



Technical Appendix 8.5: Private Water Supply Risk Assessment

Dalfad Wind Farm

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Basis of Report

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Acronyms and Abbreviations

CSM	Conceptual Site Model
EAC	East Ayrshire Council
EIA	Environmental Impact Assessment
OS	Ordnance Survey
PWS	Private Water Supplies
SEPA	Scottish Environment Protection Agency



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1.0 Introduction

This report has been prepared to assess the potential effect of the proposed Dalfad Wind Farm (the Proposed Development) on the quality and quantity of water at private water supply (PWS) sources within the Study Area, which comprises a buffer of 500 m from the Site boundary.

To complete the assessment a conceptual site model (CSM) is presented which uses a source-pathway-receptor linkage to assess the risk to each PWS. Where necessary, mitigation required to safeguard a water source is proposed.

The location of the PWS sources is shown on **Figures 8.5.1a-c** of the EIA Report.

This Technical Appendix should be read in conjunction with **Chapter 8: Geology, Hydrology, Hydrogeology and Peat** of the Environmental Impact Assessment (EIA) Report which 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.

1.1 Survey Approach

Following consultation with East Ayrshire Council (EAC), data was received for PWS sources within the Study Area. This data was then augmented with Ordnance Survey (OS) mapping and aerial photography.

Additional properties, and potential water users, were also identified following a programme of site-specific field investigation that involved visiting the properties within the Study Area, enquiring about their water use and source, and mapping water abstraction locations. A standard reporting questionnaire was used to ensure consistency of data collected.

The location of water sources (boreholes, springs, surface abstractions) and holding tanks etc. were recorded using a handheld GPS. When residents were unavailable on the day that the survey was conducted, questionnaires were left at properties requesting details of their water source or PWS to be returned by post or email.

1.2 Assessment Methodology and Report Structure

As required by the Scottish Environment Protection Agency (SEPA) the assessment has been undertaken by suitably qualified and experienced specialists. The field investigation was completed in September 2025 by the author of this report, and the assessment has been reviewed by Gordon Robb BSc (Hons), MSc, MBA, C.WEM, FCIWEM.

The assessment has been undertaken with reference to SEPA guidance¹ which sets out SEPA's expectations for the assessment of impact of developments on groundwater abstractions, both public and private water supplies. This guidance applies to proposed infrastructure, both temporary or permanent and given dewatering abstractions are unlikely to exceed 10m³/day.

SEPA recommends adopting a phased approach to the assessment of risks to groundwater abstractions, with greater detail being required for higher risk sites or activities, and identify the steps given in **Table 1**.

¹ SEPA (August 2024) Guidance on Assessing the Impacts of Development on Groundwater Abstractions



Table 1: SEPA Methodology - Assessment Steps

Step	Description
1	<u>Identifying any Existing Groundwater Abstractions</u> This covers both public and private water supply groundwater abstractions, both within and out with the site boundary. It is critical that it is the actual source of the abstraction, and not the property that it supplies, that is identified. The relevant buffer zones for groundwater abstractions for all proposed infrastructure, both temporary and permanent and provided expected dewatering rates do not exceed 10m³/day, are: a) 10 m for all activities b) 100 m radius of all subsurface activities less than 1m in depth; c) 250 m of all subsurface activities deeper than 1m Details of each private water supply source will require confirmation, including a site walkover survey. If there are no groundwater abstractions within the buffer zones, SEPA will not provide comment on this topic in our planning response. If there are no groundwater abstractions within the buffer zones there is no need to assess further and progress to Step 2.
2	<u>Qualitative Impact Assessment</u> A conceptual site model (CSM) should be provided as part of the Environmental Statement. This should include interpretation of the hydrogeological setting, including the groundwater flow regime. This may be supported, as appropriate, by intrusive ground investigation, groundwater monitoring, or groundwater modelling. Qualitative assessment of the potential impacts to any groundwater abstractions identified within the relevant buffer zones is required. This should consider the expected extent, magnitude, likelihood, and duration, frequency, and reversibility of any potential impacts. The impact assessment should consider the impacts to each groundwater abstraction individually, including any potential cumulative effects if the groundwater abstraction is near multiple parts of the proposed development. If the potential impacts to groundwater abstractions are considered low or less then no further risk assessment (e.g. Step 3) is required.
3	<u>Detailed Quantitative Risk Assessment</u> This would include characterisation of the ground conditions at both the relevant infrastructure location(s) and the groundwater abstraction(s), plus the pathway(s) in between if appropriate. This will require ground investigation, including groundwater level and quality monitoring and quantify the potential change(s) in groundwater levels or flow regime.

Using this approach and developing this to include surface water abstractions and to consider the distribution pipework from ground and surface water abstractions the criteria given in **Table 2** have been used to assess potential risk to each PWS source.



Table 2: Private Water Supply Risk Assessment Criteria

PWS Risk	Criteria
PWS source considered potentially at risk from the Proposed Development	- PWS source is located within 10 m of any element of the Proposed Development; - spring fed or groundwater source is located within 100 m of excavations less than 1 m deep (such as access tracks); - spring fed or groundwater source is located within 250 m of excavations greater than 1 m deep (such as borrow pits, turbine crane pads and other hardstanding areas); and / or - stream or surface water fed abstraction is located within the same surface water catchment and downstream of the Proposed Development.
PWS source is not considered at risk, or PWS source is unconfirmed. Distribution pipework may be impacted	- PWS source is located at least 10 m away from any element of the Proposed Development; - spring fed or groundwater source is not located within 100 m of excavations less than 1 m deep (such as access tracks); - spring fed or groundwater source is not located within 250 m of excavations greater than 1 m deep (such as borrow pits, turbine crane pads and other hardstanding areas); - stream abstraction is not located within the same surface water catchment and / or upstream of the Proposed Development; - PWS source unconfirmed and needs to be assessed prior to construction; and /or - the distribution pipework between the PWS source and property may be crossed by the Proposed Development.
PWS source or pipework not considered to be at risk from the Proposed Development	- PWS source is located at least 10 m away from any element of the Proposed Development; - spring fed or groundwater source is not located within 100 m of excavations less than 1 m deep (such as access tracks); - spring fed or groundwater source is not located within 250 m of excavations greater than 1m deep (such as borrow pits, turbine crane pads and other hardstanding areas); - stream abstraction is not located within the same surface water catchment and / or upstream of the Proposed Development; - the distribution pipework between the PWS source and property will not be crossed by the Proposed Development.
Property supplied by mains	Property has been confirmed to be supplied by mains rather than a private water supply and therefore no further assessment is required.

The results of the PWS survey and assessment are presented in **Section 2** of this report in accordance with Step 1 of the SEPA guidance.



2.0 Private Water Supply Risk Assessment (Step 1)

Table 3 presents information collected from the PWS field survey, returned questionnaires, data collected during the desk study and following consultation with East Ayrshire Council. If a source is assessed to be within the buffers specified in SEPA's guidance and have a hydraulic connection (e.g. there is a flow pathway) to the Proposed Development, a further qualitative risk assessment is required.

The findings from **Table 3** are summarised as follows:

- Four PWS sources are not considered to be at risk from the Proposed Development; and
- Three properties are confirmed to be supplied by mains, and three properties are thought to be supplied by mains.

Table 3: Private Water Supply Risk Assessment

PWS ID (Figure 8.5.1)	Property Name	Data Source and Source Type	Location of PWS Source and Distance from the Proposed Development	Details	PWS Risk Assessment (see Table 2)
PWS01	Boghead Farm, Dalvene Cottage	Survey Stream (unconfirmed)	E 264724 / N 623317 This is located approximately 1.3km east from the Proposed Development.	This property is confirmed to be supplied by a stream abstraction from the Glenmuir Burn. Water is piped to a holding tank and then to the property. The exact location of the stream source was not confirmed during the site visit however, consultation with EAC confirms that the PWS source is located approximately 1.9 km south-west of the property. No development is proposed upstream of the PWS source and therefore the water which sustains the PWS source cannot be impaired. The Proposed Development would not cross any distribution pipework from the source to the property. Therefore, PWS source and distribution pipework is not considered to be at risk from the Proposed Development.	PWS source and pipework are not considered to be at risk. No further assessment, monitoring or mitigation required.
PWS02	Stone Briggs Farm, Stone	Survey	Borehole (2a) E 262501 / N 623937	These properties have been confirmed to be supplied by two PWS sources, a	PWS sources and pipework are not



PWS ID (Figure 8.5.1)	Property Name	Data Source and Source Type	Location of PWS Source and Distance from the Proposed Development	Details	PWS Risk Assessment (see Table 2)
	Briggs and West Briggs	Borehole (2a) Spring (2b) (unconfirmed)	Spring (2b) (unconfirmed) 262658 / 623639 These are located approximately 550 m north and 190 m north-west from the nearest element of the Proposed Development respectively.	borehole which is located adjacent to the properties and a spring fed source which is located to the south-east of the properties. The exact location of the spring source is unknown as all infrastructure is below ground, however it is thought to be located within the north-eastern extent of the Site. Water is diverted from this source to a holding tank within the yard. No development is proposed within 100m of the PWS sources. No development, except for potential upgrades to an existing access track is proposed within 250m of the spring source. No excavations >1m deep would be required to facilitate upgrades to the existing access track. The Proposed Development would not cross any distribution pipework from the source to the property. Therefore, PWS source and distribution pipework is not considered to be at risk from the Proposed Development, however it is recommended that the spring source is confirmed – potentially by geophysical surveys prior to construction.	considered to be at risk. No further assessment, monitoring or mitigation required, however it is recommended that the spring source is confirmed prior to construction.
PWS03	Springhill	Council Data Groundwater Source (unconfirmed)	E 264491 / N 620219 This is located approximately 1.3km east from the Proposed Development.	Residents were not available at time of survey, and no questionnaire response has been received. Consultation with EAC confirms that the property is supplied by a groundwater source which is located approximately 400 m north-east of the property.	PWS source and pipework are not considered to be at risk. No further assessment, monitoring or mitigation required.



PWS ID (Figure 8.5.1)	Property Name	Data Source and Source Type	Location of PWS Source and Distance from the Proposed Development	Details	PWS Risk Assessment (see Table 2)
				No development is located within 250 m of the PWS source or within the same surface water catchment as the PWS source. The Proposed Development would not cross any distribution pipework from the source to the property. Therefore, PWS source and distribution pipework is not considered to be at risk from the Proposed Development.	
PWS04	Nether Guelt Dornal	Survey Spring	Owners requested that details of their water source and use is not shared or reported in this assessment.		Based on details provided by owners at the time of the survey it is considered the PWS source and pipework is not at risk from the Proposed Development. No further assessment, monitoring or mitigation required.
M01	Laigh Glenmuir	Returned Questionnaire Mains	N/A	Property is confirmed to be supplied by a Scottish Water mains.	Property supplied by mains.
M02	High Glenmuir Farm	Survey Mains	N/A	Property is confirmed to be supplied by a Scottish Water mains.	Property supplied by mains.
M03	White Holm	Survey Mains	N/A	Property is confirmed to be supplied by a Scottish Water mains.	Property supplied by mains.
M04	Glenview Cottage	Survey	N/A	Residents were not available at time of survey, and no questionnaire response has been received. No data has been	Property likely to be supplied by mains. This should be



PWS ID (Figure 8.5.1)	Property Name	Data Source and Source Type	Location of PWS Source and Distance from the Proposed Development	Details	PWS Risk Assessment (see Table 2)
		Mains (unconfirmed)		received from EAC for this property. Neighbouring properties are supplied by mains and following a review of Scottish Water data it is likely that this property is supplied by mains, although this should be confirmed prior to construction.	confirmed prior to construction.
M05	Low Garleffan	Survey Mains (unconfirmed)	N/A	Residents were not available at time of survey, and no questionnaire response has been received. No data has been received from EAC for this property. Neighbouring properties are supplied by mains and following a review of Scottish Water data it is likely that this property is supplied by mains, although this should be confirmed prior to construction.	Property likely to be supplied by mains. This should be confirmed prior to construction.
M06	Duncanziemere	Survey Mains (unconfirmed)	N/A	Residents were not available at time of survey, and no questionnaire response has been received. No data has been received from EAC for this property. Neighbouring properties are supplied by mains and following a review of Scottish Water data it is likely that this property is supplied by mains, although this should be confirmed prior to construction.	Property likely to be supplied by mains. This should be confirmed prior to construction.





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