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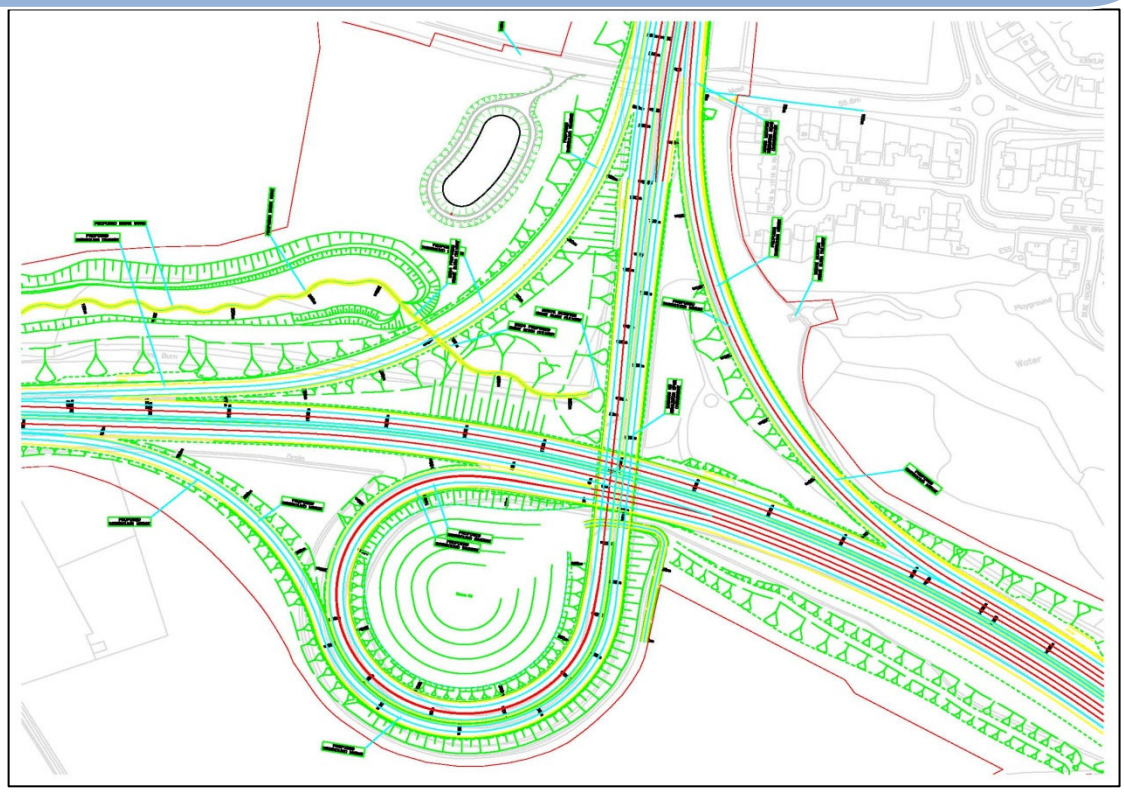
RAMBOLL

FORTH REPLACEMENT CROSSING
M9 Junction 1a – Project Quality Plan: Volume 4 ECOLOGICAL MANAGEMENT PLAN



TRANSPORT SCOTLAND

Construction Issue: March, 2012

FORTH REPLACEMENT CROSSING M9 Junction A1

Ecological Management Plan

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	Name	**Signature**	**Date**
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Revision Record					
Rev	**Date**	**By**	**Summary of Changes**	**Chkd**	**Aprvd**
01	18th September 2011	RT	Reflect EDT, Statutory Bodies and Local Authorities Consultations and Review	SOB	SOB
02	10th October 2011	RT	Reflect EDT Comments – alter Section 4.4 to include reference to J1A SEPA CAR Licence	SOB	SOB
03	14th March	RT	Reflect review by SRB	SOB	SOB

Ecological Management Plan

1. Introduction

1.1.1 This management plan details the ecological mitigation and procedures required for the construction of the M9 J1a project. It also details methodologies that should be followed, and licenses which will be required, in order to avoid unnecessary impacts to valuable habitats and species, and to control and limit construction impacts in line with the Environmental Statement.

1.1.2 SRB have an Environmental Manager as part of the construction team who will be responsible for implementing the procedures in the plan and will be based on site. The contractors Environmental Manager will be supported by the Design Environmental Advisor who will visit the site regularly, attend the Environmental Liaison Group meetings as required and provide technical assistance.

1.1.3 This Ecological Management Plan includes:

- Information on protected species;
- Control measures for invasive and alien species;
- Protection measures for mature trees;
- Tree replacement protocols;
- Site clearance measures in regard to protection of ecology; and
- Monitoring procedures.

1.1.4 In support of the Ecological Management Plan a set of Environmental Management Plan drawings are included in Appendix E of the CEMP. These show the following ecological elements, amongst others:

- Location of designated sites including Sites of Special Scientific Interest (SSSI) and Sites of Importance for Nature Conservation, where relevant to the M9J1a Project.
- Location of signs of protected species, e.g. badger hairs and latrines
- Location of ecological mitigation measures, e.g. mammal passes

Note – these are not included in this redacted version of the CEMP as they contain confidential information.

2. Scope

a) This Ecological Management Plan includes the following:

- A summary of all known areas of nature conservation interest which may be affected on or adjacent to the project;
- Maps showing the locations of all known areas of nature conservation interest which may be affected by the project and routes used for access (See Appendix G of the CEMP);
- Details of proposed protection measures to avoid any unnecessary encroachment into adjoining areas of nature conservation interest;
- Details of measures proposed to mitigate potential impacts on areas of nature conservation interest;

- A programme for undertaking ecological survey works prior to and during construction to verify the baseline ecological conditions disclosed in the Environmental Statement and undertake appropriate monitoring during the construction and post construction phases;
- Details of any restrictions on the timing of construction works and construction methods to protect species or areas of nature conservation interest;
- Details of appropriate watching briefs to be implemented during construction works;
- Procedures to be implemented in relation to relocation or translocation of species;
- Procedures to be adopted in the event of unanticipated discovery or disturbance of protected species or important habitats;
- Reinstatement procedures to be implemented for any areas of temporary habitat loss; and
- Reference to the relevant procedures in the Pollution Incident Response Plan to be implemented in the event of a pollution incident on or adjacent to a designated nature conservation site.

b) Individual Species or Habitat Management Plans for the following species are included in Section 4:

- Terrestrial habitats;
- Aquatic habitats;
- European Protected Species (great crested newt, otter and bats);
- Badger;
- Breeding birds;
- Freshwater fish, including migratory species; and
- Reptiles.

3. ECOLOGICAL COMMITMENTS

3.1.1 SRB will minimise the working area used where possible to reduce the habitat loss from within the land made available.

3.1.2 Habitat enhancement and creation will provided by SRB where possible, for example along the newly aligned Swine Burn. Planting of this nature will be included in the landscape design and will use species of local provenance. There are more details on species provenance in the SRB Landscape Management Plan.

3.1.3 Some of the measures included in this management plan are also covered in other management plans within Appendix D of the CEMP (for example the control of noise and dust), as detailed below.

- Noise and Vibration
- Dust and Air quality
- Surface water management plan
- Agricultural Management Plan; and
- Area Management Plan

3.1.4 Where relevant the Ecological Management Plan sets out specific measures necessary to comply with relevant legislation, including the:

- Wildlife and Countryside Act 1981, as amended;
- Nature Conservation (Scotland) Act 2004;
- Conservation (Natural Habitats, & c.) Regulations 1994, as amended;

- Food and Environment Protection Act 1985;
- Protection of Badgers Act 1992;
- Environmental Protection Act 1990;
- Wild Mammals (Protection) Act 1996; and
- Salmon and Freshwater Fisheries Act 1975.

3.1.5 The Ecological Management Plan also includes references to licensing requirements where applicable, such as those for otters and bats.

3.1.6 This plan has been prepared in parallel to ongoing consultation with TS, SNH, and SEPA, as appropriate.

3.1.7 The Construction Environmental Manager, with support from the Design Environmental Advisor will be responsible for the delivery of this Management Plan. Where necessary specialist ecological consultants will undertake specific elements of work, for example, [redacted] and in the undertaking of verification surveys for badgers, otters and invasive weeds. Ramboll will provide an independent Ecological Clerk of Works to come to site, as required, and supervise the construction operations and ensure that the works are compliant with the ES and CoCP Requirements.

3.2 Protected Habitats and Species

3.2.1 The aim of this Management Plan is to ensure that the implementation of the project complies with the ecological commitments and provisions made in the following documents, in particular with regard to the provisions made for protection of ecology:

- The Forth Replacement Crossing Act
- The Environmental Statement
- The requirements of the CoCP; and,
- The Employer's Requirements.

3.2.2 There are no internationally or nationally designated sites within 2km of the site. There are however several local designations within 2km of the scheme, as follows, listed clockwise from the north:

- Dundas Estate SINC, LBS and LWS lies 600m to the north (Site of Importance for National Conservation SINC, Local Biodiversity LBS and Listed Wildlife Site LWS)
- Black Breas Weir SINC, LBS and LWS lies adjacent to the scheme boundary to the east
- SINC running through Kirkliston from north to south lies 600m to the east of the scheme at its closest point
- River Almond SINC, LBS, WS lies 200m to the west, south and east of the scheme at its closest point (measured from the main scheme, not from the access road to the southernmost detention basin on the scheme which lies adjacent to the designated site).
- Hallyards Castle Woods SINC lies 800m to the south east of the scheme
- Lindsay's Craigs SINC and LBS lies adjacent to the western boundary of the scheme

3.2.3 There are also a number of long established woodlands, which are also shown on Figure 10.1c from the ES, which also shows the location of the designated sites listed above.

3.2.4 A verification survey of the site was undertaken on Thursday 15th September to check that the findings of the ES and advance works information still represented the true ecological baseline of the site. This walkover identified any changes of baseline and help influence the design of ecological mitigation. The programme for undertaking ecological survey works is as follows:

Activity	Carried out by	Date
Verification Survey	Ecological Specialist	9th August 2011
Ecological Survey of Swine Burn [redacted]	Ecological Specialist	24th to 28th August 2011
Verification Survey / Hedgerow Survey	Ecological Clerk of Works	15th September 2011
Pre-construction Monitoring of Swine Burn (related to CAR licence)	Ecological Specialist	23rd September 2011
[redacted]	Ecological Clerk of Works	7th November
Monitoring of Swine, Niddry and Niddry /Tributary Cuvlert during Construction including overseeing in-season works	Ecological Specialist	Ongoing

NOTE: This is a Live Table

3.2.5 The walkover identified the location of any ecological exclusion zones in line with best practice.

3.2.6 SRB will obtain and comply with the requirements of any protected species licences necessary for construction of the Project. Licences may include those in relation to the following:

- European Protected Species derogation licences – in respect of any works likely to breach the Conservation (Natural Habitats &c) Regulations 1994. Species potentially requiring a derogation licence include great crested newt, otter and bats; and
- Badger development licences - in respect of any works likely to result in the disturbance, damage or destruction of a badger sett (note no badger activity requiring a licence has been identified on site to date).

3.2.7 Where possible and practicable, the programming of construction works will take cognisance of the requirements set out in the Environmental Statement. In particular, the timing of construction works will be undertaken with due regard to the following:

- Site clearance works – to mitigate potential impacts on terrestrial breeding birds; and
- Works within watercourses – to mitigate potential impacts on migratory fish;

3.2.8 In the event of unanticipated discovery or disturbance of protected species or important habitats, the following will take place:

- Immediate cessation of works in the immediate area
- The area will be cordoned off and access restricted to all plant, machinery and personnel as required.
- The Environmental Manager will immediately inform the RE and the Ecological Clerk of Works and Environmental Advisor.

- The necessary permits and provisions to enable works to proceed will be agreed with the RE and Local Authority and /or Statutory Body, as required.
- Works will not recommence until the Environmental Advisor has confirmed that all necessary provisions are in place.

3.2.9 In the event of a pollution incident on or adjacent to a designated nature conservation site, the Pollution Incident Response Plan will be activated. In addition, SNH and / or SEPA will be notified immediately.

3.3 Control of Invasive and Alien Species

3.3.1 Section 4 describes the management process to be implemented for the appropriate treatment of invasive alien species, including:

- Japanese knotweed (Fallopia japonica);
- Giant hogweed (Heracleummantegazzianum); and
- Himalayan balsam (Impatiens glandulifera)
- Few-flowered leek (or garlic) (*Allium paradoxum*)

3.3.2 The plan sets out appropriate construction, handling, treatment and disposal procedures in relation to these species, which are listed in Schedule 9, Part II of the Wildlife and Countryside Act 1981, as amended.

3.4 Protection of Trees

3.4.1 An arboriculturalisthas undertaken a survey of the site before construction commenced to identify any trees needing trimming or limb lopping works, and to advise on whether trees close to the boundary of the site require removal for safety reasons.

3.4.2 The M9 J1a arboricultural consultant will advise the Environmental Manager on works relating to the protection of trees. All tree clearance, tree protection and tree surgery work will presented to the Employers Delivery Team (EDT) for agreement. Where possible trees will be coppiced or pollarded rather than removed.

3.4.3 Trees will be protected in line with the recommendations in BS 5837 Trees in Relation to Construction. Tree surgery operations will comply with the recommendations in BS 3998 Recommendations for Tree Works, as appropriate.

3.4.4 Fencing of individual and blocks of trees will be used to prevent vehicles tracking over the trees root zone, and to ensure no canopies are damaged by vehicles passing underneath. Fencing will also prevent the storage of materials in root protection zones. No Entry – “Environmental Sensitive Area” signage will also be put in place to ensure that areas are not trafficked by plant or on foot.

3.4.5 Fenced off areas will remain vegetated to help trap dust and runoff. Where possible similar vegetated buffer strips will be implemented across the site, especially near sensitive environmental receptors such as rivers.

3.4.6 To help prevent the compression of soils whilst in storage stockpiles of soil to be re-used will be no higher than 2m, where practicable. For heights greater than this, the stockpiles will be inspected by the Landscape Clerk of Works. If soil is to be stockpiled for more than one growing season it will be seeded to help prevent runoff in wet conditions and dust in dry conditions.

3.4.7 Tree felling will be carried out taking appropriate consideration of the Forestry Commission's Forest and Water Guidelines 2003 to mitigate risks from felling areas of woodland and trees on the freshwater environment. Where there are no windthrow or landscape visual issues, tree felling will be reduced to that necessary to allow the safe construction and operation of the proposed project. Tree felling operations will consider the legal protection given to roosting bats and breeding birds.

3.4.8 Any tree felling in land outside the extents of the Bill which is occupied with the agreement of the relevant landowner will require consent in accordance with Forestry Act 1967. M9 J1a will obtain any consents necessary in this regard.

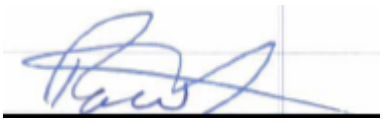
3.5 Tree Planting and Replacement

3.5.1 Any trees intended to be retained which are felled or die as a consequence of construction works will be replaced. Where reasonably practicable, the size and species of replacement trees will be selected to achieve a close resemblance of the original trees most effectively using locally occurring native species of local provenance and taking cognisance of any management plans for immediately adjacent areas of woodland.

3.5.2 The supply, storage, handling, planting and maintenance of new planting will be undertaken in accordance with appropriate British Standards, including BS 5837 Trees in relation to construction; BS 3998 Recommendations for Tree Works and BS 4428 Code of Practice for General Landscape Operations (excluding hard surfaces) and other guidance including the UK Forestry Standard and the UKWAS Standard.

4. Species management plans

4.1 Reptiles and Amphibians

PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT ON REPTILES		
Table SMM01	Revision: 01	Date: 14th March 2012
Signature (Method Approved): 		
Signature (Method Implemented): 		
Justification/ Reference for Mitigation/ Management Actions:	ES Chapter 10	
Background	- Reptile surveys were undertaken by Jacobs Arup in July, August and September 2008. No reptiles were found. - Consultation with SNH and JA during the tender process revealed that reptiles are not typically found in the area. - It is therefore very unlikely that reptiles will be found during the construction phase. - To ensure that the correct procedure is followed if reptiles are found a mitigation strategy will be implemented.	

Potential Impacts	- In the unlikely event reptiles were found on site they would be at risk of damage or death as a result of construction activities.
Mitigation Strategy	- In the event that a reptile is seen all works will stop in that area and the Ecological Clerk of Works will be called to visit the site. The Ecological Clerk of Works will conduct a fingertip survey of the area the reptile was spotted, and will then supervise the works as they recommence. - If a reptile is caught it will be moved by the Ecological Clerk of works to a suitable area of habitat outside the working area. - To ensure site staff are familiar with what to look out for the Environmental Tool Box Talk will include a slide showing names and pictures of British reptiles.
Monitoring	- No further monitoring required unless protected species are found unexpectedly on site.
Emergency Measures	- Environmental Clerk of works to be consulted and informed if protected species are seen on site (or potentially protected species are seen). - Immediate consultation with EDT and SNH will be required if any protected species are encountered.
External Consultation Required	- SNH, EDT
Additional Method Statement Required?	- If any further reptile survey or translocation works are required.
Consents/Licences Required?	- If translocation of reptiles is necessary consultation with EDT and SNH will be required to identify a suitable receptor site.

PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT ON AMPHIBIANS		
Table SMM02	Revision: 01	Date: 14th March 2012
Signature (Method Approved): 		
Signature (Method Implemented): 		
Justification/ Reference for Mitigation/ Management Actions:	Chapter 23 of ES reference TE33 ES Chapter 10	
Background	- Amphibian surveys were undertaken by Jacobs Arup in March April and June 2008. - No Great Crested Newts or other amphibians were found within 1km of the M9 J1a scheme.	
Potential Impacts	- If amphibians were present and suitable mitigation measures were not implemented amphibians could be at risk of direct mortality of damage. - Amphibians would also be at risk from poor construction practices, such as degradation of water quality, if these potential impacts were not properly controlled.	
Mitigation Strategy	- If a Great Crested Newt is found works will halt whilst the Ecological Clerk of Works is called and a mitigation plan developed in support of a European Protected Species Licence. - If an amphibian other than a Great Crested Newt is caught (e.g. smooth	

	newt, frog, toad) it will be moved by the Environmental Clerk of works to a suitable area of habitat outside the working area. - To ensure site staff are familiar with what to look out for the Environmental Tool Box Talk will include a slide showing names and pictures of British amphibians.
Monitoring	- No further monitoring required unless amphibian species are found unexpectedly on site.
Emergency Measures	- Ecological Clerk of works to be consulted and informed if protected species are seen on site (or potentially protected species are seen).
External Consultation Required	- SNH, EDT.
Additional Method Statement Required?	- If any further amphibian survey or translocation works are required.
Consents/Licences Required?	- No, unless a Great Crested Newt is unexpectedly found

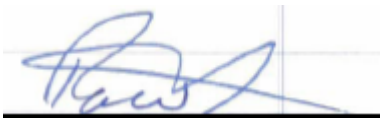
4.2 Mammals

PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT ON BADGERS		
Table SMM03	Revision: 01	Date: 14th March 2012
Signature (Method Approved): 		
Signature (Method Implemented): 		
Justification/ Reference for Mitigation/ Management Actions:	- Chapter 23 of ES reference items TE3, TE6, TE9, TE10, TE14, TE15,TE19, TE20, TE27, TE41. - See also Chapter 10 of the ES.	
Background	- Badger surveys were undertaken by Jacobs Arup in March, April, October 2008, January and May 2009 and April and May 2010. - One Badger Sett has been found within the LMA. Consultations have taken place with SNH and regular monitoring has been carried out. - Badger fencing is required in some locations to prevent badgers accessing the carriageway where they are at risk of car strikes.	
Potential Impacts	- If badgers were unexpectedly found on site they wuold be at risk from disturbance and possible damage from construction plant - Breach of protected species legislation	
Mitigation Strategy	- Re survey of the entire LMA will be undertaken to check for the presence of badger setts, which may have changed since the last survey. - The updated survey may highlight the need for further badger mitigation - To ensure site staff are familiar with what to look out for the Environmental Tool Box Talk will include a slide showing generic photographs of badger setts to aid identification of any new setts during the construction process. - Mammal ledges will be installed in the Niddry Burn Extension and existing Culvert and will comprise the installation of a ledge of minimum 500mm wide with access to the bank via ramps. Ledges will be a minimum of 150mm above high water levels and allow 600mm headroom (or as otherwise agreed with the EDT). - A mammal pass will be installed at new Swine Burn Culvert - Trenches will be covered at the end of each working day or mammal ramps will be provided to allow mammals to escape. - Where night works are required, directional lighting will be used to ensure that roosts, woodland edges and waterbodies are not directly illuminated, or curfew times established to ensure that emerging or foraging badgers are not disturbed. - Works compounds, storage sites, access roads and construction work will be located/carried at agreed minimum distances from sensitive habitats for badger (if any are found). Any works undertaken within this distance must be subject to consultation with SNH, and undertaken under licence where applicable on a case by case basis.	
Monitoring	- The Environmental Clerk of Works will monitor the site throughout the construction process to check no new setts have been created.	

Emergency Measures	- The Environmental Clerk of Works will be consulted and informed if protected species are seen on site (or potentially protected species are seen) - Immediate consultation with EDT and SNH will be required if any protected species are encountered.
External Consultation Required	- SNH, EDT
Additional Method Statement Required?	- Method statements will be prepared by the Environmental Clerk of Works if any badger survey or exclusion works are required.
Consents/Licences Required?	- Yes. If any setts are found a licence from SNH will be required either to disturb the setts, or to destroy/ replace them (depending on the type of sett and its proximity to the works).

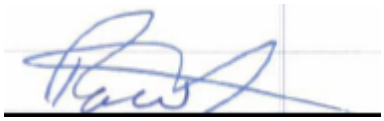
PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT ON OTTERS		
Table SMM04	Revision: 01	Date: 14th March 2012
Signature (Method Approved): 		
Signature (Method Implemented): 		
Justification/ Reference for Mitigation/ Management Actions:	- Chapter 23 of ES reference items TE3, TE6, TE14, TE15, TE19,TE20, TE32, TE40. - See also Chapter 10 of the ES.	
Background	- Otter surveys were undertaken by Jacobs Arup in May and June 2008 and have been continued into 2011. [redacted] - [redacted]	
Potential Impacts	- In the event that an otter holt or resting place was close to the works disturbance to them would be relatively likely. - Breach of protected species legislation	
Mitigation Strategy	- Re survey of the entire LMA was undertaken on the 9th August 2011 to check for the signs of otters, including spraint, slides and resting places, [redacted]. - The survey report did not highlight the need for further otter mitigation, which may require an EPS licence [redacted] - To ensure site staff are familiar with what to look out for the Environmental Tool Box Talk will include a slide showing generic photographs of otter holts, spraint and slides to aid identification of otter signs during the construction process. - Underpasses to allow otters to cross the mainline and culverts with mammal ledges will be constructed by SRB in areas identified by the	

	ES and ER's. - A dedicated mammal pass will be installed over the New Swine Burn culvert to allow dry passage of otters and other mammals at times of high flow through the culvert. - Any temporary drainage systems will be designed to prevent otters entering and becoming trapped. - A mammal ledge will be installed at Niddry Burn - Trenches will be covered at the end of each working day or mammal ramps will be provided to allow mammals to escape. - Works compounds, storage sites, access roads and construction work will be located/carried at agreed minimum distances from sensitive habitats for otter. Any works undertaken within this distance must be subject to consultation with SNH, and undertaken under licence where applicable on a case by case basis. - Where night works are required, directional lighting will be used to ensure that roosts, woodland edges and waterbodies are not directly illuminated, or curfew times established to ensure that emerging or foraging otters are not disturbed. - In order to reduce disturbance of otters, lighting will be sensitively sited to reduce light spill onto burns and where required screens will be provided. - Temporary mammal-resistant fencing was not required from consultations with SNH.
Monitoring	- No further monitoring required unless protected species are found unexpectedly on site.
Emergency Measures	- The Environmental Clerk of Works will monitor the site throughout the construction process for signs of otter. - Should it be deemed necessary by either the Environmental Clerk of Works of the Environmental Manager, after assessing the situation, the works will be stopped should a situation arise where otters are placed in danger by ongoing works.
External Consultation Required	- SNH, EDT.
Additional Method Statement Required?	- Method statements will be prepared by the Ecological Clerk of Works if any further otter survey or resting place loss is required.
Consents/Licences Required?	[redacted]

PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT ON BATS		
Table SMM05	Revision: 01	Date: 14th March 2012
Signature (Method Approved): 		
Signature (Method Implemented): 		
Justification/ Reference for Mitigation/ Management Actions:	- Chapter 23 of ES reference items TE17, TE19, TE21 TE45. - See also Chapter 10 of the ES.	
Background	- Bat surveys were undertaken by Jacobs Arup in between April 2008 and February 2009. - No bat roosts were found within the LMA, although trees with bat roosting potential were found, as shown on figure 10.5c of the ES - Two bat commuting routes were identified within 250m of the scheme, one to the south along Lindsey's Craig's wood, and one to the north along a headline, crossing Swine Burn (see figure 10.4c of the ES).	
Potential Impacts	- In the event that a bat roost was not discovered and the roost was destroyed (for example as a result of a tree being felled) the bats would be in danger of death or injury. - Breach of protected species legislation	
Mitigation Strategy	- Re survey of the entire LMA will be undertaken to check the status of bat roosts, which may have changed since the last survey. - The updated survey may highlight the need for further mitigation to be developed, for example additional bat boxes. - Linear features are to be retained as far as practicable allowing safe crossings for bats as advised by the ECoW. - Hedgerows and hedgerows with tree planting will reinforce landscape boundaries and provide connectivity for bats (see Habitat Management Plan HMM01). - Bat boxes have been erected where required by TS and will be monitored by the ECoW on a regular basis, as prescribed in the ER's. - Where night works are required, directional lighting will be used to ensure that roosts, woodland edges and waterbodies are not directly illuminated, or curfew times established to ensure that emerging or foraging bats are not disturbed. - To ensure site staff are familiar with what to look out for the Environmental Tool Box Talk will include a slide showing suitable bat roosting habitat, i.e. holes in trees and gaps in buildings.	
Monitoring	- No monitoring proposed once construction has commenced (pre-construction re-survey will take place).	
Emergency Measures	- Environmental Clerk of works to be consulted and informed if protected species are seen on site (or potentially protected species are seen). - Immediate consultation with EDT and SNH will be required if any protected species are encountered.	
External Consultation Required	- SNH, EDT	
Additional Method Statement	- Method statements will be prepared by the Environmental Clerk of	

Required?	Works if any further bat survey or exclusion works are required.
Consents/Licences Required?	- Not unless any bat roosts are found during the pre-construction survey. Bat licences would be required for any roosts to be lost or disturbed.

4.3 Birds

PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT ON BIRDS		
Table SMM06	Revision: 01	Date: 14th March 2012
Signature (Method Approved): 		
Signature (Method Implemented): 		
Justification/ Reference for Mitigation/ Management Actions:	- Chapter 23 of ES reference items TE15, TE17, TE21, EE11, EE13, EE14, EE15, EE18, EE18. - See also Chapter 10 of the ES.	
Background	- Terrestrial breeding bird surveys were undertaken by Jacobs Arup in April 2008 and June 2008. - Terrestrial wintering bird surveys were undertaken by Jacobs Arup in November and December 2008 and February 2009.	
Potential Impacts	- In the event that a bird nest was not discovered and the nest was destroyed (for example as a result of a tree being felled) the birds would be disturbed and potentially miss rearing chicks that season, and the eggs or chicks would be lost. - Noisy events, including those with a high human presence, have the potential to disturb birds. It is particularly important this does not occur to birds on the foreshore which are temporally and spatially constrained. - Potential breach of legislation	
Mitigation Strategy	- Where practicable, works compounds, storage sites, access roads and construction work will be located/carried out at least 30m away from sensitive habitats for birds. Any works undertaken within this distance must be subject to consultation with SNH, and undertaken under licence where applicable on a case by case basis. - A method statement will be prepared in advance for all areas where tree and scrub removal is required. The ECoW will monitor vegetation removal and associated activities. - Site clearance of vegetation will be undertaken outside of the main bird breeding season where practicable (typically March-August inclusive). Where site clearance works must be undertaken during the main bird breeding season, methods of exclusion and deterrent will be used to prevent birds beginning to nest in clearance areas. The precise methods of deterrent will be developed according to habitat types and the species concerned forming part of the habitat management plan. This will be undertaken during both construction and management phases in consultation with EDT, ECoW and SNH. - Any clearance works undertaken during February or Septemberare at moderate risk of affecting breeding birds. During this period, if clearance is required, the Environmental Clerk of Works will check any areas for evidence of breeding birds prior to works commencing. - The Environmental Clerk of Works will advise all construction staff of the requirement to stop work should nesting birds be encountered. - All cleared material will be rendered unsuitable for nesting birds. - Tree felling will be carried out by experienced contractors according to agreed felling methods and any licensing conditions. - Vegetation clearance/tree felling will be agreed with the Environmental	

	Clerk of Works - Where the removal of dead standing, fallen and felled timber is necessary, the material will be relocated into areas of existing and newly created woodland habitat within the limits of the site where practicable. - Design of lighting arrangements will ensure minimal light spillage out with the boundary of the construction the sites and associated site compounds, with compliance determined by the Environmental Clerk of Works .
Monitoring	- Prior to tree felling in February, the ECoW inspected proposed felling areas to ensure that nesting birds would not be affected by the works.
Emergency Measures	- Environmental Clerk of Works to be consulted and informed if protected species are seen on site (or potentially protected species are seen). - Immediate consultation with EDT and SNH will be required if any protected species are encountered.
External Consultation Required	- SNH, EDT
Additional Method Statement Required?	- A method statement for the pre-clearance survey will be prepared by the Environmental Clerk of Works (if clearance is to take place in March-August 2011)
Consents/Licences Required?	- No.

4.4 Fish

PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT ON FISH		
Table SMM08	Revision: 01	Date: 14th Match 2012
Signature (Method Approved): 		
Signature (Method Implemented): 		
Justification/ Reference for Mitigation/ Management Actions:	- Chapter 23 of ES reference items TE8, TE11, TE19, TE20, EE6, EE7, EE8. - See also Chapters 10 and 11 of the ES.	
Background	- Jacobs Arup surveyed the scheme for freshwater fish between March and June 2008.	
Potential Impacts	- Freshwater fish would be at risk of changes in water quality, caused by increased turbidity, and corresponding changes in oxygen demand, were this not controlled and correctly managed. - Freshwater fish would also be at risk from death through the dewatering of Swine Burn, overpumping of the Swine Burn, Niddry Burn and Nidrry Burn tributary, if mitigation measures were not implemented. - Freshwater fish would be at risk from damage from pumps used during culverting works if screens/ bunds were not used.	
Mitigation Strategy	- Where night works are required, directional lighting will be used to ensure that migratory fish are not disturbed. - Best working practices in relation to works within salmonid watercourses will be adhered to. - Vegetation buffer strips will be maintained where practical. - Watercourse realignments in low gradient areas will be designed to minimise sedimentation and in high gradient areas to minimise erosion. The opportunity to create suitable habitat will be incorporated through the inclusion of meander bends, secondary channels or, riparian zones where appropriate. - Altered flow regimes resulting from the use of culvert extensions or channel realignments will be avoided. Culverts will be oversized to allow natural bed and bank profiles to remain, where practicable. - On sites where dewatering is anticipated, the creation of a temporary diversion channel with suitable sized replacement substrate or transplanted substrate from the section being dewatered will be undertaken, making sure that the size and flow in the diversion channel is as near to the existing channel as practicable. - Fish will be removed from channels to be dewatered for construction of culverts, realignments or bridges, using a methodology such as elctro-fishing. - In salmonid waters, in-channel works and piling will be avoided during sensitive periods for migrating and spawning fish unless otherwise agreed with SEPA (October-May inclusive). - Best practice measures will be implemented to prevent pollution in the marine and freshwater environments.	

Monitoring	- Water quality, noise and vibration will all be monitored (see Geology, Contamination and Waste Management Plan, Noise Management Plan and the Ground and Surface Water Quality Monitoring Plan for details) which will ensure water quality, noise and vibration levels are within acceptable limits. - No monitoring specifically for fish is proposed. - Electrofishing will be carried out by a qualified and registered specialist
Emergency Measures	- Environmental Clerk of works to be informed immediately if any adverse impact on fish becomes apparent.
External Consultation Required	- SNH, EDT and SEPA
Additional Method Statement Required?	- Method statements for electrofishing, culverting and dewatering will be prepared.
Consents/Licences Required?	- Yes J1a SEPA CAR License S/1089331

4.5 Flora

PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT FROM ALIEN AND INVASIVE PLANTS		
Table SMM11	Revision: 01	Date: 14th March 2012
Approval Signature (Method Approved): 		
Completion Signature (Method Implemented): 		
Justification/ Reference for Mitigation/ Management Actions:	- Chapter 23 of ES reference item LU8, TE22. - See also Chapter10 of the ES.	
Background	- Jacobs Arup undertook general site surveys between March and August 2008 and October 2008.	
Potential Impacts	- If suitable controls for the construction phase were not implemented invasive species could colonise the site, reducing biodiversity and threatening the mitigation measures implemented, such as species rich grassland and woodland plating. - Breach of Invasive Species legislation	
Mitigation Strategy	- Sowing/planting will be undertaken as soon as possible following completion of the works to reduce the likelihood of the areas being colonised by invasive, non-native species which are of lower value to wildlife. - Reasonable precautions will be taken during construction to avoid the spreading of soil borne pests and diseases, animal and crop diseases and invasive species. - The ecological; verification walkover of the whole site will check the status of known stands of alien/invasive plants and record any new stands: • Few-flowered garlic (Allium paradoxum) in woodlands at Lindsay's Craigs and at overton road	
Monitoring	- Monitoring will be undertaken by the Environmental Clerk of Works throughout the construction phase. - Post construction monitoring will be continued as part of the landscape management works – this will include management of injurious weeds (Weeds Act, 1959) that are invasive, but are native to the UK (spear thistle Cirsiumvulgare, creeping or field thistle Cirsiumarvense, curled dock Rumexcrispus, broad-leaved dock Rumexobtusifolius, and ragwort Seneciojacobaea).	
Emergency Measures	- Environmental Clerk of works to be informed immediately if any new stands of alien or invasive weeds are found. - Where invasive species are found, an environmental exclusion zone will be created. This will entail a physical fence and proper signage. - Works will cease in affected areas until proper measures are in place	
External Consultation Required	- SNH, EDT	
Additional Method Statement Required?	- Method statements for removal and disposal of alien and invasive weeds will be produced. - This may include the chemical treatment of some species (such as repeated spraying to reduce vigor prior to removal). - This will need to include liaison with local landfills to check the specific arrangements they require for the disposal of Japanese Knotweed	

	arisings, which may be treated as hazardous waste
Consents/Licences Required?	- No (but see note re landfills above)

5. Habitat management plans

PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT ON GRASSLAND, WOODLAND AND HEDGEROW HABITATS		
Table HMM01	Revision: 01	Date: 14th March 2012
Signature (Method Approved): 		
Signature (Method Implemented): 		
Justification/ Reference for Mitigation/ Management Actions:	- Chapter 23 of ES reference items TE3, TE4, TE11, TE17, TE22, TE24, TE25, TE26. - See also Chapter 10 of the ES.	
Background	A Phase 1 habitat survey was undertaken by Jacobs Arup in 2009 in support of the ES.	
Potential Impacts	If suitable mitigation was not implemented valuable local habitats could be lost or damaged. This would reduce local biodiversity, and remove habitat used by protected species.	
Mitigation Strategy	- Pre-construction surveys will be undertaken within the limits of the site and will extend 50m outwith the site boundary within areas of appropriate habitat to identify sensitive and vulnerable species. This will include surveys for badger setts, otter resting places and bat roosts adjacent to the proposed scheme. Where found, their locations will be communicated to construction staff in strict confidence to ensure no direct mortality during site clearance. - If required by the Environmental Clerk of Works, plant and personnel will be constrained to a prescribed working corridor through the use of temporary barriers, thereby reducing damage to habitats, potential direct mortality and disturbance to species. - Vegetation buffer strips will be maintained where practical. - Tree felling will be carried out by experienced contractors according to agreed felling methods and any licensing conditions. - Vegetation clearance/tree felling will be agreed with the Environmental Clerk of Works and Landscape Clerk of Works. - An arboriculturalist will perform a pre-clearance site visit to advise the contractors on which trees can be retained as they are, which can be retained with some remedial works and which need to be removed. - Where the removal of dead standing, fallen and felled timber is necessary, the material will be relocated into areas of existing and newly created woodland habitat within the limits of the site where practicable. - Bankside habitat creation comprising planting and enhancement of detention basins will be undertaken. - Landscape planting and newly created habitat will be comprised of predominantly native species of local provenance where available, and	

	will comprise a mixture of species. - Where loss or degradation of valuable habitat is unavoidable and where watercourses are realigned, they will be returned to their former quality or improved once construction is complete where practicable. - Sowing/planting will be undertaken as soon as possible following completion of the works to reduce the likelihood of the areas being colonised by invasive, non-native species which are of lower value to wildlife. - All areas of habitat loss due to temporary works, site compounds, easements, working areas or access roads will be reinstated following construction on a like for like basis. - Habitat creation will contribute to biodiversity targets identified in local (LBAP) and national (UKBAP) strategies. - During the operation of the proposed scheme, management and maintenance of roadside verges is to be undertaken to maintain and enhance floral diversity. - Appropriate management will be undertaken of existing boundary habitats such as hedgerows or rough edges for the benefit of key farmland species of conservation concern such as yellowhammer (*Emberiza citronella*), skylark (*Alaudaarvensis*), linnet (*Cardueliscannabina*), tree sparrow (*Passer montanus*), meadow pipit (*Anthuspratensis*) and grey partridge (*Perdixperdix*). - Habitat creation to be undertaken using broad-leaved and mixed plantation woodland of native species of local provenance where available. - Existing trees and vegetation will be retained wherever practicable and incorporated with new planting proposals. - Planting will be undertaken to enhance biodiversity and conserve the integrity of existing habitats. - Grass seeding for verges will be Roadside Verge Mix which is low maintenance, fast establishing and tolerant of traffic and salt spray. - Grass seeding for all other soft areas, out with planting areas, will be Species Rich Grassland Mix consisting of native, non-invasive grasses and wildflower species to reflect locally occurring semi-natural flora. - Scrub woodland planting will be provided to replace lost vegetation and soften appearance of cutting. - Specific landscape planting details are included in the Landscape Management Plan
Monitoring	- Monitoring will be undertaken by the Environmental Clerk of Works throughout the construction phase. - Monitoring of planting and seeding will be undertaken for 5 years after completion of construction works.
Emergency Measures	- Environmental Clerk of works to be informed immediately if any adverse impact to habitat occurs out with the LMA or areas set aside for construction within the LMA.
External Consultation Required	- SNH, EDT.
Additional Method Statement Required?	- Method statements for site clearance, hedgerow translocation, seeding and tree planting will be prepared.
Consents/Licences Required?	- No.

PROCEDURE FOR PREVENTION/ MITIGATION OF IMPACT ON FRESHWATER HABITAT		
Table HMM05	Revision:	Date:
Signature (Method Approved):		
Signature (Method Implemented):		
Justification/ Reference for Mitigation/ Management Actions:	- Chapter 23 of ES reference items TE7, TE8, TE19, TE20, TE38, W1, W16. - See also Chapter11 of the ES.	
Background	- Jacobs Arup undertook general site surveys between March and August 2008 and October 2008.	
Potential Impacts	- If suitable controls for the construction phase were not implemented freshwater habitat could be degraded beyond the areas to be lost through dredging.	
Mitigation Strategy	- Reasonable precautions will be undertaken to avoid/reduce in-channel works and translocation of channel substrate. - Best working practices in relation to works within salmonid watercourses will be adhered to. - Where night works are required, directional lighting will be used to ensure that waterbodies are not directly illuminated. - Construction work at watercourses will not prevent the movement of animals along the bank throughout the works period. - Watercourse realignments in low gradient areas will be designed to minimise sedimentation and in high gradient areas to minimise erosion. The opportunity to create suitable habitat will be incorporated through the inclusion of meander bends, secondary channels or, riparian zones where appropriate. - Where bridging is not practical and culverts are required, their length will be kept to a practical minimum. Where practical, the insertion of each culvert will not alter the gradients markedly from existing conditions so as to avoid altering flow patterns and resulting habitat loss and to avoid excessive siltation or erosion. - Altered flow regimes resulting from the use of culvert extensions or channel realignments will be avoided. Culverts will be oversized to allow natural bed and bank profiles to remain, where practicable. - On sites where dewatering is anticipated, the creation of a temporary diversion channel with suitable sized replacement substrate or transplanted substrate from the section being dewatered will be undertaken, making sure that the size and flow in the diversion channel is as near to the existing channel as practicable. - Fish will be removed from channels to be dewatered for construction of culverts, realignments or bridges. - In salmonid waters, in-channel works and piling will be avoided during sensitive periods for migrating and spawning fish unless otherwise agreed with SEPA (October-May inclusive). - Detention basins, culverts, filter drains, swales and catchpits will be inspected and maintained as appropriate. - For all watercourses, in-channel works will be carried out during periods of low flow (as determined by the Environmental Clerk of Works) to reduce the risk of a pollution event. The length of channel disturbed will be restricted to the minimum that is required. All in-channel works and construction activities within the floodplain will be avoided where possible and practicable during periods of high flow and	

	increased flood risk for health and safety reasons. In-channel works will avoid spawning periods in salmonid watercourses unless otherwise agreed with SEPA, i.e. Niddry Burn, Swine Burn and the River Almond (between October and May). - Tie-ins back to existing channels during culvert realignment works will be undertaken during low flow conditions. - Best practice guidance including but not limited to the following will be adhered to: - SEPA Pollution Prevention Guidelines - PPG01, PPG02, PPG03,PPG04, PPG05, PPG06, PPG07, PPG08, PPG10, PPG13, PPG14, PPG18, PPG20, PPG21, PPG22, and PPG26; CIRIA Guidelines Report 142 Control of Pollution from Highway Drainage Discharges; CIRIA Report 168 Culvert Design Guide; CIRIA C609 Sustainable Drainage Systems; CIRIA C648 Control of Water Pollution from Linear Construction Projects; CIRIA C649 Control of Water Pollution from Linear Construction Projects Site Guide; CIRIA C697 The SUDS Manual; BS6031:1981 Code of Practice for Earthworks; and Defra Code of Practice for Using Plant Protection Products.
Monitoring	- Monitoring will be undertaken by the Environmental Clerk of Works throughout the construction phase (see the Ground and Surface water Management Plan). - Water quality, noise and vibration will all be monitored (see Geology, Contamination and Waste Management Plan, Noise Management Plan and Water Quality Monitoring Plan for details) which will ensure water quality, noise and vibration levels are within acceptable limits.
Emergency Measures	- Environmental Clerk of Works to be informed immediately if any adverse impact to habitat occurs out with the LMA or areas set aside for construction within the LMA. In the event of a pollution incident, SEPA are to be informed immediately.
External Consultation Required	- SNH, EDT and SEPA.
Additional Method Statement Required?	- Method statements for works within benthic habitat areas will be prepared.
Consents/Licences Required?	- Not specifically for habitats, but see relevant species management plans (otter etc) and CAR Licence

6. Monitoring

a) The SRB appointed Environmental Manager will be responsible for implementing the procedures in the plan and will undertake monitoring to ensure implementation to best practice standards.

b) Tool box talks will include environmental elements of the project, stressing the importance of no-go zones, sensitive environmental areas, respect for fenced off areas and an awareness of legislation, archaeological / protected species, and what action to take if they are discovered. The talks will also cover relevant legislation and steps to take in the event of an environmental find e.g. archaeology or Badger / otter sighting.

c) SRB will consult with relevant authorities including the EDT, SNH, SEPA, local authorities and the Forestry Commission regarding monitoring and survey works to be undertaken prior to construction to verify the baseline ecological and arboricultural conditions set out in the Environmental Statement, including agreeing a suitable handover from the Scottish Ministers for any on-going monitoring and survey works being undertaken by them. The survey works will be

planned to provide sufficient baseline data to inform the development of appropriate construction programmes, methods and mitigation measures which will be set out in the Ecological Management Plan.

d) SRB will undertake appropriate monitoring of construction works and implementation of mitigation measures, including those relating to noise and vibration associated with works

e) SRB will undertake appropriate monitoring during construction to enable the effectiveness of construction methods and mitigation measures to be identified.