5.11.14 The geomorphology of Carron Water will be permanently altered, affecting flows, reducing floodplain connectivity, and reducing flood risk.

### Construction effects to be assessed at EA

Table 5.20: Likely construction effects

Aspects of the proposed works that may cause construction effects	Construction impact	Potential significant effect
General construction works on the site	Deposition or spillage of soils, sediment, fuels or other construction materials Uncontrolled site runoff Temporary earthworks affecting natural drainage paths	Degradation of the water quality of river
In channel works	Sedimentation Deposition or spillage of construction materials, debris, dust Change to flood risk	Degradation of the water quality of river Temporary increase in flood risk as a result of partially completed works. Flood warning system potentially no longer applicable
Work on bridges crossing the river, river banks, and new walls	Deposition or spillage of construction materials, debris, dust Sedimentation	Degradation of the water quality of the river

### Operation effects to be assessed at EA

Table 5.21: Potential operational effects

Aspects of the proposed works that may cause operational effects	Operational impact	Potential significant effect
Works to river channel	Change in river geomorphology	Change in river flows Reduced flood risk
Lowering the river bed	Change in the river flow	Change in sedimentation and erosion

5.11.15 As work has already been carried out to assess operational flood risk impacts (the proposed scheme has been developed to take account of these), no detailed assessment of the impacts of the proposed scheme on flood risk during the operational period will be undertaken.

### Summary

5.11.16 The key environmental issues from the proposed Scheme on the water environment are considered to be as follows, and will be considered further in the EA:

- Effects on water quality as a result of general construction activities, in channel works, and works to bridges, river banks and walls which could cause leaks, spills, debris, dust, and uncontrolled runoff during construction;
- Changes to river geomorphology and the resulting alteration to river flows.

## 6 Summary

### 6.1 Summary of Scoping Environmental Effects

6.1.1 One of the aims of this Report is to identify the technical environmental disciplines that will be included in the Environmental Assessment. Topics proposed for ‘scoping in’ (i.e. considered further in the EA) and ‘scoping out’ (i.e. not considered further in the EA) are summarised in Table 6.1.

Table 6.1: Summary table of topics scoped in and out

Environmental Topic	Scoped in / out of EA Process		Brief justification for topics scoped-out
	Construction	Operation	
Air Quality	Scoped In	Scoped Out	Operational activities will include inspection and maintenance. These are likely to be low frequency and consist of one or two small vans at a time.
Ecology (Flora & Fauna)	Scoped In	Scoped In	-
Historic Environment	Scoped In	Scoped In	-
Landscape and Visual	Scoped In	Scoped In	-
Material Assets (such as property, infrastructure, and utilities)	Scoped Out	Scoped Out	Effects on property and infrastructure such as roads are addressed under the Socio-Economic; Historic Environment; and Transport, Access, and Traffic sections of this report.  Sewer and power cables will need to be diverted. However, it is likely that this will be possible without disruption to normal services.
Noise (& Vibration)	Scoped In	Scoped Out	Operational activities will include maintenance and repair. These are likely to be low occurrence and temporary in nature
Socio-Economic	Scoped Out	Scoped Out	Issues covered in this topic are addressed elsewhere in the report including construction dust and noise nuisance, access issues, and effects on views. The scheme itself will provide flood protection for properties and businesses.
Soils, Geology, and Land Quality	Scoped In	Scoped In	-
Transport, Access and Traffic	Scoped In	Scoped Out	Operational activities will include inspection and maintenance. These are likely to be low frequency and consist of one or two small vans at a time
Water Environment	Scoped In	Scoped In	-

### 6.2 Next steps

6.2.1 This report will form the basis for consultation with Aberdeenshire Council and statutory bodies. The scope of the subsequent Environmental Assessment may be updated following consultation comments. An Environmental Assessment will be undertaken and a report produced detailing the process and results. This will be submitted as part of the application for the Scheme.

## 7 References

- Aberdeen City and Shire Strategic Development Planning Authority (March 2014) *Aberdeen City and Shire Strategic Development Plan 2014* [Online] Available from: [http://www.aberdeenshire.gov.uk/planning/plans\\_policies/AberdeenCityandShireStrategicDevelopmentPlan2014.pdf](http://www.aberdeenshire.gov.uk/planning/plans_policies/AberdeenCityandShireStrategicDevelopmentPlan2014.pdf) [Accessed 13 February 2015]
- Aberdeenshire Council (January 2015) *EIA Screening Opinion for Stonehaven Flood Prevention Scheme*
- Aberdeenshire Council (2015) *Proposed Aberdeenshire Local Development Plan 2016* [Online] Available from: [http://www.aberdeenshire.gov.uk/planning/plans\\_policies/next\\_ldp.asp](http://www.aberdeenshire.gov.uk/planning/plans_policies/next_ldp.asp) [Accessed 13 February 2015]
- Aberdeenshire Council (April 2013) *EIA Screening Opinion for Stonehaven Flood Prevention Scheme*
- Aberdeenshire Council (2012) *Aberdeenshire Local Development Plan 2012* [Online] Available from: [http://www.aberdeenshire.gov.uk/planning/plans\\_policies/plan.asp](http://www.aberdeenshire.gov.uk/planning/plans_policies/plan.asp) [Accessed 13 February 2015]
- Costain Environmental Services (January 2014) *Factual Report on Ground Investigation*
- ECONorthwest (2011) *Economic Benefits of Green Infrastructure in the Chesapeake Bay Region*
- ECONorthwest (2007) *The Economics of Low Impact Development*
- FAS Heritage (January 2014) *Stonehaven Flood Prevention Scheme – Heritage Assessment*
- HM Government (2009) *Flood Risk Management (Scotland) Act 2009* [Online] Available from: <http://www.legislation.gov.uk/asp/2009/6/contents> [Accessed 12 February 2015]
- HM Government (2010) *Flood Risk Management (Scotland) (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) Regulations 2010* [Online] Available from: <http://www.legislation.gov.uk/ssi/2010/426/made> [Accessed 12 February 2015]
- Institute of Ecology and Environmental Management (IEEM) (2006) *Guidance for Ecological Impact Assessment in the UK*
- Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment / IEMA) (1993) *Guidelines for the Environmental Assessment of Road Traffic, Guidance Notes No. 1*
- JBA Consulting (October 2014) *Stonehaven Flood Protection Scheme: Landscape and Visual Assessment*
- JBA Consulting (September 2014) *Ground Investigation Interpretive Report*
- JBA Consulting (October 2013) *River Carron, Stonehaven – Further Ecological Surveys*
- JBA Consulting (April 2013) *Site Investigation – Desk Study’ – Including Appendix A. Envirocheck Report No. 44862644\_1\_1*
- JBA Consulting (July 2012) *Stonehaven River Carron Flood Alleviation Study*
- Langton Tree Specialists (October 2013) *Tree Survey and Arboriculture Report*
- Mott MacDonald (January 2015) *Phase 1 Preliminary Contaminated Land Risk Assessment*

Natural England (2014) *Microeconomic Evidence for the Benefits of Investment in the Environment*

Royal Commission on the Ancient and Historical Monuments of Scotland and Historic Scotland [no date] *PastMap* [Online] Available from: <http://pastmap.org.uk/> [Accessed 16 February 2015]

Scottish Government (June 2014) *Scottish Planning Policy* [Online] Available from: <http://www.scotland.gov.uk/Resource/0045/00453827.pdf> [Accessed 12 February 2015]

Scottish Government (June 2014) *Scotland's Third National Planning Framework* [Online] Available from: <http://www.scotland.gov.uk/Resource/0045/00453683.pdf> [Accessed 12 February 2015]

Scottish Government (January 2014) *Planning Advice Notes* [Online] Available from: <http://www.scotland.gov.uk/Topics/Built-Environment/planning/publications/pans> [Accessed 21 January 2015]

Scottish Natural Heritage [no date] *SiteLink* [Online] Available from: <http://gateway.snh.gov.uk/sitelink/> [Accessed 16 February 2015]