

Balliemeanoch Pumped Storage Hydro

Environmental Impact Assessment
Report

Volume 5: Appendices
Appendix 11.3 Private Water Supplies
Assessment

ILI (Borders PSH) Ltd

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Quality information

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1. Introduction

This appendix provides details of any known Private Water Supplies (PWS) in the study area, and then presents a qualitative assessment of whether they may be impacted by the Balliemeanoch Pumped Hydro-Storage Scheme (the proposed 'Development' herein). The main risks to PWS during construction include:

- Spillages of fuel, hydraulic fluids, solvents, grouts, paints and detergents and other potentially polluting substances will be stored and/or used on site;
- Sediment laden runoff from construction activity;
- Material left over from tree felling causing acidification (through the breakdown of organic material) of groundwater and surface water sources; and
- Impacts to supply from dewatering activities.

This appendix is to support *Chapter 11 Water Environment (Volume 2: Main Report)* and should be read in conjunction with the chapter.

1.1 Private Water Supplies

In Scotland, PWS are defined as potable supplies that are not provided by the mains water provider Scottish Water. They may be surface water abstractions, or abstractions from groundwater via wells and boreholes. As private supplies the only treatment of the supply will be by any facilities put in and maintained by the owner of the supply or those that benefit from the supply.

PWS are regulated and enforced by Local Authorities in accordance with the Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017. The main objective of the Regulations is to ensure the provision of clean, safe drinking water and to deliver significant health benefits to those using PWS. There are essentially two types of PWS, and the legislation relating to each is different. Larger PWS or those with a commercial activity are defined as Regulated supplies. Smaller PWS that only serve domestic properties are classified as Exempt supplies. Additional information on PWS in Scotland can be found here: <https://dwqr.scot/private-water-supplies>.

1.2 Data sources

The majority of PWS data used in the assessment was supplied by Argyll and Bute Council on the 1st of June 2023. The Council supplied data on all the known PWS within 2 km of the Development. These are listed in *Appendix A* and presented in *Figure 11.3* in *EIAR Volume 3: Figures*. Overall, 81 PWS data points were supplied by the Argyll and Bute Council.

In addition, as part of the stakeholder consultation process, a member of the local community confirmed their own PWS and identified additional PWS supplying basic details. They also noted previous works in Keppochan Forest around National Grid Reference (NGR) NN 06667 20040 which impacted the PWS for a property by the name of 'Sonachan View'. This information was received in October 2023 and is also listed in *Appendix A* and presented in *Figure 11.3* in *EIAR Volume 3: Figures*.

1.3 Methodology

A three-step process was conducted for assessing the likely risk to a PWS.

Step 1: Screen out any data points which are not required to be assessed as there is no known risk (i.e. no impact pathway or well out of study area).

Step 2: Assess a general risk rating based on distance from the proposed Development (see *Table 2*). Before assessing the source-pathway-receptor impact in Step 3, an initial risk assessment has been applied. Where a PWS is located within 50 m of a component of the Development or where construction works may occur it was considered to be in a high risk zone. Between 50 to 250 m is considered to be a moderate risk, and excess of 250 m is considered to be low risk.

Table 1 Risk factors

Distance (m)	Risk Factor	Justification
50	High	Travel time between source and receptor would be quick and likely to be less barriers to block any pathway for contamination to reach receptor.
50-250	Moderate	There will be a bit more time for source to travel to receptor. There would also be a higher likelihood for there to be barriers that block any pathway for contamination to reach the receptor.
More than 250	Low	The larger distance between the source and receptor will allow for longer travel time and a large dispersion effect. There will also be less direct flow paths and potentially barriers that block any pathway for contamination to reach the receptor.

Step 3: Establish any pathways present between sources and PWS and assess whether the PWS should be considered for further assessment (see *Table 2*).

1.4 Limitations and assumptions

The data collected from Argyll and Bute Council does not clarify whether the coordinates correlate to the property served by the PWS or the actual PWS location. For the purposes of this assessment, it has been assumed that the coordinates received from Argyll and Bute Council correspond to the location of the PWS (i.e. no ground truthing has been undertaken at this stage). It is also unclear which PWS serves which properties.

There is also no confirmation whether an alternative source is available to them or what current treatment measures they use.

PWS data was received on the 1st of June 2023 and therefore only represent the PWS that were recorded at that time.

2. Summary of findings

Table 2 shows the risk categories and potential pathways that are present for each PWS. When considering the potential pathways, the following summary points can be made:

2.1 Step 1

A total of 81 PWS data points were supplied by the Argyll and Bute Council and supplied from the stakeholder consultation process, which are listed in Appendix A.

PWS's screened out were in locations anywhere on the northern side of Loch Awe or on the northeastern side of A819; where no hydraulic linkage to the Proposed Development exists, and so there will be no expected impacts. One other location, Cnoc a Mhullin, was also screened out as the water source was rainwater and so was not applicable for this assessment.

This left there to be a total of 27 PWS which required assessment.

2.2 Step 2

From step 2 the following was concluded:

- Low Risk PWS: a total of 22 PWS were over 250 m away from any works. They ranged in distances from 302 m to well over 2000 m.
- Moderate Risk PWS: four PWS are within 50 to 250 m of works.
- High Risk PWS: one PWS is within 50 m of works.

2.3 Step 3

Low Risk PWS (beyond 250 m)

- In general, the majority of these are situated along Loch Awe downstream of the Keppochan access track and permanent compound (PC13). Any contaminants and sediment from construction activities will likely be captured by Allt na Cuile Riabhaiche, Keppochan River and the Archan River. Therefore, there is unlikely to be a pathway for contaminated water to impact the PWS. It should be noted that anecdotal evidence suggests that previous works in Keppochan Forest did have an impact the PWS Sonachan View, although the nature of that impact is not known. The works were situated around NN 06696 20007, which is downgradient from the works proposed in this assessment. These works were closer to the PWS Sonachan View and others compared to the works for this Development. Therefore, the added distance between the PWS and the access track as well as surface water features capturing any contaminants will likely reduce any risk of contamination to the PWS.
- Blarghour Farm, Barr-beithe and Loch Awe House are situated close to Allt Beochlich. However, they are on the opposite bank from Proposed Development and therefore Allt Beochlich will act as a barrier to pollutant flow paths. So, the PWS will unlikely be impacted.
- Some of the PWS are situated nearby to Blarghour Farm access track. The track may be used if built for Blarghour Windfarm. Therefore, there may small risk of pollution from vehicles using the track from accidental chemical spillages.

Moderate Risk PWS (between 50 m to 250 m)

- Three Bridges is 80 m upstream of the Blarghour Farm access track. The track may be used for Balliemanoach if the Blarghour Windfarm is constructed, and there may be a cumulative effect. Therefore, there may small risk of pollution from vehicles using the track from accidental chemical spillages.
- Castle Fisheries is situated nearby to the Inveraray bypass and 85 m downgradient from the bypass. However, as the PWS is already situated close to the road, and we would not expect the quality of road runoff to change significantly, the water quality is unlikely to change. Although no confirmation of the usage, the name 'Castle Fisheries' suggests that the PWS is for industrial/fisheries use. Therefore, is unlikely to be a PWS as it is not a potable use and so will not be considered further in this assessment.
- Barr-beithe is situated on the opposite bank of the Allt Beochlich, and will therefore not be at risk of being potentially impacted by any potential contaminated run-off and is unlikely to be impacted by the proposed Development. Therefore, this PWS will not be considered further in this assessment.

High Risk PWS (within 50 m)

- One of the PWS (Stronmagachan) is situated nearby to Blarghour Farm access track. The track may be used for Balliemanoach if the Blarghour Windfarm is constructed. Therefore, there may small risk of pollution from vehicles using the track from accidental chemical spillages.

3. Recommendations

As outlined in the 'Limitation and Assumptions' section, the data collected from the Argyll and Bute Council does not clarify whether the coordinates correlate to the property served by the PWS or the actual PWS source location. Therefore, a PWS survey of each location would be required to determine the exact location of the PWS and the precise use of the PWS so that a more refined risk assessment can be undertaken prior to any construction works starting. It is also proposed that some PWS may need to be monitored during the works, and if there is disruption to the supply in terms of volume or quality, a temporary alternative supply would need to be provided by the Applicant. This mitigation requirement has been recorded in *Chapter 11 Water Environment of Volume 2: Main Report* of the EIAR.

All PWS screened into the assessment at Step 2 should be considered for baseline, construction and operation monitoring in surface and groundwater monitoring plan.

Table 2 Scoped in Private Water Supplies (Step 2 and Step 3)

Receptor	PWS ID	Easting	Northing	Source Type	Step 2		Step 3		
					Distance from Infrastructure (m)	Risk Rating	Closest works	Pathway	Further Assessment Required?
Blarghour Farm	PWS-01	199710	713552	Watercourse	1990	Low	Access track from Loch Awe	Potential runoff from Blarghour Windfarm access track situated 3.8 km upstream. However, track will only be used if Blarghour Windfarm is built, and any runoff will be minimal due to the distance between the PWS and track. On other side of Allt Beochlich which will capture any contaminants from scheme.	No further assessment proposed as the risk is low
Barr-beithe	PWS-02	200709	715156	Watercourse	224	Moderate	Access track from Loch Awe	Potential runoff from Blarghour Windfarm access track situated 3.4 km upstream. However, track will only be used if Blarghour Windfarm is built, and any runoff will be minimal due to the distance between the PWS and track. On other side of Allt Beochlich from works which will capture any contaminants from scheme.	No - there may small risk of pollution from vehicles using the track from accidental chemical spillages. However, the risk will be small and insignificant
Portsonachan Chalets - West	PWS-03	203969	719884	Groundwater Spring	2082	Low	PC13	2 km downstream from PC13 which is situated within the Archan River catchment and so runoff from the compound is unlikely to enter the PWS catchment. If it does, the dispersion will limit any impacts.	No further assessment proposed as the risk is low
Sonachan House	PWS-04	203969	719884	Watercourse	2082	Low	PC13	2 km downstream from PC13 which is situated within the Archan River catchment and so runoff from the compound is unlikely to enter the PWS catchment. If it does, the dispersion will limit any impacts.	No further assessment proposed as the risk is low
Portsonachan Hotel	PWS-05	204853	720649	Loch	2094	Low	PC13	2.7 km downstream from PC13 which is situated within the Archan River catchment and so runoff from the compound is unlikely to enter the PWS catchment. If it does, the dispersion will limit any impacts.	No further assessment proposed as the risk is low
Ar Taigh	PWS-06	205449	720906	Groundwater Spring	1879	Low	Potential construction compound at Keppochan access track	Situated 1.8 km downstream of a potential construction compound and the Keppochan access track. The majority of contaminants will be captured by Allt na Cuile Riabhaiche, Keppochan River and the Archan River. All underground works are situated over 4 km from	No further assessment proposed as the risk is low

Receptor	PWS ID	Easting	Northing	Source Type	Step 2		Step 3			
					Distance from Infrastructure (m)	Risk Rating	Closest works	Pathway	Further Assessment Required?	
									PWS-06, therefore it is unlikely any contaminants will enter the PWS.	
The Old School, Portsonachan	PWS-07	205500	720900		1845	Low	Potential construction compound at Keppochan access track		Situated 1.8 km downstream of a potential construction compound and the Keppochan access track. The majority of contaminants will be captured by Allt na Cuile Riabhaiche, Keppochan River and the Archan River, therefore it is unlikely any contaminants will enter the PWS.	No further assessment proposed as the risk is low
Portsonachan Village Hall	PWS-08	205518	720917		1848	Low	Potential construction compound at Keppochan access track		Situated 1.8 km downstream of a potential construction compound and the Keppochan access track. The majority of contaminants will be captured by Allt na Cuile Riabhaiche, Keppochan River and the Archan River, therefore it is unlikely any contaminants will enter the PWS.	No further assessment proposed as the risk is low
Upper Sonachan Farm	PWS-09	205867	720777		1542	Low	Keppochan track		Situated 1.6 km downstream of the Keppochan access track. Keppochan River and Archan River will likely capture any runoff and contaminants from the Access Tracks, and groundworks are situated over 4 km away and will not impact PWS supply.	No further assessment proposed as the risk is low
Church Cottage	PWS-10	206415	720893		1478	Low	Keppochan access track		Situated 1.6 km downstream of the Keppochan access track. Keppochan River and Archan River will likely capture any runoff from the Access Tracks and groundworks are situated over 4 km away and will not impact PWS supply.	No further assessment proposed as the risk is low
Ardbrecknish House Supply	PWS-11	207360	720944	Watercourse	1092.	Low	Potential construction compound at Keppochan access track		Situated 1 km downstream of a potential construction compound and the Keppochan access track. The majority of contaminants will be captured by Keppochan River and the Archan River, therefore it is unlikely any contaminants will enter the PWS.	No further assessment proposed as the risk is low
Sallachry East	PWS-12	207669	712249	Watercourse	232	Low	Blarghour Wind Farm access track		PWS is situated 300 m upstream from Blarghour Windfarm access route	No further assessment proposed as the risk is low

Receptor	PWS ID	Easting	Northing	Source Type	Step 2		Step 3		
					Distance from Infrastructure (m)	Risk Rating	Closest works	Pathway	Further Assessment Required?
Salachry East	PWS-13	207684	712341	Groundwater Spring	302	Low	Blarghour Wind Farm access track	PWS is situated 300 m upstream from Blarghour Windfarm access route	No further assessment proposed as the risk is low
Rockhill Guest House	PWS-14	207700	721700	Watercourse	1638	Low	Keppochan access track	Situated 1.7 km downstream of the Keppochan access track. Keppochan River and Archan River will likely capture any runoff from the Access Tracks and groundworks are situated over 4 km away and will not impact PWS supply.	No further assessment proposed as the risk is low
Keppochan Farmhouse	PWS-15	208023	721309	Groundwater Spring	1209	Low	Keppochan access track	Situated 1 km downstream of a potential construction compound and the Keppochan access track. The majority of contaminants will be captured by Keppochan River and the Archan River, therefore it is unlikely any contaminants will enter the PWS.	No further assessment proposed as the risk is low
Stronmagachan	PWS-16	208240	712249	No data	5	High	Blarghour Wind Farm access track	Situated adjacent to Blarghour Windfarm access route, contaminants and sediment from track could impact water quality of PWS.	No - there may small risk of pollution from vehicles using the track from accidental chemical spillages. However, the risk will be small and insignificant
Electric Cottage	PWS-17	208334	709944	Watercourse	423	Low	Inveraray Bypass	Located upstream from the Inveraray access track	No further assessment proposed as the risk is low
Black Bull Cottage	PWS-18	208484	711145	Watercourse	1070	Low	Blarghour Wind Farm access track	Located at too great a distance for run-off impacts	No further assessment proposed as the risk is low
Low Balantyre Cottage	PWS-19	208484	711145	Watercourse	1070	Low	Blarghour Wind Farm access track	Located at too great a distance for run-off impacts	No further assessment proposed as the risk is low
Balantyre Lodge	PWS-20	208558	710936	Loch	1158	Low	Blarghour Wind Farm access track	Located at too great a distance for run-off impacts	No further assessment proposed as the risk is low

Receptor	PWS ID	Easting	Northing	Source Type	Step 2		Step 3		
					Distance from Infrastructure (m)	Risk Rating	Closest works	Pathway	Further Assessment Required?
Three Bridges	PWS-21	208700	712502	Watercourse	81	Moderate	Blarghour Wind Farm access track	PWS is situated 80 m upstream of Blarghour Access Track access route	No - there may small risk of pollution from vehicles using the track from accidental chemical spillages. However, the risk will be small and insignificant
Eas a Chleibh	PWS-22	208794	711755	Watercourse	645	Low	Blarghour Wind Farm access track	Located at too great a distance for run-off impacts	No further assessment proposed as the risk is low
Cladich	PWS-23	209200	722200	Groundwater Spring	1723	Low	Keppochan Access Track	1.7 km downstream from Keppochan access track. The majority of contaminants will be captured by Keppochan River and the Archan River, therefore it is unlikely there will be any impact to the PWS.	No further assessment proposed as the risk is low
Castle Fisheries	PWS-24	210595	709827	Groundwater Spring	83	Moderate	Inveraray Bypass	Situated 85 m downgradient from the Inveraray bypass route. However, already situated beside the A83 and so quality of supply will not likely be impacted.	No - Not considered to be a major risk as the source is unlikely to be PWS as it is not a potable source.
Millside (from public questionnaire)	PWS-25	203416	719780	Watercourse	2297	Low	PC13	PC13 is situated within the Archan River catchment and so runoff from the compound is unlikely to enter the PWS catchment. If it does, the dispersion will limit any impacts.	No further assessment proposed as the risk is low
Sonachan Farm	PWS-26	204980	719271	Watercourse	1186	Low	PC13	PC13 is situated within the Archan River catchment and so runoff from the compound is unlikely to enter the PWS catchment. If it does, the dispersion will limit any impacts.	No further assessment proposed as the risk is low
Loch Awe House	PWS-27	200800	714900	Watercourse	491	Low	Access Track from Loch Awe	Potential runoff from Blarghour Windfarm access track situated 3.2 km upstream. However, track will only be used if Blarghour Windfarm is built, and any runoff will be minimal due to the distance between the PWS and track. The PWS is located on the opposite bank of the Allt Beochlich, which will capture any contaminants from the Proposed Development.	No further assessment proposed as the risk is low

Appendix A PWS Data received from Argyll and Bute Council

Source Name	Easting	Northing	Source Type
Rockhill Guest House	207700	721700	Groundwater Spring
Shellachan	187314	720127	Surface Watercourse
Eleraig Chalets	186848	716645	Surface Watercourse
Barnaline Lodge	196400	713400	Groundwater Spring
The Old School, Portsonachan	205500	720900	Surface Watercourse
Drissaig Farmhouse	194343	715860	Surface Watercourse
Inverinan Mor	198650	717010	Surface Watercourse
Bovoy	210400	722500	Surface Watercourse
Cladich	209200	722200	Surface Watercourse
Knipochmore Cottage	186700	722800	Groundwater Spring
Lagganbuie	186600	722700	Groundwater Spring
Bragleen House	190800	720400	Surface Watercourse
Bragleenmore Farm	190800	720200	Surface Watercourse
Scammadale Farm	188700	720700	Groundwater Spring
Shallachan	187300	720400	Groundwater Spring
The Bungalow	188500	720600	Groundwater Spring
Tigh a Ghline	189500	720400	Surface Watercourse
Corrilorne Farm	186900	717600	Groundwater Spring
Elleraig Bungalow	186400	717300	Groundwater Spring
Innie	187700	716800	Surface Watercourse
Ardconnel Farm	198400	712400	Groundwater Spring
Collaig House	201800	720700	Surface Watercourse
Fearnoch Farm	201400	719500	Surface Watercourse
Keppochan Farmhouse	208023	721309	Groundwater Spring
Loch Awe House	200800	714900	Surface Watercourse
Innie House	187884	716826	Surface Watercourse
Maolachy	188911	712645	Surface Watercourse
Cnoc a Mhullin	204397	720472	Surface Rainwater
The Boathouse-Sonachan	203929	720477	Surface Loch
Ar Taigh	205449	720906	Groundwater Spring
Achnatra	212556	709327	No data
Balantyre Lodge	208558	710936	No data
Black Bull Cottage	208484	711145	No data
Castle Fisheries	210595	709827	No data
Dalbhuie	208921	711410	No data

Source Name	Easting	Northing	Source Type
Duaig	190905	713485	No data
Dunderave Castle	214323	709648	No data
Ellerig Beag	213619	714563	Surface Watercourse
Garron Bridge House	211537	710165	Surface Watercourse
Low Balantyre Cottage	208484	711145	Surface Watercourse
North Tullich	208908	716076	Surface Watercourse
Sallachry East	207669	712249	Groundwater Spring
Stronmagachan	208240	712249	Surface Watercourse
Three Bridges	208700	712502	Groundwater Spring
West Drimfern	208091	714801	Groundwater Spring
Maam House	212391	712701	Groundwater Spring
Electric Cottage	208334	709944	Groundwater Spring
Salachry East	207684	712341	No data
Eas a Chleibh	208794	711755	Surface Watercourse
Drishaig Cottage, Cairndow	215877	710680	Surface Watercourse
Clachan Farmhouse	218814	712770	Surface Watercourse
Croft Kennels	217212	709358	Surface Watercourse
Cuil Cottage	217709	711577	Surface Watercourse
Drimlee	214147	716312	Surface Watercourse
Stucsgarden, Glen Shira	212727	713890	No data
Ardbrecknish House Supply	207360	720944	Surface Watercourse
Portsonachan Hotel	204853	720649	Surface Watercourse
Portsonachan Chalets - West	203969	719884	Surface Loch
Sonachan House	203969	719884	Surface Watercourse
Loch Awe Boat House	205894	722479	Surface Watercourse
Dalavich Village	196500	714000	Surface Watercourse
Kilmun Farmhouse (Dalavich)	197117	714442	Groundwater Spring
Portsonachan Village Hall	205518	720917	Surface Watercourse
Inverinan Village Supply	199100	718100	Surface Watercourse
Kilmun Log Cabin (Loch Avich)	192217	714831	Surface Watercourse
Loch Avich House	193764	715674	Surface Watercourse
Blarghour Farm	199710	713552	Surface Watercourse
Upper Sonachan Farm	205867	720777	Groundwater Spring
Barr-beithe	200709	715156	Groundwater Spring
Church Cottage	206415	720893	Groundwater Spring
Glenann	188537	720705	Surface Watercourse
Druimbreac	208087	714643	Groundwater Spring
Ardkinglas Estate	217470	710160	Surface Watercourse
The Tree Shop	218888	712705	Surface Watercourse
Fyne Ales Ltd	219828	713131	Surface Watercourse

Source Name	Easting	Northing	Source Type
Inverfyne/ Bridge Cottage	219821	713127	Surface Watercourse
Loch Fyne Oysters	218818	712699	Surface Watercourse
Cairndow Scottish Salmon Company Ltd	217791	710959	Groundwater Spring
Upper Croitachonie	217584	709534	Surface Watercourse
Ardganavan Croft	217475	711480	Surface Watercourse

