

Chleansaid Wind Farm 132 kV OHL Connection Environmental Appraisal (EA) Report

Appendix 10.3: Private Water Supply Risk

Assessment

November 2024





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LIST OF ABBREVIATIONS

CAR	Controlled Activity Regulations
BGL	Below Ground Level
BNG	Biodiversity Net Gain
BNGR	British National Grid Reference
EA	Environmental Appraisal
LoD	Limit of Deviation
OHL	Overhead Line
OS	Ordnance Survey
PWSRA	Private Water Supply Risk Assessment
SEPA	Scottish Environment Protection Agency
ТНС	The Highland Council



1. INTRODUCTION

1.1 Project Background

- 1.1.1 A Private Water Supply Risk Assessment (PWSRA) has been conducted for water abstractions that may be affected during the construction and operation of the Chleansaid Wind Farm Grid Connection ("the Proposed Development").
- 1.1.2 The Proposed Development consists of the construction of a new 132 kV overhead line (OHL) connection supported on 132 trident wood poles approximately 10.5 km in length running from the consented Chleansaid Wind Farm Substation to the existing Dalchork Substation.
- 1.1.3 The Proposed Development is situated within The Highland Council (THC) council area. This technical appendix should be read in conjunction with **Chapter 10: Hydrology, Hydrogeology, Geology and Soils** of the EA Report.

1.1 Objectives of Risk Assessment

- 1.1.1 The purpose of this PWSRA is to present the findings of a walkover survey and subsequent site-specific assessment undertaken for PWS Dalnessie hereby referred to as Dalnessie Lodge. A desk top survey conducted within Chapter
 10, Section 10.3 of the EA identified that the PWS was situated approximately 250 m downgradient of the Proposed Development and could therefore be impacted during construction or operation.
- 1.1.2 This PWSRA has been undertaken with reference to SEPA LUPS 31. This is in accordance with Option 4 of the Scottish Environment Protection Agency (SEPA) Land Use Planning Guidance Note 31¹.
- 1.1.3 The information within this appendix is for the private water supply (PWS) source (Dalnessie lodge) that is situated within 250 m of the Proposed Development.

1 SEPA (2017) Land Use Planning System SEPA Guidance Note 31, Guidance on assessing the impacts of development proposals on groundwater abstractions and groundwater dependent terrestrial ecosystems, Version 3 [online] Available at: https://www.sepa.org.uk/media/144266/lups-



2. METHODOLOGY

2.1 Study Area

2.1.1 The Study Area for the PWSRA was set as a buffer of 400 m from the Proposed Development. This buffer was set to incorporate the SEPA LUPS¹ 250 m buffer from excavations greater than 1 m, plus 50 m to account for limits of deviation (LoD) and finally an additional conservative 100 m was added to allow for potential special discrepancies in existing PWS data.

2.2 Desk Study

- 2.2.1 In order to identify potential PWS within the Study Area a review of the following data sets was carried out:
 - THC Register of PWS provided by THC (December 2023);
 - Authorised Controlled Activity Regulation (CAR) abstractions provided by SEPA (October 2023); and
 - Ordnance Survey (OS) historical mapping.
- 2.2.2 In order to ascertain the potential for any impacts on PWS as a result of construction activities a desk top study was undertaken as described in Section 10.2 of Chapter 10 Hydrology, Hydrogeology, Geology and Soils of the EA Report.

2.3 Site Survey

2.3.1 A site walkover survey was undertaken by WSP in April 2024 to confirm the sources' exact location, nature of the source, number of properties served, location relevant to Proposed Development, and potential for impact of Proposed Development on the supply. The survey included an inspection of the source location as well as obtaining anecdotal information on the supply from the PWS User.



3. **RESULTS**

3.1 Desk Study

- 3.1.1 THC Register of PWS indicated that only one PWS source (Dalnessie Lodge) was present within the Study Area as shown in **Figure 10.1** of the EA Report. According to THC Register the abstraction is a borehole Located at British National Grid reference (BNGR) NC 63087 1524. No other Registered PWS were identified within the Study Area.
- 3.1.2 Further review of the authorised SEPA CAR abstractions showed no groundwater abstractions within the Study Area.
- 3.1.3 A review of OS historical mapping also indicated that a potential well was present within the Study Area on the Dalnessie Estate (BNGR NC 62770 15260). This well was then further investigated as part of the site survey.
- 3.1.4 The hydrogeological findings of the desk study as outline in **Chapter 10: Hydrology, Hydrogeology, Geology and Soils** of the EA concluded that there is one groundwater body underlying the Proposed Development; Northern Highlands (ID: 150701), which was classified by SEPA under the WFD, as having an overall status of 'Good' in 2022. The southern section of the Study Area is underlain by Morar Group, while the northern part is underlain by Moine Supergroup; both described as low productivity aquifers, where small amounts of groundwater may be present in near the surface weathered zone and secondary fractures.

3.2 Site Survey

- 3.2.1 The results of the PWS site survey are summarised in Table 3-1.
- 3.2.2 After discussions with the landowner and site observations made by the site survey team, the source at Dalnessie Lodge was found to be a borehole (PWS-BH) with associated headworks located at NC 63087 15241 within a shed adjacent to the lodge as shown in **Plate 1-1**. The distance between the Proposed Development and this supply is approximately 250 m at its closest point.
- 3.2.3 It is understood that the borehole was advanced to approximately 60 m below ground level (BGL). The average yield is unknown and no install logs were available. The primary uses of the abstraction were to supply two properties Dalnessie lodge and an adjacent short term rental hunting lodge as well as a nearby livestock shed. Treatment of the water consisted of two filters a charcoal filter and UV lights. It was noted that historic issues with heightened magnesium levels were reported, however since the introduction of the charcoal filter no such water quality issues were experienced.
- 3.2.4 The well (PWS-W) identified on OS and historical mapping was confirmed by the landowner to be disconnected and is not an active supply.





Plate 1-1 Photograph of PWS-BH (south facing) taken at NC 63090 15242



Table 3-1: Summary of PWSRA

Source ID	Source	Grid Reference and Location Description	Number of Properties Served	Location Relevant to Infrastructure	Site Survey Notes	Photograph	Potential for Proposed Development to Impact Supply
РWS-BH	Borehole	NC 63087 1524 Headworks located within shed adjacent to property	2 – Dalnessie Lodge and adjacent short term rental hunting lodge	Approximately 250 m downslope east of Proposed Development at closest point.	Depth: ~60 m Yield: Unknown Headworks: Shed or flush cap – kept within shed Treatment: 2 filters, a charcoal filter and UV light filter. Had bad issues with magnesium until this charcoal filter was used and now has no issues Additional notes: No scaling or signs of hardness noted from the water; No changes have been made or noted in water quality or appearance following heavy rain; Source has never dried up in the 24 years of use.	Plate 1-2 Photograph of PWS-BH taken at NC 63087 1524	No – Excavations of wood pole for Proposed Development anticipated to be very minor. The aquifers have been identified to be of low productivity where small amounts of groundwater may be present in near the surface weathered zone and secondary fractures. The proximity of this supply is on the fullest extent of the 250 m SEPA LUPS buffer, and the depths targeted by borehole (60 m BGL) are far below excavations associated with the Proposed Development. With mitigation contained the Applicant's GEMPs (Appendix 3.2 of the EA) and implemented through the Construction Environmental Management Plan (CEMP), no adverse effects are anticipated.
PWS-W	Well	NC 62770 15260 Well situated on the eastern slops of Cnoc na Fuaralachd, directly east of the woodland.	0	Approximately 60 m west of Proposed Development at closest point.	Land owner confirmed supply is disconnected and not active.	Plate 1-3 Photograph (north west facing) of PWS-W taken at NC62770 15260	No, not an active supply.



4. CONCLUSIONS

- 4.1.1 The findings of the desktop study revealed two potential PWS within the Study Area; with TCH Register identifying an abstraction at Dalnessie Lodge (PWS-BH), and a review of OS mapping depicting a well (PWS-W) within the Study Area situated on the eastern slopes of Cnoc na Fuaralachd.
- 4.1.2 A site survey was carried out in order to gather more information on these PWS in order to assess the potential risks associated with the construction and operation of the Proposed Development. The site survey confirmed that PWS-BH was a borehole approximately 60 m deep, and PWS-W was a disused well that is not an active PWS.
- 4.1.3 The key findings of this PWSRA associated with these two PWS are as follows;
 - PWS-W is not an active supply and therefore does not require further assessment as part of the PWRA.
 - PWS-BH is targeting deep groundwater approximately 60 m BGL. The construction of the Proposed Development only requires minor excavations at a distance of ~250 m upslope. These excavations are unlikely to interact with deep groundwater and therefore there is no plausible pathway through which the Proposed Development could affect the PWS. Notwithstanding, with good practice and mitigation measures presented in SSEN's GEMPs outlined within Chapter 10 and Appendix 3.2 of the EA, there are no risks anticipated on PWS as a result of the Proposed Development.