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13. Hydrology and Hydrogeology

13.1. Introduction

- 13.1.1. This Chapter does not repeat the information set out in *Chapter 13: Hydrology and Hydrogeology* of the Shepherds' Rig EIA Report (November 2018) where that information remains valid in the context of the reduced number of turbines now proposed as the Revised Development (**AEI Figure 4.1**). As such, the Additional Environmental Information (AEI) supplements Chapter 13 of the EIA Report (November 2018) and should be read in conjunction with it.
- 13.1.2. Whilst the hydrological catchments and private water supplies have not changed, **AEI Figure 13.1** has been updated to reflect the reduced number of turbines associated with the Revised Development.
- 13.1.3. In response to the EIA Report (November 2018), several post-submission consultation responses were received as detailed in AEI Table 13.1.

AEI Table 13.1: Post-Submission Consultation Responses

Organisation	Consultee Comments	Response to Consultee
Marine Scotland Science 25 th February 2019	Supports the proposal of a hydrochemical water quality monitoring programme at a minimum of monthly frequency, at least 12 months prior to construction commencing, during construction and for at least 12 months after construction at the same sites, including a control. Supports 50 m buffer zone around watercourses.	Best practice measures outlined in the CEMP, provided as Appendix 4.1 of the EIA Report, will prevent sediment entering the watercourse. No further action required in the AEI.
Scottish Water 27 th December 2018	Proposed Development falls within a drinking water catchment where a Scottish Water abstraction is located. In the event of an incident occurring, Scottish Water should be notified without delay. Site specific risks and mitigations measures to be assessed and implemented. All documentation should note the existence of the drinking water catchment.	Potential effects on the hydrological environment from all aspects of the Revised Development are assessed within this Chapter in paragraphs 13.6.1 to 13.9.1. Measures within the outline CEMP, provided as EIA Report Appendix 4.1, will safeguard watercourses and subsurface water and are based on good practice and industry guidance. No further action required in the AEI.

Organisation	Consultee Comments	Response to Consultee
SEPA 14 th March 2019	Require a Construction Site Licence under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR), including the submission of an application accompanied by a robust Pollution Prevention Plan. No work to commence until bio security plan has been approved by SEPA.	A Construction Site Licence under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR), including the submission of an application accompanied by a robust Pollution Prevention Plan, will be provided. The final details on sizing of SuDS will be provided prior to the construction phase. No further action required in the AEI.

13.2. Methodology

- 13.2.1. There have been no changes to the legislation and policy referred to in the EIA Report (November 2018).
- 13.2.2. SEPA has updated its proposed climate change allowances applied to peak fluvial flows and rainfall intensities¹ since the EIA Report (November 2018). New watercourse crossings should be designed to accommodate a 1:200 year flow plus a 44% increase to account for climate change.
- 13.2.3. The Site boundary and Core Study Area is the same as stated within Chapter 13: Hydrology and Hydrogeology of the EIA Report (November 2018) and no development is proposed outside of the areas previously assessed.
- 13.2.4. The baseline information relied upon in order to make an assessment of the effects of the Revised Development is that information which has been provided in the EIA Report (November 2018). To ensure consistency of approach, the same significance criteria and assessment methodology as referred to in the EIA Report (November 2018) has been followed. Taking into account the relevant policy and guidance, baseline information, and assessment criteria, an assessment is presented below which details any changes in effects as a result of the revised layout.

13.3. Baseline Conditions

- 13.3.1. There have been no changes to land use and no substantial changes to the hydrological regime associated with the Revised Development. As such, there are no changes to the Baseline Conditions presented in Section 13.4 of the EIA Report (November 2018).

¹ SEPA (2019) Climate Change Allowances for Flood Risk Assessment in Land Use Planning [Online] Available from: <https://sepaweb.maps.arcgis.com/apps/webappviewer/index.html?id=a01f82dbc66145f4a4b558d7b840f51a&xtent=-2086266.4068%2C6926044.231%2C1044594.2717%2C9056497.0833%2C102100>
Last Accessed: 08/10/2019

13.3.2. Receptors identified as having high sensitivity in the EIA Report (November 2018) remain the same. These consist of:

- Watercourses;
- Groundwater;
- Public Water Supplies;
- Private Water Supplies; and
- Near-Surface Water.

13.4. Change in Effects

13.4.1. The following amendments to the Proposed Development have been incorporated within the Revised Development and are of relevance to hydrology and hydrogeology:

- The removal of one watercourse crossing across Craigengillan Burn (**AEI Figure 13.1**); and
- Addition of two watercourse crossings: one upstream of previous crossing at Craigengillan Burn and one at a minor tributary of Craigengillan Burn (**AEI Figure 13.1**).

13.4.2. SEPA has updated its proposed climate change allowances applied to fluvial flows and rainfall intensities since the EIA Report (November 2018). New watercourse crossings should be designed to accommodate a 1:200 year flow plus a 44% increase to account for climate change. This is considered to be achievable through the detailed design phase and does not alter the assessment conclusions in paragraphs 13.6.37 and 13.6.40 of Chapter 13 within the EIA Report (November 2018) which states that potential effects associated with watercourse crossings (impediments to flow) would be negligible and not significant in accordance with the EIA Regulations.

13.4.3. All other infrastructure either remains the same as the EIA Report (November 2018) or remains outwith the 50 m buffer of watercourses outlined within the EIA Report.

13.4.4. No new development is proposed in areas of the Site that have not been previously assessed in terms of hydrology and hydrogeology.

13.5. Cumulative Effects

13.5.1. The EIA Report (November 2018) identified that Windy Rig Wind Farm as having the potential to cumulatively affect the Water of Ken catchment, of which the Development is also located. Implementation of the measures outlined in the CEMP, provided as Appendix 4.1 of the EIA Report, mean that the magnitude of any potential effects from the Revised Development have been assessed as negligible.

13.5.2. Since the submission of the EIA Report (November 2018), Windy Rig Wind Farm has been approved as outlined in Table 2.1 of this report. As outlined above, the magnitude of cumulative impacts during the construction, operational and decommissioning phases remain negligible and not significant in terms of the EIA Regulations.

- 13.5.3. All other potential cumulative effects are as assessed within the EIA Report (November 2018) which identified no significant effects in terms of the EIA Regulations.

13.6. Summary

- 13.6.1. The Revised Development would not increase the significance of effects assessed in the EIA Report (November 2018) in terms of hydrology and hydrogeology.

- 13.6.2. The Revised Development removes one watercourse crossing at Craigengillan Burn and adds two watercourse crossings: one further upstream on Craigengillan Burn and one at an unnamed tributary of Craigengillan Burn. The potential effects associated with watercourse crossings (impediments to flow) would remain negligible and not significant as per the EIA Regulations.

13.7. Statement of Significance

- 13.7.1. Effects on hydrology and hydrogeology associated with the Revised Development are considered to be not significant. This represents no change to the conclusions outlined in the EIA Report (November 2018).