

Appendix 9.6 Private Water Supply Assessment

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Introduction

Numerous properties within the vicinity of the Proposed Development were identified to have the potential to be reliant on Private Water Supplies (PWS). This area of South Ayrshire is considered to be a drought-stricken area by SAC and SEPA. Therefore, a thorough risk assessment of the PWS has undertaken in collaboration with Constance Lobban, Enforcement Officer, Environmental Health, SAC.

Desk Based Study

Prior to a site visit, properties potentially reliant on PWS were identified from Ordnance Survey mapping and aerial imagery:

- Onsite: Linfairn;
- Close proximity to the site, within 600m: Glenlinn, Palmullan Cottage, Knockskae, Glenalla Farm (approximately 250m from access track), Dalmorton Farm, Dalmorton House and Dalrowan Cottage; and
- Greater than 600m to 1000m distance: Dyke properties x2, Bennan Farm properties x3, High Genoch, Genoch, Tairlaw Toll, Balbeg Holiday Cottages, Craigfad, Craig, Culloch, Knockgarden and Threethorns. Consultation with South Ayrshire Council (SAC)

Consultation was undertaken with the Constance Lobban, Enforcement Officer at SAC Environmental Health Department to further identify the potential properties reliant on PWS. A list of nine, properties with registered PWS was provided. These included: Knockskae, Glenalla Farm, Linfairn, Genoch, Little Garroch, Dalmorton Farm, Duncawin, Threethorns Farm, Knockgardner Farm.

Private Water Supply Questionnaires Issued

A PWS questionnaire was sent to the above properties to find out further information on their private water supplies.

Site Survey

On 9 and 10 June 2021 both Lucy Parker, Principal Consultant, Fluid Environmental Consulting and Constance Lobban, Enforcement Officer, Environmental Health, SAC undertook site visits together to the relevant shortlisted properties that had the potential to be connected to the development area to assess the source, condition and risk to the PWS.

Results

The Linfairn PWS is a groundwater spring (NGR NS 38130 01103) supplying Linfarn Farm, Glenlinn and Palmullan Cottage. The spring was found to be located over 640m from the nearest proposed wind farm infrastructure, the access track, and was considered to be within a separate sub-catchment to the main wind farm infrastructure and therefore not effected by the wind farm development.

Knockskae PWS is shallow groundwater spring, located NGR NS 37109 01249 over 100m and up gradient of the nearest wind farm infrastructure, the access track. It is therefore not considered to be hydrologically connected to the Proposed Development area or its infrastructure and therefore not at risk from the Proposed Development.

Glenalla Farm is reliant on an abstraction of surface water at NGR NS 34600 00258 originating from springs on the hills side with several surface water drains entering it, including surface water drainage from the Glenalla Farm track. The surface water abstraction point is located 240m from the nearest proposed wind farm infrastructure (the existing western forestry access track which forms part of the western access route option). The springs at the top of the watercourse are located 150 m from the existing western forestry track with forestry plantation in between. Should the existing western

forestry track be chosen, whilst there is a considerable distance between the Proposed Development area and the supply, there are multiple sources to this private water supply and a potential risk, albeit low, from the existing western access track runoff to the supply, especially if widening is required. It is understood from the owner that there have been historically issues with the supply quality during the construction of the existing western forestry access track and forestry operations.

Dalmorton House, Dalmorton Farm and Dalrowan are supplied by a groundwater spring at NGR NS 38093 02146, which is on a separate hill and sub-catchment to the wind farm site and therefore not considered to be hydrologically connected to the development area or at risk from the Proposed Development.

Little Garroch is supplied by a shallow groundwater spring at NGR NS 38192 02732, which is on a separate hill and sub-catchment to the Proposed Development and therefore not considered to be hydrologically connected or at risk from the Proposed Development.

Threethorns (approx. NGR NS 35635 03690) and Knockgardner PWSs are up gradient of the existing northern forestry track and therefore are not considered to hydrologically connected to the Proposed Development.

Genoch, Little Genoch, Tairlaw Toll and Craig all have PWS within separate sub-catchments to the Proposed Development and therefore are not considered to be hydrologically connected to the development area.

Several properties are on mains water supply along the Water of Girvan Valley, and within 2km of the Proposed Development area including Craighfad, Balbeg Holiday cottages, the three Bennan Farm properties and the two Dyke Farm properties.

The fields adjacent to Dykes Farm, that used to be owned by Dykes Farm, are now owned by Kirkbride Farm and receive a water supply from NGR NS 36532 03544 for livestock. This is not hydrologically connected to the development area as it is located upgradient and a significant distance (over 200m) from the Proposed Development. However, the water supply pipeline does pass beneath the existing northern forestry access track and was encountered and restored during the recent construction of the track in 2021.

Details of the private water supply source, systems and their assessment are presented in Table 1 and the locations are shown in Figure 9.6 Hydrological Features.

Summary

In summary, one PWS located at Glenalla Farm NGR NS 34600, 00258 was identified to be potentially hydrologically connected to the Proposed Development, namely the existing western forestry track which forms part of the western access route option. Whilst there is a considerable distance between the Proposed Development and the supply, there are multiple sources to this private water supply and a potential risk, albeit low, from the existing western access track runoff to the supply, especially if widening is required.. Mitigation will be implemented if the existing western forestry access track is chosen as the access route, including careful drainage management, a water quality monitoring plan to monitor the supply before, during and after construction, and a contingency plan.

Any improvements made to the existing northern forestry access track, if chosen as the access route, will need to be careful not to disturb the existing water supply pipeline to the Dykes Farm fields, owned by Kirkbride Farm.

Table 1 – Private Water Supply Investigation Results and Assessment

PWS1 Glenalla Farm Abstraction Point: NGR NS 34600, 00258	Receptor	Potential Pathway	Risk
<p>Use: Potable</p> <p>Treatment: None</p> <p>Source: Surface water catchment (originates from springs around NGR NS 34450 00560 and becomes a mix of surface water from runoff and drains, including the Glenalla Farm access track runoff drainage)</p> <p>Abstraction Point: NGR NS 34600, 00258, upstream of tank. Flow ~ 1l/s, low.</p> <p>System: 227litre, 1.2mx0.7m plastic collection tank with over flow, NGR NS 34601, 00256. Tank lid bent and not sealed. Fenced off area, rabbits ingress. Pumped to tanks in house.</p> <p>Quality: Reasonable, brownish colour after heavy rainfall and when forestry felling. SAC EHO test every 5 years</p> <p>Quantity: Generally acceptable, however it is understood to dry up when there is a three week dry period and then the residents use bottled water.</p> <p>Other Comment: Previously affected by forestry operations. Glenliffin next door is a ruin, being sold by Sir Charles Ferguson Estate to Carrick wind farm developers.</p>	<p>Yes</p> <p>Human consumption</p> <p>High</p>	<p>Yes</p> <p>Section of existing western forestry track, located approximately 250 m from abstraction point. Western access track potentially within catchment.</p> <p>Spring locations approximately 150 m from western access track with forestry plantations in between.</p> <p>Potentially, low</p>	<p>Yes</p> <p>Low, however there is a potential.</p> <p>Monitoring and mitigation will be implemented.</p> <p>Monitoring must be by foot to avoid disturbing Glenalla Farm access track, which drainage directly enters the watercourse abstracted from for the supply.</p>



Collection Tank



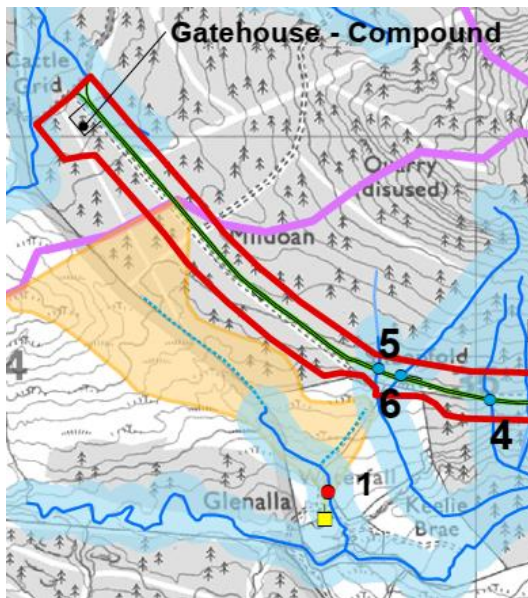
Fenced off area around collection tank



View of catchment down to the property



Wet area of spring collects at top of catchment



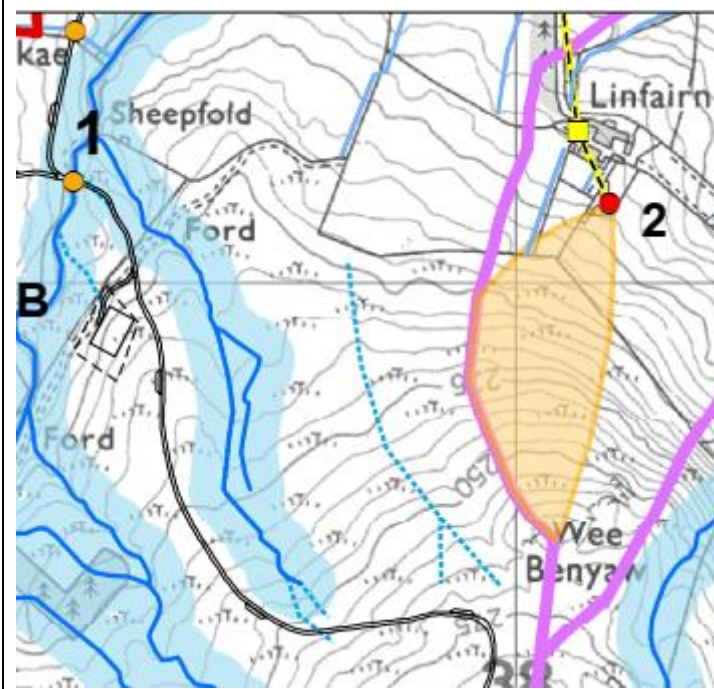
PWS2 Linfairn. Glen Linn Cottage and Palmullan Cottage Abstraction Point: NGR NS 38130 01103	Receptor	Potential Pathway	Risk
<p>Use: Potable and livestock</p> <p>Treatment: None</p> <p>Linfairn Farm, also supplies Glen Linn Cottage and Palmullan Cottage, all owned by same family.</p> <p>Source: Groundwater spring from bedrock.</p> <p>Abstraction Point: NGR NS 38130 01103</p> <p>System: 3000gallon header tank at NGR NS 38130 01103, underground and concrete cover.</p> <p>Quality: Good, been tested 2 or 3 times.</p> <p>Quantity: No issues</p> <p>Other Comment: Owners financially involved in the Proposed Development</p>	<p>Yes</p> <p>Human and livestock consumption</p> <p>High</p>	<p>No</p> <p>No Proposed Development within the water supply catchment.</p> <p>Separate sub-catchment, up to Wee Benyaw Hill</p> <p>Significant distance - closest wind farm infrastructure is over 615m away</p>	<p>None</p> <p>Not connected</p>



Collection tank downgradient



Collection tank up gradient



PWS3 Knockskae Abstraction Point: NGR NS 37109 01249	Receptor	Potential Pathway	Risk
<p>Use: Potable</p> <p>Treatment: None</p> <p>Abstraction Point: NGR NS 37109 01249</p> <p>Source: shallow groundwater and surface water collection.</p> <p>System: Small open dam collection below deep collection chamber, copper piped to 0.7m x0.5m settlement tank, piped to galvanised zinc 1.0mx1.5mx1.2m deep header tank. 3000gallon header tank at NGR NS 38130 01103, underground and concrete cover.</p> <p>Quality: Good, been tested 2 or 3 times.</p> <p>Quantity: No issues</p>	<p>Yes</p> <p>Human consumption</p> <p>High</p>	<p>No</p> <p>Source over 100m upgradient of the Proposed Development</p> <p>No Proposed Development within the water supply catchment</p>	<p>None</p> <p>Not connected</p>



Collection point



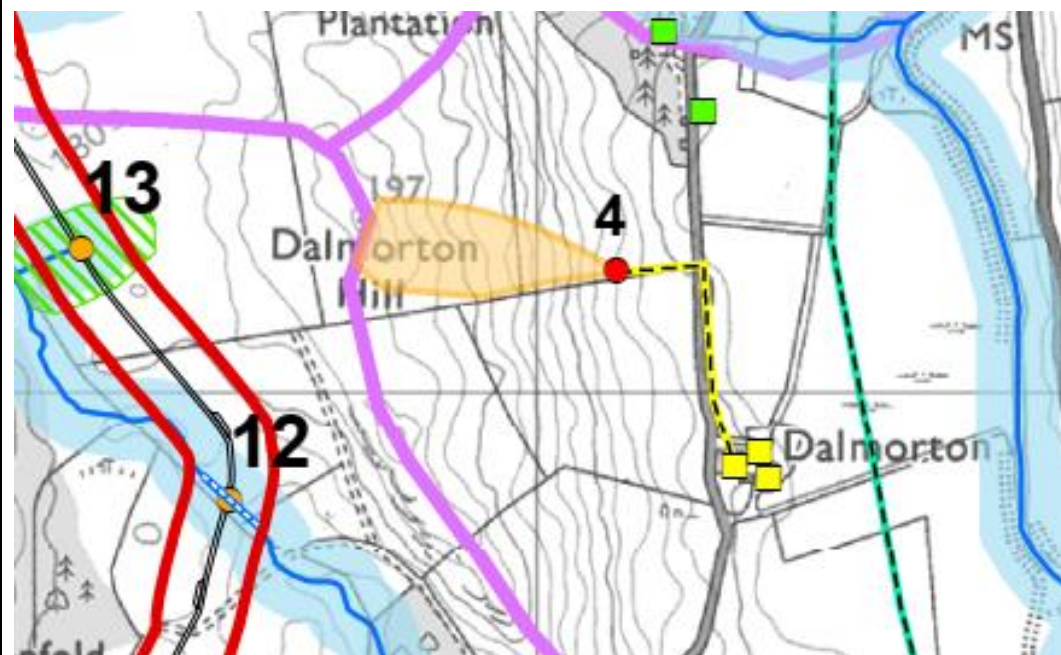
Settlement tank



Header tank



PWS4 Dalmorton Farm, Dalmorton House and Dalrowan Abstraction Point: NGR NS 38093 02146	Receptor	Potential Pathway	Risk
<p>Use: Potable</p> <p>Treatment: UV and filter</p> <p>Abstraction Point: NGR NS 38093 02146, east side of Dalmorton Hill summit.</p> <p>Source: shallow groundwater/spring collection used for over 12 years</p> <p>Quality: Previously tested, good quality, no issues</p> <p>Quantity: No issues</p> <p>Other Comment: None</p>	<p>Yes</p> <p>Human consumption</p> <p>High</p>	<p>No</p> <p>No Proposed Development within the water supply catchment.</p> <p>Nearest potential infrastructure, the existing northern forestry track if chosen, is located on eastern side of hill, opposite side to the Proposed Development.</p> <p>Over 500m from Proposed Development</p>	<p>None</p> <p>Not connected</p>



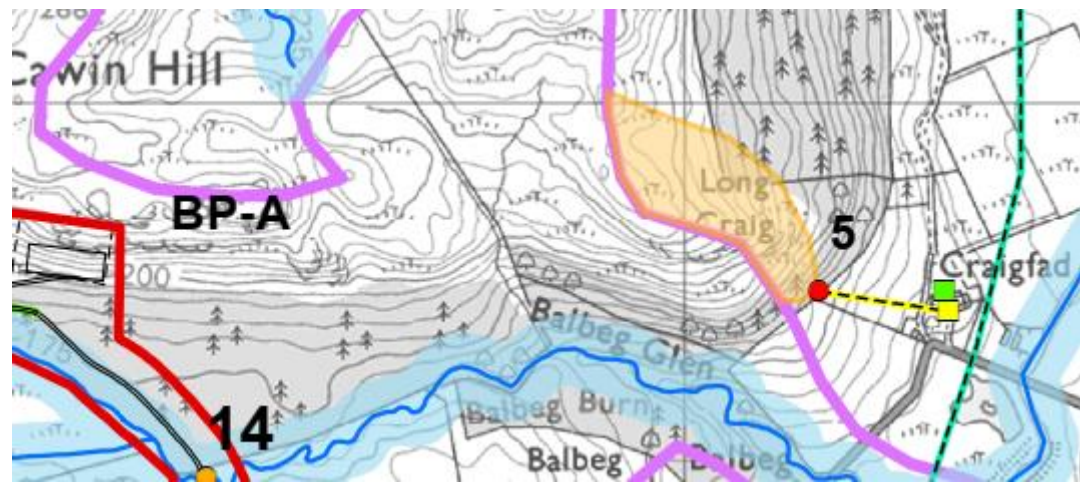
PWS5 Little Garroch Abstraction Point: NGR NS 38192, 02732	Receptor	Potential Pathway	Risk
<p>Use: Potable</p> <p>Treatment: UV and particulate filter</p> <p>Abstraction Point: NGR NS 38192, 02732</p> <p>Source: shallow groundwater spring collection.</p> <p>System: Small open dam collection below deep collection chamber, copper piped to 0.7m x0.5m settlement tank, piped to galvanised zinc 1.0mx1.5mx1.2m deep header tank.</p> <p>300gallon concrete header tank at NGR NS 38198 02734, underground and concrete cover.</p> <p>Quality: Good, no issues.</p> <p>Quantity: Good flow, no issues.</p> <p>Other Comment: Some concerns about land use and tree felling etc up gradient of supply source.</p>	<p>Yes</p> <p>Human consumption</p> <p>High</p>	<p>No</p> <p>No Proposed Development within the water supply catchment.</p> <p>Located on eastern side of hill, opposite side to the Proposed Development.</p> <p>Over 500m from Proposed Development</p>	<p>None</p> <p>Not connected</p>



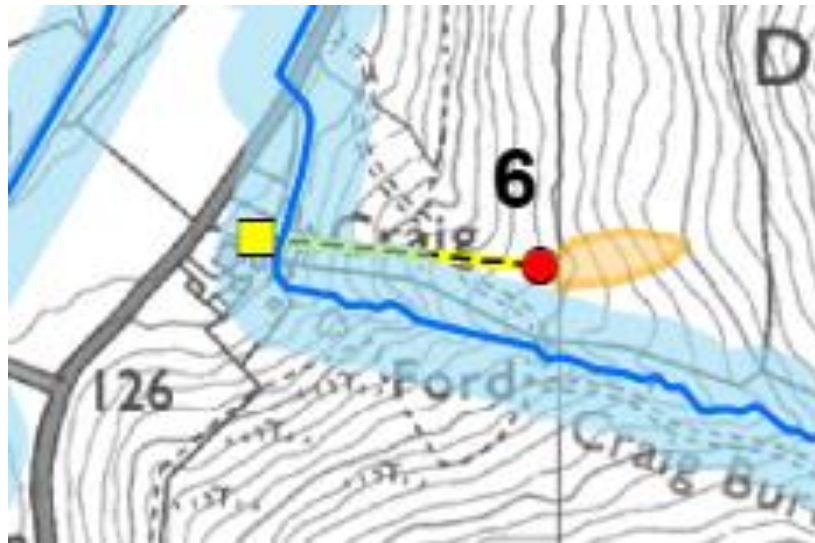
Collection tank



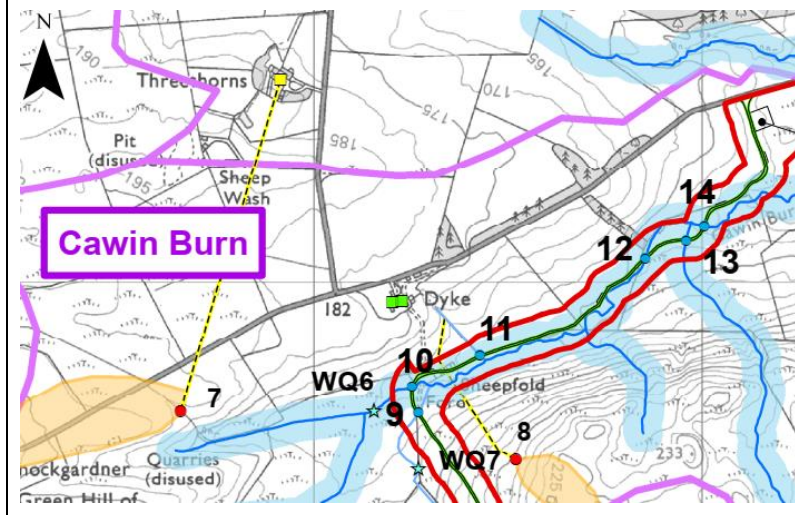
Header tank



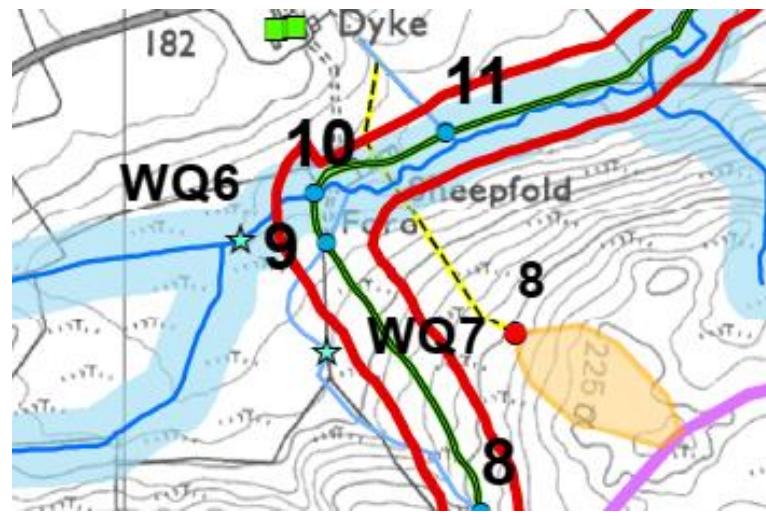
PWS6 Craig Farm Abstraction Point: NGR NS 39036 02633	Receptor	Potential Pathway	Risk
Use: Potable and livestock Abstraction Point: NGR NS 39036 02633 Source: shallow groundwater spring collection on western slope of Doonans Hill.	Yes Human consumption High	No No Proposed Development within the water supply catchment. Located on opposite side of the water of Girvan and over 500m from Proposed Development	None Not connected



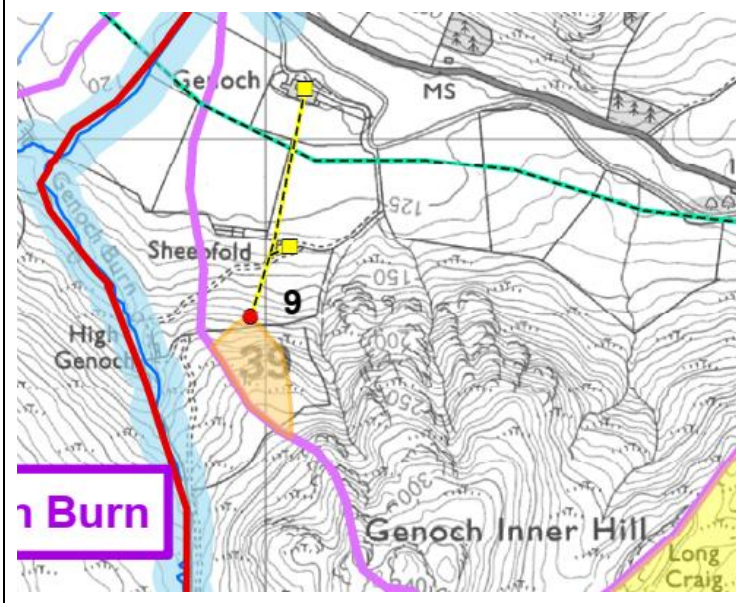
PWS7 Threethorns (and Knockgardner) Abstraction Point: NGR NS 35635 03690	Receptor	Potential Pathway	Risk
Use: Potable and livestock Abstraction Point: NGR NS 35635 03690 Source: shallow groundwater spring collection on north east of Greenhill of Knockgardner. Information provided by questionnaire	Yes Human consumption High	No No Proposed Development within the water supply catchment. Upgradient of development.	None Not connected



PWS8 Kirkbride Farm Livestock fields (previously Dyke Farm fields) Abstraction Point: NGR NS 36532 03544	Receptor	Potential Pathway	Risk
Use: Livestock and sheds Abstraction Point: NGR NS 36532 03544 Source: shallow groundwater spring collection on north side of Cawin Hill. Information provided by questionnaire	Yes Livestock Medium	No No Proposed Development within the water supply catchment. Located approximately 200m distance and upgradient of the Proposed Development	None Not connected



PWS9 Genoch Farm and Genoch Cottage Abstraction Point: NGR NS 38968 00635	Receptor	Potential Pathway	Risk
Use: Potable and livestock Treatment: UV and filter, recently got fixed. Abstraction Point: NGR NS 38968 00635 Source: shallow groundwater spring collection on the north side of Inner Genoch Hill.	Yes Potable High	No No No Proposed Development within the water supply catchment. Within separate catchment	None Not connected



PWS10 Tairlaw Toll and Tairlaw Cottage (Old Toll House) Abstraction Point: NGR NX 40082 99484	Receptor	Potential Pathway	Risk
Use: Livestock Abstraction Point: NGR NX 40082 99484 Source: shallow groundwater spring collection on opposite side of the valley, on western side of Tairlaw Ring.	Yes Potable High	No No Proposed Development within the water supply catchment. Within separate catchment	None Not connected

