ELCHIES (ROTHES III) WIND FARM GRID CONNECTION WORKS

Appendix 7.2: Forestry Hydrology Report

Prepared for: Scottish and Southern Electricity Networks Transmission (SSEN Transmission)

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BASIS OF REPORT

CONTENTS

1.0 Introduction

This Appendix should be read in conjunction with **Chapter 7: Geology, Hydrology and Hydrogeology** of the Elchies (Rothes III) Wind Farm Grid Connection Works Environmental Appraisal (EA). The Chapter of the EA contains a detailed description of the local hydrology and hydrogeology, flow mechanisms and hydraulic properties of the soils and geology, the embedded mitigation incorporated in the development design, and an assessment of impacts on groundwater and surface water flows and quality.

Felling would be required to construct the Proposed Development and to establish a wayleave to facilitate the safe operation of the OHL. This Appendix considers whether the proposed felling is likely to impact water quality in the surface water catchments in which the felling will occur.

1.1 Methodology

The assessment has been completed in accordance with the UK Forestry Standard[1].

Details regarding surface water catchment areas have been obtained from Scottish Environment Protection Agency (SEPA)[2] and has been confirmed by a site visit undertaken by SLR hydrologists. The catchments used in the assessment correspond to watercourses which are monitored by SEPA as part of the Water Framework Directive (WFD).

The proposed felling will occur in six surface water catchments:

- Rothes Burn (SEPA ID: 23071);
- Broad Burn (SEPA ID: 23070);
- River Spey – River Fiddich to tidal limit (SEPA ID: 23065);
- Mulben Burn (SEPA ID: 23069);
- Crooksmill Burn / Haughs Burn (SEPA ID: 23180); and
- River Isla – source to Keith (SEPA ID: 23181).

Information regarding sensitive receptors located within each surface water catchment has also been considered and the following datasets used to identify the sensitivity of each surface water catchment:

- Drinking Water Protected Areas (DWPA)[3];
- Shellfish Water Protected Areas[4];
- Flood Risk Areas[5];
- Water dependent designated sites[6];

[1] UK Forestry Standard (2017). The Governments Approach to Sustainable Forestry The UK Forestry Standard - GOV.UK (www.gov.uk) [accessed February 2023]
[2] SEPA River and loch waterbody nested catchments, available online from https://www.sepa.org.uk/environment/environmental-data/ [Accessed February 2023]
[3] Scottish Water DWPA, available online from https://www.gov.scot/publications/drinking-water-protected-areas-scotland-river-basin-district-maps/ [Accessed February 2023]
[4] SEPA Shellfish Water Protected Areas https://www.sepa.org.uk/data-visualisation/water-classification-hub/ [Accessed February 2023]
[5] SEPA Flood Risk Management Plans (potentially vulnerable areas and target areas), available online from https://www2.sepa.org.uk/frmplans/ and https://www.sepa.org.uk/environment/water/flooding/flood-maps/ [Accessed February 2023]
[6] NatureScot SiteLink available online from https://sitelink.nature.scot/home [Accessed February 2023]

- Catchments Sensitive to Acidification[7]; and
- Nitrate Sensitive Catchments[8].

Review of theses data sources confirms that none of the catchments are located within areas defined as sensitive or vulnerable to acidification nor in shellfish water protected areas; these potential receptors have therefore been screened out of the assessment.

Several of private water supplies have been confirmed locally and these are considered in **Appendix 7.1** (Private Water Supply Risk Assessment) to Chapter 7, and therefore are not considered as part of this assessment.

For each surface water catchment through which the Proposed Development passes, an assessment has been completed relating the overall surface water catchment area to the area of proposed felling. The assessment assumes that all felling will occur at once and therefore adopts a conservative approach.

In accordance with the UK Forestry Standard[1] a threshold of 20% has been used to screen for potential effects of felling on surface water quality and acidity[9]. Regarding flooding the UK Forestry Standard[1] records flooding effects associated with well managed forests are unlikely to be discernible[10].

Section 2 presents the assessment. Each surface water catchment is considered in turn.

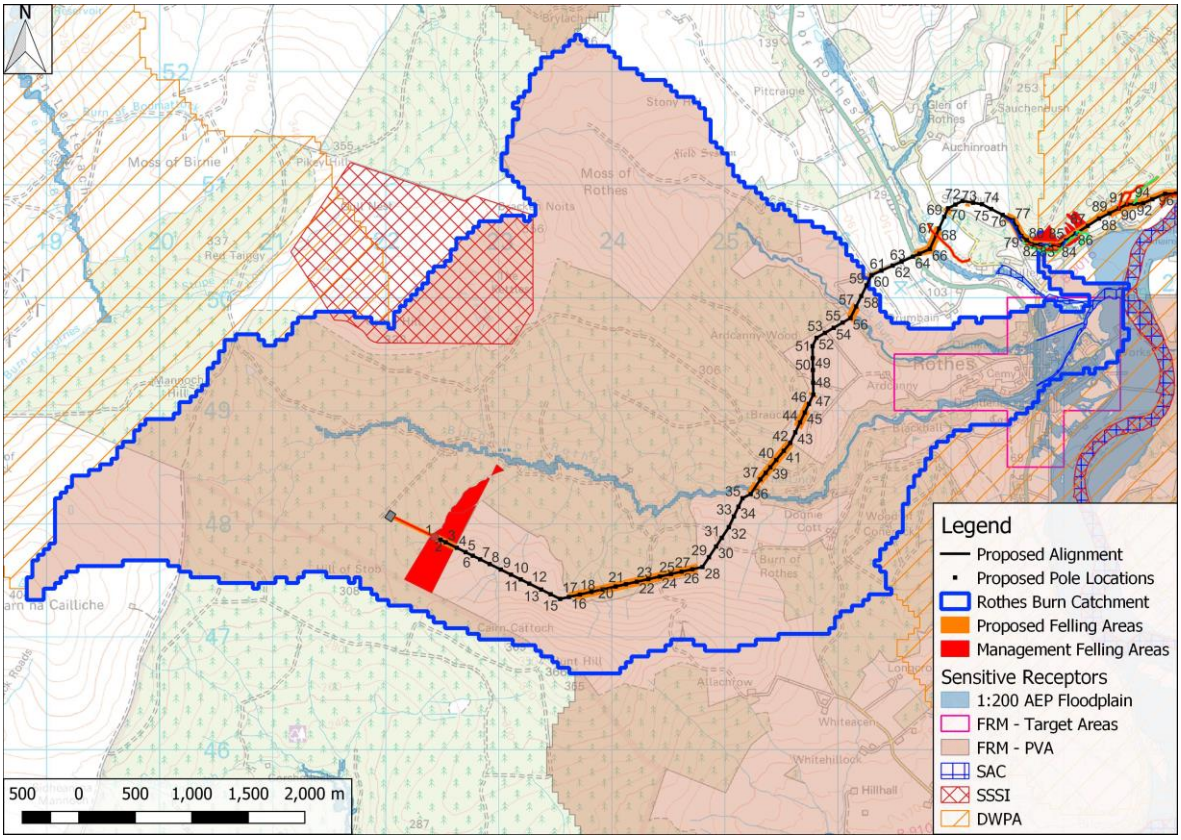
[7] Forest Research, catchments vulnerable to acidification maps, available online from https://www.forestresearch.gov.uk/tools-and-resources/fthr/catchments-vulnerable-to-acidification-maps/ [Accessed February 2023]

[8] Scottish Government, Nitrate Vulnerable Zones: maps, available online from https://www.gov.scot/publications/nitrate-vulnerable-zones-maps/ [Accessed February 2023]

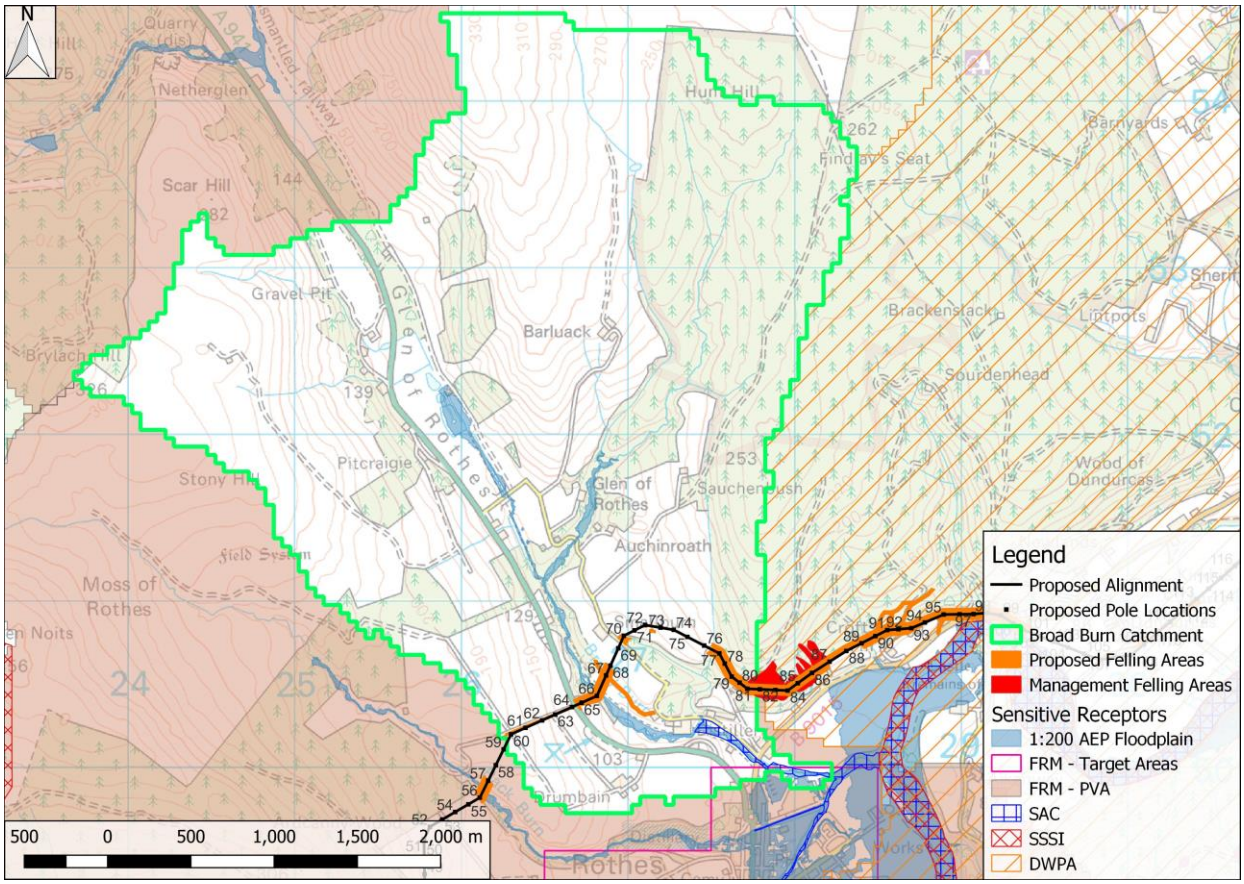
[9] Research shows that the effects of harvesting on surface water acidity are difficult to discern when 20% or less of a catchment is felled within any three-year period. Consequently, where the rate of felling exceeds this figure it may be necessary to carry out a site impact assessment to determine if the watercourse is at risk; this includes felling for habitat restoration or wind farm developments. And Where water bodies are sensitive to nutrient enrichment, including shallow coastal lochs designated for shellfish, limit any clearfelling to less than 20% of the catchment in any three-year period.UK Forestry Standard (2017) p174 and p180.

[10] Forest establishment and growth have the potential to decrease peak flows, while clearfelling can have the opposite effect until the trees are replanted and regrow. Overall, research suggests that the contrasting effects of the different stages of the forest cycle (cultivation, drainage, road construction, forest growth and harvesting) may even out at the catchment scale, especially as forest areas become more diverse in age. As a result, well-designed and sited forests in headwater catchments are likely to have a beneficial impact on downstream flood risk and may contribute to flood alleviation.

2.0 Forest Felling Assessment

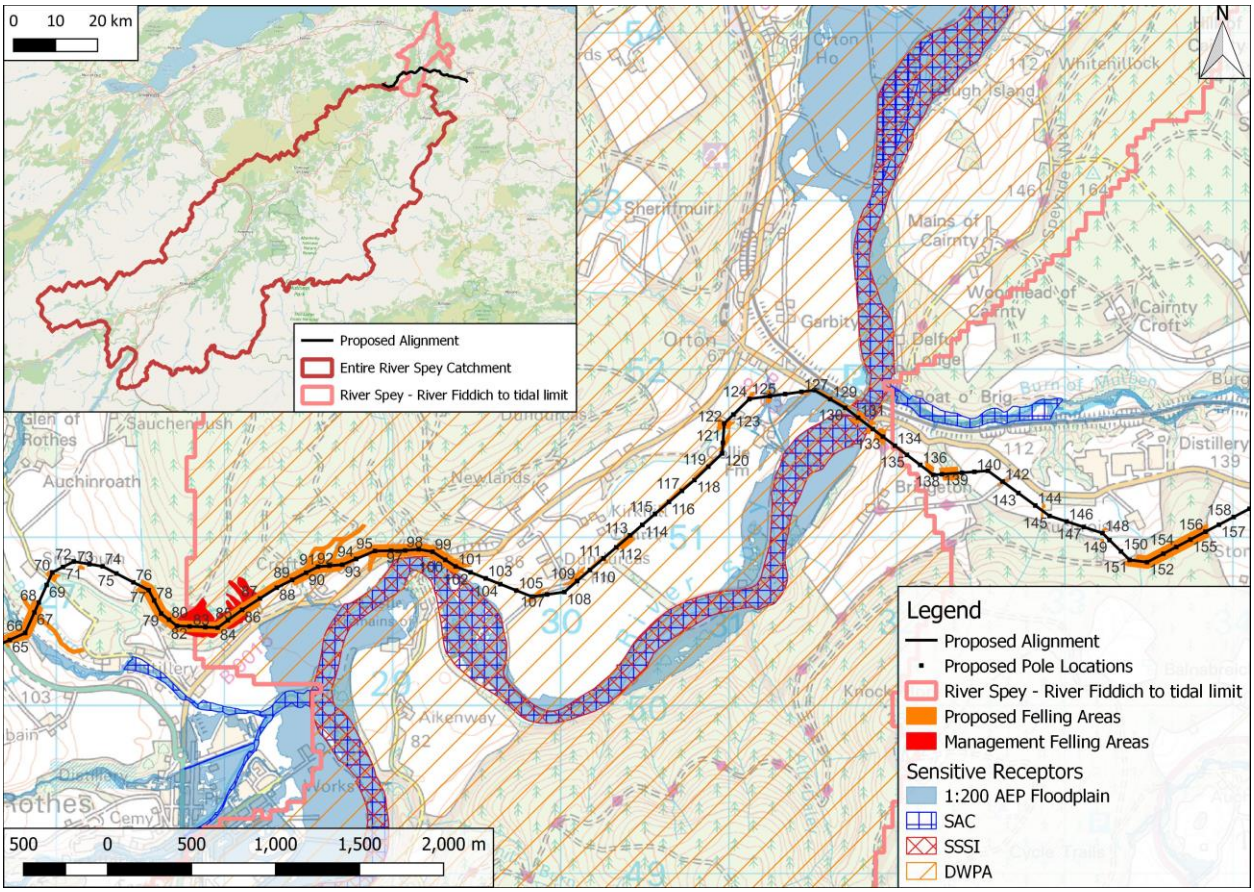
Rothes Burn	
	
Total Catchment Size	25.5km^2
SEPA Overall Classification (2020)	Poor
Identified Sensitive Receptors	- Located within the Rothes and Aberlour Potentially Vulnerable Area (PVA) (02/05/09) which has a specific target note to address flooding concerns. - Drains to the River Spey which has been designated as a Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC) due to presence of altantic salmon, freshwater pearl mussel, otters and sea lamprey. - Drains to the River Spey, the catchment of which has been designated as a Drinking Water Protected Area (DWPA).
Total Area of Felling within catchment	0.4km^2
Percentage of Catchment	0.02%
Potential Risk (Y/N)	No – significantly less than 20% Measures given in Chapter 7 to control rate and quality of runoff shed from areas of forest felling should be adhered to.

Broad Burn



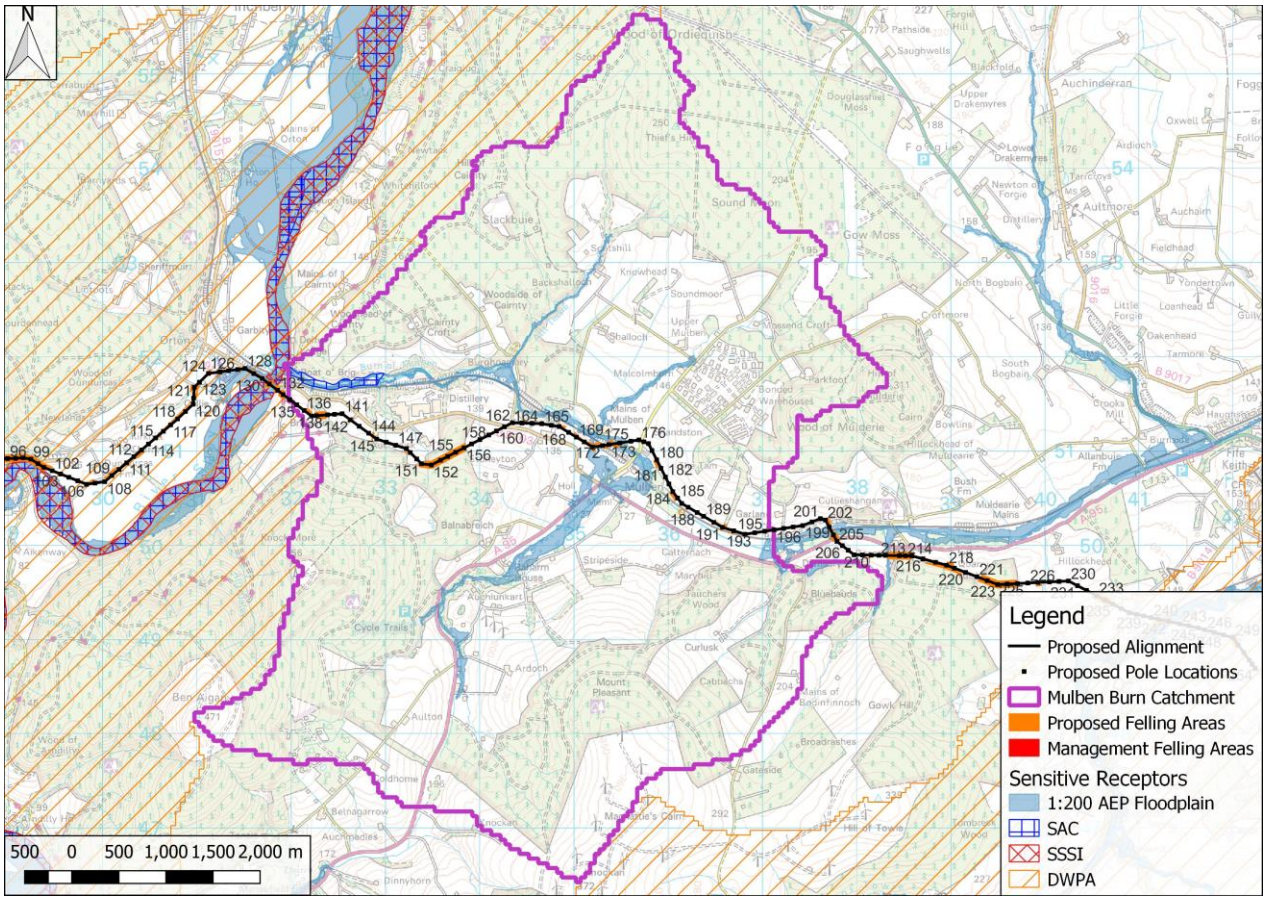
Total Catchment Size	12.8km^2
SEPA Overall Classification (2020)	Good
Identified Sensitive Receptors	- Drains to an area which has a specific target note to address flooding concerns. - Drains to the River Spey which has been designated as a SSSI and SAC due to presence of altantic salmon, freshwater pearl mussel, otters and sea lamprey. - Drains to the River Spey (DWPA.
Total Area of Felling within catchment	0.10km^2
Percentage of Catchment	0.78%
Potential Risk (Y/N)	No – significantly less than 20% Measures given in Chapter 7 to control rate and quality of runoff shed from areas of forest felling should be adhered to.

River Spey – River Fiddich to tidal limit



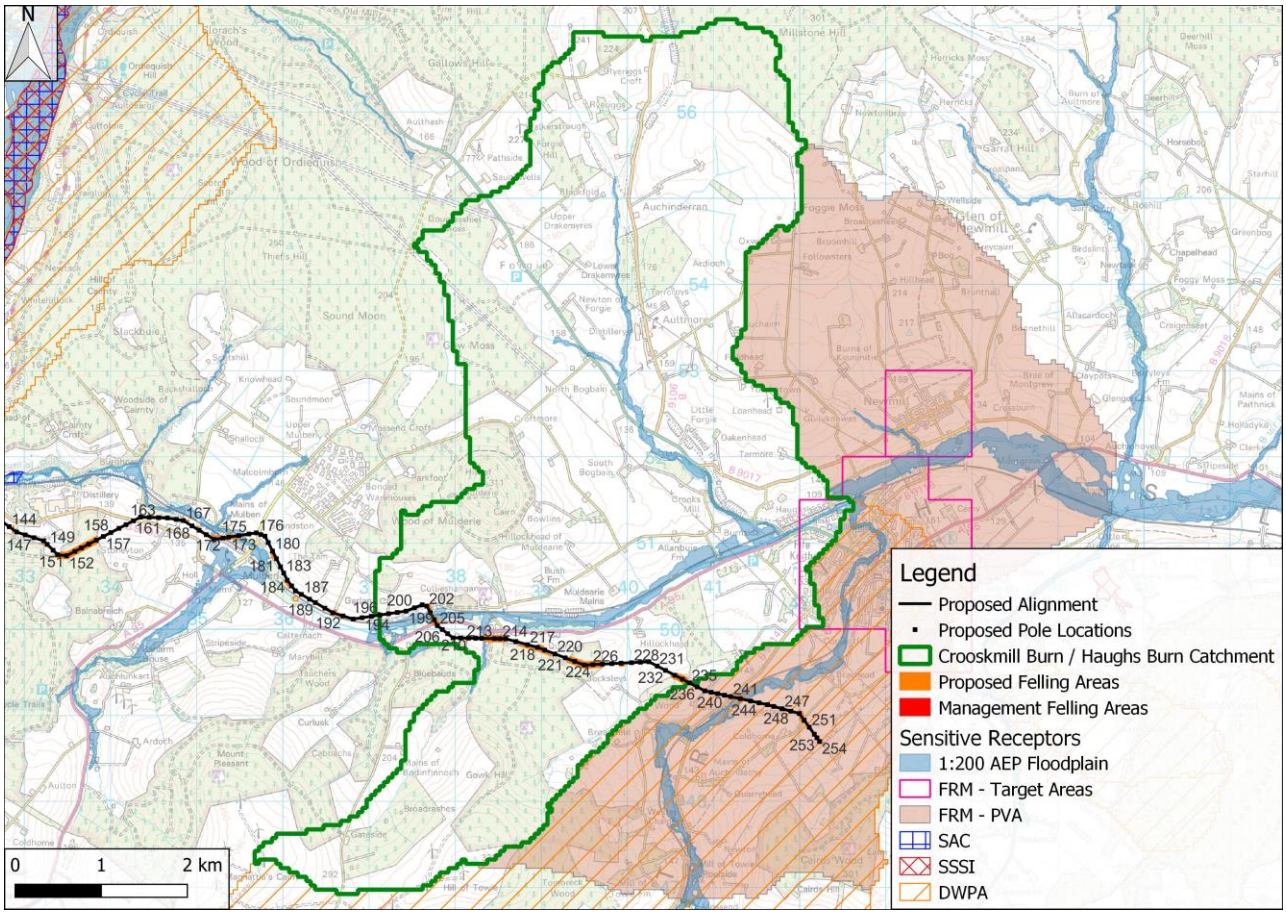
Total Catchment Size	94.8 km^2
SEPA Overall Classification (2020)	Good
Identified Sensitive Receptors	- River Spey which has been designated as a SSSI and SAC due to presence of altantic salmon, freshwater pearl mussel, otters and sea lamprey. - River Spey catchment has been designated as a DWPA. - Further downstream the River Spey is located within the Moray, Aberdeenshire, Banff and Buchan Nitrate Vulnerable Zone (NVZ).
Total Area of Felling within catchment	0.21km^2
Percentage of Catchment	0.22%
Potential Risk (Y/N)	No – significantly less than 20% Measures given in Chapter 7 to control rate and quality of runoff shed from areas of forest felling should be adhered to.

Mulben Burn



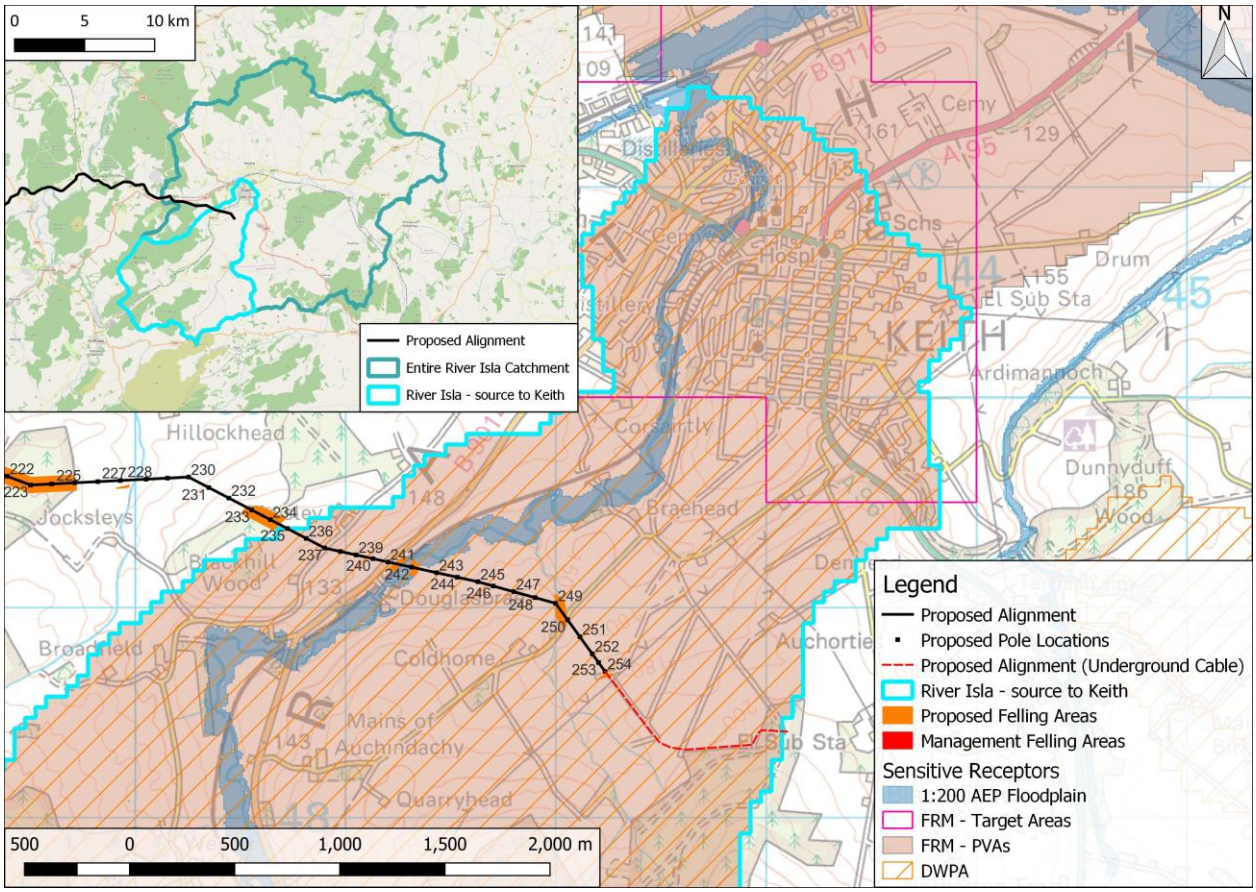
Total Catchment Size	36.6km^2
SEPA Overall Classification (2020)	Good
Identified Sensitive Receptors	- Drains to the River Spey which has been designated as a SSSI and SAC due to presence of altantic salmon, freshwater pearl mussel, otters and sea lamprey. - Drains to the River Spey, the catchment of which has been designated as a DWPA.
Total Area of Felling within catchment	0.06km^2
Percentage of Catchment	0.16%
Potential Risk (Y/N)	No – significantly less than 20% Measures given in Chapter 7 to control rate and quality of runoff shed from areas of forest felling should be adhered to.

Crooksmill Burn / Haughs Burn



Total Catchment Size	34.0km^2
SEPA Overall Classification (2020)	Moderate
Identified Sensitive Receptors	- Drains to the River Isla which is located within the Keith and Newmill Potentially Vulnerable Area (PVA) (02/06/06) which has a specific target note to address flooding concerns. - Drains to the River Isla, the catchment of which has been designated as a DWPA.
Total Area of Felling within catchment	0.08km^2
Percentage of Catchment	0.24%
Potential Risk (Y/N)	No – significantly less than 20% Measures given in Chapter 7 to control rate and quality of runoff shed from areas of forest felling should be adhered to.

River Isla - source to Keith



Total Catchment Size	63.6km^2
SEPA Overall Classification (2020)	Poor
Identified Sensitive Receptors	- River Isla is located within the Keith and Newmill Potentially Vulnerable Area (PVA) (02/06/06) which has a specific target note to address flooding concerns. - River Isla catchment has been designated as a DWPA.
Total Area of Felling within catchment	0.009km^2
Percentage of Catchment	0.01%
Potential Risk (Y/N)	No – significantly less than 20% Measures given in Chapter 7 to control rate and quality of runoff shed from areas of forest felling should be adhered to.

3.0 Conclusions

Review of Section 2 confirms that the proposed felling areas required to facilitate the Proposed Development are very small (less than 1%) in comparison to the surface water catchments through which the development passes. Therefore no impairment of surface water quality or increase in flooding, as a consequence of felling, is anticipated as a consequence of the Proposed Development.

Measures to safeguard water quality associated with the disturbance of soil, the movement and use of machinery during felling and construction of the proposed transmission line, and which will be deployed to protect surface and groundwater resources, including private and licensed water abstraction are given in Chapter 7 of the assessment.

Should felling of larger and adjacent forest blocks, in areas not required to facilitate the Proposed Development, occur within any 3 year period before or after the felling areas considered in this assessment then this assessment should be undertaken again to confirm whether the combined area of felling remains <20% of the surface water catchment areas considered in this assessment. Any revised assessment should consider if additional or further mitigation measures might be required to protect surface and groundwater resources and habitats and users dependent on these resources.

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