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Introduction

6.1 **Chapter 6: Hydrology, Hydrogeology and Soils** of the Environmental Impact Assessment (EIA) Report assesses the potential impacts of the Proposed Development on geology (including peat and carbon rich soils) and hydrology and hydrogeology (forming the water environment).

6.2 This Supplementary Environmental Information (SEI) Chapter supplements **Chapter 6** of the EIA Report. The methodology employed in this SEI Chapter is set out in **Chapter 6** of the EIA Report.

6.3 The following key documents should be read in conjunction with this SEI:

- EIA Report Volume 2 – **EIA Chapter 6: Hydrology, Hydrogeology and Soils**
- EIA Report Volume 3a – **EIA Figures 6.1 to 6.8**
- EIA Report Volume 4 – **EIA Technical Appendices 6.1 and 6.2**

Consultee Responses to EIA Report

6.4 **Table 6-1** provides a summary of the consultation with regards to hydrology, hydrogeology and soils (including peat) related to the application layout of the Proposed Development. A reply to the consultee responses is also provided in **Table 6-1**.

Table 6-1: Consultee Responses

Consultee	Summary of Key Issues	Responses to Comments
The Highland Council – Contaminated Land Officer 25 April 2024	Thank you for consulting the contaminated land team on this application. Having checked our database, historical Ordnance Survey maps and aerial photos, there does not appear to be a potential source of contamination onsite. Therefore, further information is not required to support the application.	Noted.
Scottish Water 29 April 2024	Scottish Water has no objection to this planning application; however, the applicant should be aware that this does not confirm that the proposed development can currently be serviced.	Noted.
Scottish Water 29 April 2024	A review of our records indicates that there are no Scottish Water drinking water catchments or water abstraction sources, which are designated as Drinking Water Protected Areas under the Water Framework Directive, in the area that may be affected by the proposed activity.	Noted.
Scottish Water 29 April 2024	For reasons of sustainability and to protect our customers from potential future sewer flooding, Scottish Water will not accept any surface water connections into our combined sewer system. There may be limited exceptional circumstances where we would allow such a connection for brownfield sites only, however this will require significant justification from the customer taking account of various factors including legal, physical, and technical challenges.	Noted.

Consultee	Summary of Key Issues	Responses to Comments
	In order to avoid costs and delays where a surface water discharge to our combined sewer system is anticipated, the developer should contact Scottish Water at the earliest opportunity with strong evidence to support the intended drainage plan prior to making a connection request. We will assess this evidence in a robust manner and provide a decision that reflects the best option from environmental and customer perspectives.	
Scottish Environment Protection Agency (SEPA) 18 June 2024	We object until information is provided to demonstrate that development avoids near natural peatland. We acknowledge that Technical Appendix 5.1 includes information on peatland quality. However, it is not provided in the format we requested, and we are not currently able to gather the information we require. We therefore object and seek a layout figure showing the different classifications of peatland quality found on the site based on the approach outlined in Guidance-Peatland-Action-Peatland-Condition-Assessment-Guide-A1916874.pdf (NatureScot). The layout should be shown to avoid any areas of near-natural habitat.	**SEI Figure 5.4** is provided to show the peatland condition within the site. It is confirmed that there are no peat areas of near natural habitat recorded on the site.
SEPA 23 December 2024	We thank the developer for providing information on peatland condition and note that the development will not impact on any near natural habitat. We now withdraw our objection on the basis that the previously requested conditions are applied to the consent if granted.	As above **SEI Figure 5.4** is provided to confirm SEPA's position.
SEPA 18 June 2024	We are content that steps have been taken to ensure that the layout avoids areas of deeper peat. There are small opportunities to make minor amendments to further reduce peat disturbance – such as T6 supporting infrastructure – but we are content that these can be addressed in the post-consent Peat Management Plan (PMP), which we request via condition. The finalised PMP should include a post construction layout which clearly demonstrates how amendments to layout and the use of floating infrastructure (if possible) further minimise peat disturbance. It should outline final proposals for excavated peat use; in relation to Table 6.1B in the current PMP we highlight that use of peat to construct visual screening bunds along tracks is not acceptable, but it can be used to dress lower areas of bunds if it can be kept in contact with the water table.	Noted. The PMP volumes have been updated in accordance with the revised layout and are provided in **SEI Annex 6.1A**.
SEPA 18 June 2024	Please note, as per our recent national communication to Heads of Planning, we no longer provide advice on peatland restoration. Developers should refer to NatureScot guidance on restoration.	Noted. The Outline Habitat Management Plan (HMP) has been updated (as presented in **SEI TA5.3**) to increase the amount of peatland restoration and enhancement.
SEPA 18 June 2024	We note that it has been determined that most potential GWDTE are likely to be surface water fed, however the updated Habitat and Vegetation Survey Report describes an area of neutral flushes and a spring to the north-east of Turbine 2 that are likely to be groundwater influence. We	Noted.

Consultee	Summary of Key Issues	Responses to Comments
	consider that these wetland features can be protected if suitable mitigation measures are put in place and therefore ask that a condition is applied requiring the submission of a site-specific mitigation plan for their protection. We consider that this may be best addressed by an annotated drawing showing the location of excavations, the wetland features and proposed mitigation measures. We note that the new Survey Report is done using the UKHAP methodology. This methodology can be used instead of a Phase 1 habitat survey, but we highlight to the developer that National Vegetation Classification (NVC) methodology should be used to support GWDTE assessment. In this case we have not objected, as older NVC survey information is available, but would have done so if that were not the case.	
SEPA 18 June 2024	To ensure that construction works are carried out in line with the measures prescribed in the submission a condition should be applied requiring the works to be carried out in line with the Schedule of Mitigation (Table 10-1) and Outline Environmental Management Plan (TA1.1).	Noted.
NatureScot 11 October 2024	Blanket bog is extensive on this site and there is little scope to avoid it, but more could be done to avoid higher value peatland areas. If the mitigation hierarchy described in NPF4 is followed, then offsetting is likely to be sufficient to overcome the predicted impacts from this development. However, the extent of peatland restoration proposed to compensate for predicted loss falls short of our guidance and we recommend that additional areas should be identified.	The Outline Habitat Management Plan has been updated, see **SEI TA5.3: Outline HMP Update**
NatureScot 11 October 2024	Avoidance of the most sensitive habitats and minimisation of impacts on priority peatland habitats. • There appears to be scope to minimise the impact on peatland by reconsidering the layout and location of tracks, turbine bases and temporary hard standings. • Several areas of bog pools have been identified in the habitat survey, but it is not clear how close these are to proposed infrastructure, and whether these sensitive habitats will be adequately buffered from development. • The NVC identifies variation in the quality/condition of the peatland habitats but it is not clear whether the areas in best condition have been avoided.	**SEI Figure 5.4** is provided to show the peatland condition within the site. It is confirmed that there are no peat areas of near natural habitat recorded on the site. Any potential to minimise the effects on peatland will be considered through micrositing during the detailed design stage including ensuring stand-off buffers to any sensitive features. This will be overseen by an Environmental Clerk of Works (EnvCoW).
NatureScot 11 October 2024	Predicted peatland habitat loss as a result of development has been calculated in the EIA Report as 11.16ha. A 10m buffer around infrastructure has been used to account for indirect drying effects. The Outline Habitat Management Plan proposes to carry out 64.73ha of forest to bog restoration. We advise that the amount of restoration	The Outline Habitat Management Plan has been updated, as presented in **SEI TA5.3: Outline HMP Update**.

Consultee	Summary of Key Issues	Responses to Comments
	proposed is insufficient to offset the peatland habitat losses in this proposal. Our guidance advises that there should be a 1:10 (loss:restored) multiplier applied for peatland or that a clear rationale is provided explain why this is not required (but this has not been provided). There appears to be scope for additional peatland restoration to be delivered within the development boundary. The ecology report and NVC survey identifies areas of degraded peatland on the open hill ground, but they have not been mapped. Access to degraded peatland would be facilitated by the new access track. We recommend that a detailed condition assessment be carried out and details of what restoration methods could be deployed and where. If this isn't possible then off-site offsetting could be considered.	The PMP volumes have been updated in accordance with the revised layout and are provided in **SEI Annex 6.1A**.
	The OHMP includes details on the felling of the forest, stump flipping, ground smoothing and drain blocking. This should all be carried out following best practice detailed in the Peatland ACTION technical compendium (https://www.nature.scot/doc/peatland-action-technical-compendium), but this is not referenced in the methodology.	Noted. The Outline Habitat Management Plan has been updated, see **SEI TA5.3: Outline HMP Update**.
NatureScot 11 October 2024	Under NPF4 a significant level of enhancement is required which should be in addition work being carried out under the mitigation hierarchy. Areas for enhancement have been identified. We recommend enhancement to be in the region of 10% of the baseline assessment of peatland extent within the wind farm boundary.	Noted.

Design Amendments

6.5 The design amendments from the site layout of the Ben Sca Redesign Wind Farm application (as detailed in the EIA Report) are detailed in full in **SEI Chapter 1: Introduction and Project Description** and shown on **SEI Figure 1.6** with the Outline Habitat Management Plan updated and provided in **SEI TA5.3: Outline HMP Update**. In relation to hydrology and peat, the only change relevant to the assessment is the removal of Turbine 1 (T1) and associated foundation and crane hardstanding.

Revised Figures

6.6 In order to update the graphic information previously issued with the EIA Report, a series of revised figures have been produced for the SEI as follows:

- **SEI Chapter 6** Figures (supersede **EIA Figures 6.1** to **6.5** and **6.7** to **6.8**[1]):
  - **SEI Figure 6.1**: Local Hydrology

[1] Note **EIA Figure 6.6** has not been updated in this SEI as none of the design changes affected the accuracy of the information presented on the figure.

  - **SEI Figure 6.2**: Soils
  - **SEI Figure 6.3**: Superficial Geology
  - **SEI Figure 6.4**: Peatland Classification
  - **SEI Figure 6.5**: Bedrock Geology
  - **SEI Figure 6.7**: Groundwater Vulnerability
  - **SEI Figure 6.8**: Areas of Potential GWDTE
- **SEI Technical Appendix 6.1: Peat Management Plan (PMP)** Figures (supersede **EIA Figures 6.1.1 to 6.1.3**):
  - **SEI Figure 6.1.1**: Peat Depth
  - **SEI Figure 6.1.2**: Peat Depth Over 0.5m

Assessment of Design Amendment Effects

Water Environment

6.7 The revised layout does not change the findings or assessment presented in **Chapter 6** of the EIA Report. Best practice and mitigation detailed within **Chapter 6** of the EIA Report remains applicable and can be used to mitigate potential adverse effects on the local hydrology and hydrogeology. These will be included as part of the final Construction Environmental Management Plan (CEMP) which will be secured by a planning condition (post any consent) and would be prepared and agreed with statutory consultees prior to construction commencing.

6.8 This would include any site-specific mitigation measures required to sustain and protect any areas of Groundwater Dependent Terrestrial Ecosystems (GWDTE), as required by SEPA.

6.9 In addition, as discussed in **Chapter 6** of the EIA Report, a programme of water monitoring is proposed prior to and during construction.

Potential Construction Effects

Pollution Risk

6.10 Best practice and mitigation measures detailed within **Chapter 6** of the EIA Report remain applicable and can be used to mitigate potential adverse effects on the local hydrology and hydrogeology. These will be included as part of the final CEMP which will be secured by a planning condition (post any consent) and would be prepared and agreed with statutory consultees prior to construction commencing. In addition, as discussed in **Chapter 6** of the EIA Report, a programme of water monitoring is proposed prior to and during construction.

6.11 The revised layout does not change the findings of **Chapter 6** the EIA Report with regards to construction effects and pollution risk. The potential effects would remain as negligible and therefore not significant.

Erosion and Sedimentation

6.12 As detailed in the **Chapter 6** of the EIA Report, adherence to good practice measures would ensure that any material generated from construction works such as the excavation

of borrow pits, hardstanding construction, and watercourse crossing construction, would not be transported into nearby watercourses, to groundwater, or onto areas of peat.

6.13 Location specific good practice measures will form part of the final CEMP and would be used to minimise the potential for erosion and sedimentation.

6.14 The revised layout does not change the findings of **Chapter 6** the EIA Report with regards to construction effects and erosion / sedimentation. The potential effects would remain as negligible and therefore not significant.

Fluvial Flood Risk

6.15 As detailed in the **Chapter 6** of the EIA Report, adherence with good practice measures including appropriate drainage design and compliance with the final CEMP would limit potential fluvial flood risk impacts to being local and short duration and so of negligible magnitude.

6.16 The revised layout does not change the findings of **Chapter 6** the EIA Report with regards to construction effects and fluvial flood risk. The potential level of effect on flood risk, would therefore remain as negligible and not significant.

Infrastructure and Man-made Drainage

6.17 As detailed in the **Chapter 6** of the EIA Report, the application layout of the Proposed Development has avoided areas of high ecological or habitat interest, including Groundwater Dependent Terrestrial Ecosystems (GWDTE), wherever possible. This also applies to the revised layout. Furthermore, the superficial and bedrock deposits have little groundwater and therefore limited or little dewatering is likely to be required. There remains potential however, for local dewatering of soils near cable trenches, turbine bases and borrow pits, without incorporation of mitigation measures.

6.18 Location specific good practice measures will form part of the final CEMP and would be used to minimise the potential for drainage and dewatering effects.

6.19 The revised layout does not change the findings of **Chapter 6 of** the EIA Report with regards to construction effects and infrastructure/man-made drainage leading to dewatering. The potential significance of effect of changing groundwater levels and flow due to dewatering remains as negligible and therefore not significant.

Peat and Soils

6.20 As per the EIA Report, it is shown (see PLHRA and PMP sections below) that the disturbance of peat and soils as a result of the construction of the revised layout can be minimised and the peat deposits safeguarded. The revised layout does not change the findings of **Chapter 6** of the EIA Report, and the potential effect would remain as negligible and not significant.

Potential Operational Effects

Peat and Soils

6.21 No excavation, movement or storage of peat or soils is anticipated during the operational site life.

6.22 The revised layout does not change the findings of **Chapter 6** of the EIA Report with regards to operational effects and peat/soils. The potential effects would remain as negligible and therefore not significant.

Pollution Risk

6.23 The possibility of a pollution event occurring during operation is very unlikely. There would be a limited number of vehicles required onsite for routine maintenance and for the operation of the proposed development. Storage of fuels/oils onsite would be limited to the hydraulic oil required in turbine gearboxes and this would be bunded (satisfying storage guidance) to prevent fluid escaping.

6.24 The revised layout does not change the findings of **Chapter 6** of the EIA Report with regards to operational effects and pollution risk. The potential effects would remain as negligible and therefore not significant.

Erosion and Sedimentation

6.25 During the operation of the Proposed Development, it is not anticipated that there would be any significant excavation or stockpiled material beyond the clearing of SuDS features to maintain their efficiency, reducing the potential for erosion and sedimentation effects.

6.26 Immediately post-construction, newly excavated drains and track dressings may be prone to erosion as any vegetation would not have matured. Appropriate design of the drainage system, incorporating sediment traps, would reduce the potential for the increased delivery of sediment to natural watercourses. Immediately post-construction, flow attenuation measures would remain and be maintained to slow runoff velocities and prevent erosion until vegetation becomes established.

6.27 The revised layout does not change the findings of **Chapter 6 of** the EIA Report with regards to operational effects and erosion/sedimentation. The potential effects would remain as negligible and therefore not significant.

Fluvial Flood Risk

6.28 The risk of an effect from fluvial flood risk arises as a result of a potential restriction of flow at the existing watercourse crossings following intense rainfall. In accordance with good practice, routine inspection of the culverts or bridges at the site would be undertaken, reducing the likelihood of a blockage occurring. In the unlikely event of a blockage any flooding would be localised.

6.29 The revised layout does not change the findings of **Chapter 6 of** the EIA Report with regards to operational effects and fluvial flood risk. The potential effects would remain as negligible and therefore not significant.

Infrastructure and Man-made Drainage

6.30 Operation of the Proposed Development would require limited activities relative to the construction phase.

6.31 The revised layout does not change the findings of **Chapter 6** of the EIA Report with regards to operational effects and infrastructure/man-made drainage leading to dewatering. The potential effects would remain as negligible and therefore not significant.

Peat Landslide Hazard Risk Assessment

6.32 There is sufficient peat probe data to assess the revised layout.

6.33 Review of the revised layout indicates that there has been no change to the level of Peat Stability Risk or the conclusions and recommendations within **Technical Appendix 6.2** of the EIA Report. No update of the PLHRA (including the accompanying **EIA Figures 6.2.1** and **6.2.2**) is therefore required and no increase in peat slide risk has been identified.

Peat Management Plan (PMP)

6.34 As a result of the revised layout, the peat excavation volumes have been updated to 44,800 m^3 compared to 45,482 m^3 presented in **Technical Appendix 6.2** of the EIA Report. An update to the excavated material calculator is provided as **SEI Annex 6.1A**.

6.35 The recommendations on excavation and re-use of soils and peat detailed within **Technical Appendix 6.1** of the EIA Report remain applicable and will be updated in a final PMP which would be secured by a planning condition (post any consent) prior to construction commencing.

Cumulative Development Update

Cumulative Baseline

6.36 Since the submission of the application, the cumulative wind farm situation in the study area has changed. The relevant changes to the cumulative baseline are as follows:

- Balmeanach (application - revised layout)
- Glen Ullinish II (Redesign) (application - revised layout)
- Beinn Mheadhonach Redesign (application)

Cumulative Effects

6.37 The combined effects which would result should the Proposed Development be constructed alongside the proposed Balmeanach Wind Farm, are discussed in full in **Volume 5** of this SEI Report.

6.38 The updated cumulative baseline does not change the cumulative assessment in relation to hydrology and soils presented in the **Chapter 6** of the EIA Report, as the cumulative developments will be developed and managed in accordance with current best practice, industry standards and relevant legislation, planning policy and guidance regulated by statutory consultees. These standards ensure, with respect to the hydrology and soils, potential impacts are mitigated and controlled at source. The mitigation measures that are presented in the EIA ensure there are no likely effects beyond the application boundary.

6.39 It is therefore considered that no cumulative effects on hydrology and soils are anticipated as a result of the Proposed Development.

Summary of Changes to the Significance of Effects

6.40 The proposed amendments to the site layout do not change the findings of **Chapter 6** of the EIA Report and the best practice measures detailed in the EIA Report remain wholly applicable and relevant to the revised design layout.

6.41 The significance of likely effects therefore remains as assessed in the EIA Report and no significant effects would arise as a result of the proposed amendments to the Proposed Development. No further additional site investigation or monitoring is required.

Conclusions

6.42 The design amendments will not result in any change to the significance of effects as presented in **Chapter 6** of the EIA Report, which were not significant.