Creag Dhubh to Inveraray 275 kV Connection Environmental Impact Assessment

Volume 4 | Appendix 11.3

Private Water Supplies Assessment

June 2022

CONTENTS

List of Abbreviations

ABC	Argyll and Bute Council
CAR	The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)
CEMP	Construction Environmental Management Plan
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
GEMP	General Environmental Management Plan
OHL	Overhead Line
OCEMP	Outline Construction Environmental Management Plan
PWS	Private Water Supply
SEPA	Scottish Environment Protection Agency
SSEN	Scottish and Southern Electricity Transmission
TA	Technical Appendix

1 INTRODUCTION

1.1 The Proposals

1.1.1 This Appendix presents information relevant to the Creag Dhubh to Inveraray 275 kV Connection. It should be read in conjunction with **Volume 2** of the **EIA Report** for full details of the Proposed Development.

1.1.2 Scottish Hydro Electric Transmission plc (the Applicant) who, operating and known as Scottish and Southern Electricity Networks Transmission (SSEN Transmission), own, operate and develop the high voltage electricity transmission system in the north of Scotland and remote islands.

1.1.3 Due to the growth in renewable electricity generation in the north and north east of Scotland, upgrade of the transmission network is required in order to provide the necessary increase in transmission capacity.

1.1.4 The Applicant is proposing to apply for consent under Section 37 of the Electricity Act 1989 to construct and operate an 9 km double circuit 275 kV OHL, supported by steel lattice towers between a proposed substation at Creag Dhubh and the recently constructed Inveraray-Crossaig 275 kV capable OHL circuit, in Argyll, Scotland (the 'Proposed Development'). The Proposed Development is shown in **Figure 2.1: Proposed Development (EIAR Volume 3a).**

1.2 The Regulations

1.2.1 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, hereafter referred to as the 'EIA Regulations', contain two schedules. Schedule 1 lists projects where an Environmental Impact Assessment (EIA) is mandatory. Schedule 2 lists projects where EIA may be required "where proposed development is considered likely to give rise to significant effects on the environment by virtue of factors such as its nature, size or location".

1.2.2 The Proposed Development falls within Schedule 1 of the EIA Regulations, as it meets criteria of paragraph (3) of Schedule 1[1]. An EIA is therefore mandatory, and an Environmental Impact Assessment Report (EIA Report) will accompany the Section 37 application.

1.2.3 A Private Water Supply (PWS) is considered to be a small abstraction of less than 10 m^3 per day from a borehole, spring/well or surface water body. The Scottish Environment Protection Agency (SEPA) typically requires that all groundwater abstractions be identified within 100 m of proposed roads, tracks and trenches or within 250 m from borrow pits and foundations[2]. In addition to screening for PWSs within these buffers, this assessment also considers other supplies within a 2 km buffer of the Proposed Development with the potential to be hydrologically connected to the Proposed Development.

1.2.4 PWSs are categorised as Type A, which are Regulated Supplies that serve 50 or more persons in total, or which serve commercial properties (regulated under The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017[3]); and Type B, or Exempt Supplies that serve only domestic properties (regulated under The Private Water Supplies (Scotland) Regulations 2006[4]).

[1] https://www.legislation.gov.uk/ssi/2017/101/schedule/1/made

[2] LUPS-GU31 SEPA 2017 Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems https://www.sepa.org.uk/media/143868/lupsgu31_planning_guidance_on_groundwater_abstractions.pdf

[3] https://www.legislation.gov.uk/ssi/2017/282/contents/made

[4] https://www.legislation.gov.uk/ssi/2006/209/contents/made

1.3 Purpose of this Technical Appendix

1.3.1 This report summarises the PWSs that may be affected by the Proposed Development. It provides an overview of the PWSs within the River Aray catchment and identifies those that require further assessment and mitigation. This TA supports the hydrological assessment of the Proposed Development (**Chapter 11: Water Environment, EIAR Volume 2**).

2 METHODOLOGY

2.1 Desk Study

2.1.1 A list of PWSs was supplied by Argyll and Bute Council (ABC). The council records are often incomplete in rural areas, and often identify the property rather than the source and / or collection tank associated with the PWS. Therefore, SSEN Transmission (the Applicant) contacted properties along the Proposed Development to confirm the location and details of their supplies.

2.1.2 The location of PWSs from both the ABC records and information supplied by local residents and landowners are shown in **Figure 11.5: Hydrogeology, EIAR Volume 3a**.

2.2 Field Survey

2.2.1 No field surveys of PWSs were undertaken as detailed information on supplies was either provided by local residents / landowners and / or the supplies were identified to be not within 250 m of the Proposed Development.

2.3 Limitations and Assumptions

2.3.1 As noted in **Section 2.1** the ABC records are often incomplete in rural areas, and often identify the property rather than the source and / or collection tank associated with the PWS. Therefore, in cases where no resident responses were received this assessment has relied on the data provided by ABC.

3 PRIVATE WATER SUPPLY ASSESSMENT

3.1 Private Water Supply Locations

3.1.1 The Study Area for the assessment of PWSs has been defined as the River Aray catchment, the primary hydrological catchment within which Proposed Development sits (**Figure 11.3.1, Annex A**).

3.1.2 Based on the PWS dataset supplied by ABC and the responses from local residents, there are a total of 15 supplies within the Study Area (**Figure 11.3.1, Annex A**). These are listed in **Table 3.1**.

Table 3.1: Private Water Supplies

Figure 11.13.1, Annex A Reference	ABC Reference	PWS Name	Source Type	Easting	Northing	Supply Type
1	N/A	North Tullich	Surface water runoff	207748	715927	B
2	AABMK0618	West Drimfern	Surface water runoff	208091	714801	B
3	AABMK0649	Druimbreac	Surface water runoff	208087	714643	B
4	N/A	Stronmagachan	Unknown	208057	714106	B
5	AABMK0544	Sallachry East	Surface water runoff	207669	712249	B
6	AABMK0863	Sallachry East	Surface water runoff	207684	712341	B
7	AABMK0571	Stronmagachan	Unknown	208240	712249	B
8	AABMK0589	Three Bridges	Unknown	208700	712502	B
9	N/A	High Balantyre	Surface water runoff	207791	711649	B
10	AABMK0881	Eas a Chleibh	Unknown	208794	711755	B
11	AABMK0150	Dalbhuie	Unknown	208921	711410	B
12	AABMK008 and AABMK047	Black Bull Cottage and Low Balantyre Cottage	Unknown	208484	711145	B
13	AABMK0052	Balantyre Lodge	Unknown	208558	710936	B
14	AABMK0795 and AABOL037	Electric Cottage	Unknown	208334	709944	B
15	AABMK0252	Inverarary Castle	Unknown	209614	709241	B

3.2 Supplies Identified for Further Assessment

3.2.1 Five PWSs (Reference 1, 5, 7, 8, 9 **Figure 11.3.2, Annex A**) are located within 250 m of the Proposed Development, including proposed access tracks, existing access tracks, temporary diversion works and tower locations. In line with SEPA guidance LUPS-GU31, site specific qualitative and / or quantitative risk assessment is required for abstractions within the 250 m buffer.

3.2.2 In addition, seven PWSs (Reference 2, 3, 4, 6, 10, 12, 13 **Figure 11.3.2, Annex A**) are located downstream of the Proposed Development and are considered to be in hydrological connectivity. These are also included in this assessment in order to take in to account the potential for alterations to surface water runoff to affect supplies.

3.2.3 Assessment of the above PWSs are summarised in **Table 3.2**.

Table 3.2: Private Water Supply Assessment

Figure 11.13.1, Annex A Reference	PWS Name	Easting	Northing	Distance from Infrastructure	Notes
1	North Tullich	207748	715927	Source 742 m Holding tank 28 m	The source of the PWS is located upstream of the Proposed Development. Surface water runoff, and therefore supply volumes are unlikely to be impacted. However, the holding tanks are within 10-40 m of proposed new permanent access tracks in the vicinity of Tower T16. Mitigation will be required to avoid impacts to these.
2	West Drimfern	208091	714801	285 m	Located downstream of the Proposed Development. Tower T21, T22 and proposed permanent access tracks are within the PWS catchment. Mitigation will be required.
3	Druimbreac	208087	714643	385 m	Located downstream of the Proposed Development. Tower T22, T23 and proposed access tracks are within the PWS catchment. Mitigation will be required.
4	Stronmagachan	208057	714106	682 m	Located downstream of the Proposed Development. Tower T25 and T26 as well as proposed access tracks are within the PWS catchment. Mitigation will be required.

Figure 11.13.1, Annex A Reference	PWS Name	Easting	Northing	Distance from Infrastructure	Notes
5	Sallachry East	207669	712249	103 m	Located downstream of existing tracks which are to be used for the Proposed Development. Within the PWS catchment, therefore mitigation will be required.
6	Sallachry East	207684	712341	288 m	Located downstream of existing tracks being utilised for the Proposed Development. Within the PWS catchment, therefore mitigation will be required.
7	Stronmagachan	208240	712249	106 m from new temporary access track. Immediately adjacent to the existing access track.	PWS within the ABC dataset. Location could not be verified through field survey. The supply is downstream of the properties and may not be in use. However, it is located downstream of Tower T32, the associated proposed temporary access track. and is immediately adjacent to the existing track which is to be used for access to the Proposed Development. There is the potential the PWS could be impacted by the Proposed Development. Mitigation will be required.
8	Three Bridges	208700	712502	71 m from existing access track. 517 m from proposed temporary access track.	PWS within the ABC dataset. Location not verified through field survey. Located upstream of the existing track but Tower T31, T31 and proposed new temporary access tracks are located upstream and within the catchment area of the PWS. Potential for the PWS to be impacted by the Proposed Development. Mitigation will be required.
9	High Balantyre	207791	711649	144 m	Located upstream of the Proposed Development

Figure 11.13.1, Annex A Reference	PWS Name	Easting	Northing	Distance from Infrastructure	Notes
					including Tower T33 and the Crossaig-Inveraray Tie-In point. Supply unlikely to be impacted.
10	Eas a Chleibh	208794	711755	782 m	PWS within the ABC dataset. Location not verified through field survey. Located downstream of the Crossaig-Inveraray Tie-In point and proposed access tracks. Supply unlikely to be impacted due to distance from development.
12	Black Bull Cottage and Low Balantyre Cottage	208484	711145	505 m	Located downstream of the existing access track which is to be maintained. Supply unlikely to be impacted due to distance from the Proposed Development.
13	Balantyre Lodge	208558	710936	360 m	Located downstream of the existing access track which is to be maintained. Supply unlikely to be impacted due to distance from the Proposed Development.

3.2.4 From the table above it is considered the following PWSs have the potential to be impacted by the Proposed Development in the absence of mitigation:

- Ref 1: North Tullich;
- Ref 2: West Drimfern;
- Ref 3: Druimbreac;
- Ref 4: Stronmagachan;
- Ref 5: Salachry East;
- Ref 6: Salachry East;
- Ref 7: Stronmagachan;
- Ref 8: Three Bridges; and
- Ref 9: High Balantyre.

4 MITIGATION MEASURES AND RECOMMENDATIONS

4.1.1 **Table 3.2** (above) identifies PWSs that are either within 250 m of the Proposed Development, or where works are within the likely catchment area of the supply. As such these supplies are potentially sensitive to alterations in the quantity and quality of surface water supply. In the absence of mitigation those supplies set out in **Section 3.2** have the potential to be impacted by the Proposed Development.

4.1.2 The following mitigation measures should be implemented to prevent significant impacts to these PWSs.

Pre-Construction

4.1.3 Detailed pre-construction surveys of all PWSs identified in **Section 3.2.4** will be carried out by the Appointed Contractor to confirm:

- Source, type and depth of water supply source (e.g. borehole, spring or surface water abstraction);
- Catchment area; and
- Nature of proposed works (e.g. depth and extent of any proposed excavations, potential for pollution incidents / spillage etc).

4.1.4 Should the results of this assessment indicate a risk to PWS, then mitigation shall be developed for inclusion in a site specific PWS Protection Plan that will be discussed and agreed with the PWS owner / user.

4.1.5 In certain circumstances it may be appropriate to undertake water quality testing of the source or supply, to establish a baseline of current water levels and quality. This should be agreed as part of the PWS projection plan.

4.1.6 A contingency plan shall be prepared to deliver an alternative water supply (on a temporary or permanent basis) in the event of unforeseen problems with the existing supply.

Construction

4.1.7 Standard mitigation measures as discussed in further detail in **Chapter 11: Water Environment (EIAR Volume 2)** and **Technical Appendix 2.2: Outline Construction Environmental Management Plan (EIAR Volume 4)** would be in place to protect water quality and quantity as a result of for example, potential effects associated with sedimentation, chemical pollution and changes to surface water flows.

4.1.8 Mitigation would be implemented through the Construction Environmental Management Plan (CEMP). The Appointed Contractor would be responsible for developing a final CEMP, Pollution Prevention Plans and detailed drainage plans, including the use of SuDS. In addition, it is anticipated the Proposed Development would be subject to a construction site licence (under the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR)).

4.1.9 Over and above the standard mitigation to protect water quality and quantity, PWSs requiring protection will have specific mitigation developed. Mitigation many include some / all of the following:

- Pre-construction water quality monitoring to establish baseline conditions;
- Fence off the PWS intake and / or storage tank (to avoid accidental damage) and identify relevant buffer buffer distances;
- Avoid undertaking works within PWS catchments during wet weather or when wet weather is forecast as there will be increased surface water flows into the PWS which will be harder to control;

- Low impact access methodologies including the use of track panels where access to works are within the PWS catchment;
- Survey and peg out the route of the PWS flow path in the vicinity of the construction works and avoid / minimise activity within this area; and
- All site operatives working in the area should be made aware of the location of the PWS and of the sensitive catchment area through toolbox talks or similar, and should be reminded when works take place in this area.

4.1.10 During construction, water quality would be monitored. If the quality and / or quantity of water to the PWS is impacted by the Proposed Development, a temporary alternative source would be supplied until the remedial works are completed.

5 CONCLUSION

5.1.1 SEPA typically requires that all groundwater abstractions be identified within 250 m of excavations <1 m in depth e.g. of proposed tracks and trenches, or within 100 m of excavations >1 m in depth e.g. borrow pits and tower foundations. In line with these requirements, an assessment has been carried out to identify PWSs that could be impacted as a result of the Proposed Development and to set out measures that would be implemented at locations where construction of the Proposed Development could affect the quality and quantity of water supplies.

5.1.2 Nine sensitive PWSs have been identified which are either within 250 m (supplies 1, 5, 7, 8 and 9) or considered in hydrological connectivity with and therefore sensitive to the Proposed Development (supplies 2, 3, 4, and 6). At these locations pre-construction assessment and construction phase implementation of best practice measures (as set out in the full CEMP to be prepared by the Appointed Contractor and SSEN Transmission's General Environmental Management Plans (GEMPs) (**Appendix 2.3, EIAR Volume 4**), to prevent adverse effects to PWSs, as well as additional specific mitigation would be required.

5.1.3 With implementation of the above mitigation it is anticipated there would be no significant impacts to PWSs as a result of the Proposed Development.

5.1.4 However, during construction, water quality would be monitored. If the quality and / or quantity of water to the PWS was found to be impacted by the Proposed Development, a temporary alternative source would be supplied until remedial works are completed.

Scottish & Southern Electricity Networks

TRANSMISSION

Annex A – Figures

Scottish & Southern Electricity Networks
TRANSMISSION

PWS Buffer (250 m)
Watercourse
Waterbody
River Aray Catchment

Scale @ A3: 1:60,000
0 0.375 0.75 1.5 2.25 3 3.75 km

Legend

- Proposed Alignment Towers
- Proposed Alignment
- Inveraray - Crossaig Towers
- Inveraray - Crossaig OHL
- Proposed Creag Dhubh Substation (Separate Application)

Temporary Diversions

- ITE / ITW 132 kV Diversion Poles
- 275 kV Diversion Towers
- ITE / ITW 132 kV Diversion
- 275 kV Diversion

Access Tracks

- Creag Dhubh Access Track
- Access Tracks - Track To Be Maintained
- Proposed Access Route (Perm)
- Proposed Access Route (Temp)
- Existing Access Tracks Upgrade
- PWS
- PWS Source
- 1st Filter Pot
- 2nd Filter Pot
- Filter
- Primary Water Tank
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- Shut off valve

Project No:	LT000194
Project:	1620011091
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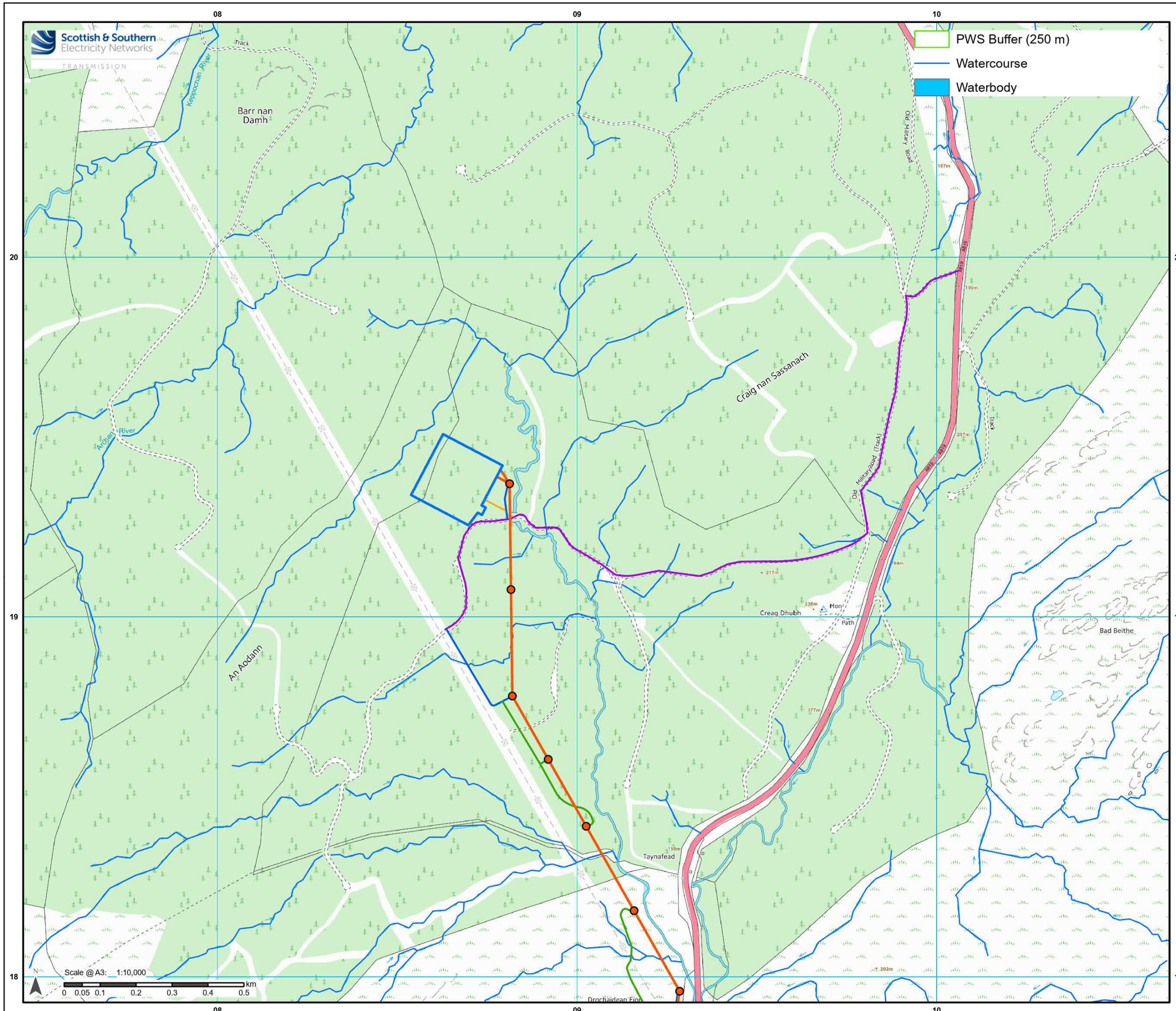

Legend

- Proposed Alignment Towers
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- Inveraray - Crossaig Towers
- Inveraray - Crossaig OHL
- Proposed Creag Dhubh Substation (Separate Application)

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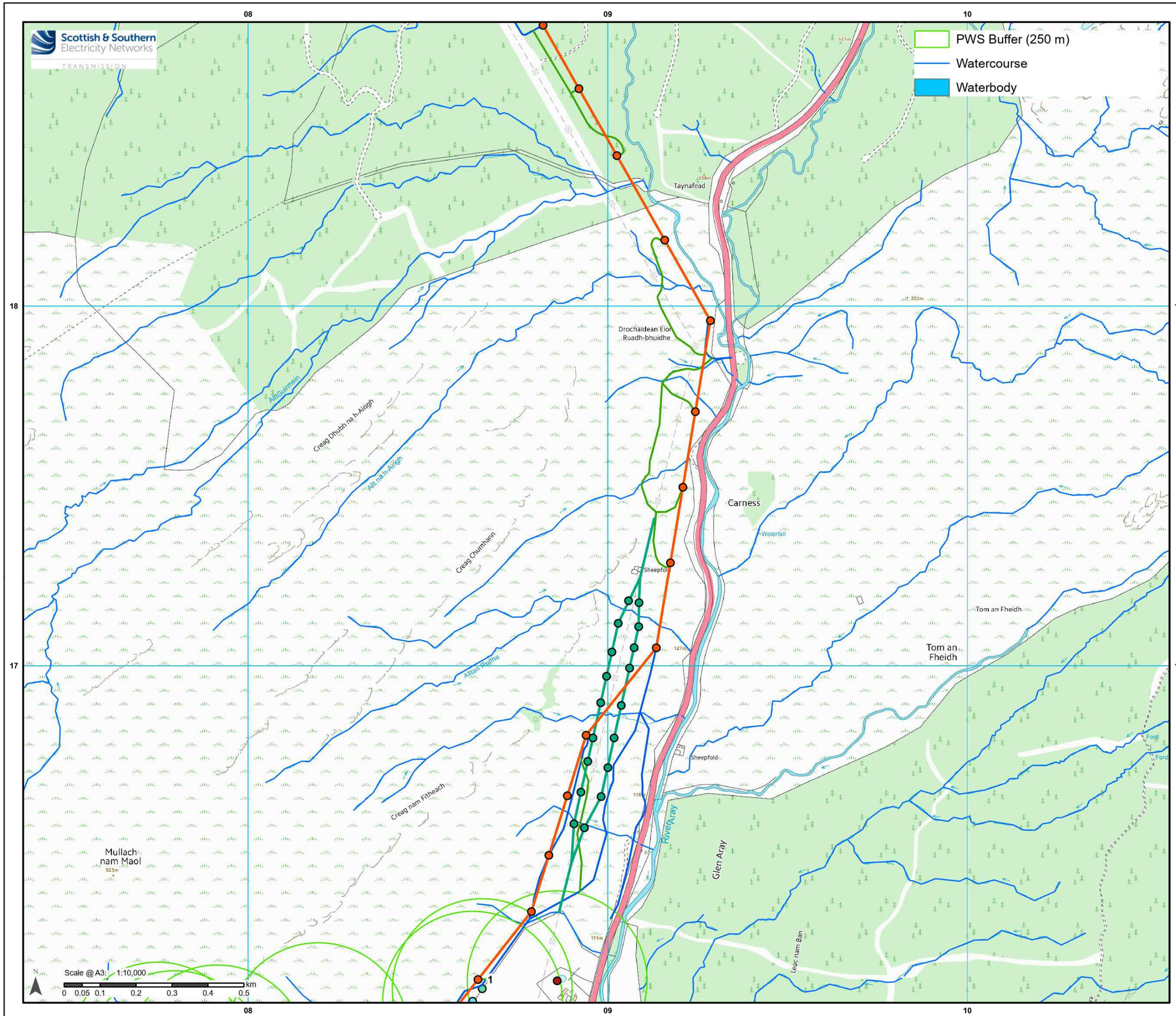

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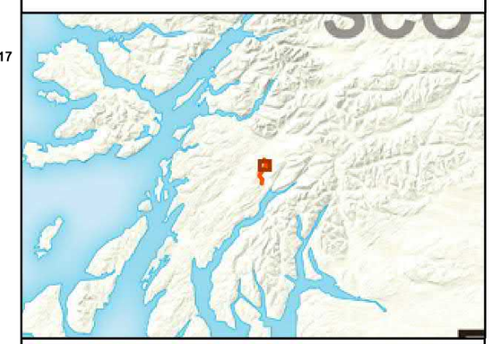

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Scottish & Southern Electricity Networks
TRANSMISSION

PWS Buffer (250 m)
Watercourse
Waterbody

Mullach nam Maol
Lochan Dhub
Creag nam Fitheach
Allan Ruithe
Sheepfold
River Aray
Glen Aray
Leac nam Ban
North Tullich
Sheepfold
Sheepfold
Ladyfield
South Tullich
Creag na h-Iolaire
Allt Creag nan Airigh
Tom Fuar
Allt a'Mhedaidh
Tom na Cuirte
Creag Bhalgach
West Drimfern
Allt Barailn
Eas na h-Airigh
Druim Breac
Toiseach nam Marbh
Druim Ban
Drimfern
Luidheagan Dubh
East Drimfern
Tom an t-Sabhail
Barra a' Chaltuinne
Cnoc Raineach
1
2
3
07
08
09
15
16
17
Scale @ A3: 1:10,000
0 0.05 0.1 0.2 0.3 0.4 0.5 km

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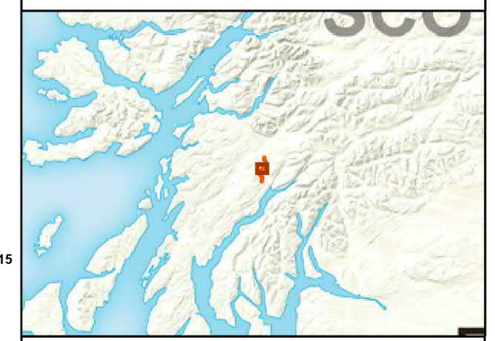

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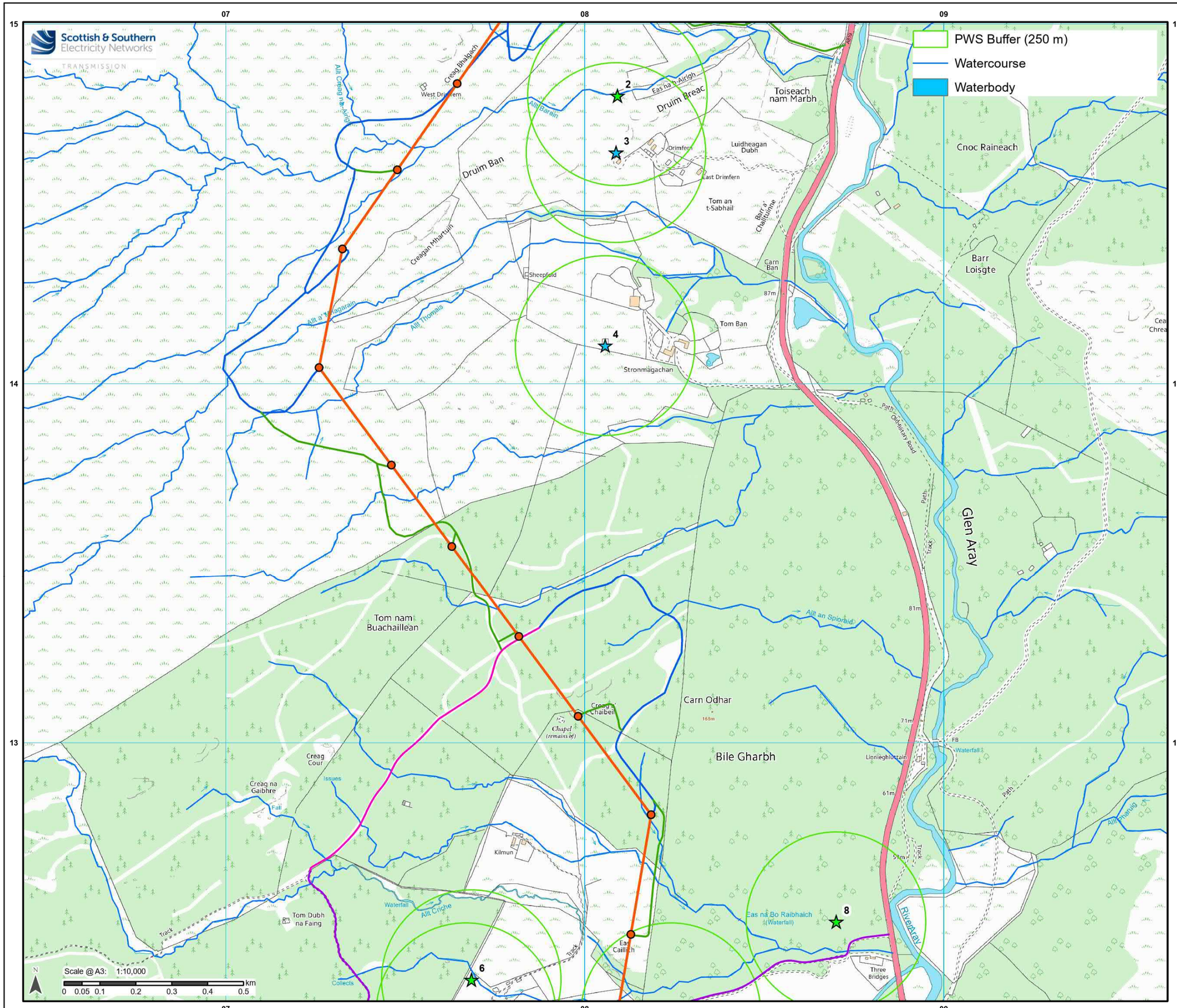

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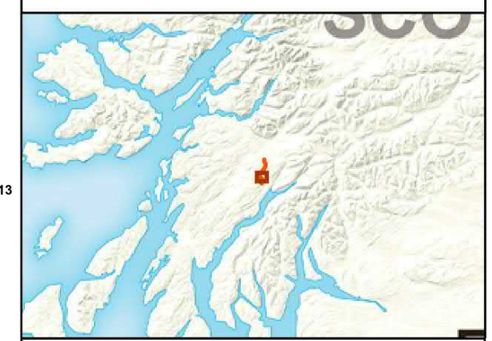

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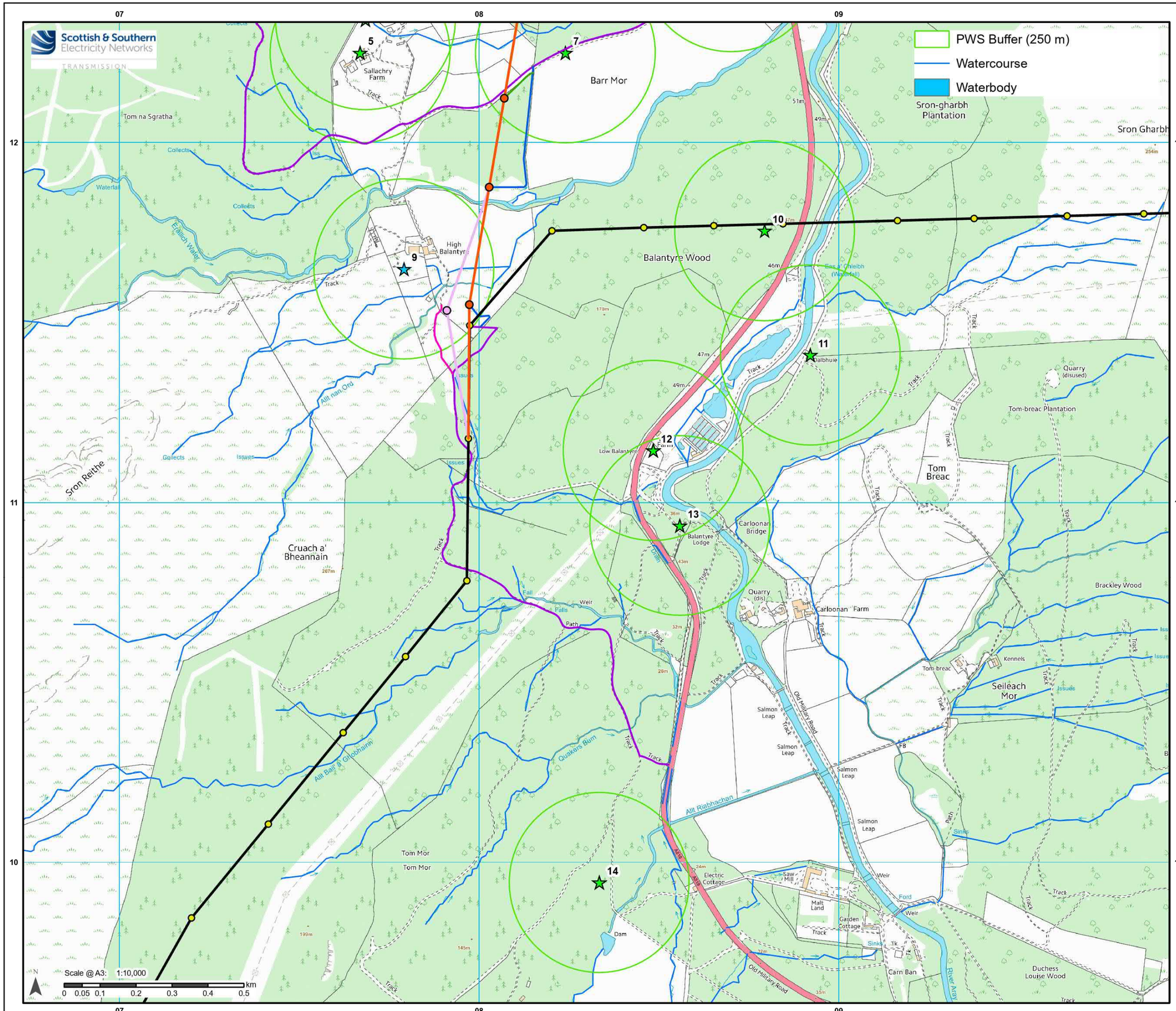

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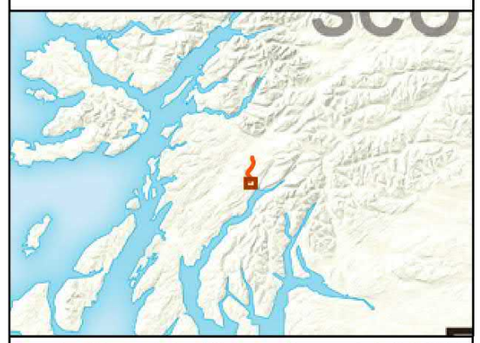

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