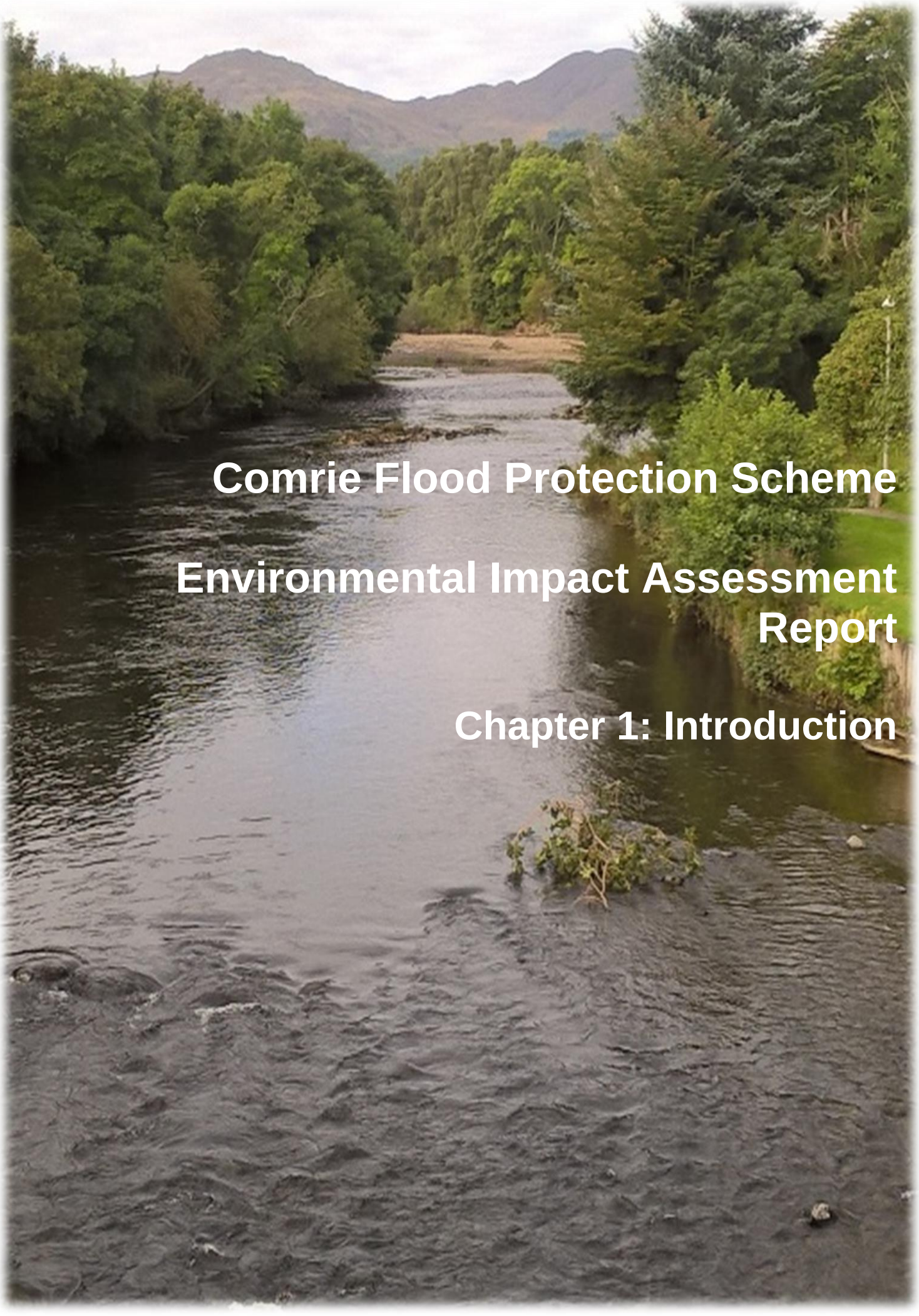

Comrie Flood Protection Scheme

Environmental Impact Assessment Report

Chapter 1: Introduction

Document Control

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Checker	Gail Currie
Approver	Gail Currie
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CONTENTS

FIGURES

1 Introduction

1.1 Overview of the Proposed Scheme

1.1.1 In 2017 Perth & Kinross Council (the Council) appointed Sweco to undertake flood modelling and design work to progress the outline design of a proposed flood protection scheme in Comrie.

1.1.2 The proposed flood protection scheme for Comrie (hereafter referred to as 'the Scheme') comprises flood protection measures with an approximate length of 2.8km along the River Earn, the Water of Ruchill and the River Lednock (**Figure 1.1**).

1.1.3 The Scheme will meet the requirements of Section 60 of the Flood Risk Management (Scotland) Act 2009 and the Flood Risk Management (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) (Scotland) Amendment Regulations 2017.

1.1.4 The Scheme comprises:

- Flood defence walls
- Flood defence embankments
- Erosion protection measures (grey and green bank protection)
- Utility and service diversions
- Hard and soft landscaping features

1.1.5 A detailed description of the Scheme is set out in **Chapter 3: Scheme Description and Alternatives**, and a plan showing the outline design of the Scheme which has been subject to assessment is presented on **Figure 1.2**.

1.1.6 The Scheme Flood Order is also supported by a full suite of Scheme Drawings, which have been submitted alongside this EIAR.

1.2 Location and Context

1.2.1 The towns of Comrie and Dalginross are located on the A85 between Perth and Crianlarich approximately 40km west of Perth at the confluence of the following three watercourses: River Earn, River Lednock and the Water of Ruchill as shown on **Figure 1.1**.

1.2.2 The two towns are separated by the River Earn with Dalginross located on the south bank and the historic town of Comrie on the north bank. The two towns are linked together by a steel beam bridge (the Dalginross Bridge) which crosses the River Earn downstream of its confluence with the Water of Ruchill.

1.2.3 Comrie and Dalginross are primarily made up of residential properties, with an estimated population of 1,927[1]. Towards the north of the town, there is also a community centre, churches, shops, small businesses and a number of caravan parks.

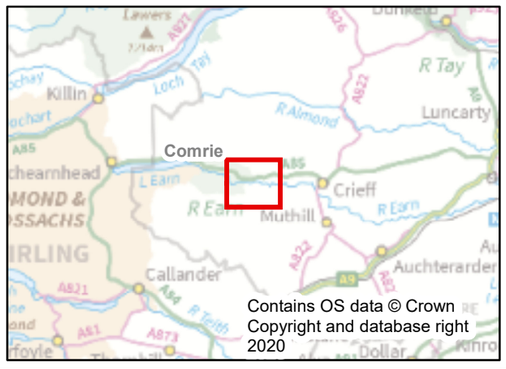
[1] Scotland's Census Data (2011). Available at: https://www.scotlandscensus.gov.uk/ods-web/area.html Accessed 22nd November 2018

Legend

EIA Study Area

N

0 0.5 1 Km



Rev.	Rev. Date	Drawing Suitability	Drawn	Appr'd
P01.1	05/02/2020	For Information	JB	RMcL

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Client

PERTH & KINROSS COUNCIL

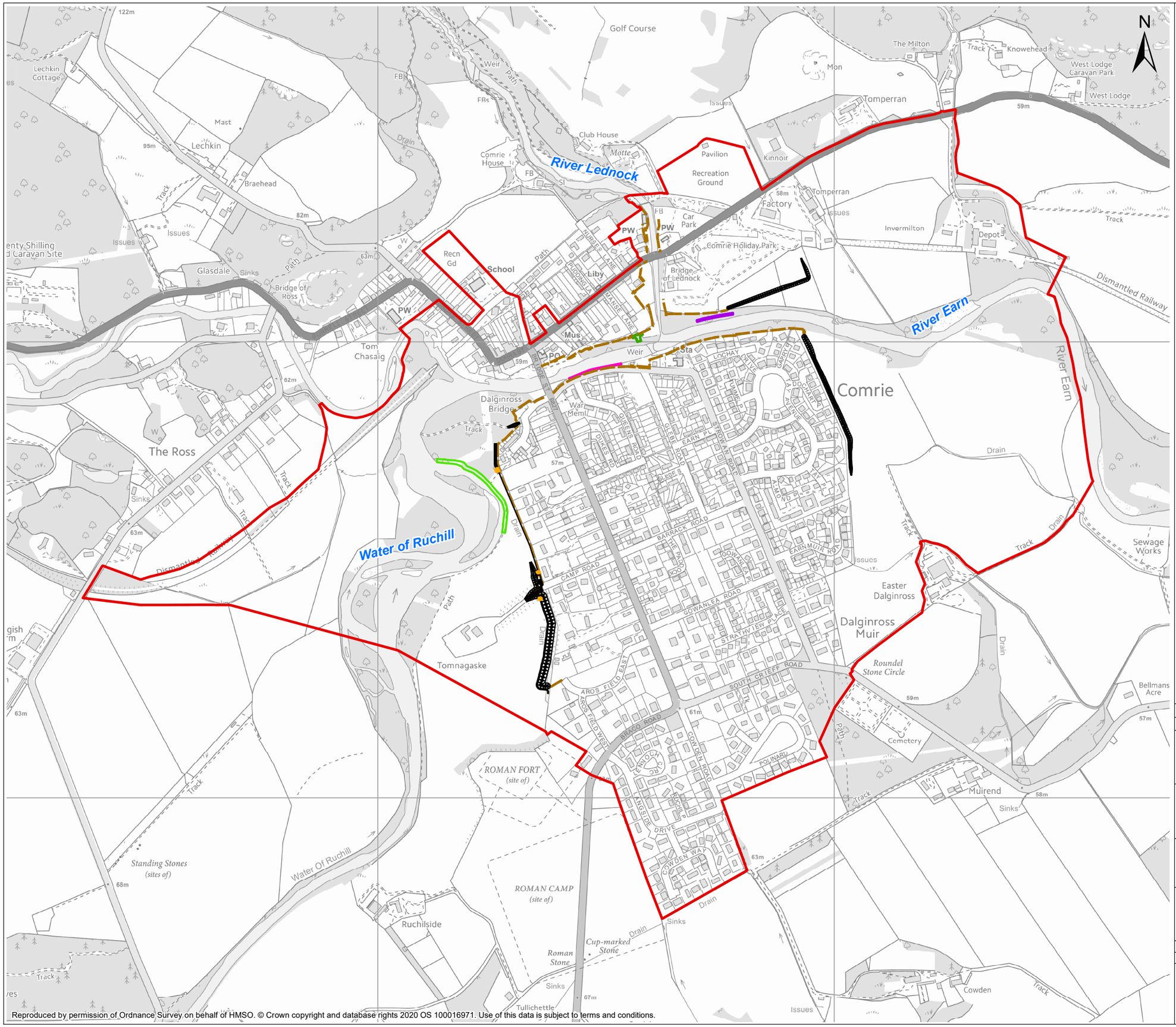
Project

Comrie Flood Protection Scheme 2020

Drawing Title

Figure 1.1 - Site Location Plan

Scale @ A3	1:22,000
Project No.	119702



Legend

- EIA Study Area

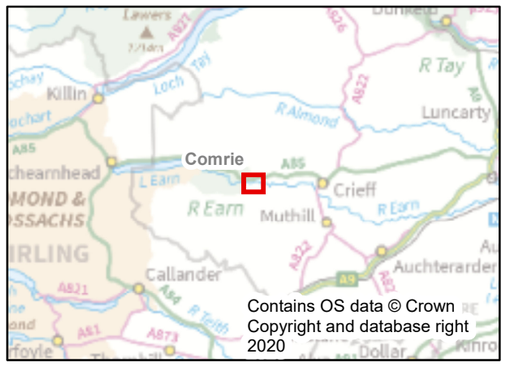
Proposed Designs

- Embankment
- Flood wall
- Culvert
- Reinforced grass - flood gate

Proposed Erosion Protection

- Root Wad Revetment
- Stacked Stone Wall
- Coir Roll

0 200 400 Metres



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Project

Comrie Flood Protection Scheme 2020

Drawing Title

Figure 1.2 - Scheme Layout Plan

Scale @ A3	1:8,000
Project No.	119702

1.2.4 Both Comrie and Dalginross have long histories, with a settlement present in the area since Roman times. Recent development has taken place predominantly on the south bank of the river at Dalginross most noticeably in the 1920s and again in the late 1990s.

1.2.5 The River Lednock drains a catchment of approximately 62km^2, comprising the upland slopes of Glen Lednock. The upland head of the catchment is controlled by the Glen Lednock Dam which forms part of the Breadalbane Hydroelectric Power Scheme and reduces the area that drains freely into the River Lednock to 34km^2.

1.2.6 The River Earn flows east from its source upstream of Loch Earn (8km west of Comrie and Dalginross), towards Comrie and Dalginross, and drains a number of glens at its upstream extent including Glen Ogle. The overall catchment size of the River Earn is 183km^2, but this is significantly reduced by the control weir at St Fillans at the downstream end of Loch Earn.

1.2.7 The Water of Ruchill drains the hills surrounding Glen Artney to the south of Comrie and Dalginross, and the catchment covers an area of 103km^2 which is characterised by steep gradients with a very rapid rainfall response.

1.3 History of Flooding

1.3.1 Comrie also has a long history of flooding and most recently experienced severe floods in November 2012. The River Lednock and the Water of Ruchill meet the River Earn within the towns of Comrie and Dalginross. Flood waters from these watercourses have historically resulted in flood damage in Comrie and Dalginross.

1.3.2 The Council has undertaken a number of studies into flood risk affecting its towns. In 2006 and again in 2008, the Council commissioned feasibility studies to investigate options which could provide a flood protection scheme for Comrie. Following the floods in August and November 2012, the Council commissioned investigations into the flood mechanism that allowed flood water from the Water of Ruchill to enter Camp Road and areas close to the property 'Tomnagaske'. They then proceeded to design potential flood protection measures that may alleviate the flooding at this location. Further assessment has since been undertaken to further develop the previous flood studies, and further information on these studies is provided in **Chapter 3: Scheme Description and Alternatives**. This assessment was also focused upon reviewing and providing details of feasible options that could address flood risk in Comrie and Dalginross.

1.3.3 The Scottish Environment Protection Agency (SEPA) under the Flood Risk Management (Scotland) Act 2009 identified Comrie as '*at risk of severe flood events*'. A flood protection scheme at Comrie has been included within the national priority list of flood schemes and forms part of the current Tay Flood Risk Management Strategy[2] and Local Flood Risk Management Plan[3]. Perth & Kinross Council and the Scottish Government have agreed in principle to fund the Scheme for Comrie.

[2] Scottish Environment Protection Agency (December 2015). Flood Risk Management Strategy: Tay.
[3] Perth & Kinross Council (June 2016). Local Flood Risk Management Plan Tay Local Plan District.

1.3.4 The following notable floods have been recorded in the Comrie/Dalginross area[4]:

- **17 March 1903:** Railway infrastructure seriously affected causing major disruption to traffic after large stretch of embankment was washed away by flooding at New Comrie;
- **January 1909**: The road between Comrie and St Fillans at East Tullybannocher was reported to have five to seven feet of water over it due to snow melt. Farmlands at Carse of Trowan and Carse of Lennoch were under water. A lake reportedly formed between Comrie and Monzievaird (an area to the east of Comrie/Dalginross);
- **8 November 1926**: Flooding throughout the area due to the River Earn and tributaries rising up to a depth of 3.5m in some places. Gas works flooded in Comrie. Residential properties, shops and commercial properties also affected;
- **22 January 1928**: Wettest January on record at the time caused flooding across Perth and Kinross including Comrie and Crieff. The River Tay reached 5.77m above normal levels at Smeaton's Bridge in Perth;
- **2 February 1948**: Telephone lines and power was disrupted within the Strathearn district when power lines were damaged. Two hundred acres of land were flooded;
- **16 January 1993**: Widespread flooding across the Tay Catchment resulted in over £20 million of damage. The flooding is known to have affected Comrie;
- **19 February 1997**: A number of streets and houses in Dalginross were flooded, as well as farm land and farm buildings;
- **27 August 2012**: Approximately 60 properties were flooded in Dalginross from the Water of Ruchill;
- **19 November 2012**: Approximately 150 properties were flooded in Dalginross from the Water of Ruchill.

1.3.5 The severity of a flood event is expressed in terms of the probability of a flood event occurring within a timeframe i.e. a 1 in 10-year event has a 10% chance of occurring in any one year, compared with a 0.5% chance of a 1 in 200-year event occurring.

1.4 Flood Risk Management in Comrie

1.4.1 Scottish Planning Policy[5] has sought to address flood risk from all sources (taking account of climate change). This is further supported through the Flood Risk Management (Scotland) Act 2009 (The Act), which requires local authorities to coordinate with the Responsible Authorities (defined in the Act as Local Authorities, Scottish Water, and such other public bodies and office-holders as the Scottish Ministers may designate by order – considered to include Scottish Natural Heritage (SNH), SEPA, and Historic Environment Scotland). The Act also requires local authorities consult with the general public about any proposals.

[4] Further information available here - http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_08_14_Full.pdf
[5] Scottish Government (2014). Scottish Planning Policy.

1.4.2 SEPA identified Comrie as a Potentially Vulnerable Area (PVA)[6] which requires flood protection works to help protect people, property (both residential and non-residential), agricultural land and the environment from flood events.

1.4.3 The Water of Ruchill (Comrie) Flood Protection Scheme 1961 was constructed to protect the Dalginross area from the Water of Ruchill.

1.4.4 Following the flood events in August and November 2012, the following emergency flood protection works were implemented:

- Rock armour protection to the river bank on the Water of Ruchill at Ruchilside;
- The removal of the old flood embankments at Tomnagaske; and
- A new flood embankment constructed at Camp Road.

1.4.5 The standard of protection provided by these emergency works is equivalent to the predicted 1 in 100-year return period flow, with an allowance for climate change. This is lower than the proposed 1 in 200-year return standard of protection proposed for the Scheme. These flood protection assets have been assessed and considered in the proposed design and will be replaced as part of the Scheme to ensure that a consistent standard of protection is provided for the town.

1.4.6 In confirming the preferred option for the outline design for the Scheme, the following key objectives and actions were considered.

Table 1.1: Comrie PVA Actions and Objectives

Action	Objective
Flood protection scheme / works	Reduce economic damages to residential and non-residential properties in Comrie caused by flooding from the River Earn and River Lednock
Maintain flood protection scheme	Reduce economic damages to residential and non-residential properties in Comrie caused by flooding from the River Earn and River Lednock
Maintain flood protection scheme	Accept that significant flood risk in Dalginross is being managed appropriately. Maintain existing actions that reduce flood risk in Dalginross caused by flooding from the Water of Ruchill.
Awareness raising	Reduce overall flood risk - SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.
Maintenance	Reduce overall flood risk - Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

[6] Scottish Environment Protection Agency (December 2015). Comrie Potentially Vulnerable Area (08/14) available at: http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_08_14_Full.pdf. Accessed 25th January 2018.

Action	Objective
Planning policies	Avoid an overall increase in flood risk & Reduce overall flood risk - Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided.

1.4.7 A long list of options was developed during a 2017 Feasibility Study undertaken by WSP (consulting engineers) on behalf of the Council[7] and were assessed against several criteria to determine their viability such as hydraulic, engineering, environmental, economic health and safety and operational and maintenance requirements. The options were then further refined based on the modelling results for each of the options considered, the advantages, disadvantages, hazards and opportunities and a short-list of options produced.

1.4.8 The preferred option selected for the town based on the shortlisted options was identified as traditional walls and embankments (refer to **Chapter 3: Scheme Description and Alternatives** for further details of the Scheme).

1.4.9 The Scheme has therefore progressed through outline design and is the subject of the Environmental Impact Assessment as reported in this Environmental Impact Assessment Report (EIAR).

1.5 Purpose of the Environmental Impact Assessment

1.5.1 Environmental Impact Assessment (EIA) is the process of gathering together and assessing the environmental information associated with a proposed development. EIA aims to ensure that likely environmental impacts are properly understood before any development consent is granted or approved and provides a means of assessing the likely significant impacts of a proposal.

1.5.2 The need to prepare an EIAR is governed by the implementation into UK Law of European Union Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. In Scotland, the Directive is implemented by the Flood Risk Management (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) (Scotland) Amendment Regulations 2017, hereafter referred to as the 'Flood Regs'.

1.5.3 A screening request to determine whether the Scheme required EIA was submitted to the Councils Planning Service in November 2016. The Screening Opinion returned by the Planning Service (dated 21st November 2016) confirmed the need for an EIA to accompany the application for deemed planning consent.

1.5.4 The EIA process for the proposed Scheme has been completed following the requirements of the Flood Regs and is reported within the EIAR. Further details on the EIA methodology implemented for the Scheme are set out in **Chapter 4: Approach to Assessment**.

[7] WSP (September 2017). Comrie Flood Protection Scheme Feasibility Report, September 2017.

1.6 The EIA Team

1.6.1 Sweco and Headland Archaeology have prepared this EIAR and provided input into individual technical chapters. Sweco has also co-ordinated the EIA process.

1.6.2 Regulation 6(4) of the Flood Regulations states that the local authority must ensure that the report is prepared by competent experts and that it has, or has access to, sufficient expertise to examine the report.

1.6.3 Sweco, together with Headland Archaeology have an extensive EIA knowledge and expertise gathered across a range of developments and sectors across the UK. A summary of the qualifications held by the technical leads involved in the EIA preparation and its reporting is provided in Table 1.2. Sweco hereby confirm that they are competent experts for the purposes of the regulations.

1.6.4 Perth and Kinross Council confirm that they (along with the statutory consultees) have sufficient expertise to examine the report and the proposed Scheme in accordance with the 2017 Flood Regulations.

Table 1.2: EIA Team Profiles

Company	Individual	Role	Profile
Sweco	Rebecca McLean	EIA Lead	**Qualifications**: BSc(Hons), MIEMA, CEnv **Experience**: 15 years experience in leading, managing and advising on EIAs in the fields of infrastructure, urban development and energy. Rebecca also has extensive experience in air quality and in facilitating environmental design optimisation/mitigation solutions.
	Philip Black	Landscape & Visual Impact Assessment Lead	**Qualifications:** Ba(Hons), CMLI **Experience:** Phillip is a Chartered Landscape Architect with over 20 years' experience. Over the course of his career he has specialised in landscape, townscape and visual impact assessment and has prepared and led assessments for a very wide range of project types.
	Jonathan Moore	Water Environment & Fluvial Geomorphology Lead	**Qualifications:** MSc, BSc(Hons), CEEQUAL Projects Assessor MCIWEM, CEnv **Experience**: Jon has 13 years experience specialising in undertaking and managing water quality assessments, with a particular expertise in Environmental Impact Assessment (EIA).
	Roy Harrison	Hydrogeology and Contamination Lead	**Qualifications:** MSc, Bsc (Hons), CGeol, EurGeol **Experience:** Over 11 years experience as a geoenvironmental engineer, working in all aspects of geotechnical and geoenvironmental design, from design, tendering and procurement of ground investigation, through management and supervision of contractors, to interpretations and recommendations.
	Claire Hopkins	Ecology & Nature Conservation Lead	**Qualifications:** MSc, BSc, MCIEEM **Experience**: Claire is a protected species specialist with over 14 years experience and holds SNH/NE licences for bats and otter, as well as extensive training and project survey experience with other UK protected mammals. Claire has a detailed understanding of survey design and implementation at the planning and design iteration phases of developments across the UK and has produced technical reports for various schemes.
	Mike Roberts*	Socio-econimcs, Public Access and Amenity Lead	**Qualifications:** MSc, BSc (Hons) MIEnvSC, CEnv **Experience:** Mike has over 14 years' experience undertaking EIAs, SEAs and non-statutory environmental assessments for a range of developments. He specialises in the preparation and review of environmental assessment documents, and the potential impacts upon local communities and non-motorised users (NMU).

Company	Individual	Role	Profile
	Lewis Barlow	Carbon Lead	**Qualifications:** BEng (Hons), MSc, DIC, CEnv, CEng, FICE, CWEM, SiLC, SQP **Experience:** Lewis provides expert advice on environmental risks and contamination issues for regulators, developers and prestige multi-site owners at the highest level. His environmental expertise includes practical carbon management: helping clients to understand and reduce their carbon footprints, as well as adapt to projected climate change.
Headland Archaeology	Chris Lowe*	Cultural Heritage Lead	**Qualifications:** BA (Hons) MA PhD MCIfA FSA Scot **Experience:** Chris has been involved in the preparation of over 25 EIAs, across a range of different development sectors, providing considerable experience.

*Has moved company or retired since authoring the chapter

1.7 Document Structure

1.7.1 This EIAR is divided into two volumes as follows:

- Volume One: Non-Technical Summary (NTS)
- Volume Two: EIAR Technical Chapters, Figures and Appendices

1.7.2 A Non-Technical Summary (Volume One) is presented as a separate document and provides an overview, in non-technical language, of the main findings of the EIA.

1.7.3 The EIAR text contained in Volume Two is presented in twelve chapters as follows:

- Chapter 1 introduces the Scheme and the EIAR.
- Chapter 2 summarises the Flood Act remit and a brief policy background.
- Chapter 3 provides a description of the Scheme and a review of the alternatives that were considered.
- Chapter 4 contains a summary of the general approach and methods used for the assessments and provides a summary of the consultation undertaken with key statutory and non-statutory consultees.
- Chapters 5 through to 11 report the findings of the studies and assessments which have been undertaken for the technical assessments scoped in to the EIA.
  - Landscape and Visual Impact Assessment
  - Water Environment (including flooding) and Fluvial Geomorphology
  - Hydrogeology and Contamination
  - Ecology and Nature Conservation
  - Cultural Heritage
  - Socio-economics, Public Access and Amenity (including impacts to human health)
  - Cumulative Environmental Assessment
- Chapter 12 presents a summary of the residual effects and the mitigation proposed for the Schedule of Environmental Commitments that will form part of the detailed design, construction and future operation of the Scheme.

1.7.4 All supporting figures and appendices are clearly referenced within the technical chapters and provided at the end of each chapter.