

A9.4 Outline Ecological Management Plan

1 Introduction

Background and Scope

- 1.1 This Outline Ecological Management Plan has been prepared to document specific mitigation measures identified through the Ecological Impact Assessment (EclA) for the A985 Kincardine Bridge Refurbishment: Piled Viaduct Replacement proposed scheme (hereafter 'the proposed scheme'). Information on important habitats, fauna and flora, including potential impacts are presented in Chapter 9 (Terrestrial Ecology), as well as Chapter 8 (Marine Ecology), of the Environmental Impact Assessment (EIA) Report.
- 1.2 This Outline Ecological Management Plan (hereafter 'the plan') will be developed by the Contractor prior to construction to prepare the Ecological Management Plan for the proposed scheme. The Ecological Management Plan will ensure that essential mitigation strategies required for safeguarding protected species and habitats are implemented as part of the contract. The plan will be updated as appropriate if any licences and additional mitigation measures are required to avoid potential breaches of conservation legislation arising from mortality or disturbance; or amendments to the agreed mitigation are identified through pre-construction surveys or watching briefs. The plan will be developed in consultation with relevant stakeholders including Scottish Natural Heritage (SNH). It should be noted that SNH changed name to NatureScot as of 24 August 2020 however, in this plan the organisation is referred to as SNH. Adherence to the plan will also mitigate for any potential animal welfare issues during construction.
- 1.3 Prior to construction, a suitably qualified Ecological Clerk of Works (ECoW) will be appointed by the Contractor to supervise the construction works and will be responsible for implementation of the Ecological Management Plan (**Mitigation Item ME2** of the EIA Report (Chapter 17: Schedule of Environmental Commitments)).
- 1.4 The Ecological Management Plan will be included as an annex to the Construction Environmental Management Plan (CEMP) which will be developed by the Contractor prior to construction as stated in **Mitigation Item ME1** of the EIA Report (Chapter 17: Schedule of Environmental Commitments). The CEMP will follow guidance set out in the Design Manual for Roads and Bridges (DMRB) Guidance Document LA 120 Environmental management plans (Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland 2020).

Report Content

- 1.5 This Outline Ecological Management Plan details the mitigation and environmental commitments identified in the EclA that are to be implemented, including:
 - details of proposed mitigation measures, including any required exclusion zones, to avoid any unnecessary encroachment into adjoining areas;
 - the scope of pre-construction surveys required prior to and during construction, in accordance with **Mitigation Item TE5**, to verify and, where required, update the baseline ecological conditions set out in the EIA Report;
 - restrictions on the timing of construction works, for example during site clearance and main construction works; and
 - appropriate watching briefs during construction.
- 1.6 Outline Species Management Plans (SMP), which will be developed by the Contractor, for peregrine (*Falco peregrinus*), wetland birds and otter (*Lutra lutra*) were identified as required as part of the EclA

and are appended to this Outline Ecological Management Plan (Appendices A-C). Additional SMPs may be required during the lifetime of the project and the requirement for addition plans, and the appropriateness of existing plans will be reviewed. An Outline Saltmarsh Management Plan can be found in Appendix 8.2 of the EIA Report and will be appended to the plan prior to being passed on to the Contractor.

- 1.7 This Outline Ecological Management Plan also details any monitoring requirements to be undertaken during and post-construction.

2 The Proposed Scheme

Description

- 2.1 The proposed scheme is located at the southern end of the Kincardine Bridge; this structure crosses the Firth of Forth between Higgins Neuk in Falkirk Council area and the town of Kincardine in Fife Council area. As part of the proposed scheme the existing piled viaduct will be demolished and replaced with a five-span structure of similar appearance to the adjacent spans of the existing Kincardine Bridge. A temporary bridge will be erected during construction to maintain traffic flow in both directions, except when work requires single lane or full closure of the bridge during limited periods. Further details regarding the proposed scheme are provided in Chapter 3 (The Proposed Scheme) of the EIA Report.

Programme

- 2.2 The Contractor would undertake the design of the temporary works and the construction of the proposed scheme. The Contractor would also prepare a programme for the construction of works, which will be approved by Transport Scotland's representative on site. It is currently anticipated that construction will not commence before summer 2021 (subject to completion of statutory procedures) and the overall construction period is expected to be between 18 to 24 months.

3 Mitigation

Introduction

- 3.1 Potential significant ecological effects are expected to be mitigated through a combination of best practice/typical mitigation methods, and mitigation specifically relating to Terrestrial Ecology ('TE' Mitigation Item references) and Marine Ecology ('ME' Mitigation Item references) targeted to specific impacts and locations. These measures are also detailed in Chapter 17 (Schedule of Environmental Commitments).

Construction

- 3.2 Construction mitigation commitments have been produced which set out the actions the Contractor and their ECoW, or an ecologist acting on behalf of Transport Scotland, are required to take during the construction phase of the proposed scheme to avoid or reduce environmental impacts (Table 1). Some measures detailed are not mitigation in isolation, but their implementation for regulatory/legal compliance purposes will inform the scope of further mitigation and licensing where required (e.g. pre-construction surveys and monitoring).

Operation

- 3.3 Measures to mitigate the destruction of a known otter holt used as part of a breeding site make up the operation mitigation commitments (Table 1).

Table 1: Construction Mitigation Items for Terrestrial Ecological (TE) and Marine Ecological (ME) Features

Mitigation Item	Description	Ecological Feature
TE1	<p>A construction lighting plan and method statement will be developed by the Contractor. The plan will detail specific mitigation requirements, including but not limited to measures to avoid light spill/reflections, and avoidance of white-blue spectrum and high UV emitting lighting. The lighting plan will take into account published guidance on lighting (e.g. Institution of Lighting Professionals (2011), The Royal Commission on Environmental Pollution (2009) and Bat Conservation Trust and Institution of Lighting Professionals (2018)).</p> <p>The construction lighting design will be developed specifically to avoid illuminating sensitive habitats in locations such as sensitive bird habitats adjacent to the bridge, particularly to the southeast of the piers; watercourses; known commuting routes, and where there is known activity of protected species identified through pre-construction ecological surveys (Mitigation Item ME1). Where this is not possible the Contractor will agree any exceptions with the Ecological Clerk of Works (ECoW).</p>	All
TE2	<p>Monitoring of bird responses to construction activities will be undertaken. Surveys will follow an adapted methodology based on the wetland bird Through The Tide Count (TTTC) surveys and will be undertaken by an ecologist acting on behalf of Transport Scotland throughout the construction period. If required, further mitigation will be proposed and discussed with the Ecological Clerk of Works (ECoW) and Scottish Natural Heritage (SNH). Screening of at least 2m in height (such as Heras Readyhoard or Steelhoard Screening fences (Heras 2020)) will be provided between the works and the coastal area throughout winter. Where possible, and as agreed by the ECoW, screens will be positioned around working areas, including ancillary works/plant such as water treatment tanks, to reduce the visual disturbance caused by operatives, plant and vehicles within the working area. Screens will be in place to mitigate against visual disturbance from the works primarily, but also provide some sound attenuation to limit noise disturbance. The screening should be checked by the ECoW prior to works to ensure that the screening has been appropriately placed.</p> <p>The Construction Environmental Management Plan (CEMP) will include a Species Management Plan for wintering birds which will provide further detail on mitigation and monitoring for these species.</p>	Qualifying interests of the Firth of Forth SPA, Ramsar and SSSI Wetland birds
TE3	<p>The Contractor will employ a 'soft-start' to all noisy activities to avoid sudden and unexpected disturbance. Each time the activity is started up after a period of inactivity, the noise levels will be gradually increased over a period of 30 minutes to allow birds (and other animals) to relocate. This will apply year-round.</p>	All
TE4	<p>Working during the hours of darkness will be avoided as far as practicable to reduce disturbance to protected species, particularly roosting geese and otter. Working during the hours of darkness will likely be unavoidable during winter, therefore lighting will need to avoid illuminating sensitive bird habitats adjacent to the bridge watercourses; known commuting routes, and where there is known activity of protected species (Mitigation Item TE1).</p>	Peregrine Bats Breeding birds Otter Qualifying interests of the Firth of Forth SPA, Ramsar and SSSI Wetland birds
TE5	<p>Pre-construction surveys will be undertaken to verify and, where required, update the baseline ecological conditions set out in the EIA Report.</p>	All

Mitigation Item	Description	Ecological Feature
TE6	<p>Construction work will be programmed, where possible, to commence outside of peregrine breeding season.</p> <p>If this cannot be achieved, monitoring surveys will be undertaken to determine if/when peregrine return to their previous nest, or if peregrine move to an alternate nest site, and will commence prior to construction. The natural programme of works should allow for a gradual increase in personnel and noise (e.g. construction of compound first, followed by temporary working platform, temporary bridge and eventually destruction of the piled viaduct) to allow peregrine to habituate so that disturbing works during the breeding season will unlikely disturb peregrine or have implications for the success of the breeding attempt. Although considered unlikely, should significant disturbance be observed by the Ecological Clerk of Works (ECoW), works will stop until further mitigation measures are put in place as determined by the ECoW in consultation with Scottish Natural Heritage (SNH), if required.</p> <p>The Construction Environmental Management Plan (CEMP) will include a Species Management Plan for peregrine which will provide further detail on mitigation for this species.</p>	Peregrine
TE7	<p>Vegetation clearance and the start of construction works should be undertaken outside the core bird breeding season (March to August inclusive) to avoid damage or destruction of occupied nests or disturbance to breeding birds. If this cannot be achieved, an inspection of vegetation to be cleared and the works area (plus a suitable disturbance buffer) for nesting birds will be undertaken by a suitably qualified ecologist no more than 24 hours prior to any works being undertaken. If any nesting birds are identified during the survey, they will be left in situ for their entire nesting period until the young birds have fledged. Alternative approaches to the work will need be proposed e.g. leaving an exclusion zone around the nest to avoid disturbance.</p> <p>All cleared vegetation will be rendered unsuitable for nesting birds, for example, by covering, chipping or removing from works area depending on the end purpose of the vegetation. Vegetation clearance operations such as chipping must be taken in accordance with Scottish Environment Protection Agency's (SEPA) Management of Forestry Waste (WST-G-027) (SEPA 2017) guidance.</p>	Breeding birds
TE8	<p>On completion of the works, vegetation cleared to facilitate construction, e.g. scrub removed to permit construction of site access tracks, will be replaced on a like for like basis.</p>	Breeding birds
TE9	<p>Trenches, holes and pits will be kept covered at night or provide a means of escape for mammals that may become entrapped.</p>	Otter
TE10	<p>All machinery stored on site and the immediate area (any plant, excavations, etc.) will be checked at the start of each work day to ensure otters are not present.</p>	Otter
TE11	<p>The positioning of construction compounds, storage areas, temporary access tracks etc. and construction works should avoid otter commuting routes as far as practicable.</p>	Otter
TE12	<p>Licences in respect of works necessary to construct the proposed scheme that are likely to breach applicable conservation legislation will be obtained. The Contractor will comply with the requirements or conditions of any granted licence. Licensing may be for the UK and/or European Protected Species.</p>	Bats Otter Cetaceans
TE13	<p>A licence application will be submitted to Scottish Natural Heritage (SNH) by an ecologist, acting on behalf of Transport Scotland, to permit destruction of the existing holt.</p>	Otter

Mitigation Item	Description	Ecological Feature
TE14	A replacement artificial otter holt will be constructed at least six months prior to the closure of the existing holt. The replacement holt will be located within 500m of the existing holt on Scottish Ministers land, as agreed; for the exact location see Appendix A9.3 (Confidential Ecology Features) of Chapter 9 of the EIA Report. The holt will be constructed above ground where there is a suitable route of access, and within 10m from the water's edge to maximise the likelihood of it being found and used by otters. Specifications for the replacement artificial holt will be detailed in a licence application submitted to Scottish Natural Heritage (SNH) to destroy the existing holt (Mitigation Item TE13) and within a Species Management Plan which will be produced prior to construction of the replacement holt.	Otter
ME1	Prior to construction the Contractor will develop a Construction Environmental Management Plan (CEMP), including an Ecological Management Plan, which will detail the mitigation to be implemented and how this will be monitored.	All
ME2	<p>Prior to construction a suitably qualified Ecological Clerk of Works (ECoW) will be appointed by the Contractor and will be responsible for implementation of the Ecological Management Plan. The ECoW will:</p> <ul style="list-style-type: none"> provide ecological advice over the entire construction programme; in collaboration with the ecologist acting on behalf of Transport Scotland, undertake or oversee pre-construction surveys for protected species in the areas affected by the proposed scheme; ensure mitigation measures are implemented to avoid and reduce impacts on ecological features; and monitor the implementation of the mitigation measures during the construction phase to ensure compliance with protected species legislation and commitments within the EIA Report. <p>The ECoW will be a member of CIEEM and will have previous experience in similar ECoW roles. All ECoWs will be approved by Transport Scotland to be appropriately qualified for the role and compliance will be monitored by an ecologist acting on behalf of Transport Scotland. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented, in collaboration with the ecologist acting on behalf of Transport Scotland.</p>	All
ME3	Best practice construction methods (CIRIA 2015) will be used including the use of appropriate pollution controls (i.e. Guidance for Pollution Prevention (GPPs)), such as construction drainage, a strict re-fuelling protocol and removal of all loose materials from the intertidal area.	Qualifying interests of the Firth of Forth SPA, Ramsar and SSSI (including saltmarsh habitat) Wetland birds Otter
ME4	The footprint of the working area will be minimised as far as possible and vehicles, plant and personnel will be constrained to this area through the use of temporary barriers to minimise the damage to habitats and potential direct mortality and disturbance to animals located within and adjacent to this footprint. The access track and working platforms on the saltmarsh will be created through use of geotextile layer under aggregate material.	Qualifying interests of the Firth of Forth SPA, Ramsar and SSSI (including saltmarsh habitat) Wetland birds Breeding birds Otter
ME5	On completion of the works all access tracks and working platforms will be removed in their entirety from the saltmarsh.	Qualifying interests of the Firth of Forth SPA, Ramsar and SSSI (including saltmarsh habitat) Wetland birds Breeding birds

Mitigation Item	Description	Ecological Feature
ME6	Prior to construction the Contractor will develop a Saltmarsh Management Plan. This will include measures to reduce damage and encourage recovery of the saltmarsh and will include a period of post-construction monitoring.	Qualifying interests of the Firth of Forth SPA, Ramsar and SSSI (including saltmarsh habitat) Wetland birds Breeding birds
ME7	With the exception of temporarily realigning the existing SuDS outfall, no works will be undertaken on the saltmarsh outside the footprint of the working platform and access tracks. This includes provision of drainage or water treatment facilities for construction runoff.	Qualifying interests of the Firth of Forth SPA, Ramsar and SSSI (including saltmarsh habitat) Wetland birds Breeding birds
ME8	The Contractor will take cognisance of Marine Scotland guidance on the protection of marine European Protected Species (Marine Scotland 2014) and Joint Nature Conservation Committee (JNCC) guidance on minimising the risk of injury to marine mammals from piling noise (JNCC 2010).	Cetaceans

4 Pre-construction Surveys

Introduction

- 4.1 Pre-construction surveys will be undertaken to verify and, where required, update the baseline ecological conditions (**Mitigation Item TE5**). The scope of pre-construction surveys for ecological features known to be present are detailed below.

Peregrine

- 4.2 If construction works cannot be programmed to commence outside of peregrine breeding season, monitoring surveys will be undertaken to determine if/when peregrine return to their previous nest, or if peregrine move to an alternate nest site. Surveys should follow best practice as detailed in Hardey *et al.* (2013) and the survey methods as described in Appendix A9.3 (Confidential Ecology Features) of the EIA Report. 'Visit 1' as described by Hardey *et al.* (2013), to check for occupancy of peregrine in the area, was not undertaken during the surveys to inform the EIA Report as peregrine had already been recorded in the area during TTTC surveys, but should be completed as part of pre-construction surveys.

Bats

- 4.3 Pre-construction bat roost surveys should extend to a minimum of 30m beyond the proposed scheme.
- 4.4 Structures which are likely to be impacted by works, shall be inspected by suitably qualified and experienced ecologists to assess their potential to support roosting bats. Features with potential to support roosting bats shall require further survey to determine if bats are present in line with the most up to date survey guidelines (Collins 2016).
- 4.5 If evidence of roosting bats is identified, a derogation licence may be required from SNH. The requirement for licensing shall be determined with respect to the nature and timing of works in proximity to bat roosts.

Breeding Birds

- 4.6 Pre-construction breeding bird surveys shall extend to a minimum of 10m beyond the works area for the proposed scheme to identify any nests, if works/site clearance are scheduled within the bird breeding season (March to August inclusive).
- 4.7 Further inspections of vegetation to be cleared for nesting birds will be undertaken no more than 24 hours prior to site clearance.

Otter

- 4.8 A known otter holt which is used as part of a breeding site will be permanently lost as a result of the proposed scheme. Pre-construction otter surveys should extend to a minimum of 200m beyond the proposed scheme to verify and update the baseline conditions as set out in Chapter 9 (Terrestrial Ecology) of the EIA Report.

5 Restrictions on the Timing of Works

- 5.1 The following considerations shall be taken into account when programming works:
- avoid working during the hours of darkness where practicable;
 - where possible, construction work that could cause disturbance is to commence outside the peregrine breeding season (March to July inclusive); and
 - vegetation clearance to be undertaken outside the core breeding bird season (March to August inclusive).
- 5.2 Table 2 illustrates the constraints and optimal timing for carrying out construction work/ecological mitigation for all ecological features identified on site.

Table 2: Guidance on the Ecological Constraints and Optimal Timing for Carrying out Construction Work/Ecological Mitigation

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Peregrine	No restriction to works.		Peregrine breeding season. Where possible, works should not commence during breeding season.					No restriction to works.				
Bats (Maternity)	No restrictions around breeding sites.				Restrictions to works around breeding sites. Licences from SNH may be required.						No restrictions around breeding sites.	
Bats (Summer)	No restrictions around summer sites.				Restrictions to works around summer sites. Licences from SNH may be required.				No restrictions around summer sites.			
Bats (Mating)	No restrictions around mating sites.							Restrictions to works around mating sites. Licences from SNH may be required.		No restrictions around mating sites.		
Bats (Hibernation)	Restrictions to works around hibernation sites. Licences from SNH may be required.				No restriction to works around hibernation sites.					Restrictions to works around hibernation sites. Licences from SNH may be required.		
Qualifying Interests of Firth of Forth SPA and Ramsar	Restrictions to works - avoid working during the hours of darkness, where practicable.			No restriction to works.					Restrictions to works - avoid working during the hours of darkness, where practicable.			
Breeding Birds	Vegetation clearance not restricted.	Clearance works may proceed at this time, but must stop immediately if any nesting birds are found.	Bird breeding season. Vegetation clearance possible, if following a nesting bird check, breeding birds are confirmed as absent.					Clearance works may proceed at this time, but must stop immediately if any nesting birds are found.	Vegetation clearance not restricted.			
Otter	Construction/mitigation can potentially be conducted in any month but is likely to be restricted where otters are found to be breeding. Avoid working during the hours of darkness.											

6 Watching Briefs During Construction

- 6.1 **Mitigation Item ME2** requires that prior to construction, a suitably qualified ECoW will be appointed by the Contractor and will be responsible for implementation of the Ecological Management Plan.
- 6.2 An ecologist, acting on behalf of Transport Scotland, will check that the Contractor's ECoW is suitably qualified to undertake their role and will audit the contractual obligations with regards to the ecological safeguarding and ecological mitigation requirements. The ecologist (acting on behalf of Transport Scotland) will undertake ecological monitoring and reporting, as detailed within this plan.
- 6.3 The ECoW will:
- provide ecological advice over the entire construction programme;
 - in collaboration with the ecologist (acting on behalf of Transport Scotland), undertake or oversee pre-construction surveys for protected species in the areas affected by the proposed scheme;
 - ensure mitigation measures are implemented to avoid and reduce impacts on ecological features; and
 - monitor the implementation of mitigation measures during the construction phase to ensure compliance with protected species legislation and commitments within the EIA Report.
- 6.4 The ECoW will be a member of the CIEEM, will have previous experience in similar ECoW roles and will be approved by Transport Scotland to be appropriately qualified for the role. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented, in collaboration with the ecologist (acting on behalf of Transport Scotland).

7 Monitoring and Management

- 7.1 The Contractor's ECoW will be responsible for ensuring compliance with protected species legislation and the commitments during construction. Compliance will be monitored by the ecologist acting on behalf of Transport Scotland.
- 7.2 During construction, the ecologist (acting on behalf of Transport Scotland) will undertake monitoring surveys following the methods for wetland bird Through The Tide Counts (TTTC) surveys (Chapter 9: Terrestrial Ecology). These surveys will be used to determine the effectiveness of the mitigation. If required, further mitigation will be proposed and discussed with the ECoW and SNH.
- 7.3 If construction works cannot be programmed to commence outside of peregrine breeding season, monitoring surveys will be undertaken by the ECoW throughout the construction period to determine if peregrine return to their previous nest or if peregrine move to an alternate nest site.
- 7.4 Monitoring of the replacement otter holt will be undertaken by the ecologist, acting on behalf of Transport Scotland, and is required from its construction, during construction of the proposed scheme and post-construction. Any post-construction monitoring will be undertaken in accordance with the SMPs or derogation licence required for the proposed scheme. This monitoring will determine the effectiveness of the mitigation employed and inform whether further mitigation, maintenance or changes in mitigation approach are required to maintain the conservation status of the ecological feature.
- 7.5 Post-construction monitoring in the longer term will be the responsibility of the relevant trunk road operating company.

8 References

Bat Conservation Trust and Institution of Lighting Professionals (2018) Guidance Note 08/18 Bats and artificial lighting in the UK Bats and the Built Environment series. [Online] Available from: <https://cdn.bats.org.uk/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?mtime=20181113114229> [Accessed May 2020]

CIRIA (2015). Coastal and marine environmental site guide (second edition).

Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.

Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013). Raptors: A Field Guide for Surveys and Monitoring. Third Edition. Scottish Natural Heritage.

Heras (2020). Heras Mobile Fencing. [Online] Available from <https://www.heras-mobile.co.uk/> [Accessed January 2020].

Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland (2020). Design Manual for Roads and Bridges, LA 120 Environmental management plans, Revision 1.

Institution of Lighting Professionals (2011). Guidance Notes for the Reduction of Obtrusive Light GN01:2011 [Online] Available from <https://www.theilp.org.uk/documents/obtrusive-light/> [Accessed February 2020].

SEPA (2017). Management of Forestry Waste. WST-G-027 version 3.

The Royal Commission on Environmental Pollution (2009). Artificial Light in the Environment. The Stationery Office, Norwich, UK.

Appendix A Outline SMP: Wetland Birds

1 Introduction

- 1.1 This document presents the Outline Species Management Plan (SMP) for wetland birds. It is a live document that consolidates the mitigation identified in the EIA Report for the proposed scheme. The Outline Wetland Bird SMP will form part of the Ecological Management Plan for the proposed scheme which will comprise an annex to the Construction Environmental Management Plan (CEMP).

2 Report Structure

- 2.1 This Outline Wetland Bird SMP will be developed by the Contractor and form part of the Ecological Management Plan.
- 2.2 The structure of this Outline SMP is set out as follows:
- Legislation and Conservation Status
 - Roles and Responsibilities for Implementing the SMP
 - Potential Impacts
 - Mitigation Measures
 - Summary
 - References

3 Legislation and Conservation Status

Legislation

- 3.1 The following sections provide the legislation relevant for wetland birds, including relevant directives and legislative frameworks underpinning the designations of the Firth of Forth Special Protection Area (SPA), Ramsar and Site of Special Scientific Interest (SSSI).

The Habitats Directive (92/43/EEC)

- 3.2 The European Union Directive (92/43/EEC) on the Conservation of natural habitats and of wild fauna and flora (Habitats Directive) is the means by which the Community meets its obligations as a signatory of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). The Directive introduces a range of measures including the protection and surveillance of habitats and species. The main aim of the Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species at a favourable conservation status, introducing robust protection for those habitats and species of European importance.
- 3.3 The habitats listed in Annex I of the Directive and the species listed in Annex II, are to be protected by means of a network of sites. Each Member State is required to prepare and propose a national list of sites for evaluation in order to form a European network of Sites of Community Importance (SCIs). Once adopted, these are designated by Member States as Special Areas of Conservation (SAC), and along with SPAs classified under the Birds Directive, form a network of protected areas known as Natura 2000.

The Birds Directive (79/409/EEC)

- 3.4 The European Union Directive on the Conservation of wild birds (79/409/EEC) was adopted in 1979. The Birds Directive is a primary tool for delivering EU obligations under the Convention on Biological Diversity (CBD), the Ramsar and Bonn Conventions. The Birds and Habitats Directives require Member States to take a number of measures/actions in order to protect all bird species, their sites and their habitats, these include: measures to conserve and maintain all naturally occurring bird species across the EU through the designation of SPAs for species listed on Annex I of the Directive and migratory species.

Convention on Wetlands of International Importance

- 3.5 Wetland sites designated under the Convention on Wetlands of International Importance, named as Ramsar sites. The mission of the Convention is *'the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world'*. The UK Government signed up to the Convention in 1976.
- 3.6 Ramsar sites are afforded the same level of protection as European sites under domestic policy and are treated in the same way as the Natura 2000 network. Most Ramsar sites in Scotland are also designated as either SPAs or SACs (SNH 2020) although not always sharing the same qualifying species.

Conservation (Natural Habitats, & c.) Regulations 1994 (as amended)

- 3.7 The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) transpose the EC Habitats Directive into national law. The Regulations provide for the designation and protection of 'European sites', the protection of 'European Protected Species', and the adaptation of planning and other controls for the protection of European sites. Under these Regulations any plan or project that may impact a European site is subject to a Habitats Regulations Appraisal.

Wildlife and Countryside Act 1981 (as amended)

- 3.8 All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). For any wild bird species, it is an offence to intentionally or recklessly:
- kill, injure or take a bird
 - take, damage, destroy or interfere with a nest of any bird while it is in use or being built
 - obstruct or prevent any bird from using its nest
 - take or destroy an egg of any bird

- 3.9 Further protection is given to some rarer species and to species vulnerable to disturbance and/or persecution. This is done through various schedules attached to the Act.

Nature Conservation (Scotland) Act 2004

- 3.10 Site of Special Scientific Interest is a statutory designation made by SNH under the Nature Conservation (Scotland) Act 2004. SNH have a duty, under section 3 of the Act, to notify SSSIs as areas of land they consider of special interest for their flora or fauna, geology or geomorphology. Many SSSIs are also designated as Natura sites – whether as SACs, SPAs or Ramsar sites. It is an offence for anyone to intentionally or recklessly damage the protected natural features of a SSSI.

Conservation Status

- 3.11 The UK's wetland habitats support internationally and nationally important numbers of wintering birds, including ducks, geese, swans and waders many of which migrate to spend the winter feeding within estuarine, coastal and inland wetland habitats. Of specific relevance to the proposed scheme is the Firth of Forth which is designated as a SPA, Ramsar and SSSI for wintering wetland birds and Sandwich tern (*Thalasseus sandvicensis*) on passage.
- 3.12 The UK's leading bird conservation organisations collaborated to review the status of birds in the UK, Channel Islands and Isle of Man. The bird species that breed or overwinter were assessed against a set of objective criteria to be placed on the Green, Amber and Red list, indicating an increasing level of conservation concern. This review was undertaken in 2015 and represents the Birds of Conservation Concern 4 (BoCC 4) (Eaton *et al.* 2015), superseding the previous review in 2009. The quantitative criteria assessed included the historical decline, trends in population and range, population size, localisation and international importance of each species as well as their global and European threat status. Of the qualifying interests of the SPA, Ramsar and SSSI, eight species are Red listed on the BoCC and 14 are Amber listed (Eaton *et al.* 2015). Table A1 presents the most recent BoCC status for qualifying interests of the Firth of Forth SPA, Ramsar and SSSI.
- 3.13 Of the species listed, the most concerning is long-tailed duck (*Clangula hyemalis*) which moved directly from the Green list to the Red list since the last review was undertaken to reflect its status as Globally Threatened (BirdLife International 2020). Additionally, velvet scoter (*Melanitta fusca*) (also Globally Threatened (BirdLife International 2020)) and ringed plover (*Charadrius hiaticula*) were moved from the Amber list to the Red list since the last review. All other species statuses remained consistent with the previous review and are either listed as Near Threatened or Least Concern globally.

Table A1: Firth of Forth SPA, Ramsar and SSSI Qualifying Interests Conservation Status

Common Name	Latin Name	BoCC Status
Bar-tailed Godwit	<i>Limosa lapponica</i>	Amber
Golden plover	<i>Pluvialis apricaria</i>	Green
Slavonian grebe	<i>Podiceps auritus</i>	Red
Red-throated diver	<i>Gavia stellata</i>	Green
Sandwich tern	<i>Thalasseus sandvicensis</i>	Amber
Knot	<i>Calidris canutus</i>	Amber
Pink-footed goose	<i>Anser brachyrhynchus</i>	Amber
Redshank	<i>Tringa totanus</i>	Amber
Shelduck	<i>Tadorna tadorna</i>	Amber
Turnstone	<i>Arenaria interpres</i>	Amber
Common scoter	<i>Melanitta nigra</i>	Red
Cormorant	<i>Phalacrocorax carbo</i>	Green
Curlew	<i>Numenius arquata</i>	Red
Dunlin	<i>Calidris alpina</i>	Amber
Eider	<i>Somateria mollissima</i>	Amber
Goldeneye	<i>Bucephala clangula</i>	Amber
Great crested grebe	<i>Podiceps cristatus</i>	Green
Grey plover	<i>Pluvialis squatarola</i>	Amber
Lapwing	<i>Vanellus vanellus</i>	Red
Long-tailed duck	<i>Clangula hyemalis</i>	Red
Mallard	<i>Anas platyrhynchos</i>	Amber
Oystercatcher	<i>Haematopus ostralegus</i>	Amber
Red-breasted merganser	<i>Mergus serrator</i>	Green

Common Name	Latin Name	BoCC Status
Ringed plover	<i>Charadrius hiaticula</i>	Red
Scaup	<i>Aythya marila</i>	Red
Velvet scoter	<i>Melanitta fusca</i>	Red
Wigeon	<i>Mareca penelope</i>	Amber

4 Roles and Responsibilities for Implementing the SMP

- 4.1 This Outline Wetland Bird SMP is a live document which will become the responsibility of the appointed Contractor; it will be a contractual requirement for the appointed Contractor to develop, update and implement the SMP as appropriate.
- 4.2 It will be the responsibility of the appointed Contractor to ensure all mitigation is implemented during construction of the proposed scheme. The SMP will include all mitigation necessary to deliver the commitments stated in the EIA Report for the proposed scheme. It will also incorporate any additional mitigation that is required for the construction of the proposed scheme; this will include any mitigation identified as a result of updated ecological surveys, undertaken prior to or during advanced/main works, required to safeguard wetland birds.
- 4.3 The appointed Contractor will finalise the mitigation design to protect wetland birds during the construction of the proposed scheme. Any change must pass an assessment in accordance with the Employer's Requirements (as defined in the contract documents) and be accepted by Transport Scotland.

Responsibilities of the Ecological Clerk of Works

- 4.4 To ensure that the Wetland Bird SMP is implemented effectively, an Ecological Clerk of Works (ECoW) will be appointed by the Contractor. An ecologist, acting on behalf of Transport Scotland, will check that the Contractor's ECoW is suitably qualified to undertake their role and will audit the contractual obligations with regards to the ecological safeguarding and ecological mitigation requirements. The ecologist will undertake any required ecological monitoring and reporting as detailed within this SMP.
- 4.5 The main roles of the ECoW are as follows:
- provide ecological advice over the entire construction programme;
 - in collaboration with the ecologist acting on behalf of Transport Scotland, undertake or oversee pre-construction surveys for protected species in the areas affected by the proposed scheme;
 - ensure mitigation measures are implemented to avoid and reduce impacts on ecological features; and
 - monitor the implementation of mitigation measures during the construction phase to ensure compliance with protected species legislation and commitments within the EIA Report.
- 4.6 The ECoW will be a member of the CIEEM, will have previous experience in similar ECoW roles and will be approved by Transport Scotland to be appropriately qualified for the role. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented, in collaboration with the ecologist (acting on behalf of Transport Scotland).

5 Potential Impacts

5.1 In the absence of mitigation, the proposed scheme has the potential to adversely impact wetland birds during the construction phase, including species that are qualifying interests of the Firth of Forth SPA, Ramsar and SSSI. The impacts have been identified and assessed within the EIA Report (Chapter 9: Terrestrial Ecology) and are summarised in the below table.

Table A2: Summary Impact Assessment for Wetland Birds

Ecological Feature	Potential Impact	Potential Effect	Characterisation of Impact (pre-mitigation) & Significance
Wetland birds (including qualifying interests of the Firth of Forth SPA, Ramsar and SSSI)	Temporary loss of saltmarsh habitat to accommodate construction.	Localised fragmentation and displacement of individual birds. This effect would be long-term, reversible and negative.	Major (significant)
	Noise, vibration and light spill associated with construction related activities.	Disturbance leading to displacement of birds from areas used for foraging, loafing and overnight roosting. This may result in additional energy expenditure and loss of conditioning. This effect would be medium-term and negative.	Moderate (significant)
	Runoff and release of sediment from construction works from accidental spillage.	Pollution of habitat resulting in deterioration of habitat and ultimately direct mortality. Depending on the magnitude of the pollution event there could be irreversible, long-term, negative effects on the habitat and on its qualifying species.	Moderate (significant)
	Changes in erosion and deposition around the edges of the working platform.	Altered habitat used by qualifying species. The area affected would be minimal and this effect would be short-term, reversible and negative.	Minor (only significant for qualifying interests of the Firth of Forth designated sites)

6 Mitigation Measures

6.1 The mitigation measures listed within this section are not exhaustive and it is acknowledged that additional measures may be identified as the proposed scheme progresses. It is assumed that any additions or amendments will be made as required and the SMP reviewed and revised as appropriate. It is assumed that previous revisions will be immediately superseded on issue of any updated documentation. Details of any changes to mitigation measures will be communicated to all site personnel through a toolbox talk or appropriate training/induction.

Mitigation Principles

6.2 Mitigation will follow a hierarchical approach in the following order:

- avoid adverse impacts in the first instance;
- where avoidance is not possible, reduce the adverse impacts through appropriate design and mitigation; and

- where significant adverse residual effects remain, measures to offset the adverse impacts at a site-specific level may be required (compensation).

General Mitigation

6.3 General mitigation principles and measures will be adhered to throughout the construction of the proposed scheme. General mitigation relevant to wetland birds will include the following.

- Adherence to mitigation within the CEMP and Ecological Management Plan.
- The ECoW will be responsible for implementation of SMPs included within the Ecological Management Plan.
- The ECoW will be present on site during the works and will provide advice on wetland birds.
- A toolbox talk, covering all ecological receptors, and associated legal compliance, will be delivered to site personnel prior to works commencing.

Specific Mitigation

6.4 Mitigation Items are presented within the EIA Report to avoid or negate impacts on ecological features in accordance with best practice guidance and UK, Scottish and local government environmental impact, planning and sustainability policies. Table A3 presents the Mitigation Items which apply to wetland birds, as presented within Chapter 9 (Terrestrial Ecology) and Chapter 17 (Schedule of Environmental Commitments) of the EIA Report.

6.5 Disturbance to wetland birds and loss/degradation of key habitats were the impact pathways identified within Chapter 9 (Terrestrial Ecology) of the EIA report. The following section details the mitigation measures aimed specifically at mitigating for these impacts.

Mitigation to Avoid Disturbance to Wetland Birds

6.6 In addition to general mitigation measures stated above, the following measures will be followed to mitigate for disturbance to wetland birds during the construction of the proposed scheme.

- Monitoring of bird responses to construction activities will be undertaken. Surveys will follow an adapted methodology based on the wetland bird Through The Tide Count (TTTC) surveys and will be undertaken by an ecologist acting on behalf of Transport Scotland throughout the construction period. If required, further mitigation will be proposed and discussed with the ECoW and SNH. The threshold for significant disturbance will be assessed by the ecologist acting on behalf of Transport Scotland in discussion with ECoW. It should be assumed that during winter months the threshold will be reduced to account for additional physiological pressures for wetland birds overwinter.
- Screening of at least 2m in height (such as Heras Readyhoard or Steelhoard Screening fences (Heras 2020)) will be provided between the works and the coastal area throughout winter. Where possible, and as agreed by the ECoW, screens will be positioned around working areas, including ancillary works/plant such as water treatment tanks, to reduce the visual disturbance caused by operatives, plant and vehicles within the working area. Screens will be in place to mitigate against visual disturbance from the works primarily, but also provide some sound attenuation to limit noise disturbance. The screening should be checked by the ECoW prior to works to ensure that the screening has been appropriately placed.
- Night-time working will be avoided where possible. Where construction during hours of darkness is needed, lighting will be angled away from estuarine habitats. Light spill will be avoided by using directional lighting, no reflective material under the lights and lights will be fitted with cowls where required. Other measures to avoid light spill will be developed as part of the construction lighting plan developed by the Contractor, and exceptions will be agreed with the ECoW prior to works.

- Working during the hours of darkness will be avoided as far as practicable to reduce disturbance to protected species, particularly roosting geese, and other species roosting near the bridge. Working during the hours of darkness will likely be unavoidable during winter, therefore lighting will need to avoid illuminating sensitive bird habitats adjacent to the bridge watercourses; known commuting routes, and where there is known activity of protected species.
- The footprint of the working area will be minimised as far as possible and vehicles, plant and personnel will be constrained to this area through the use of temporary barriers to minimise potential disturbance to wetland birds located adjacent to this footprint.
- Noise and vibration limits for ecological noise sensitive receptors (NSRs) will be agreed with SNH. These limits will be incorporated into the Contract Documents. The Contractor will be required to develop and implement a Noise and Vibration Management Plan (NVMP) to reduce construction noise and adhere to appropriate noise thresholds where possible (as described in Chapter 12: Noise and Vibration of the EIA Report).
- The Contractor will employ a 'soft-start' to all noisy activities to avoid sudden and unexpected disturbance. Each time the activity is started up after a period of inactivity, the noise levels will be gradually increased over a period of 30 minutes to allow birds (and other animals) to relocate. This will apply year-round.

Mitigation to Avoid Habitat Loss or Degradation

6.7 In addition to general mitigation measures stated above, the following measures will be followed to mitigate for wetland bird habitat loss and degradation as a result of the construction of the proposed scheme.

- Access tracks and working platforms on the saltmarsh will be created through use of geotextile layer under aggregate material.
- A Saltmarsh Management Plan will be prepared prior to construction. This Saltmarsh Management Plan (see Appendix 8.2 for Outline Saltmarsh Management Plan) will include measures to reduce damage and encourage recovery of the saltmarsh and will include a period of post-construction monitoring.
- The footprint of the working area will be minimised as far as possible and vehicles, plant and personnel will be constrained to this area through the use of temporary barriers to minimise the damage to habitats and located within and adjacent to this footprint.
- On completion of the works all access tracks and working platforms will be removed in their entirety from the saltmarsh.
- With the exception of temporarily realigning the existing SuDS outfall, no works will be undertaken on the saltmarsh outside the footprint of the working platform and access tracks. This includes provision of drainage or water treatment facilities for construction runoff.

Table A3: Construction Mitigation Items for Wetland Birds

Impact Type	Impact	Mitigation Item(s)	Description
Disturbance	<ul style="list-style-type: none"> Light spill associated with construction related activities. 	TE1	<p>A construction lighting plan and method statement will be developed by the Contractor. The plan will detail specific mitigation requirements, including but not limited to measures to avoid light spill/reflections, and avoidance of white-blue spectrum and high UV emitting lighting.</p> <p>The lighting plan will take into account published guidance on lighting (e.g. Institution of Lighting Professionals (2011), The Royal Commission on Environmental Pollution (2009) and Bat Conservation Trust and Institution of Lighting Professionals (2018)).</p> <p>The construction lighting design will be developed specifically to avoid illuminating sensitive habitats in locations such as sensitive bird habitats adjacent to the bridge, particularly to the southeast of the piers; watercourses; known commuting routes, and where there is known activity of protected species identified through pre-construction ecological surveys (Mitigation Item ME1). Where this is not possible the Contractor will agree any exceptions with the Ecological Clerk of Works (ECoW).</p>
	<ul style="list-style-type: none"> Noise, vibration and light spill associated with construction related activities 	TE2	<p>Monitoring of bird responses to construction activities will be undertaken. Surveys will follow an adapted methodology based on the wetland bird Through The Tide Count (TTTC) surveys (Table 9.1) and will be undertaken by an ecologist acting on behalf of Transport Scotland throughout the construction period. If required, further mitigation will be proposed and discussed with the Ecological Clerk of Works (ECoW) and Scottish Natural Heritage (SNH).</p> <p>Screening of at least 2m in height (such as Heras Readyhoard or Steelhoard Screening fences (Heras 2020)) will be provided between the works and the coastal area throughout winter. Where possible, and as agreed by the ECoW, screens will be positioned around working areas, including ancillary works/plant such as water treatment tanks, to reduce the visual disturbance caused by operatives, plant and vehicles within the working area. Screens will be in place to mitigate against visual disturbance from the works primarily, but also provide some sound attenuation to limit noise disturbance. The screening should be checked by the ECoW prior to works to ensure that the screening has been appropriately placed</p> <p>The Construction Environmental Management Plan (CEMP) will include a Species Management Plan for wetland birds which will provide further detail on mitigation and monitoring for these species.</p>
		TE4	<p>Working during the hours of darkness will be avoided as far as practicable to reduce disturbance to protected species, particularly roosting geese and otter. Working during the hours of darkness will likely be unavoidable during winter, therefore lighting will need to avoid illuminating sensitive bird habitats adjacent to the bridge watercourses; known commuting routes, and where there is known activity of protected species (Mitigation Item TE1).</p>

Impact Type	Impact	Mitigation Item(s)	Description
	<ul style="list-style-type: none"> Noise and vibration associated with construction related activities. 	TE3	The Contractor will employ a 'soft-start' to all noisy activities to avoid sudden and unexpected disturbance. Each time the activity is started up after a period of inactivity, the noise levels will be gradually increased over a period of 30 minutes to allow birds (and other animals) to relocate. This will apply year-round.
		NV2	Noise and vibration limits for residential and ecological NSRs will be agreed with the Falkirk Council Environmental Health Department and SNH, respectively, and these limits will be incorporated into the Contract Documents. The Contractor will be required to develop and implement a Noise and Vibration Management Plan (NVMP) as part of the CEMP to meet these requirements. The NVMP will include the design of any necessary NSR specific construction mitigation over and above the standard mitigation included within this chapter.
		NV5	Best practicable means will be used to limit the level of noise to which operators and others in the vicinity of site operations would be exposed. This includes the following: <ul style="list-style-type: none"> the hours of working will be planned and account will be taken of the effects of noise upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned, the duration of work and the likely consequence of any lengthening of work periods; where reasonably practicable, quiet working methods will be employed, including use of the most suitable plant, reasonable hours of working for noisy operations, and economy and speed of operations; noise will be controlled at source, for example, by modification of existing plant/equipment, its use and location and ensuring maintenance of all noise-generating equipment; the spread of noise will be limited, i.e. by distance between source and receiver and/or screening; on-site noise levels will be monitored regularly, particularly if changes in machinery or project designs are introduced, by a suitably qualified person appointed specifically for the purpose; on those parts of a site where high levels of noise are likely to be a hazard to persons working on the site, prominent warning notices will be displayed and, where necessary, ear protectors will be provided; proper use of plant with respect to minimising noise emissions and regular maintenance in line with plant manuals; where appropriate, inherently quiet plant will be selected. All major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; machines in intermittent use will be shut down in the intervening periods between work or throttled down to a minimum; all ancillary plant such as generators, compressors and pumps will be positioned so as to cause minimum noise disturbance. If necessary, acoustic barriers or enclosures will be provided; and

Impact Type	Impact	Mitigation Item(s)	Description
			<ul style="list-style-type: none"> adherence to the codes of practice for construction working and piling given in BS 5228-1 and BS 5228-2 and the guidance given therein regarding minimising noise and vibration emissions from the site.
Habitat loss/ degradation	<ul style="list-style-type: none"> Runoff and release of sediment from construction works from accidental spillage. Temporary loss of saltmarsh habitat to accommodate construction. Changes in erosion and deposition around the edges of the working platform. 	ME3	Best practice construction methods (CIRIA 2015) will be used including the use of appropriate pollution controls (i.e. Guidance for Pollution Prevention (GPPs)), such as construction drainage, a strict re-fuelling protocol and removal of all loose materials from the intertidal area.
		ME6	Prior to construction the Contractor will develop a Saltmarsh Management Plan. This will include measures to reduce damage and encourage recovery of the saltmarsh and will include a period of post-construction monitoring.
Habitat loss	<ul style="list-style-type: none"> Temporary loss of saltmarsh habitat to accommodate construction. 	ME4	The footprint of the working area will be minimised as far as possible and vehicles, plant and personnel will be constrained to this area through the use of temporary barriers to minimise the damage to habitats and potential direct mortality and disturbance to animals located within and adjacent to this footprint. The access track and working platforms on the saltmarsh will be created through use of geotextile layer under aggregate material.
		ME5	On completion of the works all access tracks and working platforms will be removed in their entirety from the saltmarsh.
		ME7	With the exception of temporarily realigning the existing SuDS outfall, no works will be undertaken on the saltmarsh outside the footprint of the working platform and access tracks. This includes provision of drainage or water treatment facilities for construction runoff.

7 Summary

- 7.1 This Outline Wetland Bird SMP sets out the mitigation measures, including roles and responsibilities, that will be implemented during the construction of the proposed scheme to protect wetland birds, including qualifying interests of the Firth of Forth designated sites.
- 7.2 This Outline Wetland Bird SMP will form part of the contract documents that make up the advance and main works contracts for the construction of the proposed scheme. The SMP will be updated by the appointed Contractor(s) ahead of advance and/or main works being undertaken in order to deliver the environmental commitments relating to protection of wetland birds for the proposed scheme.

8 References

- Bat Conservation Trust and Institution of Lighting Professionals (2018) Guidance Note 08/18 Bats and artificial lighting in the UK Bats and the Built Environment series. [Online] Available from: <https://cdn.bats.org.uk/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?mtime=20181113114229> [Accessed May 2020].
- BirdLife International (2020). IUCN Red List for birds.
- CIRIA (2015). Coastal and marine environmental site guide (second edition).
- Heras (2020). Heras Mobile. Fencing. [Online] Available at: <https://www.heras-mobile.co.uk/> [Accessed January 2020]
- Institution of Lighting Professionals (2011). Guidance Notes for the Reduction of Obtrusive Light GN01:2011 [Online] Available from <https://www.theilp.org.uk/documents/obtrusive-light/> [Accessed January 2019]
- The Royal Commission on Environmental Pollution (2009). Artificial Light in the Environment. The Stationery Office, Norwich, UK.
- SNH (2020). Ramsar sites. Available at: <https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/international-designations/ramsar-sites> [Accessed July 2020].

Appendix B Outline SMP: Peregrine

1 Introduction

- 1.1 This document presents the Outline Species Management Plan (SMP) for peregrine (*Falco peregrinus*). It is a live document that consolidates the mitigation identified in the EIA Report for the proposed scheme. The Outline Peregrine SMP will form part of the Ecological Management Plan for the proposed scheme which will comprise an annex to the Construction Environmental Management Plan (CEMP).

2 Report Structure

- 2.1 This Outline Peregrine SMP will be developed by the Contractor and form part of the Ecological Management Plan.
- 2.2 The structure of this Outline SMP is set out as follows:
- Legislation and Conservation Status
 - Roles and Responsibilities for Implementing the SMP
 - Potential Impacts
 - Mitigation Measures
 - Summary
 - References

3 Legislation and Conservation Status

Legislation

- 3.1 The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for wildlife protection in the UK. Its aim is to implement the requirements of the Bern Convention and the Birds Directive. All wild birds are protected under Act. Further protection is given to some rarer species and to species vulnerable to disturbance and/or persecution. This is done through various schedules attached to the Act¹.
- 3.2 For any wild bird species, it is an offence to intentionally or recklessly:
- kill, injure or take a bird;
 - take, damage, destroy or interfere with a nest of any bird while it is in use or being built;
 - obstruct or prevent any bird from using its nest; and/or
 - take or destroy an egg of any bird.

¹ There are additional offences related to wild bird species listed on Schedule 1A and A1 of the Act where it's an offence to intentionally or recklessly harass any bird, and to intentionally or recklessly take, damage, destroy or interfere at any time with a nest habitually used by any bird. There are additional offences in relation to use of prohibited methods of killing or taking wild birds, the sale of live and dead wild birds listed on Schedule 3 and the registration and keeping of captive wild birds listed on Schedule 4. Exceptions to these offences include the shooting of certain Schedule 2 species outside the closed season. List of species on the schedules is available at: https://www.nature.scot/sites/default/files/2018-10/Protected%20species%20list%20-%20WCA%20schedules%201A%20A1%20%26%201-4_0.pdf

3.3 For any wild bird species listed on Schedule 1, it's an offence to disturb:

- any bird while it is building a nest;
- any bird while is in, on, or near a nest containing eggs or young;
- any bird while lekking²; and/or
- the dependent young of any bird.

3.4 It is also an offence to:

- possess or control a living or dead wild bird;
- possess or control an egg of a wild bird (or any such derivatives); and/or
- knowingly cause or permit any of the above acts to be carried out.

3.5 Peregrine is listed on Schedule 1 of the Act. Therefore, for the proposed scheme to continue lawfully, it must be demonstrated that there will be no intentional or reckless disturbance to breeding peregrine at Kincardine Bridge.

Conservation Status

3.6 Peregrine are vulnerable to persecution and the UK population was at a low in the 1960s as a result of human persecution and bioaccumulation of pesticides such as DDT in the food chain. However, since improved legislation came into force regarding wildlife protection and pesticide use, the population of peregrine has recovered (RSPB 2020a).

3.7 The UK's leading bird conservation organisations collaborated to review the status of birds in the UK, Channel Islands and Isle of Man. The bird species that breed or overwinter were assessed against a set of objective criteria to be placed on the Green, Amber and Red list, indicating an increasing level of conservation concern. This review was undertaken in 2015 and represents the Birds of Conservation Concern 4 (BoCC 4) (Eaton *et al.* 2015), superseding the previous review in 2009. The quantitative criteria assessed included the historical decline, trends in population and range, population size, localisation and international importance of each species as well as their global and European threat status. Peregrine remains on the Green list of the BoCC, maintaining its conservation status since the previous review. Globally the species is listed as being of Least Concern (BirdLife International 2019).

3.8 The UK peregrine population is estimated to be 1,500 breeding pairs (RSPB 2020b), with the European population estimated to be 14,900-28,800 pairs with an overall stable trend, with an estimated increase in Europe (BirdLife International 2015).

² Applicable to capercaillie (*Tetrao urogallus*)

4 Roles and Responsibilities for Implementing the SMP

- 4.1 This Outline Peregrine SMP is a live document which will become the responsibility of the appointed Contractor; it will be a contractual requirement for the appointed Contractor to develop, update and implement the Peregrine SMP as appropriate.
- 4.2 It will be the responsibility of the appointed Contractor to ensure all mitigation is implemented during construction of the proposed scheme. The SMP will include all mitigation necessary to deliver the commitments stated in the EIA Report for the proposed scheme. It will also incorporate any additional mitigation that is required for the construction of the proposed scheme; this will include any mitigation identified as a result of updated ecological surveys, undertaken prior to or during advanced/main works, required to safeguard peregrine.
- 4.3 The appointed Contractor will finalise the mitigation design to protect peregrine during the construction of the proposed scheme. Any change must pass an assessment in accordance with the Employer's Requirements (as defined in the contract documents) and be accepted by Transport Scotland.

Responsibilities of the Ecological Clerk of Works

- 4.4 To ensure that the Peregrine SMP is implemented effectively, an Ecological Clerk of Works (ECoW) will be appointed by the Contractor. An ecologist, acting on behalf of Transport Scotland, will check that the Contractor's ECoW is suitably qualified to undertake their role and will audit the contractual obligations with regards to the ecological safeguarding and ecological mitigation requirements.
- 4.5 The main roles of the ECoW are as follows:
- provide ecological advice over the entire construction programme;
 - in collaboration with the ecologist acting on behalf of Transport Scotland, undertake or oversee pre-construction surveys for protected species in the areas affected by the proposed scheme;
 - ensure mitigation measures are implemented to avoid and reduce impacts on ecological features; and
 - monitor the implementation of mitigation measures during the construction phase to ensure compliance with protected species legislation and commitments within the EIA Report.
- 4.6 The ECoW will be a member of the CIEEM, will have previous experience in similar ECoW roles and will be approved by Transport Scotland to be appropriately qualified for the role. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented, in collaboration with the ecologist (acting on behalf of Transport Scotland).

5 Potential Impacts

- 5.1 Peregrine use the existing Kincardine Bridge for nesting and the rearing of chicks during the breeding season (March to July inclusive). The nest location will not be destroyed as part of the refurbishment works. Noise, vibration and light spill associated with construction related activities could lead to disturbance of this species, which could influence breeding success, feeding and behaviour. Peregrine are more susceptible to disturbance early in the breeding season and could abandon a breeding attempt depending on the level of disturbance.
- 5.2 However, peregrine exhibit tolerance to disturbance (Ruddock and Whitfield 2007) and it was observed during the surveys to inform the impact assessment that the peregrines present on site appeared to be habituated to traffic noise and road maintenance works on the Kincardine Bridge.

5.3 The impacts have been identified and assessed within the EIA Report (Chapter 9: Terrestrial Ecology) and are summarised in the below table.

Table B1: Summary Impact Assessment for Peregrine

Ecological Feature	Potential Impact	Potential Effect	Characterisation of Impact (pre-mitigation) & Significance
Peregrine	Noise, vibration and light spill associated with construction related activities.	Disturbance of Schedule 1 species which could influence breeding success, feeding and behaviour. Peregrine exhibit tolerance and can habituate to disturbances. This effect is unlikely to have an impact on the population of the species.	Moderate (significant)

6 Mitigation Measures

6.1 The mitigation measures listed within this section are not exhaustive and it is acknowledged that additional measures may be identified as the proposed scheme progresses. It is assumed that any additions or amendments will be made as required and the Peregrine SMP reviewed and revised as appropriate. It is assumed that previous revisions will be immediately superseded on issue of any updated documentation. Details of any changes to mitigation measures will be communicated to all site personnel through a toolbox talk or appropriate training/induction.

Mitigation Principles

6.2 Mitigation will follow a hierarchical approach in the following order:

- avoid adverse impacts in the first instance;
- where avoidance is not possible, reduce the adverse impacts through appropriate design and mitigation; and
- where significant adverse residual impacts remain, measures to offset the adverse impacts at a site-specific level may be required (compensation).

General Mitigation

6.3 General mitigation principles and measures will be adhered to throughout the construction of the proposed scheme. General mitigation relevant to peregrine will include the following.

- Adherence to mitigation within the CEMP and Ecological Management Plan.
- The ECoW will be responsible for implementation of SMPs included within the Ecological Management Plan.
- The ECoW will be present on site during the works and will provide advice on peregrine.
- Pre-construction surveys will be undertaken to update the ecological baseline for protected species.
- A toolbox talk, covering all ecological receptors, and associated legal compliance, will be delivered to site personnel prior to works commencing.

Specific Mitigation

6.4 Mitigation Items are presented within the EIA Report to avoid or negate impacts on ecological features in accordance with best practice guidance and UK, Scottish and local government environmental impact,

planning and sustainability policies. Table B2 presents the Mitigation Items which apply to peregrine, as presented within Chapter 9 (Terrestrial Ecology) and Chapter 17 (Schedule of Environmental Commitments) of the EIA Report.

- 6.5 Disturbance to peregrine was the only impact pathway identified within Chapter 9 (Terrestrial Ecology) of the EIA report. The following sections detail the mitigation measures aimed specifically at mitigating for this impact.

Mitigation to Avoid Disturbance to Peregrine

- 6.6 In addition to general mitigation measures stated above and the Ecological Management Plan, the following measures will be abided by to mitigate for disturbance to peregrine during the construction of the proposed scheme.

- Construction work will be programmed, where possible, to commence outside of peregrine breeding season. If this cannot be achieved, monitoring surveys will be undertaken to determine if/when peregrine return to their previous nest, or if peregrine move to an alternate nest site, and will commence prior to construction.
- Monitoring surveys will be undertaken throughout the construction period, with specific focus on the peregrine breeding season between March and July and during any particularly disturbing works. Surveys should follow methods as detailed in Hardey *et al.* (2013) and in Appendix A9.3 (Confidential Ecology Features) of the EIA Report, which describes the methods to be used. These surveys will be used to determine if there is any significant disturbance to breeding peregrine. The threshold for significant disturbance will be assessed by the ECoW and will follow professional judgement based on the understanding of peregrine behaviour and ecology. It should be assumed that during early breeding season the threshold for disturbance will be lower to take into account the potential for significant disturbance to cause birds to abandon the nesting attempt.
- The natural programme of works should allow for a gradual increase in personnel and noise (e.g. construction of compound first, followed by temporary working platform, temporary bridge and eventually destruction of the piled viaduct) to allow peregrine to habituate so that disturbing works during the breeding season will unlikely disturb peregrine or have implications for the success of the breeding attempt. This approach is based on peregrine being a relatively tolerant species with habituation to disturbance highly likely; pairs have been recorded successfully breeding in highly disturbing environments such as quarries (Ruddock and Whitfield 2007).
- Although considered unlikely, should significant disturbance be observed by the ECoW, works will stop until further mitigation measures are put in place as determined by the ECoW in consultation with SNH if required.
- Working during the hours of darkness will be avoided as far as practicable. A construction lighting plan and method statement will be developed by the Contractor. The plan will detail specific mitigation requirements, including but not limited to measures to avoid light spill/reflections, and avoidance of white-blue spectrum and high UV emitting lighting.
- The Contractor will employ a 'soft-start' to all noisy activities to avoid sudden and unexpected disturbance. Each time the activity is started up after a period of inactivity, the noise levels will be gradually increased over a period of 30 minutes to allow birds (and other animals) to relocate. This will apply year-round.

Table B2: Construction Mitigation Items for Peregrine

Impact Type	Impact	Mitigation Item(s)	Description
Disturbance	<ul style="list-style-type: none"> Light spill associated with construction related activities. 	TE1	<p>A construction lighting plan and method statement will be developed by the Contractor. The plan will detail specific mitigation requirements, including but not limited to measures to avoid light spill/reflections, and avoidance of white-blue spectrum and high UV emitting lighting.</p> <p>The lighting plan will take into account published guidance on lighting (e.g. Institution of Lighting Professionals (2011), The Royal Commission on Environmental Pollution (2009) and Bat Conservation Trust and Institution of Lighting Professionals (2018)).</p> <p>The construction lighting design will be developed specifically to avoid illuminating sensitive habitats in locations such as sensitive bird habitats adjacent to the bridge, particularly to the southeast of the piers; watercourses; known commuting routes, and where there is known activity of protected species identified through pre-construction ecological surveys (Mitigation Item ME1). Where this is not possible the Contractor will agree any exceptions with the Ecological Clerk of Works (ECoW).</p>
	<ul style="list-style-type: none"> Noise and vibration associated with construction related activities. 	TE3	<p>The Contractor will employ a 'soft-start' to all noisy activities to avoid sudden and unexpected disturbance. Each time the activity is started up after a period of inactivity, the noise levels will be gradually increased over a period of 30 minutes to allow birds (and other animals) to relocate. This will apply year-round.</p>
	<ul style="list-style-type: none"> Disturbance caused by all construction related activities 	TE6	<p>Construction work will be programmed, where possible, to commence outside of peregrine breeding season.</p> <p>If this cannot be achieved, monitoring surveys will be undertaken to determine if/when peregrine return to their previous nest, or if peregrine move to an alternate nest site, and will commence prior to construction. The natural programme of works should allow for a gradual increase in personnel and noise (e.g. construction of compound first, followed by temporary working platform, temporary bridge and eventually destruction of the piled viaduct) to allow peregrine to habituate so that disturbing works during the breeding season will unlikely disturb peregrine or have implications for the success of the breeding attempt. Although considered unlikely, should significant disturbance be observed by the Ecological Clerk of Works (ECoW), works will stop until further mitigation measures are put in place as determined by the ECoW in consultation with Scottish Natural Heritage (SNH), if required.</p> <p>The Construction Environmental Management Plan (CEMP) will include a Species Management Plan for peregrine which will provide further detail on mitigation for this species.</p>
	<ul style="list-style-type: none"> Noise and vibration associated with construction related activities. 	NV2	<p>Noise and vibration limits for residential and ecological NSRs will be agreed with the Falkirk Council Environmental Health Department and SNH, respectively, and these limits will be incorporated into the Contract Documents. The Contractor will be required to develop and implement a Noise and Vibration Management Plan (NVMP) as part of the CEMP to meet these requirements. The NVMP will include the design of any necessary NSR specific construction mitigation over and above the standard mitigation included within this chapter.</p>

Impact Type	Impact	Mitigation Item(s)	Description
	<ul style="list-style-type: none"> Noise and vibration associated with construction related activities. 	<p>NV5</p>	<p>Best practicable means will be used to limit the level of noise to which operators and others in the vicinity of site operations would be exposed. This includes the following:</p> <ul style="list-style-type: none"> the hours of working will be planned and account will be taken of the effects of noise upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned, the duration of work and the likely consequence of any lengthening of work periods; where reasonably practicable, quiet working methods will be employed, including use of the most suitable plant, reasonable hours of working for noisy operations, and economy and speed of operations; noise will be controlled at source, for example, by modification of existing plant/equipment, its use and location and ensuring maintenance of all noise-generating equipment; the spread of noise will be limited, i.e. by distance between source and receiver and/or screening; on-site noise levels will be monitored regularly, particularly if changes in machinery or project designs are introduced, by a suitably qualified person appointed specifically for the purpose; on those parts of a site where high levels of noise are likely to be a hazard to persons working on the site, prominent warning notices will be displayed and, where necessary, ear protectors will be provided; proper use of plant with respect to minimising noise emissions and regular maintenance in line with plant manuals; where appropriate, inherently quiet plant will be selected. All major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers; machines in intermittent use will be shut down in the intervening periods between work or throttled down to a minimum; all ancillary plant such as generators, compressors and pumps will be positioned so as to cause minimum noise disturbance. If necessary, acoustic barriers or enclosures will be provided; and adherence to the codes of practice for construction working and piling given in BS 5228-1 and BS 5228-2 and the guidance given therein regarding minimising noise and vibration emissions from the site.

7 Summary

- 7.1 This Outline Peregrine SMP sets out the mitigation measures, including roles and responsibilities, that will be implemented during the construction of the proposed scheme to protect peregrine.
- 7.2 This Outline SMP will form part of the contract documents that make up the advance and main works contracts for the construction of the proposed Scheme. The SMP will be updated by the appointed Contractor(s) ahead of advance and/or main works being undertaken in order to deliver the environmental commitments relating to protection of peregrine for the proposed scheme.

8 References

- Bat Conservation Trust and Institution of Lighting Professionals (2018) Guidance Note 08/18 Bats and artificial lighting in the UK Bats and the Built Environment series. [Online] Available from: <https://cdn.bats.org.uk/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?mtime=20181113114229> [Accessed May 2020]
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- CIRIA (2015). Coastal and marine environmental site guide (second edition).
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- RSPB (2020a). Peregrine: Population numbers and trends. [Online] Available at: <https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/peregrine/population-numbers-and-trends/> [Accessed April 2020]
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Appendix C Outline SMP: Otter (Confidential)

1 Introduction

1.1 This document presents the Outline Species Management Plan (SMP) for otter (*Lutra lutra*). It is a live document that consolidates the mitigation identified in the EIA Report for the proposed scheme. The Outline Otter SMP will form part of the Ecological Management Plan for the proposed scheme which will comprise an annex to the Construction Environmental Management Plan (CEMP). The Outline Otter SMP is confidential due to the potential risk to protected species from locational data being made publicly available and as such is not included in the published Environmental Impact Assessment (EIA) Report.

1.2 A request for a copy of the appendix may be made in writing to:

Transport Scotland

Roads Directorate - Bridges Branch
Buchanan House
58 Port Dundas Street
Glasgow
G4 0HF

Info@transport.gov.scot