

# Appendix 10.3

## Groundwater Abstractions and Private Water Supplies

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## 1 Introduction

- 1.1.1 In support of **Chapter 10 (Volume 1)** of the Design Manual for Roads and Bridges (DMRB) Stage 3 Environmental Impact Assessment (EIA) report; this appendix presents the baseline detail of groundwater abstractions and private water supplies (PWS) that were identified within the study area for Project 8 - Dalwhinnie to Crubenmore of the A9 Dualling Programme (hereafter referred to as the Proposed Scheme) and records the consultation undertaken regarding them.
- 1.1.2 Potential impacts are assessed and mitigation measures identified (if required) in **Chapter 10 (Volume 1)**, while additional abstractions related to surface water and hydropower via the Cuaich aqueduct through Dalwhinnie are identified and assessed in **Chapter 11 (Volume 1)** where necessary. Natural springs and flushes present in the study area but not identified as existing PWS sources are considered in the context of the potential groundwater dependent terrestrial ecosystem (GWDTE) assessment in **Chapter 10 (Volume 1)** and **Appendix 10.2 (Volume 2)**.

## 2 Approach and Methods

- 2.1.1 The assessment related to groundwater abstractions and PWS covered a study area extending to 850m from the temporary and permanent works boundaries of the Proposed Scheme, which was considered to correspond to the minimum study area applied for groundwater abstractions under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR).
- 2.1.2 In order to identify these features, consultation was undertaken with The Highland Council (THC), Scottish Environment Protection Agency (SEPA) and HighWater (Scotland) Ltd. Additional information regarding the source, location, type and use of any such features present was then obtained through private property/ landowner consultation questionnaires, public exhibitions and/ or site walkovers. Additional consultation regarding some supplies may be required as part of pre-construction activities as identified in **Chapter 10 (Volume 1)**.

## 3 Baseline Conditions

- 3.1.1 Based on the consultations undertaken and questionnaire responses/ feedback received, one groundwater abstraction (comprising three shallow wells) and two PWS source locations were identified within the study area, supplying properties in Dalwhinnie, Cuaich and Crubenmore.
- 3.1.2 The approximate locations of the abstractions and PWS sources and supplied properties are illustrated in **Drawing 10.21 to 10.29 (Volume 3)** with photographs and questionnaire feedback from private properties/ landowners, summarised in **Annex 10.3.1**. The collective known details and status of each feature identified are summarised in **Table 1**.
- 3.1.3 The sensitivity of each feature has been assigned based on the criteria within **Table 10-4** in **Chapter 10 (Volume 1)** and the number of properties served.

Table 1: Groundwater Abstractions and Private Water Supplies

Feature Ref.	Feature Type/ Source	Feature Location	Easting	Northing	Feature Details	Sensitivity
ABS 8.1	PWS Source – Spring	Crubenmore	267351	791032	Basic details provided by THC identified a PWS sourced from a spring at Crubenmore, which supplies four properties (Crubenmore Lodge, Truim Cottage, Crubenmore Cottage and Crubenmore Chalet) for domestic use. The indicated supply source is located approximately 380m west at ch. 30,700, with the supplied properties nearby this and between 100 and 250m west of the existing A9. These are all located beyond the River Truim. Subsequent landowner consultation confirmed these details and that a spring tank capture system has been utilised to supply these properties for in the region of 100 years. Although precise locations of the source, tank and supply network are unknown; the landowner noted that the spring water is collected in a 2,500 litre tank and is then conveyed to the properties via a 50ml alkathene pipe. The supply was noted to be of good quality and is tested annually by THC.	High
ABS 8.1 (Linked)	PWS Supplied Property	Crubenmore Cottage, Newtonmore, Highland, PH20 1BE	267422	791051		
ABS 8.1 (Linked)	PWS Supplied Property	Crubenmore Lodge, Newtonmore, Highland, PH20 1BE	267492	791008		
ABS 8.1 (Linked)	PWS Supplied Property	Truim Cottage, Newtonmore, Highland, PH20 1BE	267612	791305		
ABS 8.1 (Linked)	PWS Supplied Property	Crubenmore Chalet, Newtonmore, Inverness-Shire, PH20 1BE	267560	791413		
ABS 8.5	Wells – Groundwater	Dalwhinnie Water Treatment Works, Dalwhinnie, PH19 1AB	263723	784678		
ABS 8.23	PWS Source/ Supplied Property (Inactive)	Dalwhinnie Beag, Dalwhinnie, PH20, 1BE	263649	785257	THC information indicated the presence of a PWS at the Dalwhinnie Beag property located approximately 540m to the west of the existing A9 carriageway. However, the property owner and landowner believes this property is serviced by the mains supply in Dalwhinnie. The PWS is therefore assumed to be inactive.	N/A
ABS 8.24	PWS Source – Spring	Cuaich	266396	786294	Information provided by SEPA or THC did not identify the presence of a PWS at the Cuaich Farm settlement. However, landowner consultation with Phoines Estate identified the five properties at Cuaich to be serviced by a spring, estimated to be located approximately 850m to the east of the A9 carriageway. The spring feeds into a tank located 800m east which is then conveyed to the settlement via a pipe network that crosses under the existing A9 at approximate ch. 25,800. The landowner noted this to be a reliable supply, suitable for purpose (domestic and agricultural) and described the water as 'peaty'. A site walkover was undertaken with Jim McKeracher of Phoines Estate in June 2017. The location of the supply intake (266438, 786491), tank (266430, 786554) and a valve (266089, 786805) were confirmed. The location of the spring source was unable to be confirmed due to nesting grouse at the time of the walkover and the precise location/ route of the supply network, including where this crosses under the existing A9, is not known by Phoines Estate and is approximated only. However, Jim McKeracher noted there has never been interruptions in the supply, even in the winter, and it is therefore assumed the supply network pipework is at a sufficient depth to avoid freezing.	High
PWS 8.24 (Linked)	PWS Supplied Properties	Cuaich Farm Settlement, nr. Dalwhinnie, PH20 1BE	265562	787087		

## 4 References

The Water Environment (Controlled Activities) (Scotland) Regulations 2011, Scottish Government (2011)

# Annex 10.3.1

## Consultation Information

## Dalwhinnie Water Treatment Works, Dalwhinnie, PH19 1AB

<b>Response Received:</b>	17 November 2016 (email)
<b>From:</b>	Jim Briggs, Scottish Water
<b>Address:</b>	31 Henderson Drive, Inverness, IV1 1TR
<b>Abstraction/ PWS Reference:</b>	ABS 8.5
<b>Abstraction/ PWS Address:</b>	Dalwhinnie Water Treatment Works, Dalwhinnie, PH19 1AB

**Q1. Is your water sourced from a private supply or abstraction, such as a well, a spring or a tank?**

Shallow infiltration chambers adjacent to River Truim

**Q2. Can you confirm the location of the supply, well, spring or tank and any associated pipework? If so, could you provide a plan and/ or photograph?**

Plan of water treatment works and intakes attached

**Q3. (If it is a spring), do you know the exact location of the spring?**

Not a spring

**Q4. (If it is a well), how deep is the well?**

Approximately 3m

**Q5. (If it is a tank), do you know the details, storage capacity and dimensions of the tank?**

Not a tank

**Q6. How old is the supply?**

1970

**Q7. How good is the quality of the water supply?**

Good quality most of the time, provided no disturbance in river

**Q8. Please give a general description of the water (i.e. is it clear, murky)**

Clear – full analysis is available from our Process Team if required

**Q9. Have you ever noticed any unusual smells off the water/ coming from the supply? If so, please provide a brief description and time of year it occurred.**

No

**Q10. Has the water ever tasted funny (i.e. tasted off, tasted salty)? If so, please provide a brief description and time of year it occurred.**

No

**Q11. How good is the quantity of the water supply? Does the water run out in dry periods or fluctuate at certain times or seasons?**

In dry periods one of the three wells ceases to produce

**Q12. How is the water conveyed (carried) to your house/ field/ reservoir – do you know the location of the supply network (if relevant)?**

Water is pumped from chambers to our water treatment works, where it is disinfected, pH adjusted, then pumped again to a remote clear water holding tank. From there, it gravitates back to the village of Dalwhinnie, the Distillery (domestic only) and visitor centre.

**Q13. Does this supply only service your house or does it service other houses/ fields/ reservoirs?**

See above

**Q14. Is this supply for domestic use and consumption? Or other purposes (please detail)?**

For domestic use

**Q15. Is any treatment provided to the water prior to use?**  
 Chlorination plus pH correction using a limestone contractor

**Q16. Approximately what volume/ yield of water is consumer per day?**  
 Various throughout the year, but typically 50 to 100m<sup>3</sup>/ day

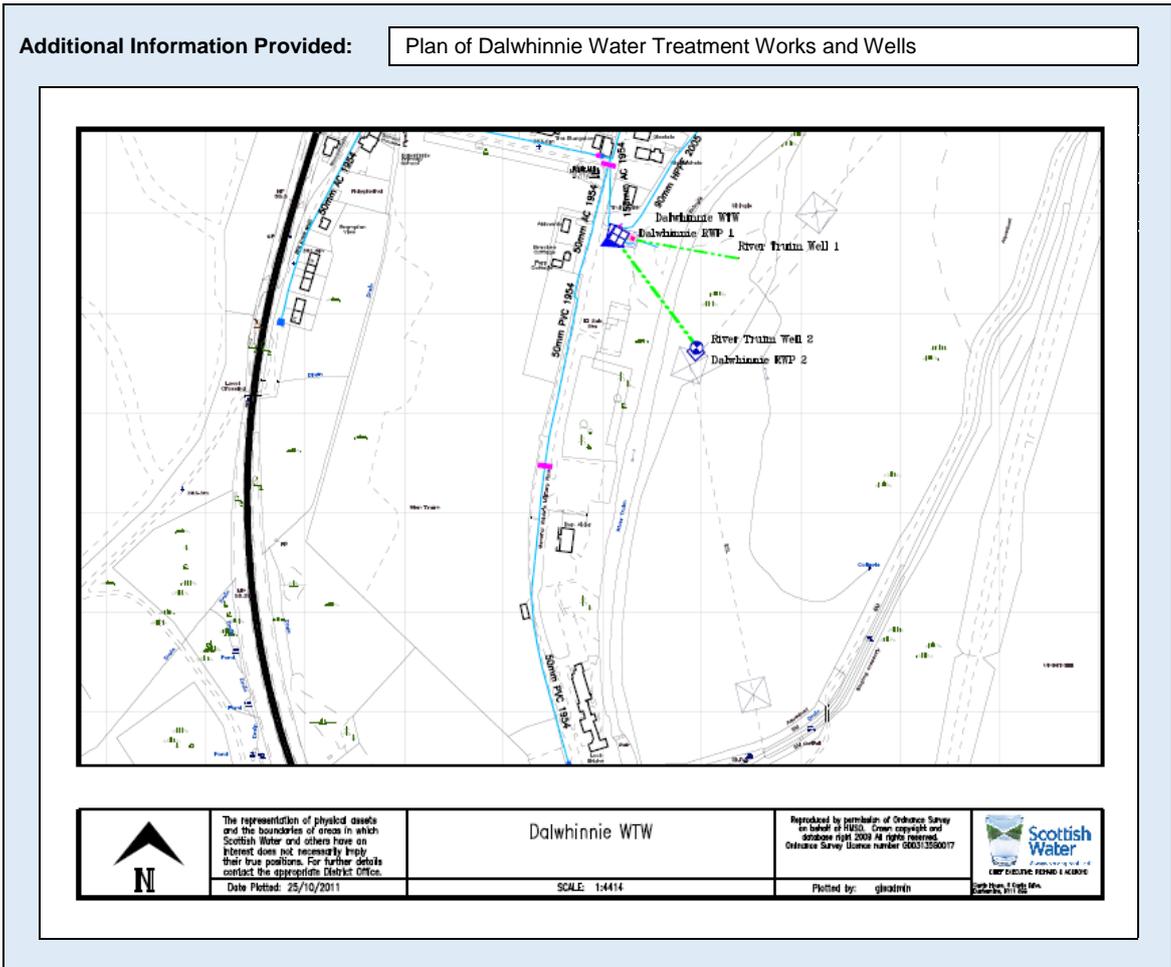
**Q17. Has water chemical testing ever been undertaken and if so, how regularly, by who and for what parameters?**  
 Water quality tested continuously

**Q18. Can the results of chemical testing (above) undertaken on the supply or abstraction be made available?**  
 Scottish Water Process Team can provide full details if required

**Q19. Does your property have a private drainage system (i.e. septic tank)? If so, could you provide details on the location of the tank, discharge arrangement and how often it is emptied?**  
 No

**Q20. May we contact you for additional information if necessary?**  
 Yes

**Q21. Is there any other information you wish to provide about your water supply?**  
 We have firm plans to upgrade the treatment facilities at Dalwhinnie in this current funding period 2015 to 2021



Photographs

CFJV walkover (June 2017) – wells and pump



Photograph 1: Estimated position of well (263771, 784812)



Photograph 2: Well (263814, 784740)



Photograph 3: Groundwater well (263787, 784680)



Photograph 4: Groundwater well pump (263787, 784680)

## Crubenmore Lodge, Crubenmore, PH20 1BE

<b>Response Received:</b>	26 October 2016 (letter)
<b>From:</b>	Alasdair Findlay
<b>Address:</b>	Ralia Lodge, Newtonmore, PH20 1BD
<b>Abstraction/ PWS Reference:</b>	ABS 8.1
<b>Abstraction/ PWS Address:</b>	Crubenmore Lodge, Crubenmore Cottage, Crubenmore Chalet and Truim Cottage, PH20 1BE

**Q1. Is your water sourced from a private supply or abstraction, such as a well, a spring or a tank?**

Private supply

**Q2. Can you confirm the location of the supply, well, spring or tank and any associated pipework? If so, could you provide a plan and/ or photograph?**

-

**Q3. (If it is a spring), do you know the exact location of the spring?**

-

**Q4. (If it is a well), how deep is the well?**

-

**Q5. (If it is a tank), do you know the details, storage capacity and dimensions of the tank?**

2,500 litres

**Q6. How old is the supply?**

100 years

**Q7. How good is the quality of the water supply?**

Good

**Q8. Please give a general description of the water (i.e. is it clear, murky)**

Clear

**Q9. Have you ever noticed any unusual smells off the water/ coming from the supply? If so, please provide a brief description and time of year it occurred.**

No

**Q10. Has the water ever tasted funny (i.e. tasted off, tasted salty)? If so, please provide a brief description and time of year it occurred.**

No

**Q11. How good is the quantity of the water supply? Does the water run out in dry periods or fluctuate at certain times or seasons?**

No

**Q12. How is the water conveyed (carried) to your house/ field/ reservoir – do you know the location of the supply network (if relevant)?**

By 50mm alkathene pipe

**Q13. Does this supply only service your house or does it service other houses/ fields/ reservoirs?**

Four properties

**Q14. Is this supply for domestic use and consumption? Or other purposes (please detail)?**

Domestic

**Q15. Is any treatment provided to the water prior to use?**

Yes

**Q16. Approximately what volume/ yield of water is consumer per day?**

Don't know

**Q17. Has water chemical testing ever been undertaken and if so, how regularly, by who and for what parameters?**

The Highland Council test the water yearly

**Q18. Can the results of chemical testing (above) undertaken on the supply or abstraction be made available?**

Yes

**Q19. Does your property have a private drainage system (i.e. septic tank)? If so, could you provide details on the location of the tank, discharge arrangement and how often it is emptied?**

Yes

**Q20. May we contact you for additional information if necessary?**

Yes

**Q21. Is there any other information you wish to provide about your water supply?**

-

**Additional Information Provided:**

None

## Cuaich Farm, Dalwhinnie, PH20 1BE

<b>Response Received:</b>	27 January 2017 (letter)
<b>From:</b>	The Honourable Michael Samuel, Phoines Estate
<b>Address:</b>	c/o Bill Roberstson, CKD Galbraith LLP, Lyndoch House, Barossa Place, Perth, PH1 5EP
<b>Abstraction/ PWS Reference:</b>	ABS 8.24
<b>Abstraction/ PWS Address:</b>	Cuaich Farm Settlement, nr. Dalwhinnie, PH20 1BE

**Q1. Is your water sourced from a private supply or abstraction, such as a well, a spring or a tank?**

Private

**Q2. Can you confirm the location of the supply, well, spring or tank and any associated pipework? If so, could you provide a plan and/ or photograph?**

See plan for approximate location of intake, tank and pipe

**Q3. (If it is a spring), do you know the exact location of the spring?**

See 2 above

**Q4. (If it is a well), how deep is the well?**

N/A

**Q5. (If it is a tank), do you know the details, storage capacity and dimensions of the tank?**

See 2 above

**Q6. How old is the supply?**

Not known

**Q7. How good is the quality of the water supply?**

Suitable for purpose

**Q8. Please give a general description of the water (i.e. is it clear, murky)**

Peaty

**Q9. Have you ever noticed any unusual smells off the water/ coming from the supply? If so, please provide a brief description and time of year it occurred.**

No

**Q10. Has the water ever tasted funny (i.e. tasted off, tasted salty)? If so, please provide a brief description and time of year it occurred.**

No

**Q11. How good is the quantity of the water supply? Does the water run out in dry periods or fluctuate at certain times or seasons?**

Always running – good source

**Q12. How is the water conveyed (carried) to your house/ field/ reservoir – do you know the location of the supply network (if relevant)?**

See 2 above

**Q13. Does this supply only service your house or does it service other houses/ fields/ reservoirs?**

All properties and facilities at Cuaich settlement

**Q14. Is this supply for domestic use and consumption? Or other purposes (please detail)?**

Domestic, agricultural

Q15. Is any treatment provided to the water prior to use?

No

Q16. Approximately what volume/ yield of water is consumer per day?

Suitable for five residential units and agricultural

Q17. Has water chemical testing ever been undertaken and if so, how regularly, by who and for what parameters?

No

Q18. Can the results of chemical testing (above) undertaken on the supply or abstraction be made available?

N/A

Q19. Does your property have a private drainage system (i.e. septic tank)? If so, could you provide details on the location of the tank, discharge arrangement and how often it is emptied?

Private – available for inspection

Q20. May we contact you for additional information if necessary?

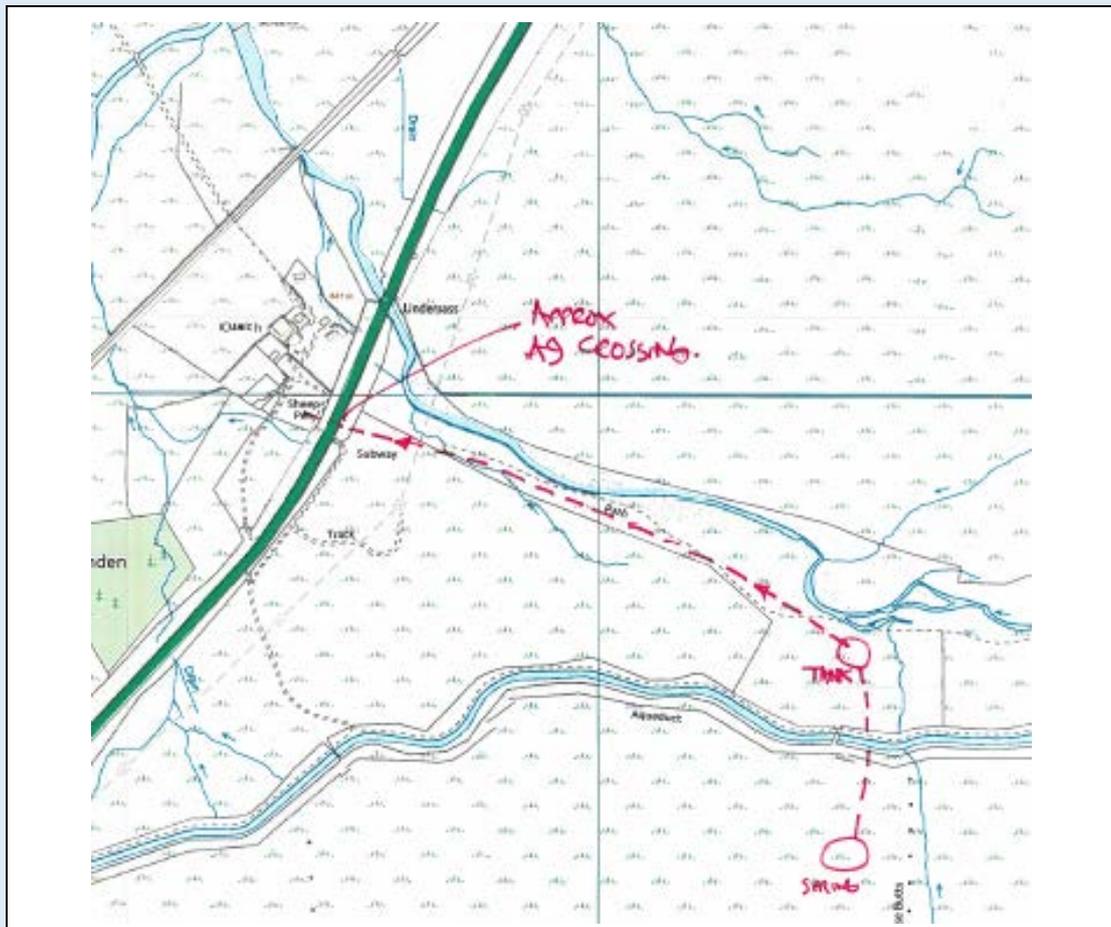
Yes

Q21. Is there any other information you wish to provide about your water supply?

Actual route for pipe passing under A9 is not known – approximate position only indicated

Additional Information Provided:

Hand-marked up plan of approximate location of source, tank and pipework



Photographs

CFJV walkover (June 2017) – tank location, intake and tank



Photograph 1: Intake location at aqueduct (266438, 786491)



Photograph 2: Intake location at aqueduct (266438, 786491)



Photograph 3: Tank location (266430, 786554)



Photograph 4: Tank location (266430, 786554)



Photograph 5: Valve location (266089, 786805)

## Dalwhinnie Beag, Dalwhinnie, PH19 1AB

<b>Response Received:</b>	26 October 2016 (letter)
<b>From:</b>	Alasdair Findlay
<b>Address:</b>	Ralia Lodge, Newtonmore, PH20 1BD
<b>Abstraction/ PWS Reference:</b>	ABS 8.23
<b>Abstraction/ PWS Address:</b>	Dalwhinnie Beag, Dalwhinnie, PH19 1AB

**Q1. Is your water sourced from a private supply or abstraction, such as a well, a spring or a tank?**

Don't know, I think it is on the mains

**Q2. Can you confirm the location of the supply, well, spring or tank and any associated pipework? If so, could you provide a plan and/ or photograph?**

No

**Q3. (If it is a spring), do you know the exact location of the spring?**

No

**Q4. (If it is a well), how deep is the well?**

-

**Q5. (If it is a tank), do you know the details, storage capacity and dimensions of the tank?**

-

**Q6. How old is the supply?**

-

**Q7. How good is the quality of the water supply?**

OK

**Q8. Please give a general description of the water (i.e. is it clear, murky)**

Clear

**Q9. Have you ever noticed any unusual smells off the water/ coming from the supply? If so, please provide a brief description and time of year it occurred.**

No

**Q10. Has the water ever tasted funny (i.e. tasted off, tasted salty)? If so, please provide a brief description and time of year it occurred.**

No, chlorine

**Q11. How good is the quantity of the water supply? Does the water run out in dry periods or fluctuate at certain times or seasons?**

Good

**Q12. How is the water conveyed (carried) to your house/ field/ reservoir – do you know the location of the supply network (if relevant)?**

-

**Q13. Does this supply only service your house or does it service other houses/ fields/ reservoirs?**

-

**Q14. Is this supply for domestic use and consumption? Or other purposes (please detail)?**

-

**Q15. Is any treatment provided to the water prior to use?**

**Q16. Approximately what volume/ yield of water is consumer per day?**

**Q17. Has water chemical testing ever been undertaken and if so, how regularly, by who and for what parameters?**

**Q18. Can the results of chemical testing (above) undertaken on the supply or abstraction be made available?**

**Q19. Does your property have a private drainage system (i.e. septic tank)? If so, could you provide details on the location of the tank, discharge arrangement and how often it is emptied?**

**Q20. May we contact you for additional information if necessary?**

**Q21. Is there any other information you wish to provide about your water supply?**

**Additional Information Provided:**