SITE ENVIRONMENTAL MANAGEMENT PLAN
VIKING WIND FARM

TECHNICAL SCHEDULE 5

WATER COURSE CROSSING PLAN

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Comment : Document was also reviewed by all consultants involved in preparation of the Addendum ES.			

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1 INTRODUCTION

1.1.1 This document concerns the proposed operations required for watercourse crossings works in areas of the consented wind farm site (the Site). The information contained herein will be used by the *Contractor* in developing his detailed design of all water course crossings at the Site and also compliance with the Controlled Activities (Scotland) Regulations 2005 (CAR).

1.1.2 The CARs require that all new river, loch and wetland engineering activities, including river crossings and culverts, will require authorisation by SEPA, which may include (depending on the nature of the works) Registration with, or a Licence from, the Scottish Environment Protection Agency (SEPA). Even if a proposed crossing does not require a Registration or Licence, due to it's compliance with a General Binding Rule (GBR), as defined in the CARs, SEPA are still required to be notified.

1.1.3 **Appendix 14.3 of the Environmental Statement (Mouchel, February 2009)** provides a comprehensive survey and assessment of CAR-regulated and non-regulated water crossings. This includes an evaluation of stream size, morphology and different type of crossing required across the site, including ecological provisions where required.

1.1.4 SEPA responded positively to this assessment as noted in their response to the Environmental Statement (letter of 28 July 2009, Section 4.5: Design of watercourse crossings):

> *"The assessment provided in Appendix 14.3 is clearly presented and provides a good level of information to assess whether the types of crossing proposed are likely to be acceptable. We particularly welcome the inclusion of photographs. We are satisfied with the methods of crossing proposed in relation to the watercourse parameters".*

1.1.5 Similarly, Scottish Natural Heritage (SNH) also responded positively, as stated in their response (letter of 24 July 2009. Section 8.4):

> *"In relation to the proposed water crossings within the development boundary, SNH welcome the thorough approach taken by the applicant in seeking to minimise water crossings and the impacts on the water environment."*

1.1.6 Following the reductions in infrastructure (now 127 turbine layout), the number of stream crossings has reduced from 97 proposed in 2009 to 79. **Chapter A14 of the Environmental Statement Addendum (prepared by Mouchel, 2010)** provides updated information on the catchments where crossings have been reduced and details of expected CAR-regulated crossings for the revised scheme layout.

2 REFERENCE DOCUMENTS

2.1.1 All construction works on the Site, and specifically design and construction works to be undertaken within and in the vicinity of any water courses, will be completed in compliance with current legislation and best practice as detailed within the Environmental Statement and Addendum, SEMP Technical Schedules (TS), current legislation and published guidance, including (non-exhaustive list):

- Appendix 14.3 of the Viking Wind Farm Environmental Statement (Mouchel, 2009) and Chapter A14 of the Viking Wind Farm Environmental Statement Addendum (Mouchel, 2010). These documents provide a detailed water course crossing assessment for the Viking Wind Farm site, including individual stream crossing descriptions and detailed Watercourse Crossing Selection Guidelines.

- SEMP TS2 Pollution Prevention Plan. This provides information on best practice to be implemented to mitigate risks from pollution of the water environment in general.

- SEMP TS3 Site Waste Management Plan. This provides information on best practice for mitigation of risks to water courses from storage and handling of waste materials.

- SEMP TS4: Drainage Management Plan. This provides more specific information on best practice for silt mitigation and avoidance of pollution of water courses from site run off and drainage pathways. This includes details on specific drainage and silt mitigation requirements in the vicinity of water course crossings.

- The Water Environment (Controlled Activities) (Scotland) Regulations 2005 ("CARs").

- The Water Environment (Controlled Activities) (Scotland) Regulations 2005, A Practical Guide, SEPA, Version 5, June 2008.

- Engineering in the Water Environment, Good Practice Guide, Construction of River Crossings, First edition, SEPA, April 2008.

- River Crossings and Migratory Fish: Design Guidance, Scottish Government, April 2000;

- Culvert Design Guide, Report 168, CIRIA, 1997;

- SEPA Pollution Prevention Guidelines, in particular:

  – PPG 01 – General Guide to the Prevention of Pollution

  – PPG 05 – Works in, near or liable to affect watercourses

3 CONSTRUCTION REQUIREMENTS

3.1.1 The *Contractor* is required to produce a detailed Water Course Crossing Plan prior to commencement of the works. This plan will take into account the stream crossing information prepared by Mouchel (and referred to in bold above) as well as any further information that may be obtained during subsequent surveys that may be undertaken post-consent and prior to construction works commencing (for example further ground investigations, ecological baseline studies etc).

3.1.2 The *Contractor's* Water Course Crossing Plan will be submitted to the Employer, ECoW and SEPA for review and approval where appropriate. The *Contractor* is responsible for liaising with and obtaining from SEPA all relevant consents, licenses and authorisations relating to construction of water course crossings at the Site.

3.1.3 The Ecological Clerk of Works (ECoW) will be consulted with regard to all water course crossing

works. Surveys by the ECoW will be carried out immediately prior to construction to ensure that adequate species mitigation is built into the design and that the following issues are addressed:

i) All watercourses, over which the access roads cross, will be routed through culverts or under bridges appropriately sized and designed not to impede the flow of water and will allow safe passage for wildlife, particularly fish and otters (i.e. capacity will be well in excess of the design flow);

ii) The Viking fish study (Viking Baseline Assessment of Fish Populations, Appendix 10.6 to non-avian ES chapter, 2009) has shown that trout are present in the upper reaches of many of the survey streams, indeed some of the highest trout densities recorded during the present survey were in small, headwater areas and these habitats are important to the maintenance of healthy trout populations. Both migratory and non-migratory trout undergo spawning migrations and access to spawning areas must not be restricted. Although their movements may be of lesser magnitude than those of sea trout, artificial barriers that restrict movements can damage brown trout through population fragmentation leading to loss of genetic diversity and reduction in fitness. All watercourse crossing will also be suitable for eels. To minimise impacts on breeding fish and eels, where encountered, it is preferred that any in-stream works be conducted during the months of June, July and August, where possible;

iii) SNH in their formal response to the original Viking wind farm application (letter of 24 July 2009) highlighted the following points which will be accounted for in relation to otters (points 6.4 & 6.5).

6.4 "As otter pass through some of the proposed development site, SNH recommends a condition of planning that at the end of each day, pipe ends should be covered to prevent otters from entering pipes and becoming trapped and planks should be placed in excavations and other construction holes to allow otters to climb out so they do not become trapped".

6.5 SNH also advise that "all contractors are made aware of possible presence of otter passing through the site and the law for European Protected Species, and that should a holt be found then all works within 250m of the holt should stop immediately and local SNH office contacted for advice".

3.1.4 Groundworks, including Watercourse Crossings, in all areas that may be affected by nesting birds will follow established best practice guidance. In line with these requirements (i.e. best practice guidance) a pre-clearance inspection by the ECoW or other suitably qualified person (ornithologist / ecologist) will be carried out.

3.1.5 Any Watercourse Crossing operations taking place during the period March to August ("Bird Breeding Season") will be in strict accordance with best practice with regard to identifying and protecting bird nests as appropriate, including the creation of a suitable "buffer zone". Ornithological surveys will be undertaken prior to the on-set of any works and the ECoW will be present on site so that if any early (e.g. raven) or late breeding species (e.g. red-throated diver) are still present, then mitigation measures will be extended into these periods accordingly. Any micro-siting required to avoid a nest will be advised by the ECoW, working with those parties undertaking the ornithological surveys.

3.1.6 The Archaeological Clerk of Works (ACoW) will also be consulted with regard to all Watercourse

Crossing works. All known sites of Cultural Heritage will be fenced to avoid accidental damage during the construction phase. All groundworks to be undertaken within identified archaeologically sensitive areas will be monitored by the ACoW. All works associated with cultural heritage will be overseen and coordinated by the ACoW.

3.1.7 Prior to the commencement of water course crossing works an on-site meeting will be held where deemed necessary. This meeting will be between the *Contractor*, ECoW, ACoW, and Consultees where appropriate, including SEPA and SNH. The purpose of this meeting is to agree specific requirements and working practices at key locations, or for particular structures (bridges or culverts). All wildlife mitigation associated with water course crossings will be carefully planned, robust and implemented for the species present.

3.1.8 During the water course crossing construction operations, both regular and periodic consultation may be made with the Consultees as required / agreed at this commencement meeting.