

# Appendix 12.5

## Protected Vertebrate Survey





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## **A9 Dualling - Project 8 Dalwhinnie to Crubenmore**

### Protected Terrestrial Vertebrate Species Survey

Prepared by LUC  
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# 1 Executive Summary

- 1.1 The CH2M/Fairhurst Joint Venture (CFJV) is responsible for designing and delivering the central section of the A9 Dualling project, Glen Garry to Kincaig. CFJV commissioned LUC, in June 2015, to undertake a survey of the protected vertebrate species found in the terrestrial habitats of the central section. The purpose of the survey is to establish a baseline of the protected fauna species and inform the Environmental Statement of the proposed dualling of the A9 trunk road.
- 1.2 The first section to be surveyed was Project 8, Dalwhinnie to Crubenmore. The habitats along the Project 8 section have clearly been subject to much human impact and alteration but are as influenced by the exposed, cold location of the site as the presence of the existing A9 road itself. The key characteristics of the wider landscape are heavily-managed game estate to the east and Dalwhinnie village, alongside agricultural grazing to the west. The construction and replacement works associated with the Beauly to Denny Overhead Line have also resulted in significant, but localised, disturbance over the previous two years.
- 1.3 As a result of the disturbance and relatively exposed location, little evidence of protected terrestrial vertebrate species was found within the survey area. Of those species targeted in the survey, the following conclusions can be made:
- Otter activity was low, though this could be seasonal, and no shelters were recorded;
  - Water vole activity was negligible;
  - No signs of badgers were recorded;
  - No signs of red squirrel were recorded;
  - No signs of wildcat were recorded;
  - No signs of pine marten were recorded;
  - Great crested newts are not thought to be present in this area;
  - There is some bat roosting potential within the area, though non-dwellinghouse roosting potential is likely to be very limited. Those structures with bat roosting potential were surveyed and no roosts were identified; and
  - Several other species are noted to be very active through the site including brown hare, mountain hare, common lizard, and adder.

## 2 Introduction

### Remit

- 2.1 LUC was commissioned by the CH2M/Fairhurst Joint Venture to undertake a protected species survey, limited to terrestrial vertebrates, along the length of Project 8. The species targeted and study areas surveyed were agreed with Transport Scotland<sup>1</sup>, in consultation with Scottish Natural Heritage (SNH) and the Cairngorms National Park Authority (CNPA), and include:
- Otter;
  - Water Vole;
  - Badger;
  - Red Squirrel;
  - Wildcat;
  - Pine Marten; and
  - Bats.
- 2.2 The survey is required to help establish an ecological baseline of the road corridor which will inform the design options and subsequent Environmental Statement for the central section, Glen Garry to Kinncraig.
- 2.3 **This report sets out the methods adopted, the baseline findings and an interpretation of the site's ecological features as they relate to terrestrial vertebrates; the remit of this particular report is limited to the Project 8 area.**

### Proposed Development

- 2.4 This report informs the Ecological Impact Assessment of the proposed dualling of the A9 between Dalwhinnie and Crubenmore, a 7.7 km stretch of road which is currently comprised of a single carriageway trunk road. The proposal will also include a new junction in the Dalwhinnie area. This stretch is separated into 4 distinct sections (sections 1-4) for the design and assessment stages of the project.

### Site Description

- 2.5 The three projects forming the central section are characterised by varying habitats, with the Project 8 section (Dalwhinnie to Crubenmore) being influenced by the local land management, primarily for game. The existing A9 trunk road and its embankments form the main study corridor. A relatively narrow survey buffer was applied to either side of the existing road corridor to allow consideration of various scheme design options.
- 2.6 The habitats on either side of the road within Project 8 are dominated by moorland. The main landowner of the Project 8 corridor manages the land as a sport estate and, as such, has cultivated the upland moorland habitat for grouse and deer. The eastern side of the road in particular is subject to regular muirburn which has resulted in a very open landscape with little

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<sup>1</sup> CVJV/JUK/AM. 2015. *Appendix B: Paper on Consistency in A9 Dualling Programme Ecological Survey Extents*. Prepared for Transport Scotland

vegetation cover found beyond the immediate road verges. Dense scrub is virtually non-existent within the survey area east of the A9 and where it is present, is found only within the highway boundary on the immediate roadside.

- 2.7 The west side of the road is more developed with the majority of dwellings and associated services found in the west, especially around Dalwhinnie. The railway line and River Truim are also key features west of the road both creating wildlife corridors and causing fragmentations of habitat. The presence of both the river and railway also affect design options as physical obstacles and as challenges for connecting new infrastructure to existing hydrological regimes. Grazing, predominantly by sheep, is also concentrated more on the west side of the road. The combination of development, railway and river, and agricultural use has crafted a more diverse mosaic of microhabitats which give way to upland moorland further away from the road. However, woodland cover is very also very sparse and fragmented on the west side, with very localised pockets of woodland being found in only three general areas and dense scrub habitat being almost absent.
- 2.8 Target notes are provided in Appendix 1 and further detail of survey results in the form of mapped data can be found in Appendix 2. Photographs of key findings or of best examples of field signs can be found in Appendix 3.

## Policy and Legislation

- 2.9 The report has been prepared in cognisance of relevant legislation and policy, including European and domestic environmental legislation, UK nature conservation policy and local biodiversity guidance.
- 2.10 European and national legislation along with planning policy and guidance relevant to the site is listed below:
- *The Conservation (Natural Habitats, &c,) Regulations 1994*, as amended in Scotland;
  - *The Wildlife and Countryside Act 1981*, as amended in Scotland; and the
  - *The Protection of Badgers Act 1992*, as amended in Scotland.

## 3 Methods

### Desk Study

- 3.1 Jacobs UK are the data custodians for the A9 Dualling Project. All data previously gathered for this project has been examined in a desk based study to help inform future surveys and site investigations. As there is no one complete source of confirmed data for species records in this area, much of the desk study findings result from previous inspections of the project area or a coarse analysis of other environmental surveys of the site, e.g. for Phase 1 habitat or structural surveys. There are no desk records older than 2004. The findings of the desk-based search are provided in Appendix 4. However, a summary of the notable terrestrial vertebrate species recorded historically in the Project 8 survey area can be found in this report.

### Field Study

- 3.2 A survey for the statutorily protected terrestrial vertebrate species expected to be present, as listed above, commenced in June 2015. Project 8 was surveyed by a two-man team traversing the site on foot. A project footprint was determined by CFJV to encompass the existing road and all mainline and junction options being considered; in some locations it is significantly larger than the final scheme is likely to be. A survey buffer was applied to both sides of the road in order to ensure complete collection of data in advance of design plans. The survey buffer extended to 50 m on either side of the project footprint for terrestrial habitats and was extended to 100 m on either side where watercourses or waterbodies were encountered<sup>2</sup>.
- 3.3 For **clarity, the 'survey area'** includes both the project footprint and the agreed buffers for each habitat type, where accessible.
- 3.4 All observations were recorded on hand-held android tablets using the Arc Collector app from Esri. By using mobile GIS mapping devices, surveyors were able to quickly record all data and digitise locations in the field for improved accuracy and efficiency. By using tablets, all information provided, such as the project footprint and access constraints, were accessible and viewable in the field. Photographs are automatically geo-referenced allowing for improved analysis. The rolling digitisation of site records also allowed for immediate upload and use of the data by the CFJV ecologists and engineers. The tablets allowed surveyors to draw polygons where areas of habitat suitability or use by sheltering animals were noted. Point-data for specific records, such as sprainting sites, were also recorded.
- 3.5 Details on all target notes (TNs) discussed in this report can be found in **Appendix 1** and their locations can be found on the relevant Figures in **Appendix 2**.
- 3.6 The following species were searched for within the survey area, as informed by the results of the desk study, and by our understanding of protected species in Central Highland<sup>2</sup>.

### Otter

- 3.7 All accessible riparian habitats within the survey area were surveyed to allow an assessment of the suitability the site for use by otters (*Lutra lutra*). Specifically, structures and vegetation growth which could offers otters a lying-up site were checked or noted for sheltering potential. The likelihood of sheltering at a particular structure was determined by the quality of the feature and the ability to provide key requirements for otters, i.e. commuting and foraging opportunities

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<sup>2</sup> See Footnote Reference 1 (CFJV/JUK/AM 2015)

and cover and seclusion to allow rest. If the site offered reasonable sheltering potential it was noted on the tablet on the 'habitat suitability' layer.

3.8 Where specific signs of otter presence were found, these were noted as point-data. Signs of otter activity, including spraints (recording whether recent or old), tracks, runs, slides, feeding remains, and resting sites, along all accessible watercourses and -bodies were recorded in line with the methods detailed in SNH's Guidance for Otter Survey<sup>3</sup>. The resting sites are defined as:

- **Holt:** A cavity or hole, in the ground, under tree roots, within rocks or caves where the back cannot be readily seen. If a holt is confirmed as active it usually contains field evidence such as spraints;
- **Hover:** The term hover is used to describe a bolt hole or ledge that provides temporary cover or a place to eat captured prey. It is not fully enclosed and the back of the hover can usually be seen. There may be spraints, footprints, and feeding evidence present;
- **Couch:** This is a place above ground where an otter can lie up or groom. These may take the form of a depression in tall vegetation where the otter has been lying, or may be covered in a vegetated grass or reed 'roof' and contain bedding;
- **Breeding site:** A term used to identify an area of land in which otters breed. The site may be large and it is usually more important to protect this site than an individual natal holt; and
- **Natal holt:** A discreet holt site that is used by a bitch to birth cubs, where they will usually remain here for up to 3 months, before being moved to a secondary holt. These sites are seldom located in the field and are rarely recorded without aid of camera traps. It is generally accepted that most natal holts will contain bedding material and sprainting activity is minimal whilst occupied.

3.9 Spraints are described as the follows:

- **Fresh:** The spraint is still very moist and pungent, and was likely to have been deposited within the last few days or hours;
- **Recent:** The spraint has become decayed but retains consistency and some odour, it is dry and colour is more faded; it is likely to have been deposited within the last week or two; and
- **Old:** The spraint is desiccated and powdery having lost its shape and most odour. Usually remains are still evident and identifiable. It is likely to have been deposited approximately a month ago (sometimes longer).

### Water Vole

3.10 As with otters, all accessible riparian habitats within the survey area were surveyed for water vole (*Arvicola amphibious*), in line with the Water Vole Conservation Handbook<sup>4</sup>. The objectives of the survey were to identify the presence of suitable habitat for water voles within the survey area and detect field evidence of their presence. Signs of water vole included latrines/droppings, feeding evidence (e.g. caches and lawns), and burrows along all accessible watercourses and -bodies present.

3.11 Where watercourses and their adjacent vegetation had potential to support sheltering water vole, the area was digitised in the field as a polygon and recorded as such. Where definitive signs of water vole were encountered they were recorded as either point-data for individual signs (e.g. isolated latrine), or within a polygon (e.g. a complex of burrows). If a watercourse supported water voles along its length, the polygon started at the feature nearest the A9 road and extended to enclose all signs for that reach.

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<sup>3</sup> <http://www.snh.org.uk/publications/on-line/wildlife/otters/default.asp>

<sup>4</sup> Strachan and Moorhouse (2006) Water Vole Conservation Handbook (2<sup>nd</sup> Edition)

## Badger

- 3.12 The search for badgers (*Meles meles*) followed the method described in Harris *et al.*<sup>5</sup> in the publication 'Surveying for Badgers'. Badger territories in the Highlands tend to be large and wide-ranging. However badgers, being habitual creatures, can be found in typical habitats characterised as sheltered areas with free-draining soils, especially in larger territories with greater choice for habitat. While attention was focussed on forested or scrubby areas, drier grassland parts of the site were also searched, where present.
- 3.13 Direct evidence of badgers searched for included:
- Badger setts;
  - Tracks, prints and paths;
  - Hair;
  - Latrines and dung pits (fresh, recent or old); and
  - Feeding remains.
- 3.14 The setts are defined as:
- **Main:** These usually have a large number of holes with large spoil heaps, and the sett generally looks well used. They usually have well used paths to and from the sett and between sett entrances;
  - **Annexe:** These usually have a large number of holes with large spoil heaps, and the sett generally looks well used. They usually have well used paths to and from the sett and between sett entrances;
  - **Subsidiary:** These usually have a large number of holes with large spoil heaps, and the sett generally looks well used. They usually have well used paths to and from the sett and between sett entrances; and
  - **Outlier:** These usually only have one or two holes, often have little spoil outside the hole, have no obvious path connecting them with another sett, and are only used sporadically.

## Red Squirrel

- 3.15 Where suitable habitat was present, primarily continuous, mature coniferous or mixed woodland, an assessment for red squirrel (*Sciurus vulgaris*) suitability was made. Assessments were based on the age, size and type of woodland present and its connectivity to other good quality habitat in the wider area.
- 3.16 Within suitable habitat, signs of red squirrel were also searched for, in line with the Forestry Commission Practice Note 11<sup>6</sup>. Signs of activity include sightings, feeding remains, and dreys. As grey squirrels (*Sciurus carolinensus*) are now known to be present in the Cairngorms National Park, identification of shared signs, such as dreys, can be unreliable, unless the animal is sighted **at the time of survey. Therefore the 'precautionary principle' was applied and** all signs of squirrel activity were assumed to be from red squirrels.

## Wildcat

- 3.17 As wildcat (*Felis sylvestris*) are known to be in the Cairngorms National Park area, it is possible wildcat signs could be encountered. During the course of surveys, habitats which could support wildcat, especially for sheltering, were noted and mapped. Examples of the types of habitats in which wildcat are found include mixed-age woodlands, rough upland pasture and open moorland but a mixture of some cover must be nearby for sheltering and hunting, such as rocky outcrops and dense woody scrub<sup>7</sup>.

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<sup>5</sup> Harris, S., Cresswell, P. & Jefferies, D. (1989) Surveying for Badgers, Occasional Publication of the Mammal Society No. 9. Mammal Society, Bristol

<sup>6</sup> Gurnell, et al (2009) Practical techniques for surveying and monitoring squirrels.

- 3.18 Any habitat deemed suitable for wildcat denning was checked, where accessible, in line with the UK BAP Mammals Interim Guidance<sup>7</sup>. Additionally any possible signs of wildcat, such as feeding remains and scats, would be recorded and sampled for analysis.

### Pine Marten

- 3.19 Pine marten (*Martes martes*) were also searched for using the UK BAP Mammals Interim Guidance<sup>7</sup> as a survey guide. Suitable habitat, generally large and mature conifer woodlands, were noted and mapped as polygons on the tablets.
- 3.20 Within these areas, signs of pine marten would be recorded as point-data. Signs of pine marten to be recorded included sightings, feeding remains, scats, and dens. Any potential dens were checked for signs of use by pine marten. As with wildcat, any scats or feeding remains suspected to be from pine marten would be sampled for analysis.

### Bats

- 3.21 A preliminary Bat Roost Potential (BRP) assessment was undertaken of trees and buildings within the survey area, where possible. The BRP is designed to identify and assess structures which may provide suitable roosting opportunities for bats and may therefore require targeted survey effort.
- 3.22 The BRP assessment takes into account the range of roosting conditions required by bats throughout the year and followed assessment criteria set out by standard guidance prepared by the Bat Conservation Trust<sup>8</sup>. The criteria used to categorise bat roost potential (BRP) are summarised in Table 3.1, below. The table also summarises what actions, if any, are required following classification.

**Table 3.1: Bat Roost Potential Categories**

Category	Description
Known or confirmed bat roost	Bats or evidence of bats recorded, both of recent and/or historic activity. <b>Works affecting a roost are licensable. Further survey (e.g. dusk emergence/dawn re-entry survey in accordance with best practice) is required to determine the bat species present, nature of roost and level of use before mitigation can be determined. Seasonal constraints may apply.</b>
1* High BRP Structures with multiple features capable of supporting a bat roost.	Features include holes, cracks or crevices that extend or appear to extend back to cavities suitable for bats. In trees, examples include rot holes, woodpecker holes, splits and flaking or raised bark which could provide roosting opportunities. In buildings, examples include eaves, barge boards, gable ends and corners of adjoining beams, ridge and hanging tiles, behind roofing felt or within cavity walls. Ivy cover is sufficiently well-established and matted so as to create potential crevices beneath <b>Further survey is required to determine whether or not bats are present and if so, the bat species present, nature of roost and level of use. Appropriate mitigation and potentially licensing requirements may then be determined. Seasonal constraints may apply.</b>
1 High BRP	As per Category 1* but tree or building supporting fewer features or with potential only for use by single bats. <b>Further survey is required to determine whether or not bats are present and if so, the bat species present, nature of roost and level of use. Appropriate mitigation and potentially licensing requirements may then be determined. Seasonal constraints may apply.</b>

<sup>7</sup> Ed. by Cresswell, et al (2012) UK BAP Mammals Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. Southampton

<sup>8</sup> Hundt (2012) Bat Surveys: Good Practice Guidance, 2nd edition, Bat Conservation Trust

2 Moderate BRP	<p>From the ground, building/tree appears to have features (e.g. holes, cavities or cracks) that may extend back into a cavity. However, owing to the characteristics of the feature, they <i>may</i> be sub-optimal for roosting bats; however presence of bats cannot be ruled out. Alternatively, if no features are visible but owing to the size and age and structure, hidden features, sub-optimal for roosting bats, may occur that only an elevated inspection may reveal. In respect of ivy, the cover is not dense (i.e. providing BRP in itself) but may mask presence of BRP features.</p> <p><b>Further surveys required in order to rule out, beyond all doubt, that bats are not using the feature as a roost. Appropriate mitigation and potentially licensing requirements may then be determined. Seasonal constraints may apply.</b></p>
3 Negligible	<p>An inspected building/tree that is considered as not having potential for roosting bats.</p> <p><b>No further survey or mitigation required.</b></p>

3.23 Bat activity surveys, specifically roost surveys at dawn and dusk, were undertaken in the summers of 2015 and 2016. The detailed methods, alongside the results, can be found in Appendix 5.

### Other Species

3.24 Other species of conservation interest encountered, though not targeted specifically, were recorded for completeness. These species were recorded as point-data for their sightings only. These animals are not subject to the comprehensive or strict protection of the animals above but are still regarded as of having ecological value and have some protection under the Wildlife and Countryside Act, (e.g. mountain hares).

3.25 The currently known range of great crested newts (*Triturus cristatus*) in Scotland does not include central Highland. Where ponds were considered to pose some risk of sheltering newts of any species, an assessment was made of their suitability and proximity to potential hibernation refugia. Great crested newts (GCN) have a specific combination of requirements for breeding, mating and sheltering. Oldham, *et al.*<sup>9</sup> adapted the habitat suitability index approach used by the US Fish and Wildlife Service to apply it to evaluating habitat quality and quantity based on the **GCN's particular requirements. The numerical index of the HSI ranges between 0 and 1** with values close to 0 indicating unsuitable habitat and 1 indicating optimal habitat. The 10 criteria used for GCN include geographic location, pond area, permanence, water quality, cover, use by other fauna species, pond count, and terrestrial habitat. Where appropriate, a habitat suitability index (HSI) score was calculated<sup>10</sup>. Ponds which were clearly in unsuitable habitats (e.g. acidic bog ponds) or of obviously poor water quality were not assessed using the HSI, but their locations were recorded. Should any sightings of GCN or evidence of their presence be encountered (e.g. eggs), they would also be recorded as point-data.

### Constraints to Methods

3.26 Evidence of protected species is not always discovered during a survey. This does not mean that a species is not present; hence, the surveys also record and assess the ability of habitats to support **protected species. The time frame in which the survey is implemented provides a 'snapshot' of activity within the survey area and cannot necessarily detect all evidence of use by a species.**

3.27 Though June is considered to be an optimal month for most fauna species surveys due to activity levels, dense vegetation growth in summer can obscure signs of species presence. Considering the land management within Project 8, it is not considered that dense vegetation posed a severe

<sup>9</sup> Oldham, et al (2000) Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). Herpetological Journal 10(4), 143-155.

<sup>10</sup> Amphibian and Reptile Group (2010) ARG Advice Note 5: Great Crested Newt Habitat Suitability Index. [www.arg.org](http://www.arg.org)

constraint to survey. Any areas with significant access constraint or dense vegetation were recorded and mapped.

- 3.28 There is widespread understanding that wildcat can be particularly difficult to survey, even in areas they are known to be occupying, notwithstanding the challenges in surveying any highly mobile and crepuscular species. This difficulty was acknowledged by the field surveyors on this site and is why assessment was made throughout the survey period for habitat suitability for this species.
- 3.29 The size and scale of the survey and timing of the project meant that survey visits were conducted in all weather conditions. Where possible, areas which were not accessible or fully visible due to high river levels were re-visited, but the summer of 2015 was a very wet season and re-visits were not always successful. The generally below average temperatures and weather conditions in summer 2015 may also have had an impact on species populations, particularly in exposed and elevated regions, such as central Highland. It is not possible to quantify the potential impact the weather may have had on local populations at this time.
- 3.30 Private dwellinghouses within the survey area were not assessed for bat roosting potential unless specific access was granted for those buildings.

## 4 Baseline

### Desk Study

- 4.1 Otter and water vole are recorded at isolated points along the survey area, particularly at culverts. Badgers are recorded in this area through road traffic accident (RTA) records (one records). There are no historical records of bats, pine marten, red squirrel, reptiles, and no confirmed or verified wildcat within the Project 8 survey area. It should be noted that absence of records could be more representative of lack of dedicated survey effort than lack of presence, which places more emphasis on the findings field survey for this project. Please see Appendix 4 for details of these records and specific locations.

### Field Study

#### Otter

- 4.2 Otters are also known to be very active within the Cairngorm area, with the nearby River Spey (which includes tributaries such as part of the River Truim) bearing a European designation for otter; the Truim runs through the Project 8 survey area. They are well-established in Cairngorms National Park and are found in every 10 km<sup>2</sup>. Part of the reason for this density of animals is the **generally high water quality of the park's rivers and abundant source of food.**
- 4.3 The River Truim is the main watercourse within the survey area, running parallel to the A9 along much of the existing A9 corridor. Within the survey area the Truim has characteristics of a more lowland, meandering river. There are varying sizes and shapes to the tributaries feeding the Truim, including man-made ditches and small burns. The presence of the current A9 road and the railway line has affected the connectivity of many of these channels as well as the water quality. Land use practices have also greatly reduced the amount of riparian vegetation found along these burns as well.
- 4.4 Though the River Truim runs parallel to the A9 trunk road through much of Project 8, there is little habitat of value to otters found along it and its tributaries suitable for otter sheltering. Land use along the Truim is predominantly grazing between the river and the road. Intensive grazing coupled with vegetation types present, has meant that the dense cover usually used by otters for sheltering is not present in any significant amounts.
- 4.5 Beyond the river, to the west, the land becomes more upland in character and is managed as a sport estate. Land management practices along Project 8 include regular muirburn, which keeps vegetation down.
- 4.6 Additionally, the water levels of the watercourses, at the time of survey, were quite low. Despite a predominantly wet summer in 2015, the water level for the River Truim was much reduced from its standard carrying capacity. Personal communication with the head gamekeeper within the Project 8 survey indicated that much of the water from the local watercourses is diverted to serve hydro-schemes both locally and further south, in Pitlochry.
- 4.7 Despite the healthy population within the park as a whole, evidence of otter activity within the Project 8 survey area is very low overall considering the number and size of watercourses present. Sprainting was only recorded in eight locations within this project. Four of the spraint locations were within culverts under the A9, and its nearby cycle path, (Target Notes O2, O3, and O5) **and Wade's Road (O6, near Cuiach).** There were old spraints at each of these sites, but fresh deposits were also left at O2 and O3. A sprainting site (O4) was also located under the aquaduct crossing of the River Truim out the outskirts of Dalwhinnie, on both banks. The other three spraint locations were along the banks of watercourses, one on Allt Coire nan Cisteachan (O1) and

the other two at the north end of the survey area, near Crubenmore Bridge at the bankside of the River Truim (O7) and under a small wooden footbridge near the river (O8); these were recent spraints. No signs of otter shelter, either holt, hover or couch, were recorded. More details on the target notes recorded can be found in Appendix 1 and their locations can be found on the Figures in Appendix 2.

### Water vole

- 4.8 Several riparian areas are present within the Project 8 survey area, as described above, which offer some suitability for water vole, particularly west of the A9, or could be made more attractive to water voles with little intervention. The more lowland characteristic of the River Truim and its tributaries in the west makes it generally more suitable for water vole, though the presence of suitable food species is a key requirement. Habitat to the east of the A9 is generally unsuitable for water vole due to lack of foraging grass species, suitable bank structure and water flow.
- 4.9 Very few signs of active water vole populations were found within the Project 8 survey area. One possible exception to this was the sighting of a few droppings consistent with water vole and foraging signs (WV6) along a small burn between the railway line and the A9, north of Cuiach. No signs of underground burrows were found here **(and the banking didn't seem suitable)**, and though the habitat was suitable for above-ground nests (VH5), none were recorded.
- 4.10 A number of burrows were observed along the grassy bank adjacent to the aquaduct footbridge (WV1). Some very old, degraded droppings, consistent with water vole, were noted nearby. This reach of the River Truim is not generally suitable for water vole due to shallow riffles and fast flow.
- 4.11 At the edge of **the survey area, northwest of Cuiach and very close to Wade's Road**, was a small burn with signs of water vole occupation (WVH3). Bird surveyors had reported a water vole sighting in this area and upon inspection burrows, latrines, lawns and runs were found to be present (WV2, WV3, WV4, and WV5). However, as the small burn flows towards the survey area boundary, it begins to dissipate and the burn channel disappears. Within the survey area, the burn becomes a marsh and signs of water vole equally disappear.

### Badger

- 4.12 Woodland belts are present in sections along the A9 trunk road, and are mostly limited to the east side of the road and at the north and south sections of the Project 8 survey area. These trees are generally no older than around 25 years and were likely planted at the time of the last A9 construction/upgrade. The woodland belts are fragmented and thin, and the ground within these belts is generally wet. The habitat surrounding the woodland belts is open moorland, dominated by heather subjected to regular muirburn. The historic land use, habitats present, and fragmentation from suitable habitats make it unlikely that badgers are present within the survey area. It is possible better quality habitat for badger is present just outwith the survey area, especially in the woodlands surrounding Dalwhinnie.
- 4.13 No evidence of badger was recorded during the survey. Suitable habitat for badger is limited within the Project 8 survey area.

### Red Squirrel

- 4.14 The habitat within the survey area was considered to be sub-optimal for red squirrel. The few woodland belts, mentioned above, were thin and fragmented, with no apparent connection to good quality squirrel woodland. Though some species of tree were producing cones, the woodlands were young overall. The fragmented nature of these belts and their proximity to the A9 make them unattractive and unsuitable for red squirrel.
- 4.15 No signs of red squirrel were recorded within the Project 8 survey area. No grey squirrels were observed at any time while surveyors were in the area, either within or outwith the survey area.

### Wildcat

- 4.16 The lack of cover, e.g. scrub and woodland, for hunting and sheltering habitat, e.g. rocky cairns and dense scrub, made the survey area unattractive for this elusive species. There are various causes of current declines in wildcat numbers but the sub-optimal habitat within Project 8 and levels of human disturbance make this area unlikely to support any regular wildcat visitor. Personal communication from local gamekeepers indicated that though wildcat were once seen in the vicinity of the A9 in past years, they are currently only known to be present in the higher corries, several kilometres away from the A9.
- 4.17 No signs of wildcat were recorded anywhere within the Project 8 survey area.

### Pine Marten

- 4.18 As with the wildcat, the lack of suitable sheltering habitat and cover make the survey area unattractive to pine marten. Though less shy than some other animals and more likely to use buildings for breeding, each pine marten does require a large area of continuous woodland. The lack of large woodland within the survey area makes it unlikely that pine marten are occupying this site. Personal communication with local gamekeepers indicate that the nearest pine marten territory is likely to be well outwith (> 300 m) the survey area, within the woodland, known locally as "Dalwhinnie Wood", along the north shore of Loch Erich.
- 4.19 No signs of pine marten were recorded during the survey.

### Bat Roost Potential

- 4.20 Bat roosting potential (BRP) in the Project 8 survey area was low overall. As mentioned above, there were few suitably mature woodlands and structures offering roosting opportunities. The open habitat and fragmented woodlands make the site a challenging place for bats, especially when combined with the more severe weather and colder temperatures.
- 4.21 The best structure with BRP was the listed **Wade's Bridge** (BT1), just south of Dalwhinnie, at the junction of the A9 with the A889. This stone-built bridge has several deep crevices in the stonework which lead to gaps in the rubble infill. It crosses over the River Truim and is close to a large **woodland at Tom a' Bhacain**. Crubenmore Bridge (BT7) at the top of Project 8 is of similar construction, albeit larger, and also offers roosting potential in the crevices within the stonework, though having undergone repair works in the 1970s, the opportunities may be fewer. Woodland resource near the Crubenmore Bridge is also smaller. Both bridges are classified as BRP 1.
- 4.22 Five other bridge structures and trees with limited BRP were identified during the survey and details on these can be found in Appendices 1 and 2. These other structures are classified as BRP 2 or 3.
- 4.23 All structures, excepting the stone bridges, are of limited BRP due to their exposed locations and the nature of their features. No occupied dwellinghouse within the survey area was assessed for BRP at this time.

### Other Species

- 4.24 Several other species were recorded during the survey if sighted. However, a dedicated search for shelters was not made for these species. The species recorded within Project 8 were brown hare, mountain hare, common lizard, and adder.
- 4.25 The open moorland habitats intermingled with agricultural pasture are suited to the brown hare. The land management targeting grouse, may also create suitable environments for mountain and brown hare.
- 4.26 On the drier, warmer days, common lizards were seen across the site. Again, the open habitat of mixed age heather provided an ideal mosaic of cover (for sheltering) and basking opportunities. On one occasion an adder was observed on the low heathery banks of the Allt Cuiach.
- 4.27 Only one pond was recorded within the Project 8 survey area (NGR NN 65694 87516), though other very small ponds could be present at different times of year. This pond had small newts

present, but it was not possible to identify them with fleeting glimpses. The pond is formed within a heavily poached scoop at one end of a livestock creep under the railway line, near Cuiach. Though water appears to be present year round, the water level does fluctuate a great deal, depending on rain and evaporation rates. A habitat suitability index (HSI) score was calculated for this pond with a resulting score of 0.279 which is considered 'poor' suitability.

## 5 Discussions and Recommendations

### Field Study

- 5.1 The habitats within the Project 8 survey area appear, on the surface, to be suitable for several protected vertebrates, such as badgers, otters and water voles. However, the dearth of protected terrestrial vertebrates recorded on site is unsurprising when one examines the influence of land use at the site. Dalwhinnie is one of the highest and coldest villages in the UK. Its exposed location, high altitude, and heavy snowfall in winter will make survival here a challenge for many small animals. The combination of high disturbance and challenging conditions has made Project 8 less attractive for most of the protected terrestrial vertebrates targeted in this survey.
- 5.2 The east side of the A9 trunk road, within the Project 8 survey area, is almost exclusively managed as a game estate. Regular muirburn was evident, which is a management technique used for rearing grouse. Game estates also tend to employ trapping of small predators, such as stoats and weasels, and this was evident across the survey area. The land management practices employed on game estates can result in reduced habitat for larger species, such as badgers and otters, and can affect vegetation structures for smaller species such as water vole. Active management of small predators can also discourage the presence of the slightly larger hunters, such as pine marten and wildcat, even when they are not targeted.
- 5.3 Also influencing the habitats within Project 8 is the recent construction of the Beauly to Denny Overhead Line (OHL), which runs parallel to A9 trunk road through the entire Project 8 corridor, and removal of the previous OHL. The majority of these works were confined to the east side of the road within Project 8 and have been carried out over the previous two years. The disturbance of these works was quantified in the Environmental Statement for that project (available on the Scottish Government website<sup>11</sup>). The works, though largely complete, were still ongoing at the time of the survey, with the temporary access tracks being mechanically reinstated and the pylons of the old line being dismantled and collected.
- 5.4 The combination of the historic land management on the east side of the A9 and the recent disturbances caused by the replacement of a major OHL will have made the eastern half of the survey area less suitable and attractive for many terrestrial species.
- 5.5 Most of the human residents of Project 8 are west of the A9 and are concentrated at the village of Dalwhinnie. Dalwhinnie is also an important tourist destination in the region, with many visitors each year. General human presence and high activity levels will likely discourage the more elusive species, such as wild cat and possibly otter.
- 5.6 The River Truim, which forms the main survey area boundary for the west side of the road, is a relatively large river channel, but flow has been significantly reduced with water being diverted to hydro-schemes. Most of the water from the catchment surrounding this section of the A9 is channelled to a pipeline which feeds the Pitlochry Dam, approximately 50 km southeast. The low flow resulting from this diversion, coupled with general lower rainfall in summer may also contribute to reduced otter activity in the survey area. It may be possible that otters are more active in the survey area during other seasons when low-flow prey are available, such as amphibians in early spring, or when flows are higher and can carry prey fish. The lower flow can also affect the suitability of some watercourses for water vole.
- 5.7 Though opportunities for otter sheltering is relatively low, pre-construction checks for otter will be required, especially if works commence within a different season to the baseline survey period.

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<sup>11</sup> <http://www.gov.scot/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/Beauly-Denny-Index/Environmental-Statement>

- 5.8 Though bat roosting potential was low overall in the Project 8 survey area, it does exist. As such, follow-up bat surveys were undertaken in August 2015 and July 2016. The aim of the surveys was to determine if there are any bat roosts within the survey area and to gain an idea of the level of bat activity in the Project 8 area. No structure surveyed was determined to be a bat roost and activity level was very low overall. Although hibernation potential is very low, consideration will be given as to whether any winter surveys are required. The detailed bat survey results can be found in Appendix 5 to this report.
- 5.9 No other follow-up surveys are recommended at this time for terrestrial vertebrates.

# Appendix 1

## Survey Results – Table

### Project 8 Survey Results Target Note Table

Target Note ID	Description	Easting	Northing	Chainage (distance in metres)
<b><i>Otter Records</i></b>				
O1	Single, old spraint at edge of the watercourse.	263978	782357	20800 (38 m)
O2	Otter sprainting site (old and fresh) at the Allt Coire nan Cisteachan under the cycle path.	263985	782358	20800 (35 m)
O3	Otter sprainting site (old and fresh) at the Dalwhinnie Culvert (Allt Coire Bhathaich).	263996	783833	22200 (40 m)
O4	Otter spraints present under the aqueduct access crossing on both the east and west banks. Rat droppings were also present at this location.	263761	784077	22400 (271 m)
O5	Ten old spraints within a very large, round, corrugate culvert under the road. Most of the spraints were at the eastern end of the culvert, with two spraints in the western end.	265030	786216	24900 (10 m)
O6	Three old spraints within a large culvert under the A9 road.	265068	787458	26100 (701 m)
O7	A single recent spraint on a boulder on the bankside of a burn.	267551	790393	30000 (223 m)

Target Note ID	Description	Easting	Northing	Chainage (distance in metres)
O8	Two old spraints on a boulder under an old wooden footbridge. There is some lie-up potential under this bridge.	267683	791279	30900 (52 m)
HS1	Banks of the river with large patches of rock armouring, blending with heather and willow scrub offering otter sheltering opportunities, though no signs were found.	263921	783166	21600 (16 m)
HS4	Willow scrub at the base of an embankment near the River Truim confluence, with numerous rabbit holes. There are sheltering opportunities for otter.	265002	786263	24900 (44 m)
HS8	Gorge-like river channel with large boulders. Gaps were observed behind the boulders but it was too dangerous to physically reach to inspect. There are sheltering opportunities for otter.	267731	789517	29200 (64 m)
HS9	Large estate vehicle bridge with gaps under bridge offering sheltering opportunities.	267797	791052	30700 (54 m)
HS10	Rocky river gorge with good commuting and couch opportunities. No signs of otter found at the time.	267888	791073	30700 (73 m)
<b>Water Vole Records</b>				
WVH1	Slower moving reaches of this small burn are suitable for WV but no signs found. Possible mitigation location.	263868	781906	20300 (42 m)
WVH2	Distillery lagoons checked for WV but water quality unlikely to be appropriate. No WV signs were found.	264464	786111	24600 (287 m)
WVH3	Area checked due to WV sighting. No signs of WV within approximately the 100 m buffer where burn starts to dissipate and channel disappears into	265369	787731	26400

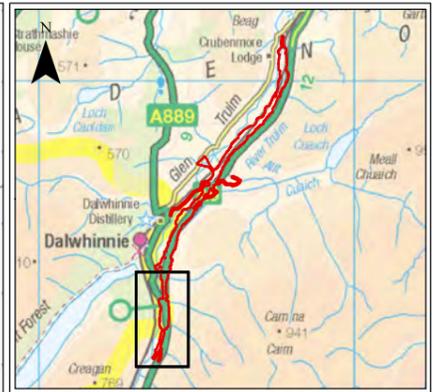
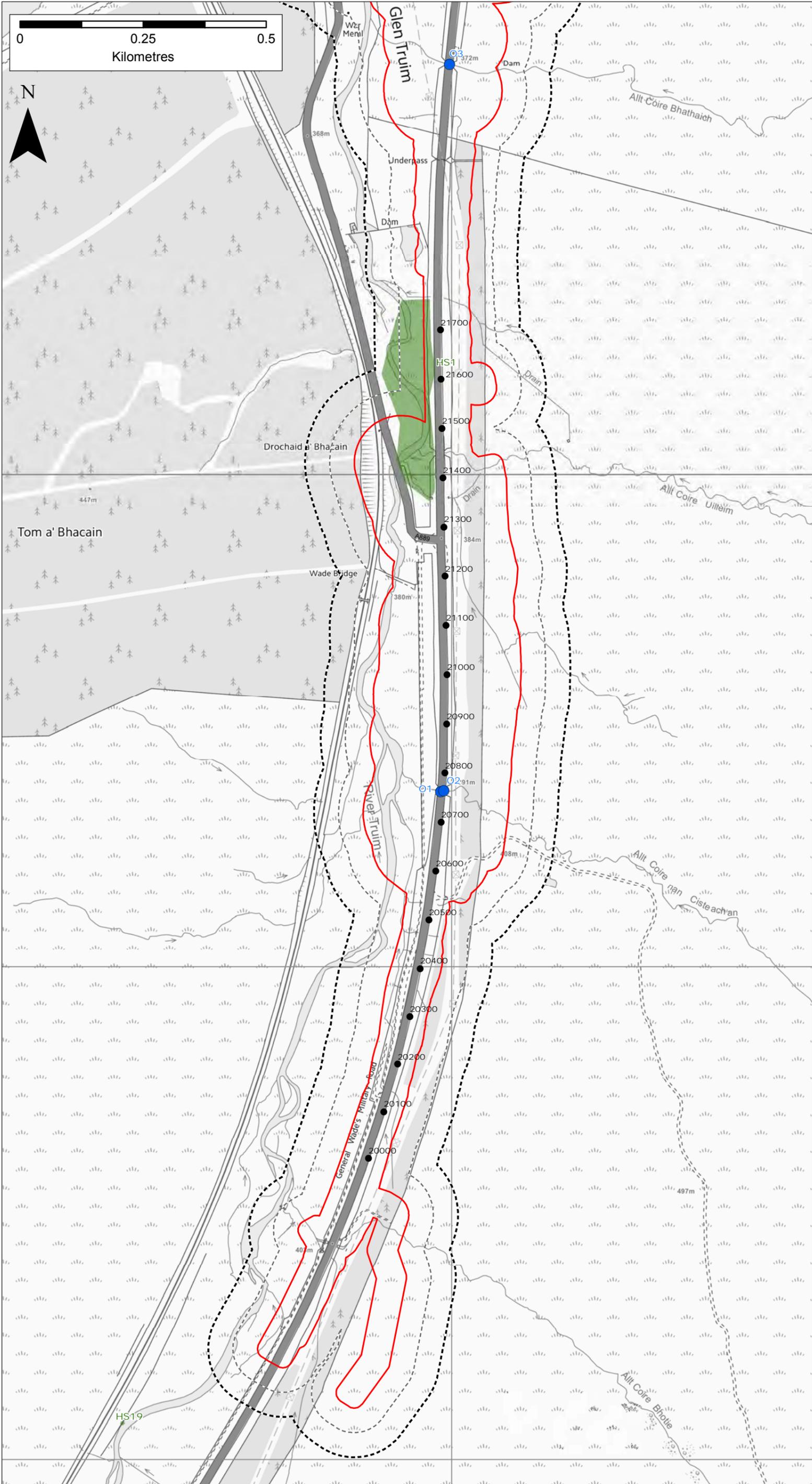
Target Note ID	Description	Easting	Northing	Chainage (distance in metres)
	marshy grassland. In area beyond buffer (where channel is present), latrines, burrows, runs, and lawns were noted.			(526 m)
WVH4	A narrow burn which is suitable for WV, but no evidence noted. Possible mitigation site.	265913	787767	26600 (88 m)
WVH5	Grassy burn near the road with few WV droppings but no underground burrows. Possible above-ground nests and runs were noted.	267032	788804	28300 (30 m)
WVH6	Burn with a likely normal width of 1 m and slow flow but high, fast flow at time of survey (1.5 m wide). During normal flow could be suitable for WV; bordered by marshy vegetation. No signs of WV found.	267544	790011	29400 (127 m)
WV1	A number of burrows (10+), some with small number of old droppings and feeding remains. Burrows and droppings found further upstream as well. Droppings were very old and the river was not ideal for WV.	263747	784085	22500 (285 m)
WV2	Around 15 recent droppings, with signs of foraging (grazed lawn).	265327	787685	26400 (565 m)
WV3	Burrow with upward facing entrance around 2 feet from channel edge.	265330	787686	26400 (563 m)
WV4	Around 30 recent droppings along small burn, very poached.	265329	787689	26400 (564 m)
WV5	Small tributary into the River Truim. Recent droppings, around 25, 2 feet from channel edge. Poached banks with low banks.	265347	787708	26400 (556 m)
WV6	Runs seen within rushes along flush. Ten recent droppings and some foraging signs were noted but no burrows were seen. Banking does not	267208	788968	28400

Target Note ID	Description	Easting	Northing	Chainage (distance in metres)
	seem suitable.			(54 m)
<b>Bat Roost Potential Records</b>				
BA1	Wade's Bridge over River Truim - stone built with rubble infill. Offers BRP 1 and hibernation potential; Pipistrelles and Daubenton's possible	263887	782788	21200 (99 m)
BA2	At top of box culvert, along the wall head joint. BRP 2	263996	783834	22200 (40 m)
BT1	Limb hole offering BRP 2	265282	786580	25300 (55 m)
BT2	Old brick-built box culvert under railway line, entrance 1.5 m high by 1 m wide, narrows inside to 1x1m. Gaps in the brick work within the culvert offer roosting opportunities. BRP 2	267712	790703	30300 (71 m)
BT3	Railway bridge with crevices in the stonework giving BRP 2	267717	791063	30700 (35 m)
BT4	Three wind-damaged trees with upward facing cracks. BRP 3	267781	791233	30800 (63 m)
BT5	Crubenmore Bridge, adjacent to a private garden, spanning across the River Truim. Stone-built & filled with rubble; it was subject to conservation work several decades ago. Roosting potential in the gaps in mortar; possible hibernation potential. BRP 1	267653	791334	30900 (96 m)
BT6	Wade's Bridge over River Truim - stone built with rubble infill. Offers BRP 1 and hibernation potential. Pipistrelles and Daubenton's roosting possible.	263887	782788	21200 (99 m)

Target Note ID	Description	Easting	Northing	Chainage (distance in metres)
BT7	At top of box culvert, along the wall head join. BRP 2	263996	783834	22200 (40 m)

# Appendix 2

## Survey Results – Figures



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Otter sign - spraint
  - Potential habitat

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		16/12	Field survey - draft	EL	-

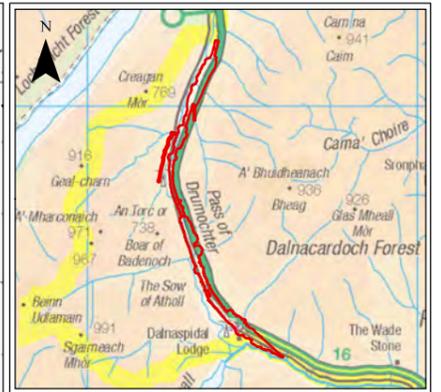
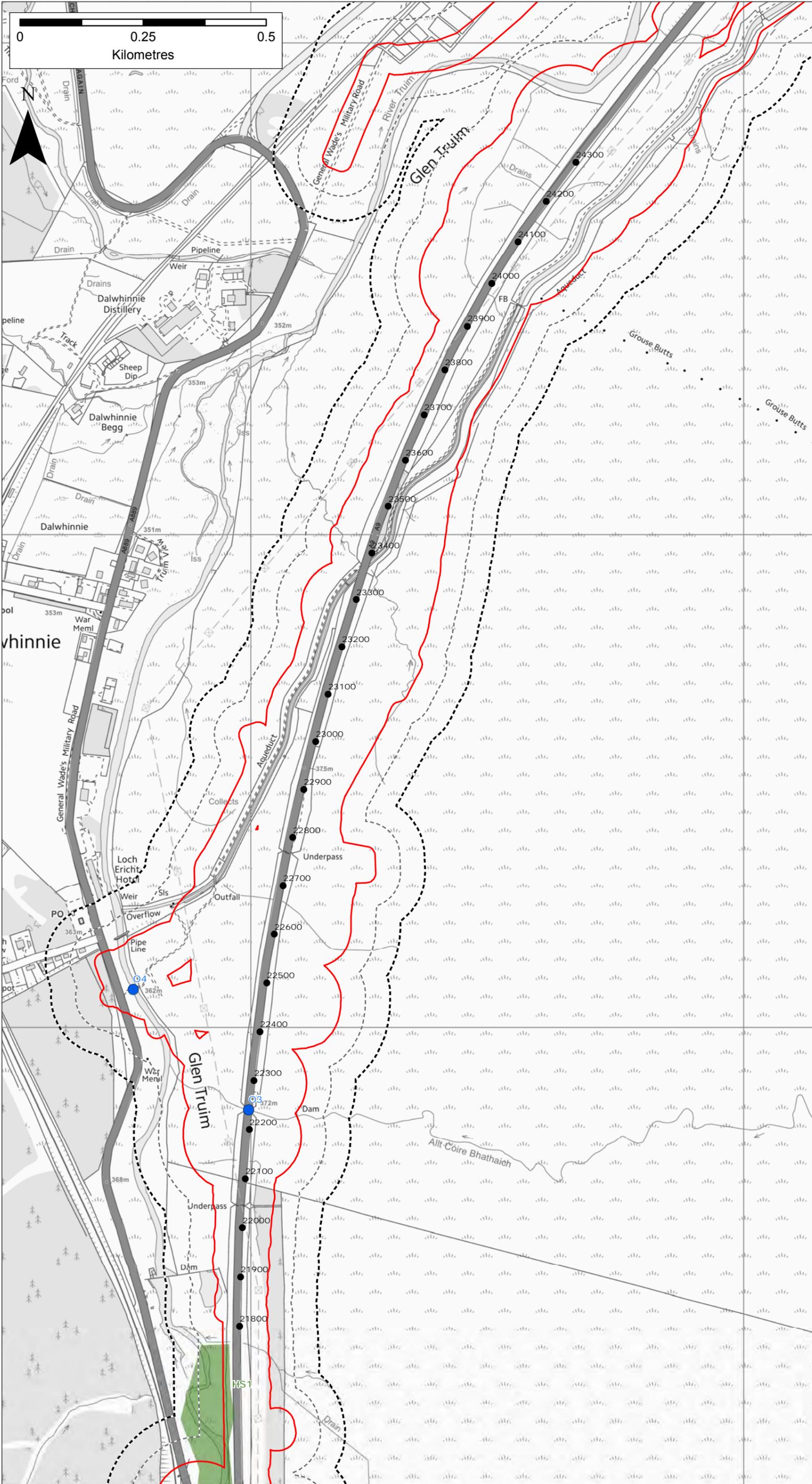
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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Field Study  
 Otter Records  
 Section 1

Drawing No:  
 A9GGDALR - MAP 1 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Otter sign - spraint
  - Potential habitat

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		16/12	Field survey - draft	EL	-

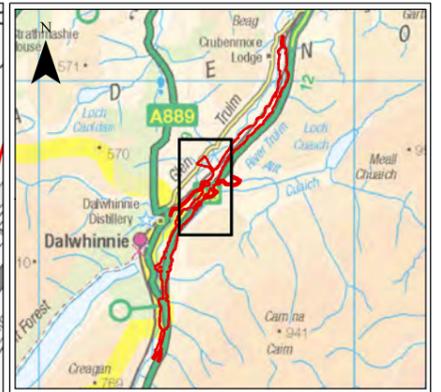
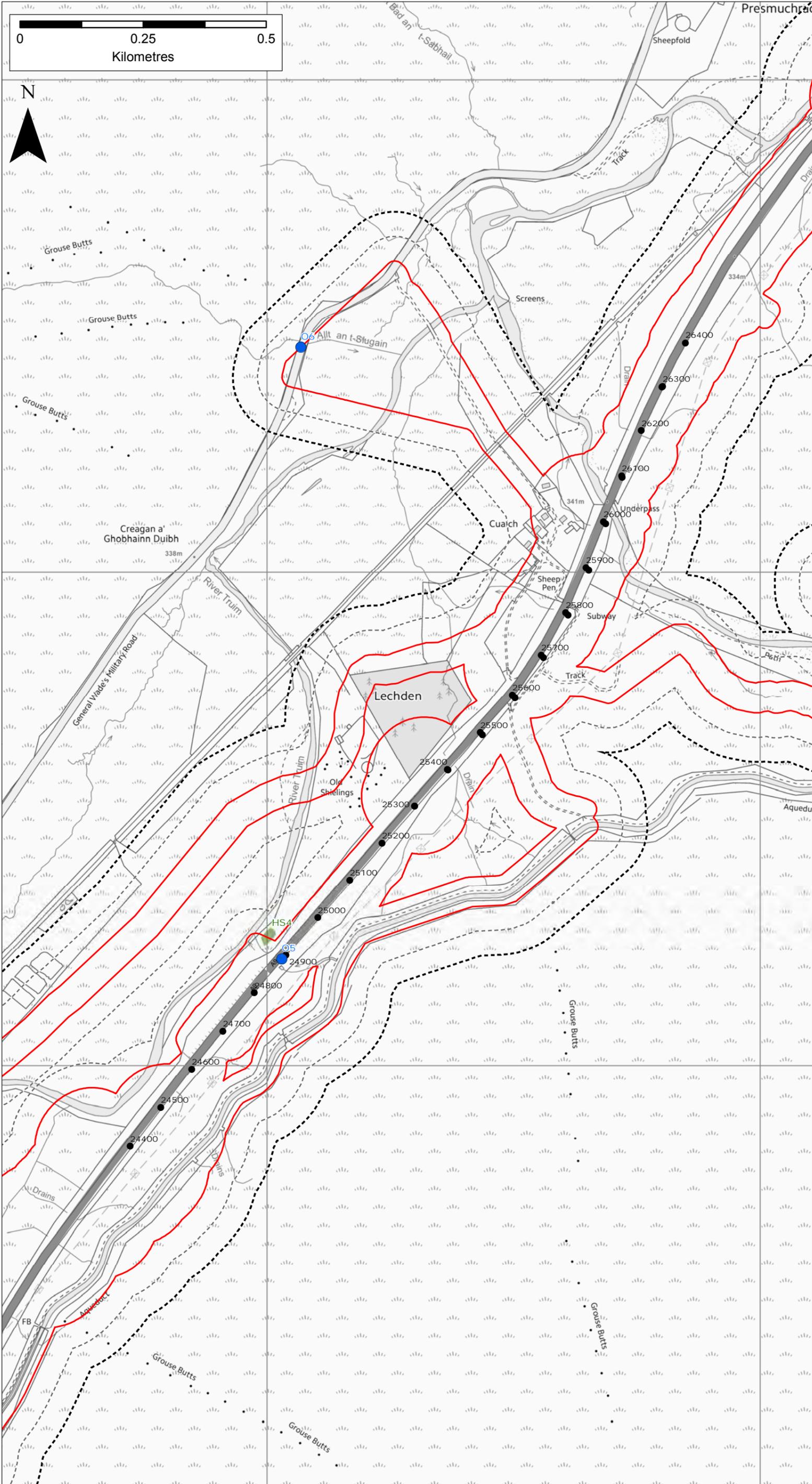
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Field Study  
 Otter Records  
 Section 2

Drawing No: A9GGDALR - MAP 2 of 5 Rev 2  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Otter sign - spraint
  - Potential habitat

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		09/16	Final	EL	JT
1		16/12	Field survey - draft	EL	-

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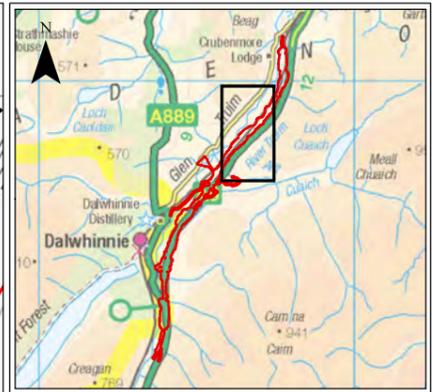
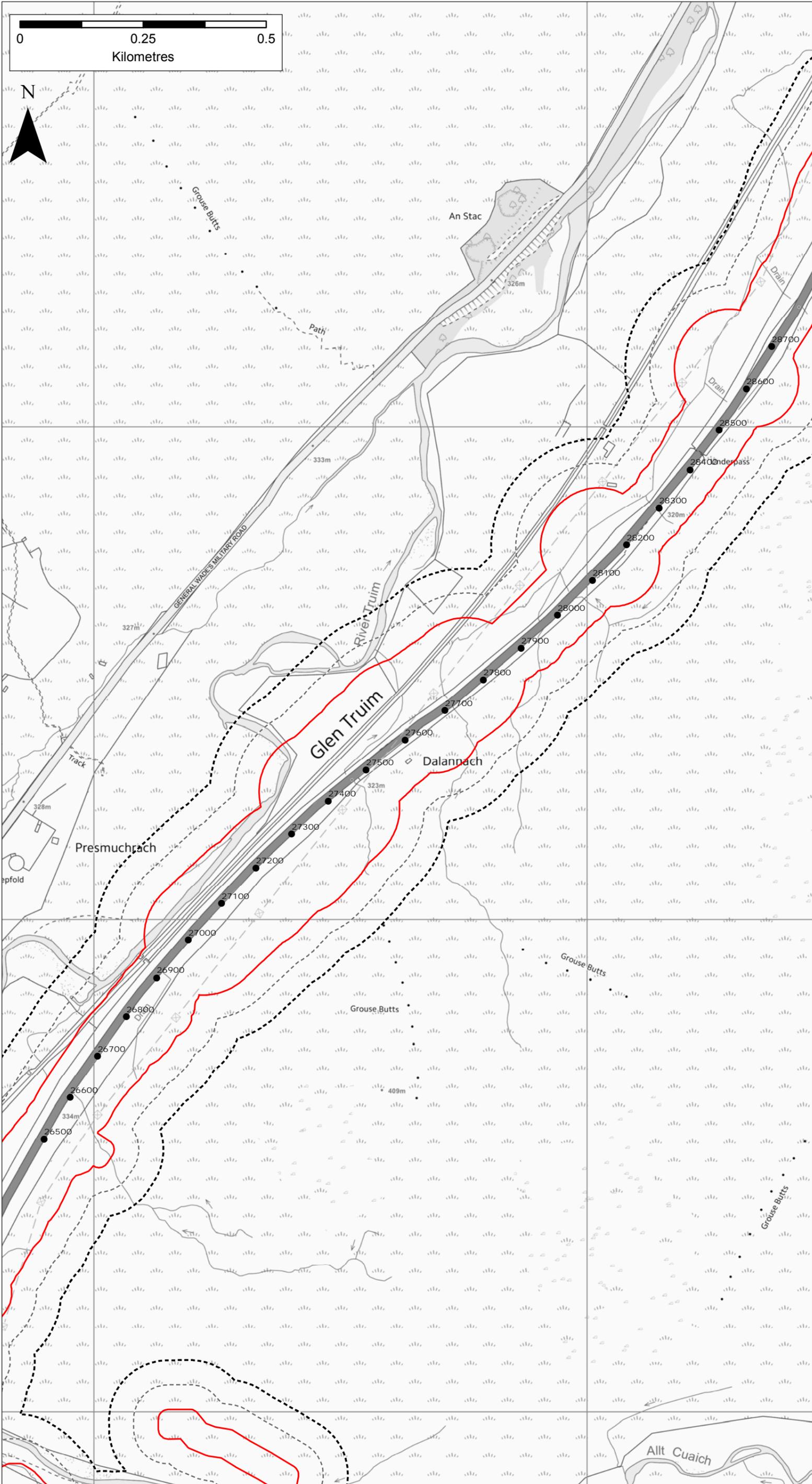


Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Field Study  
 Otter Records  
 Section 3a

Drawing No: A9GGDALR - MAP 3 of 5 Rev 2

Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage

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1		16/12	Field survey - draft	EL	-

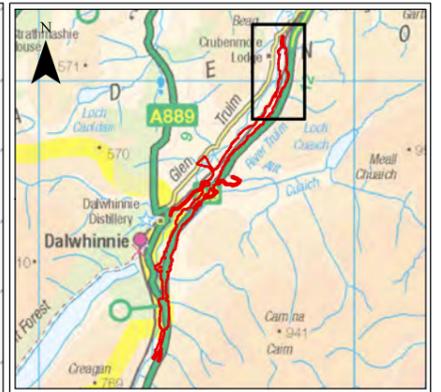
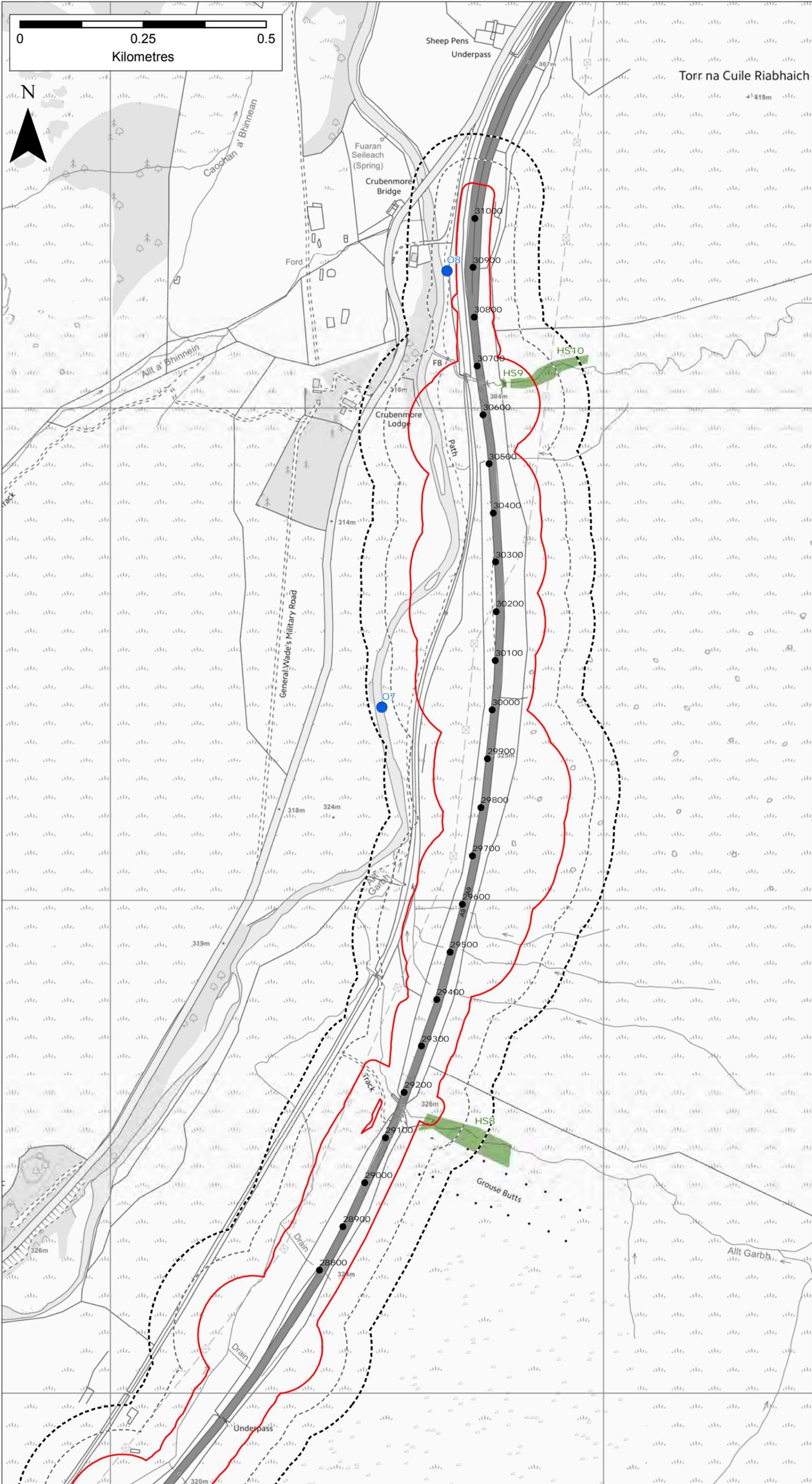
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
**Project 8 – Ecology Field Study  
 Otter Records  
 Section 3b**

Drawing No: A9GGDALR - MAP 4 of 5 Rev 2  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Otter sign - spraint
  - Potential habitat

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		16/12	Field survey - draft	EL	-

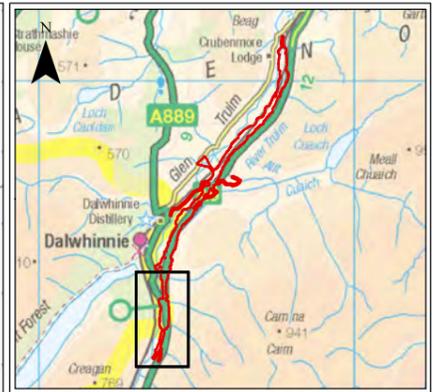
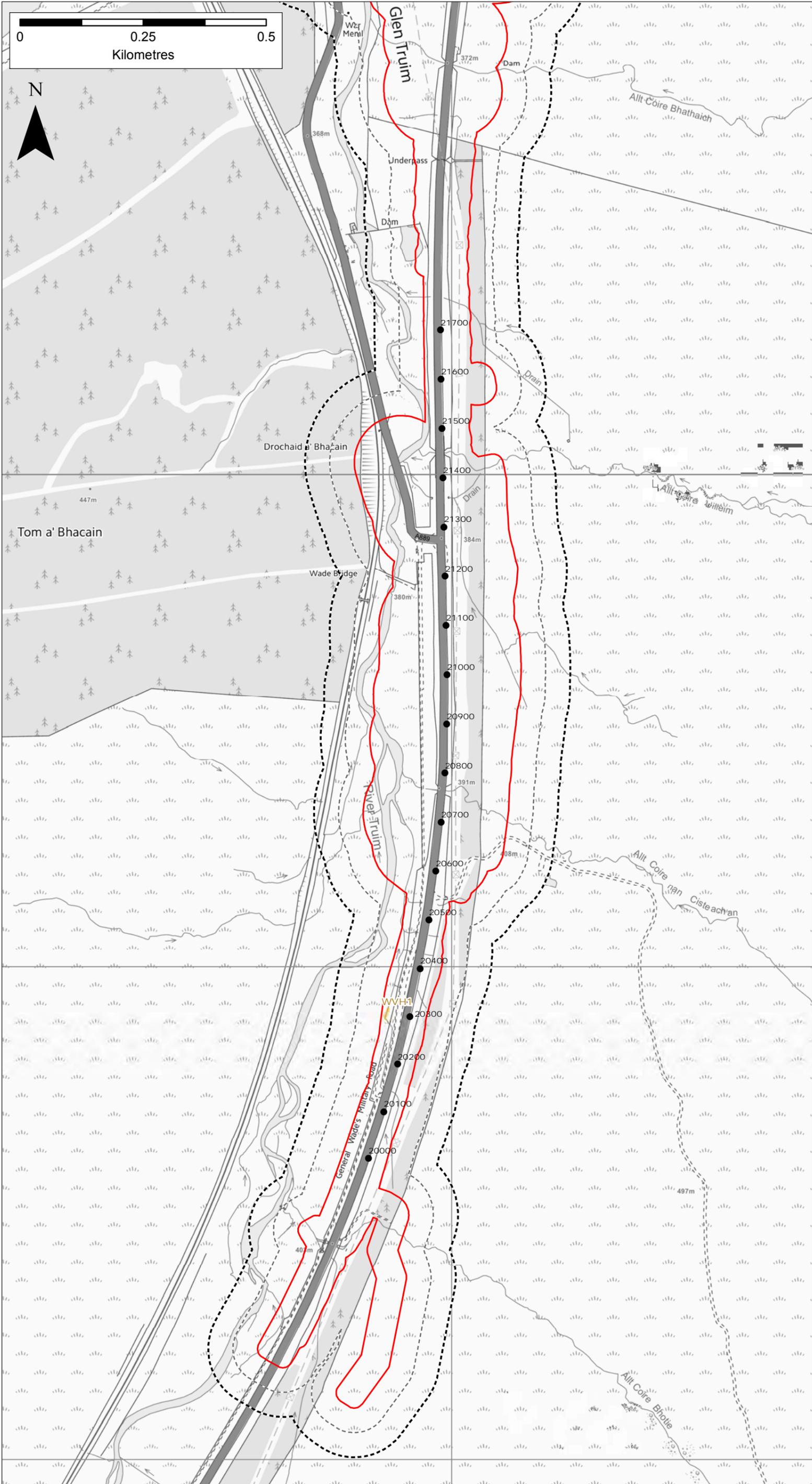
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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Field Study  
 Otter Records  
 Section 4

Drawing No:  
 A9GGDALR - MAP 5 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Potential habitat (no sign of water vole)

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		16/12	Field survey - draft	EL	-

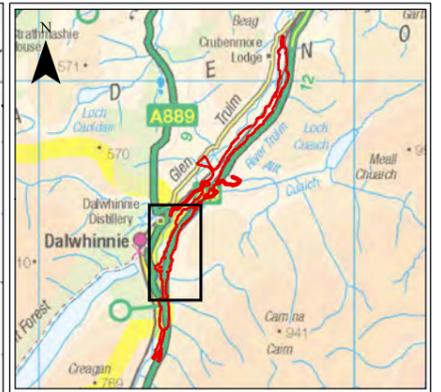
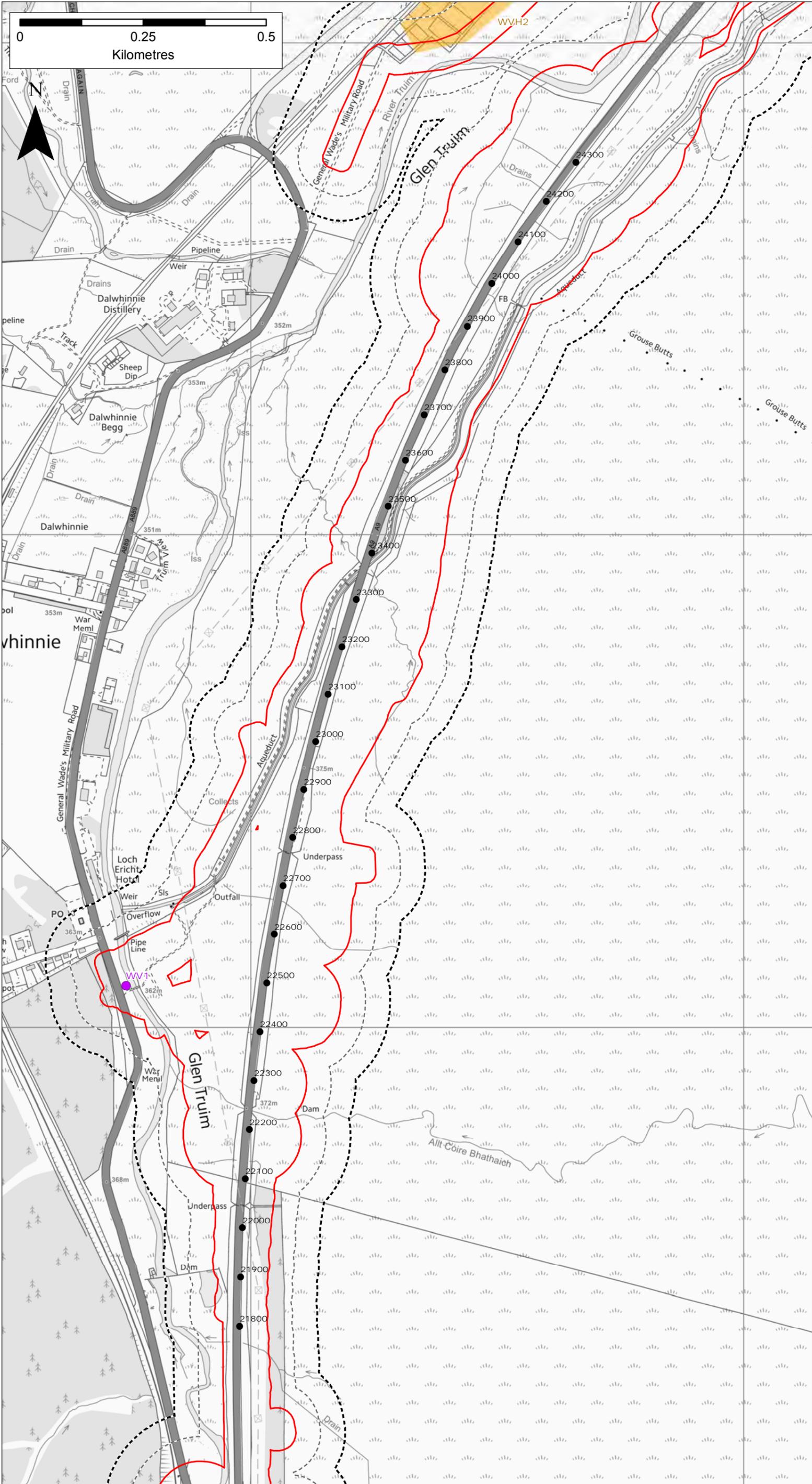
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
**Project 8 – Ecology Field Study  
 Water Vole Records  
 Section 1**

Drawing No:  
 A9GGDALR - MAP 1 of 5 Rev 2



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Water vole - other sign
  - Potential habitat (no sign of water vole)

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		16/12	Field survey - draft	EL	-

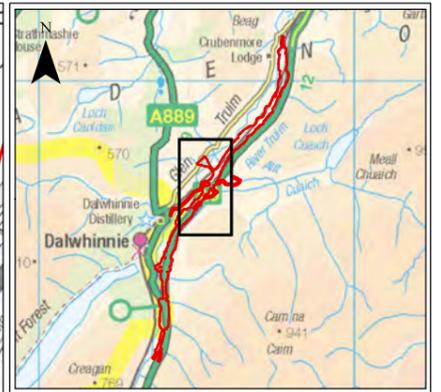
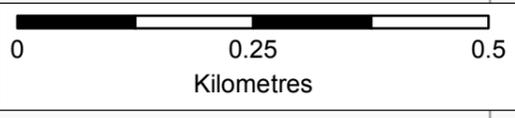
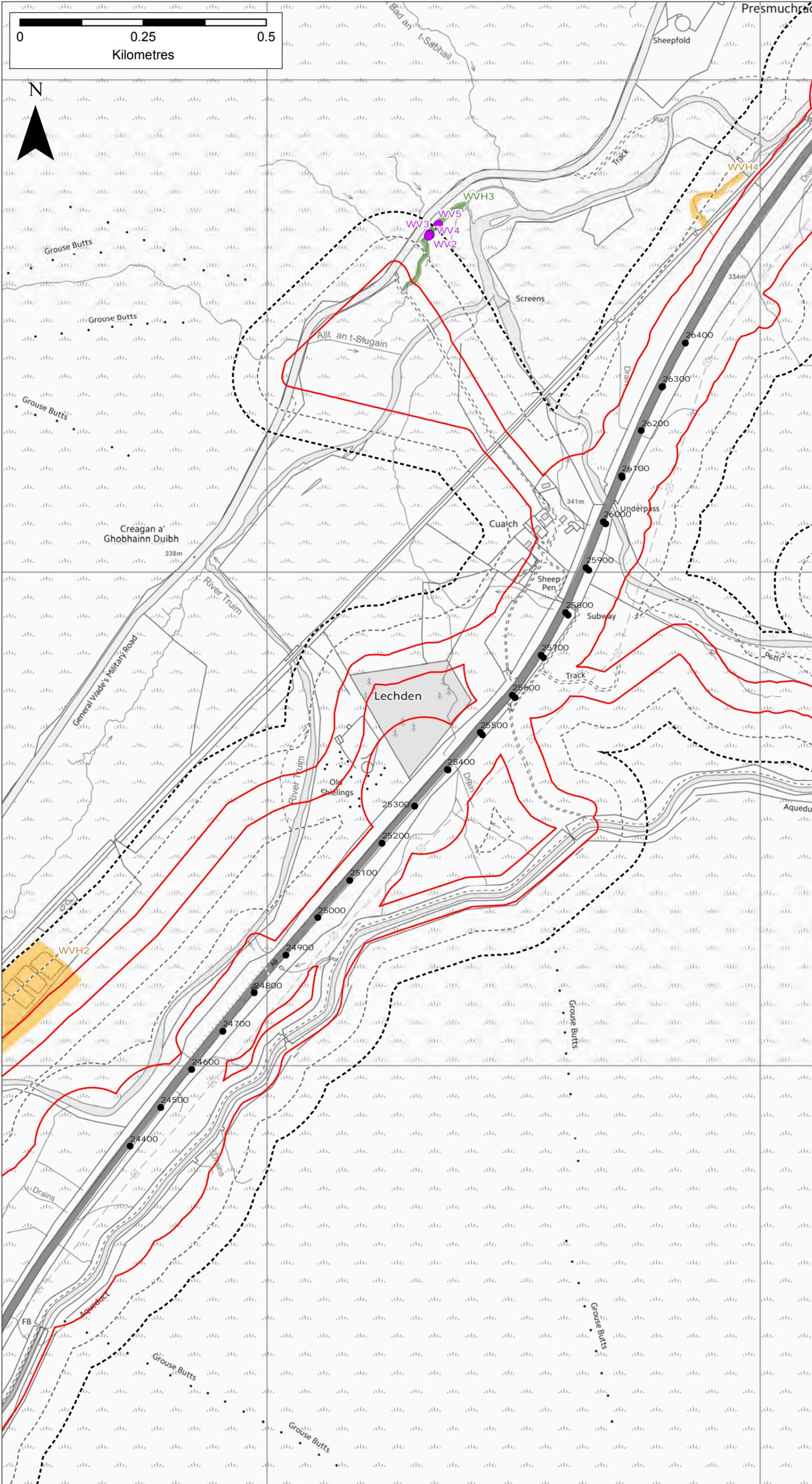
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Field Study  
 Water Vole Records  
 Section 2

Drawing No: A9GGDALR - MAP 2 of 5 Rev 2  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Water vole - other sign
  - Water vole habitat (signs found)
  - Potential habitat (no sign of water vole)

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		16/12	Field survey - draft	EL	-

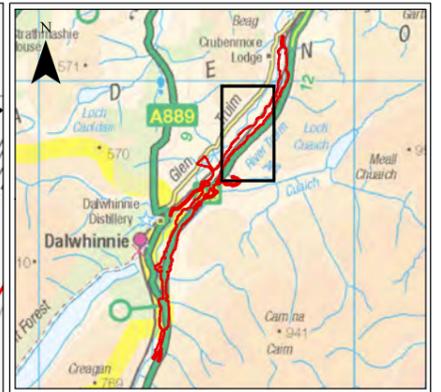
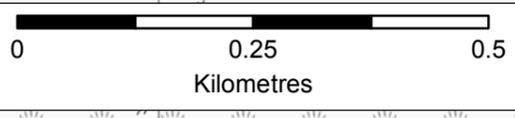
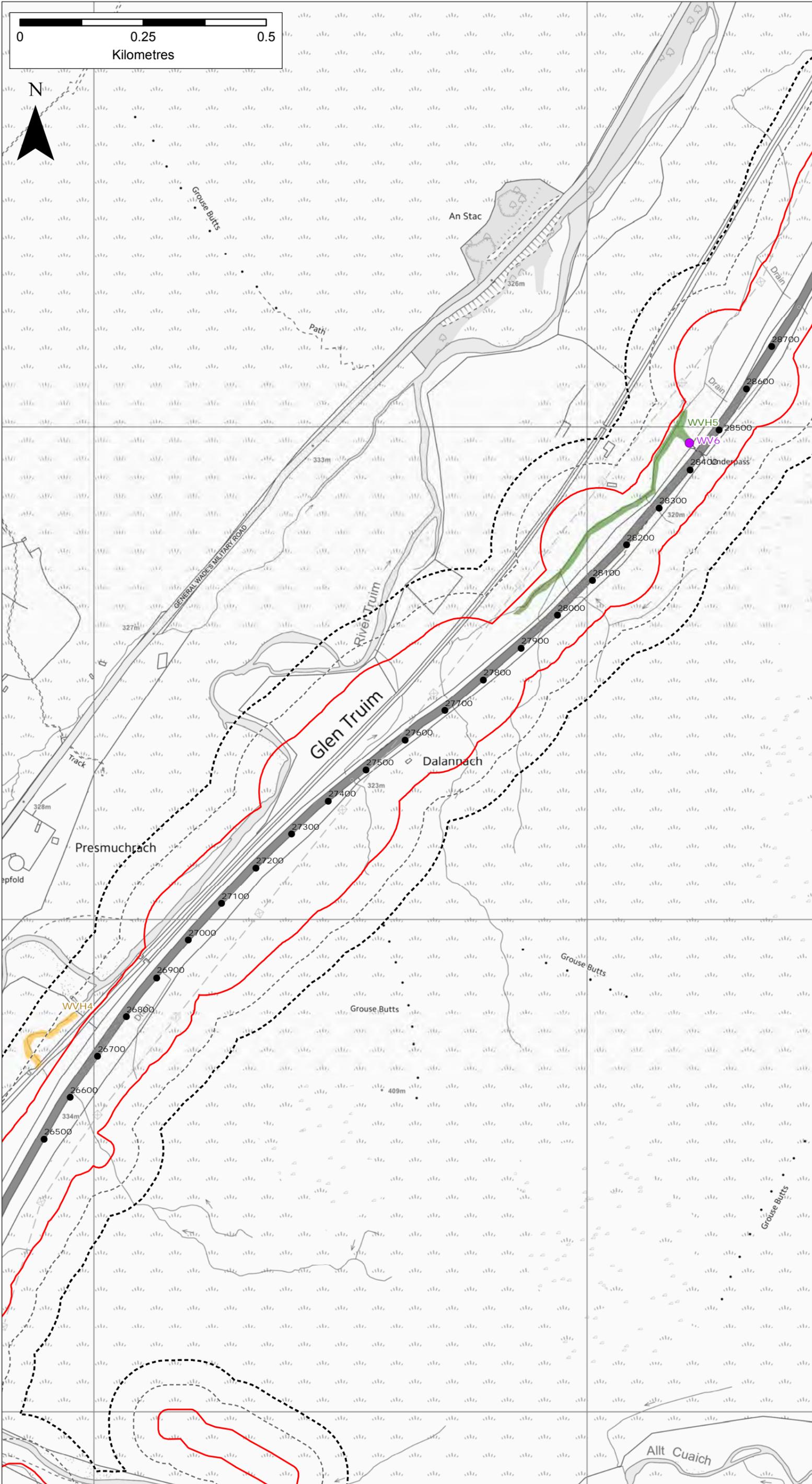
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Field Study  
 Water Vole Records  
 Section 3a

Drawing No:  
 A9GGDALR - MAP 3 of 5 Rev 2



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Water vole - other sign
  - Water vole habitat (signs found)
  - Potential habitat (no sign of water vole)

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		16/12	Field survey - draft	EL	-

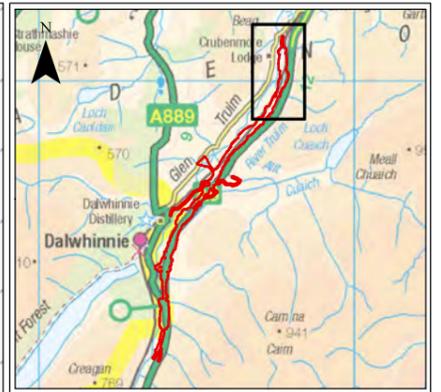
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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Field Study  
 Water Vole Records  
 Section 3b

Drawing No:  
 A9GGDALR - MAP 4 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Water vole - other sign
  - Water vole habitat (signs found)
  - Potential habitat (no sign of water vole)

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		09/16	Final	EL	JT
1		16/12	Field survey - draft	EL	-

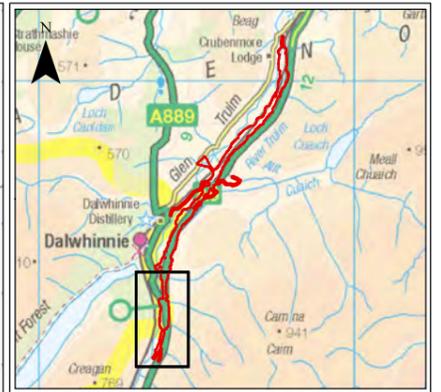
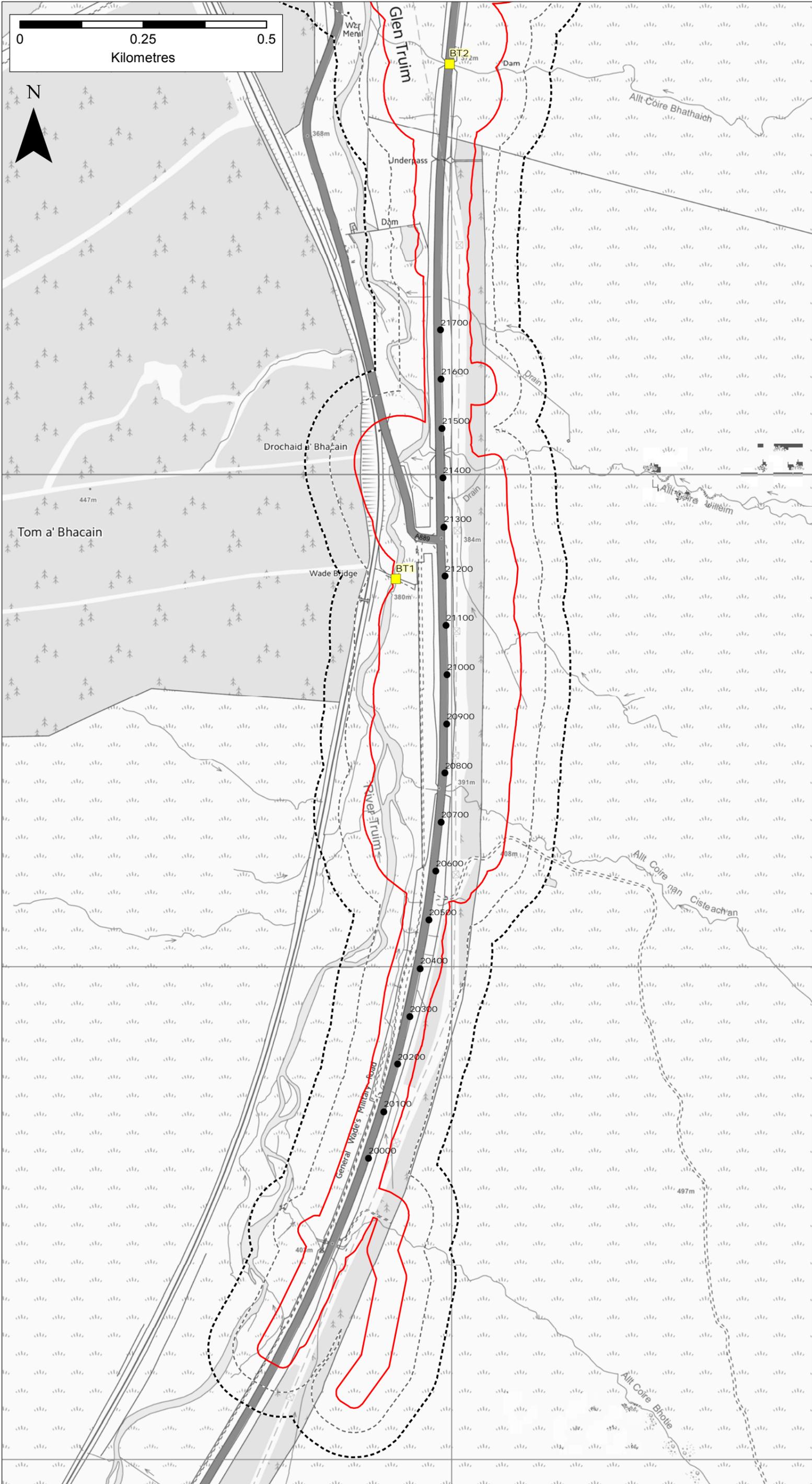
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
**Project 8 – Ecology Field Study  
 Water Vole Records  
 Section 4**

Drawing No:  
**A9GGDALR - MAP 5 of 5** Rev **2**  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Bat roosting potential

REV	SUIT	DATE	DESCRIPTION	BY	APP
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3		09/2016	Final draft	EL	JT
2		06/2016	Update	EL	-
1		16/12	Field survey - draft	EL	-

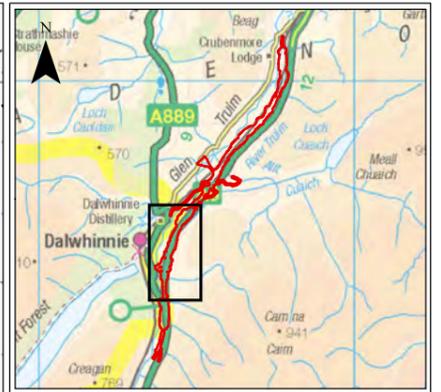
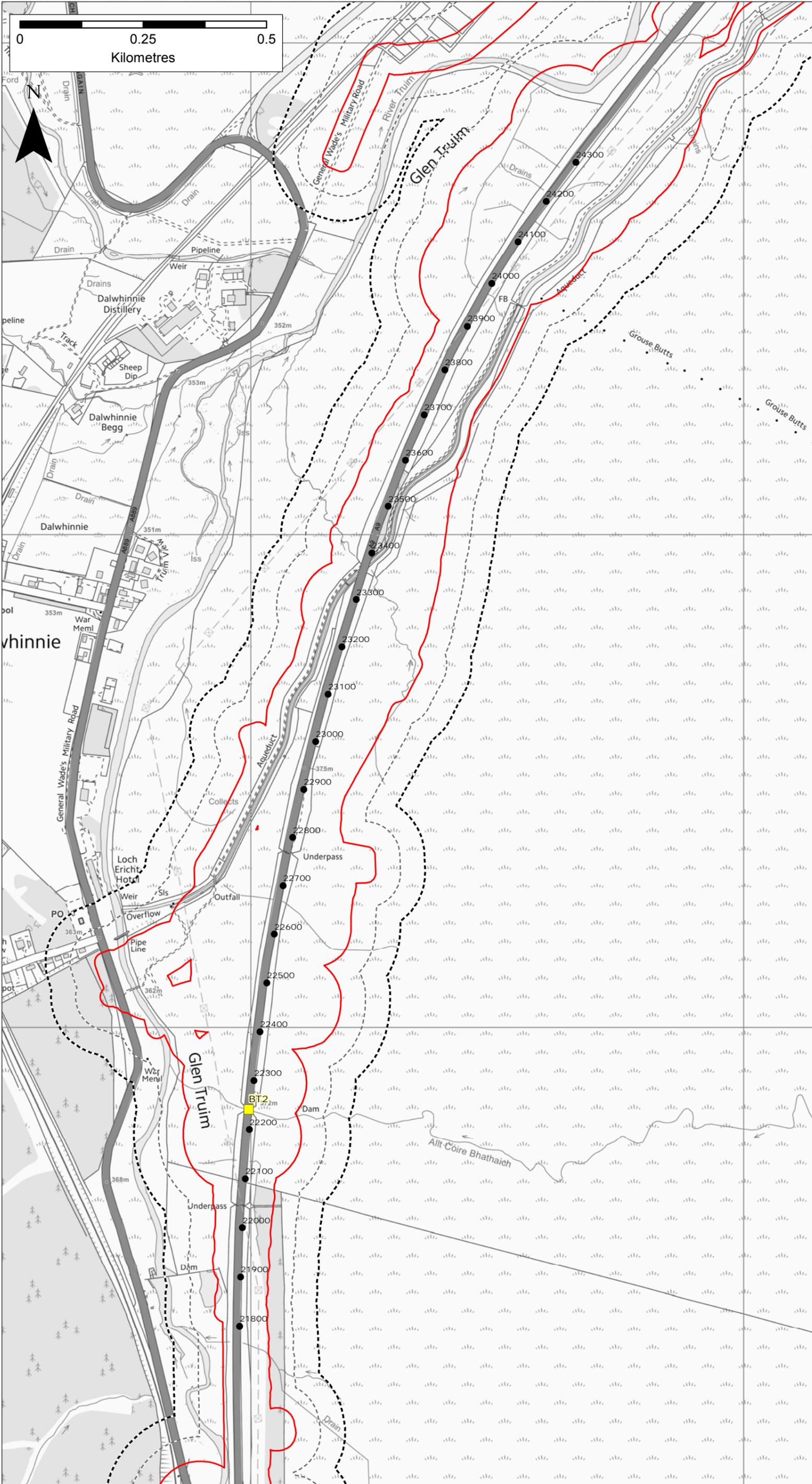
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
**Project 8 – Ecology Field Study  
 Bat Records  
 Section 1**

Drawing No:  
 A9GGDALR - MAP 1 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Bat roosting potential

REV	SUIT	DATE	DESCRIPTION	BY	APP
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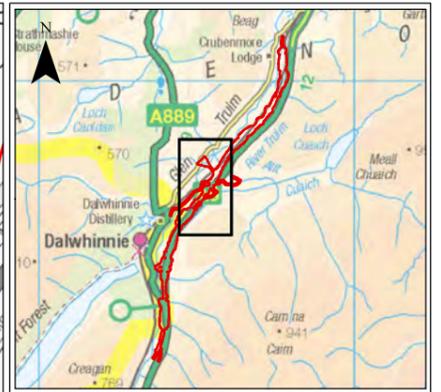
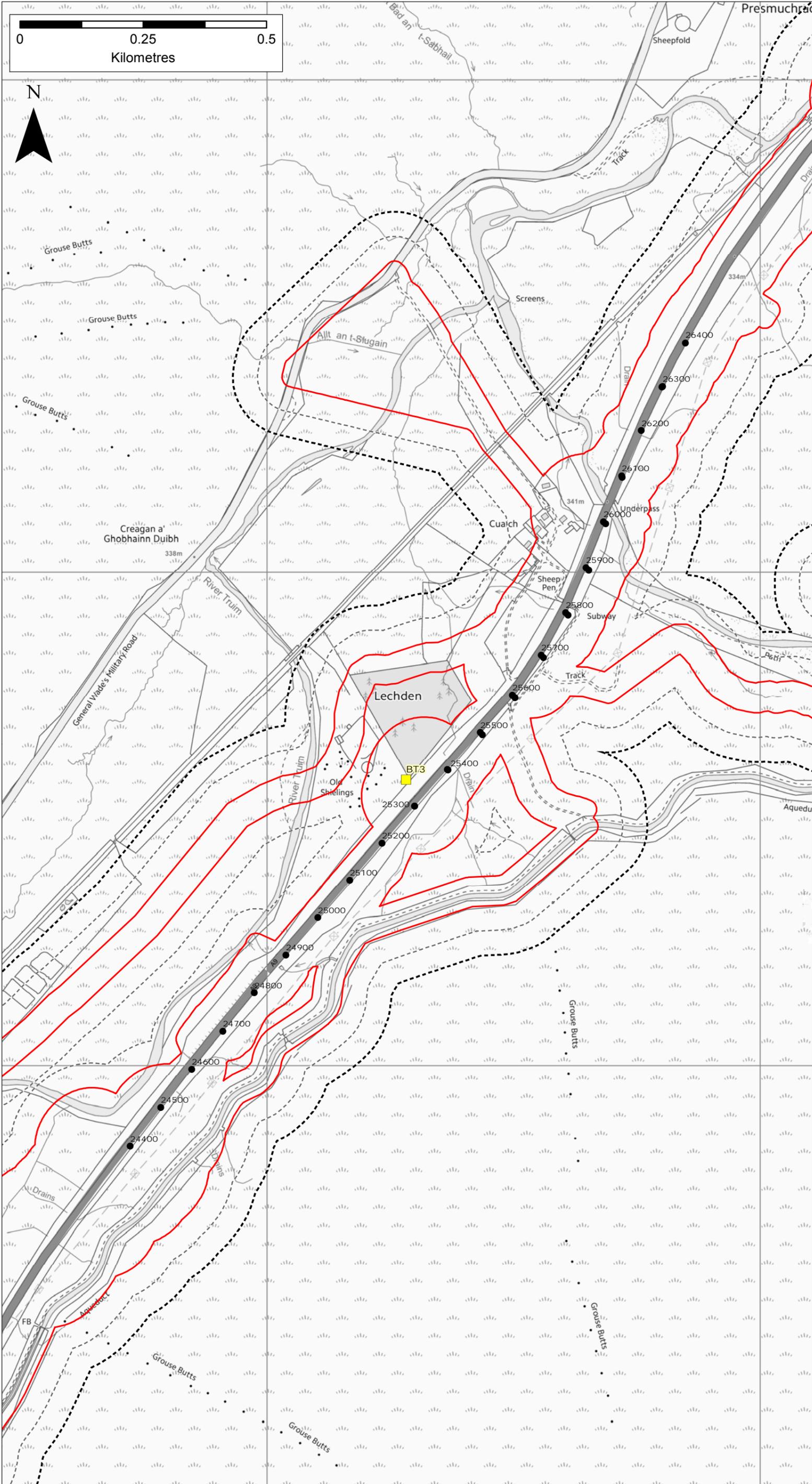
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Field Study  
 Bat Records  
 Section 2

Drawing No: A9GGDALR - MAP 2 of 5 Rev 4  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Bat roosting potential

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		16/12	Field survey - draft	EL	-

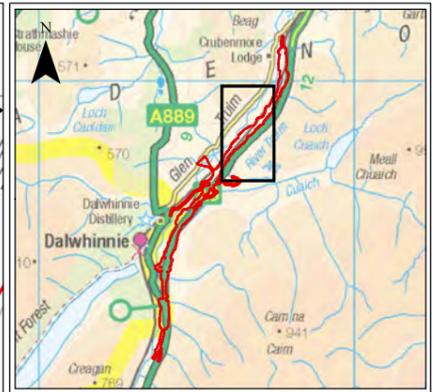
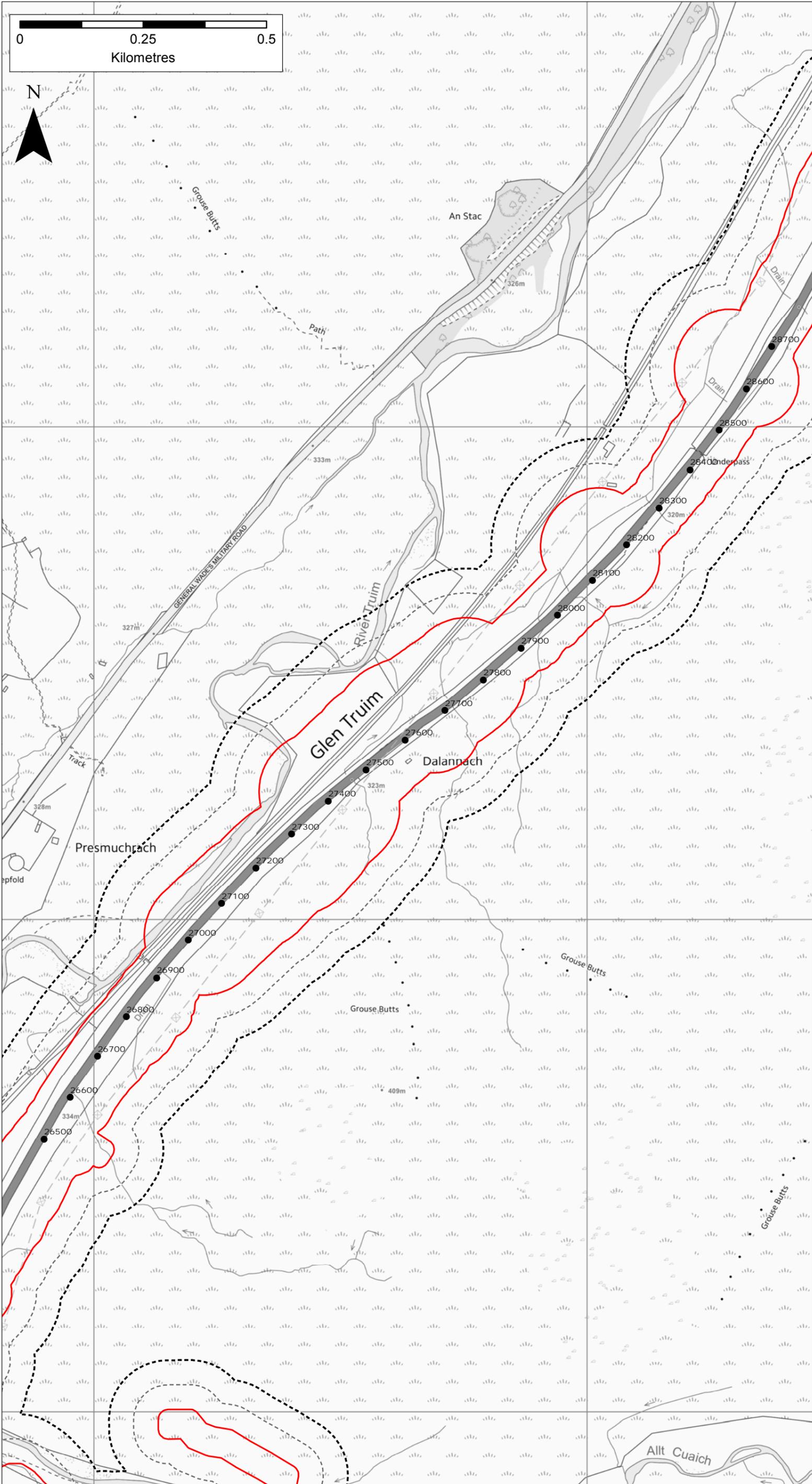
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Field Study  
 Bat Records  
 Section 3a

Drawing No: A9GGDALR - MAP 3 of 5 Rev 4  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage

REV	SUIT	DATE	DESCRIPTION	BY	APP
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3		09/2016	Final draft	EL	JT
2		06/2016	Update	EL	-
1		16/12	Field survey - draft	EL	-

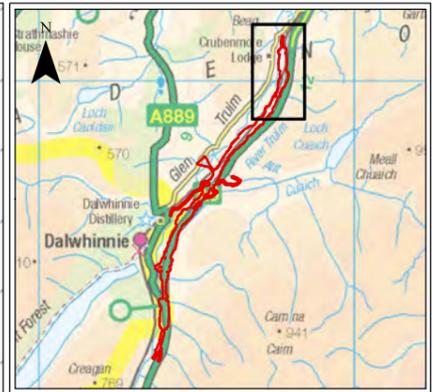
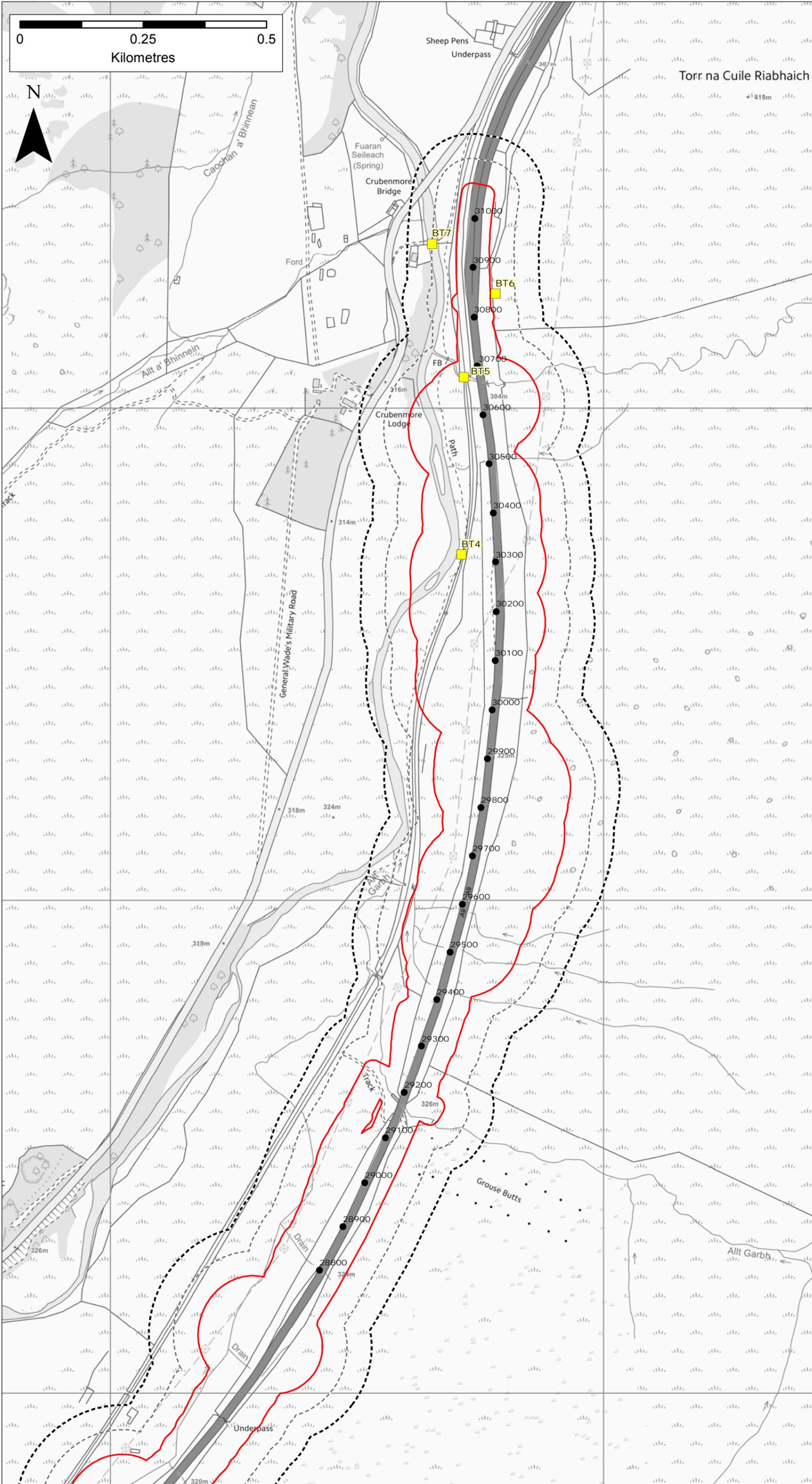
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
**Project 8 – Ecology Field Study  
 Bat Records  
 Section 3b**

Drawing No: A9GGDALR - MAP 4 of 5 Rev 4  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Bat roosting potential

REV	SUIT	DATE	DESCRIPTION	BY	APP
4		09/2016	Final	EL	JT
3		09/2016	Final draft	EL	JT
2		06/2016	Update	EL	-
1		16/12	Field survey - draft	EL	-

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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Field Study  
 Bat Records  
 Section 4

Drawing No: A9GGDALR - MAP 5 of 5 Rev 4  
 Drawing scale @ A3 = 1:7,500

# Appendix 3

## Photographs

### Otters



8\_05\_1

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### Water Voles



8\_WV1\_11

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**Bats**



**8\_BT2\_1**



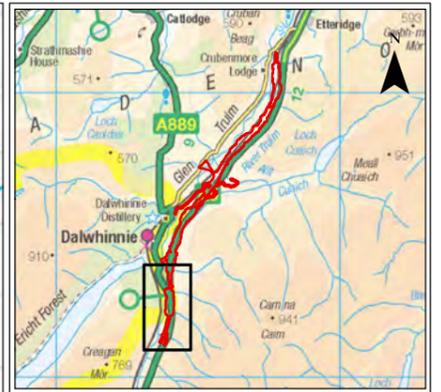
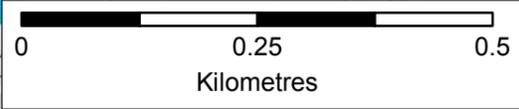
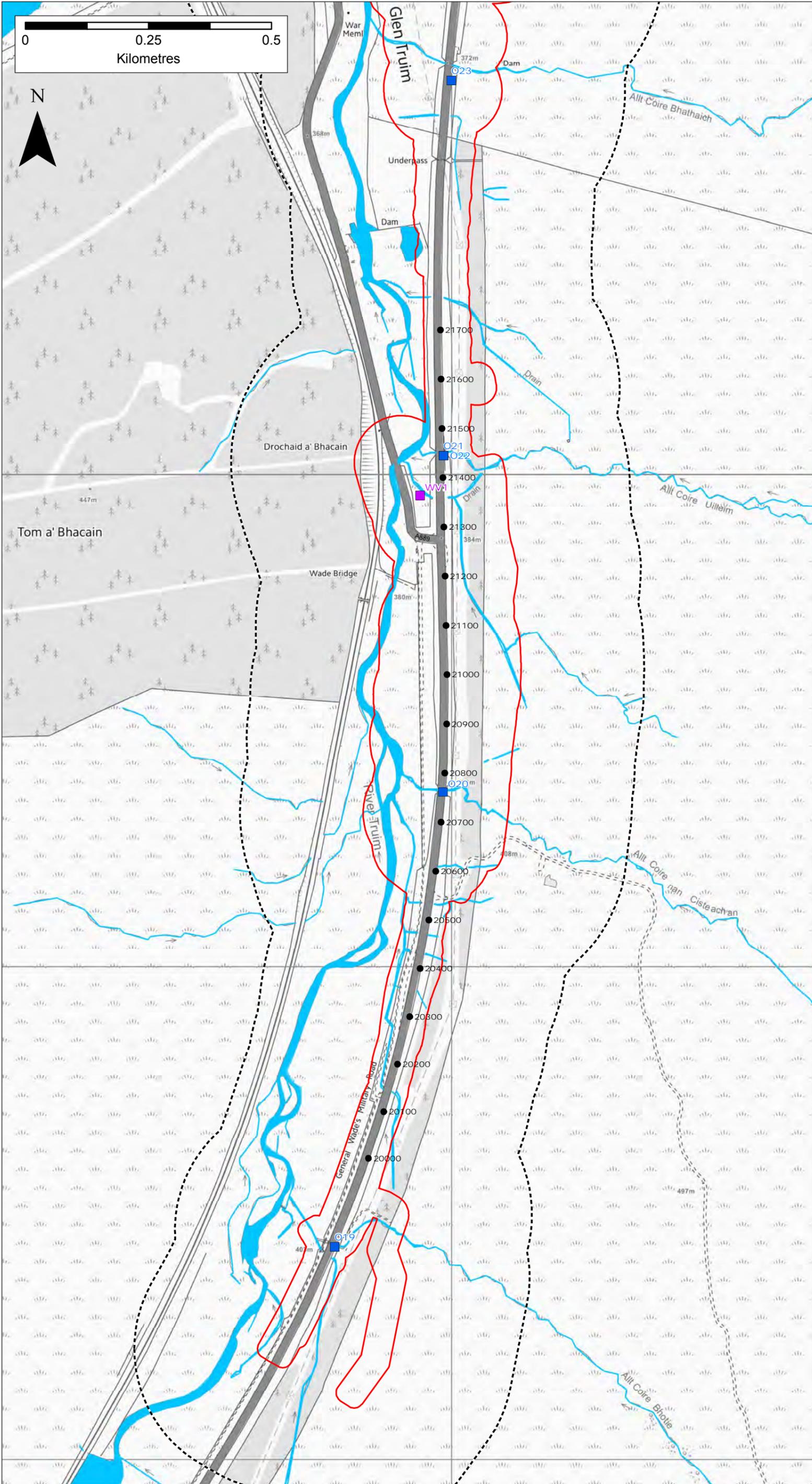
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## Appendix 4

### Desk Study Results – Table and Figures

#### Project 8 Desk Study Summary Table

Map Code	Species	Comment	Section	Closest Chainage (Distance in m)	National Grid Reference (NN)	Date
BG1	Badger	Road casualty	1	21200 (87)	63900 82800	August 2004
BT3	Bat	Bridge/ culvert with bat roost potential	2	22300 (57)	63968 83851	2014
O20	Otter	Spraint	1	20800 (38)	63983 82356	2014
O21	Otter	Spraint	1	21400 (45)	63984 83039	2014
O22	Otter	Spraint	1	21400 (45)	63984 83039	2014
O23	Otter	Spraint	2	22200 (8)	64000 83800	2014
O24	Otter	Spraint	3	26000 (43)	65688 87146	2014
WC1	Wildcat	Unverified wildcat/ hybrid sighting: Large tabby cat with thick ringed tail	1	20200 (79)	63950 81750	February 2012
WV1	Water Vole	Burrow	1	21400 (59)	63936 82958	2014
WV2	Water Vole	Droppings and runs	2	22400 (34)	63991 84012	2014
WV3	Water Vole	Latrine	2	22400 (12)	64022 84004	2014
WV4	Water Vole	Water Vole sighted in culvert	4	29200 (58)	67635 89569	2014



- KEY**
- Project 8 footprint
  - 250m from project footprint
  - Section chainage
- Species record**
- Otter
  - Water vole
- Habitat potentially suitable for otter and water vole**
- Watercourse

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		10/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

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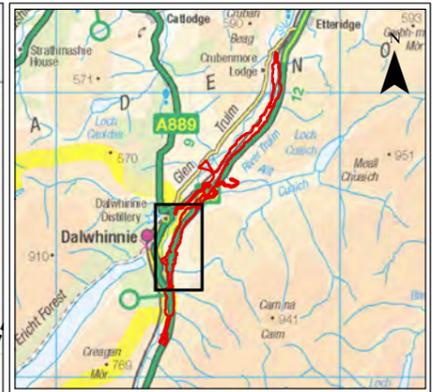
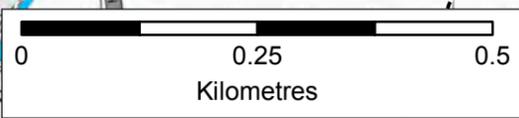
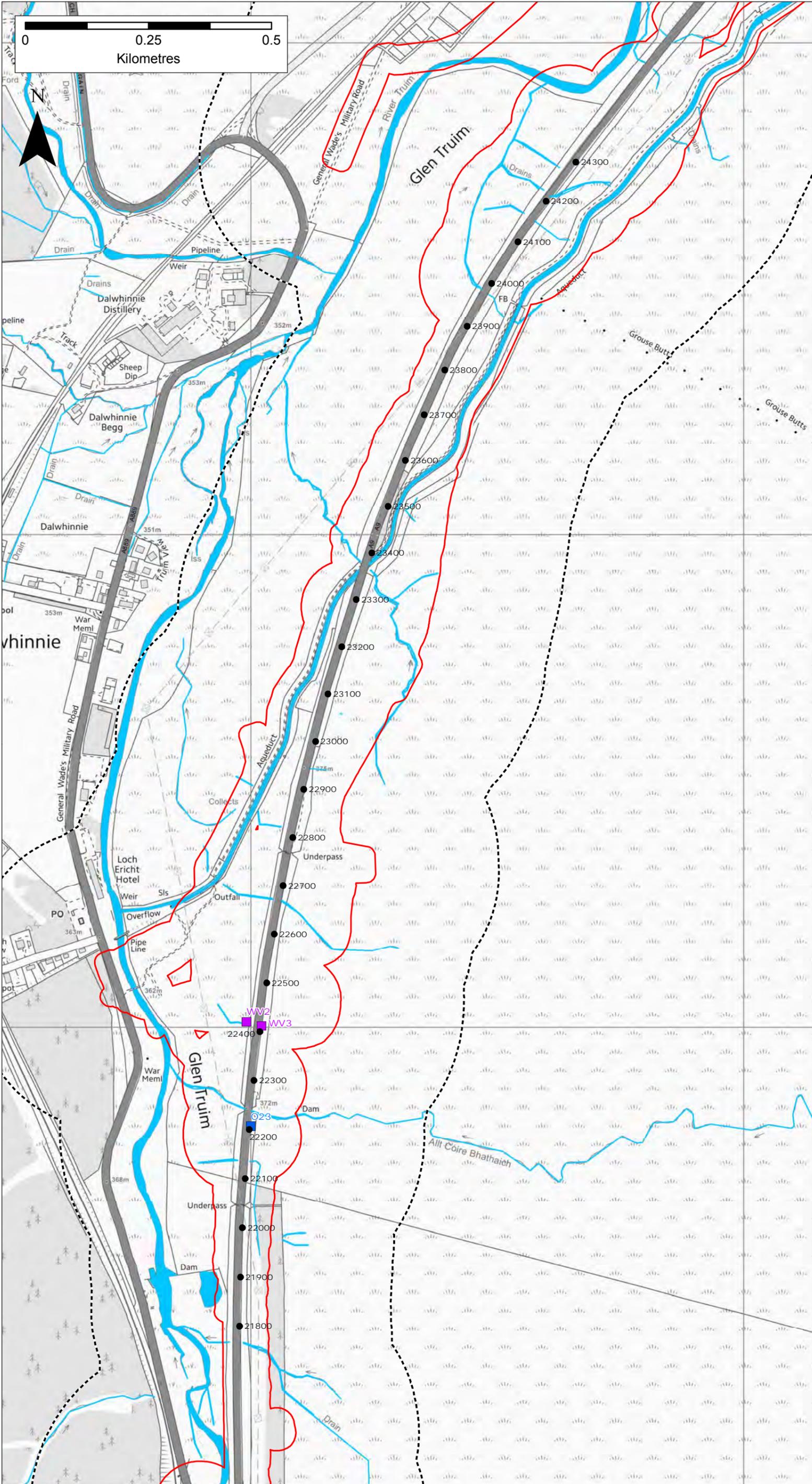


Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Desk Study  
 Water Vole and Otter Records  
 Section 1

Drawing No:  
 A9GGDALR - MAP 1 of 5 Rev -

Drawing scale @ A3 = 1:7,500 Suitability:



- KEY**
- Project 8 footprint
  - 250m from project footprint
  - Section chainage
- Species record**
- Otter
  - Water vole
- Habitat potentially suitable for otter and water vole**
- Watercourse

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

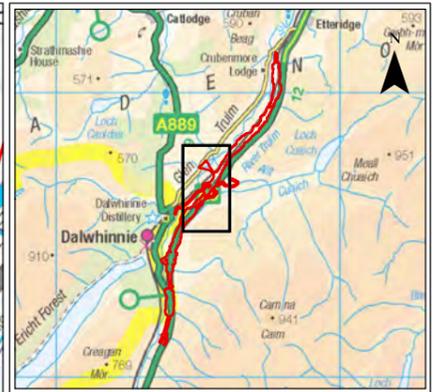
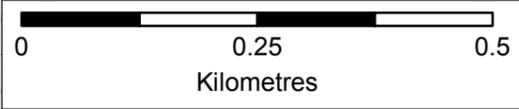
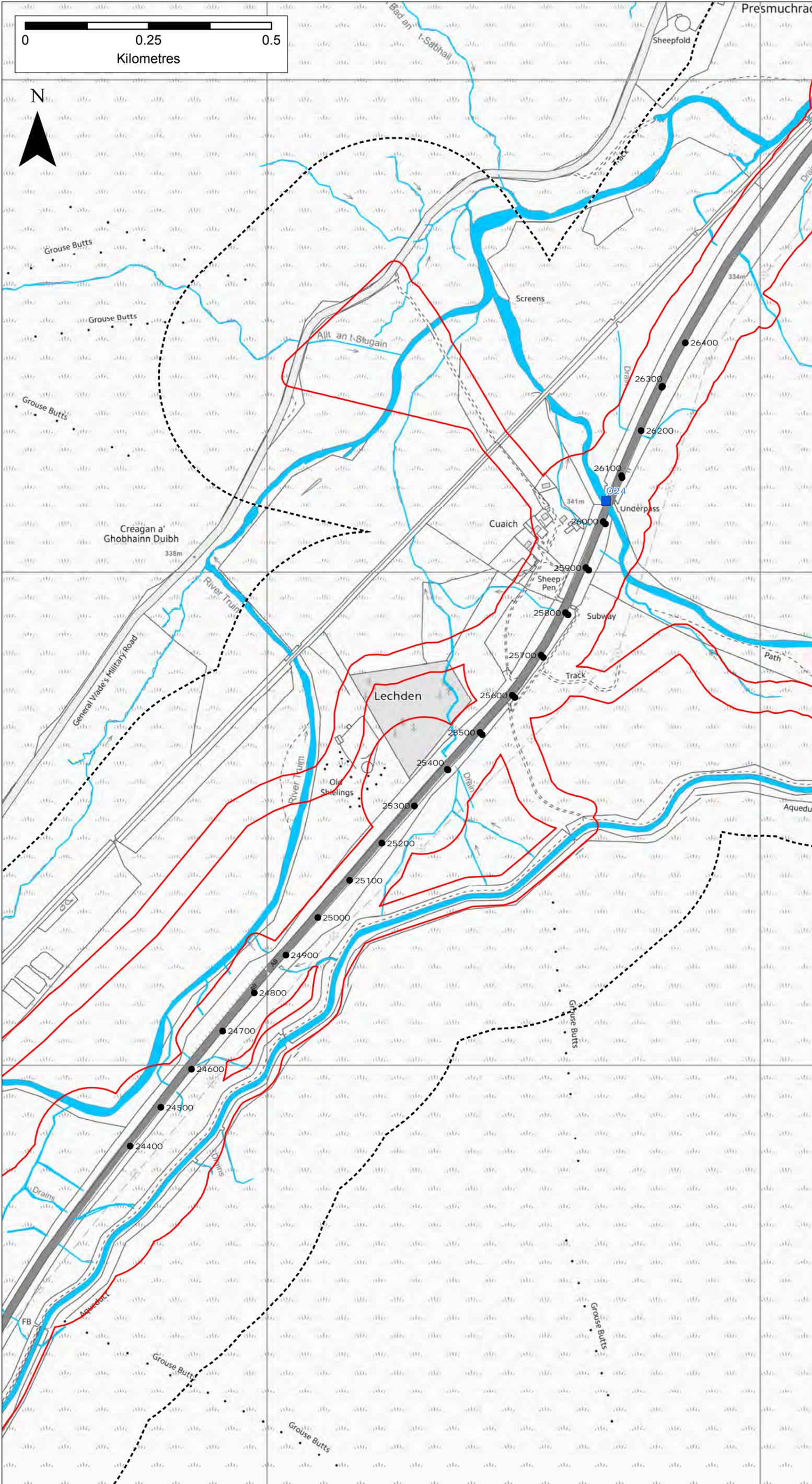
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Project:  
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Drawing:  
 Project 8 – Ecology Desk Study  
 Water Vole and Otter Records  
 Section 2

Drawing No:  
 A9GGDALR - MAP 2 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 250m from project footprint
  - Section chainage
  - Otter
  - Watercourse
- Species record**
- Otter
- Habitat potentially suitable for otter and water vole**
- Watercourse

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

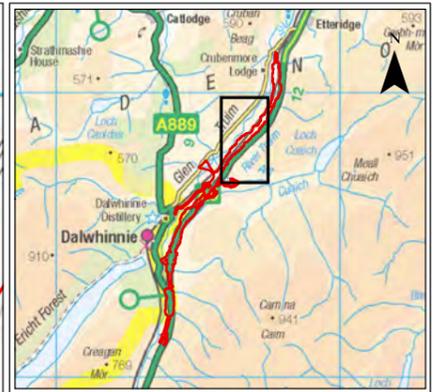
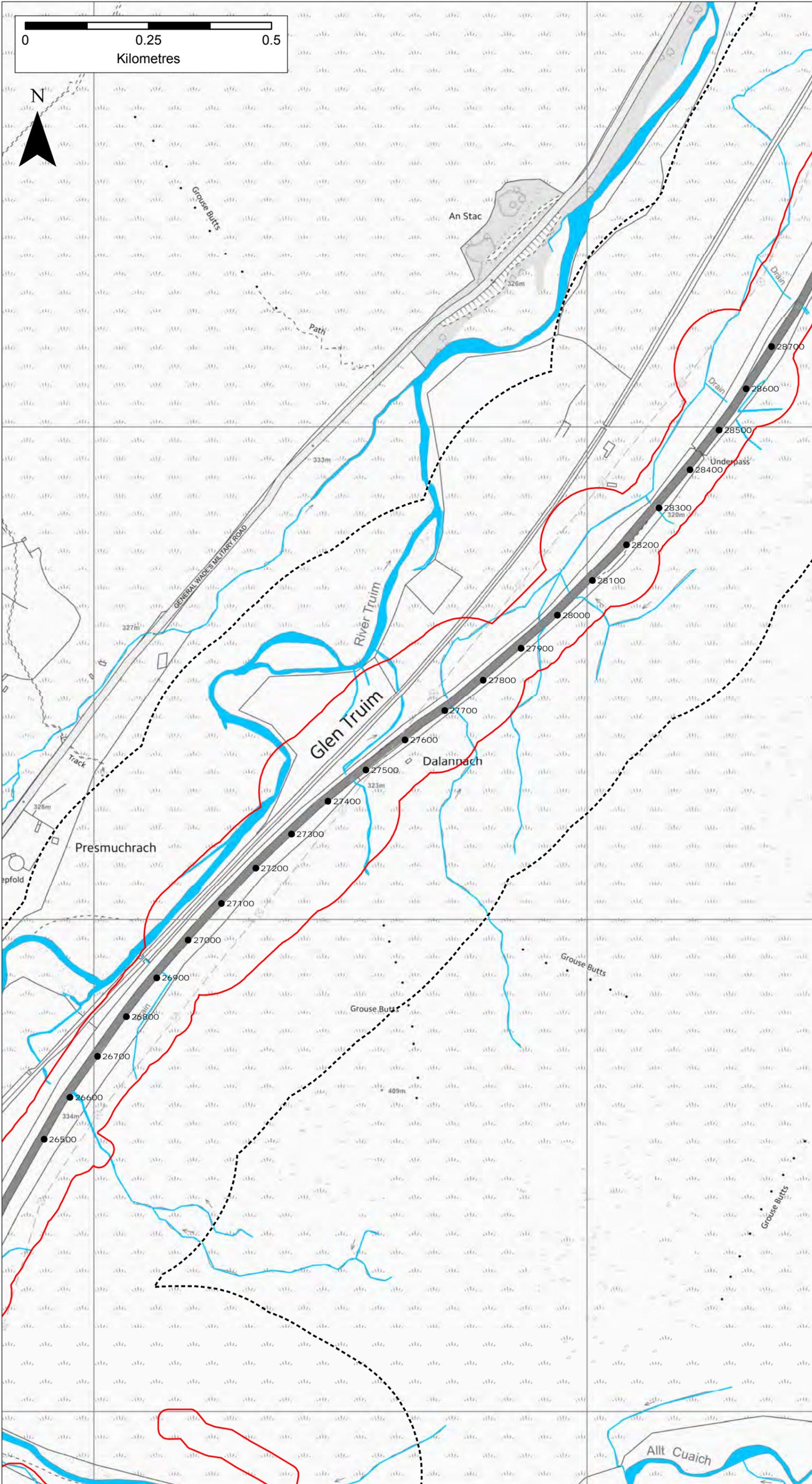
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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Water Vole and Otter Records  
 Section 3a

Drawing No:  
 A9GGDALR - MAP 3 of 5  
 Drawing scale @ A3 = 1:7,500



**KEY**

- Project 8 footprint
- 250m from project footprint
- Section chainage

**Habitat potentially suitable for otter and water vole**

- Watercourse

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

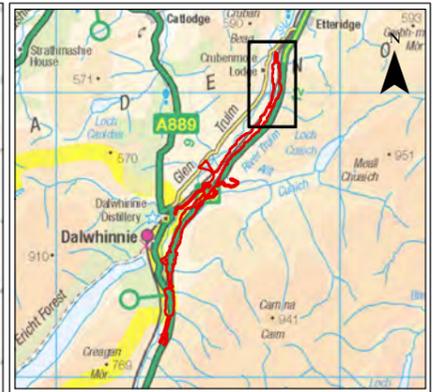
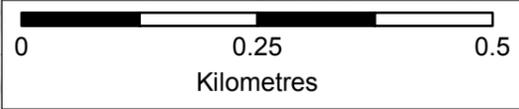
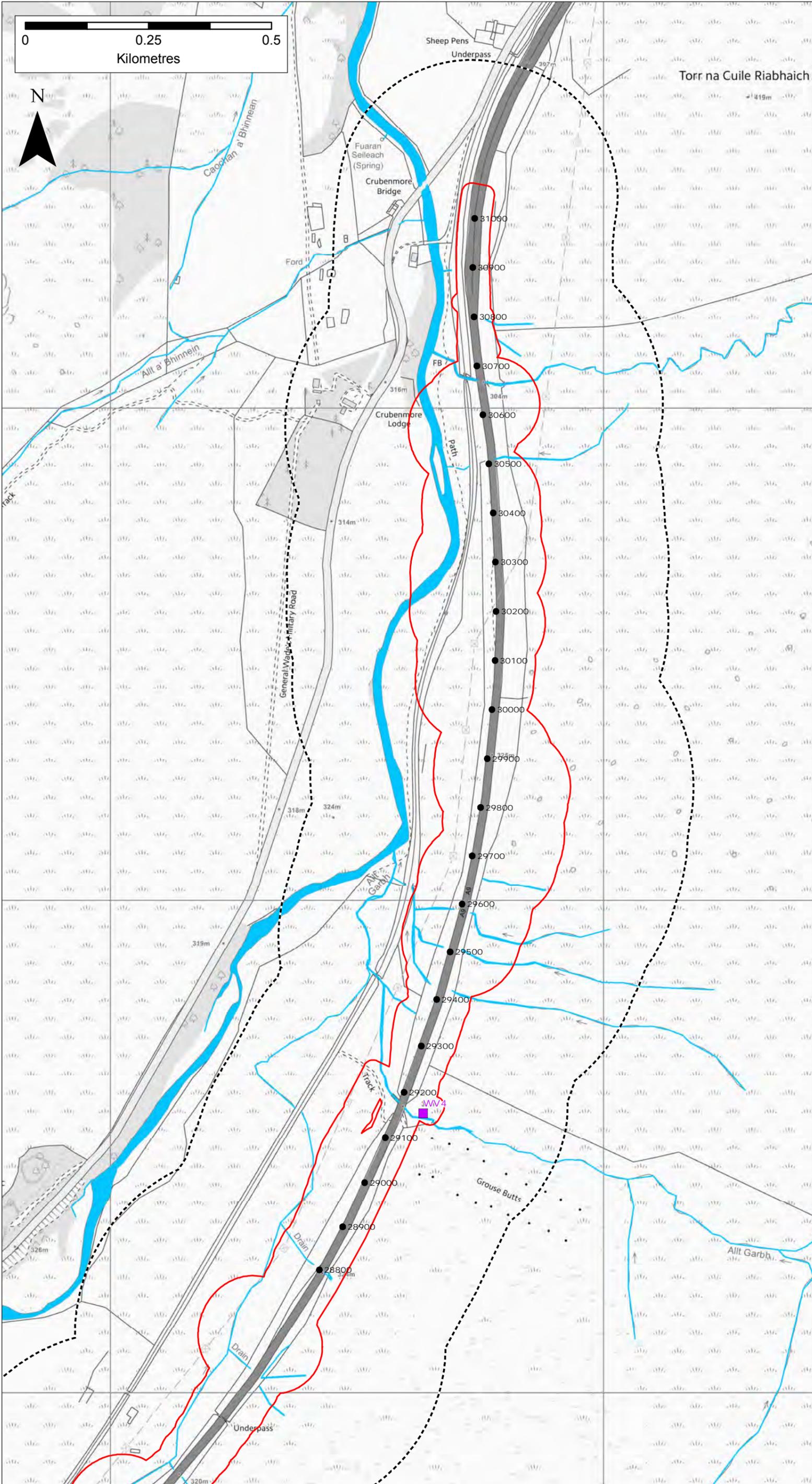
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
**Project 8 – Ecology Desk Study  
 Water Vole and Otter Records  
 Section 3b**

Drawing No: A9GGDALR - MAP 4 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 250m from project footprint
  - Section chainage
  - Water vole
  - Watercourse
- Species record**
- Habitat potentially suitable for otter and water vole**

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

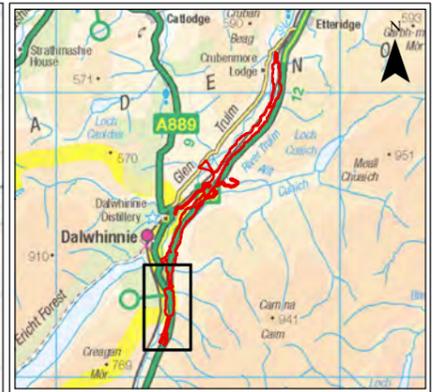
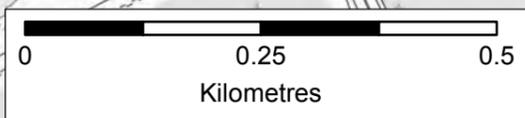
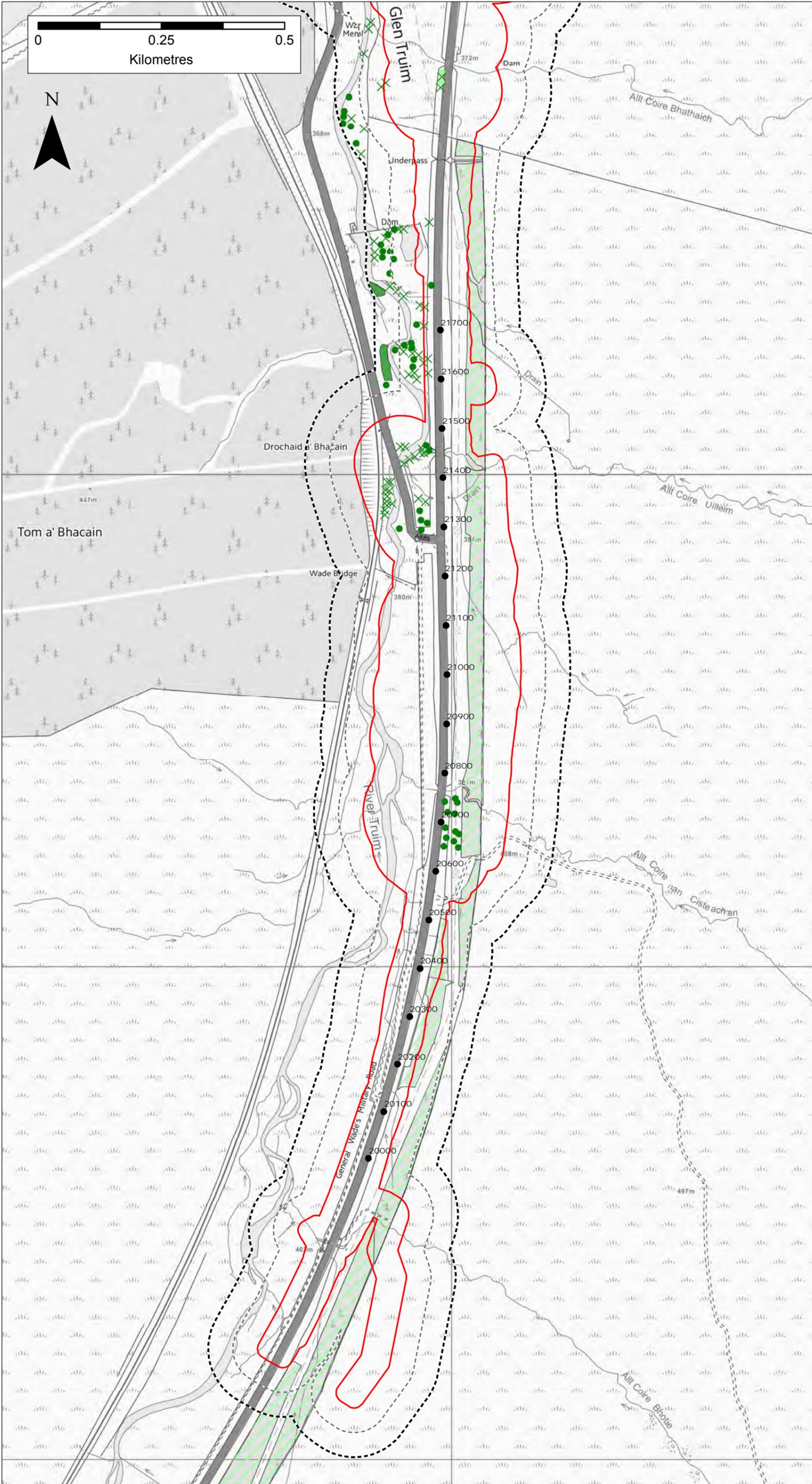
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Project: A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing: Project 8 – Ecology Desk Study  
 Water Vole and Otter Records  
 Section 4

Drawing No: A9GGDALR - MAP 5 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for squirrel dreys based on Phase 1 habitats**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.2.2, Coniferous woodland - plantation
  - A3.2, Coniferous Parkland/scattered trees
  - A2.2, Scrub - scattered
  - A3.1, Broadleaved Parkland/scattered trees
  - A3.2, Coniferous Parkland/scattered trees

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

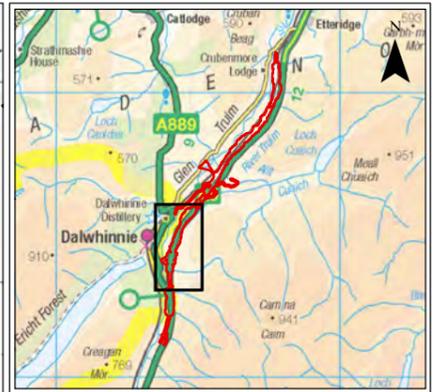
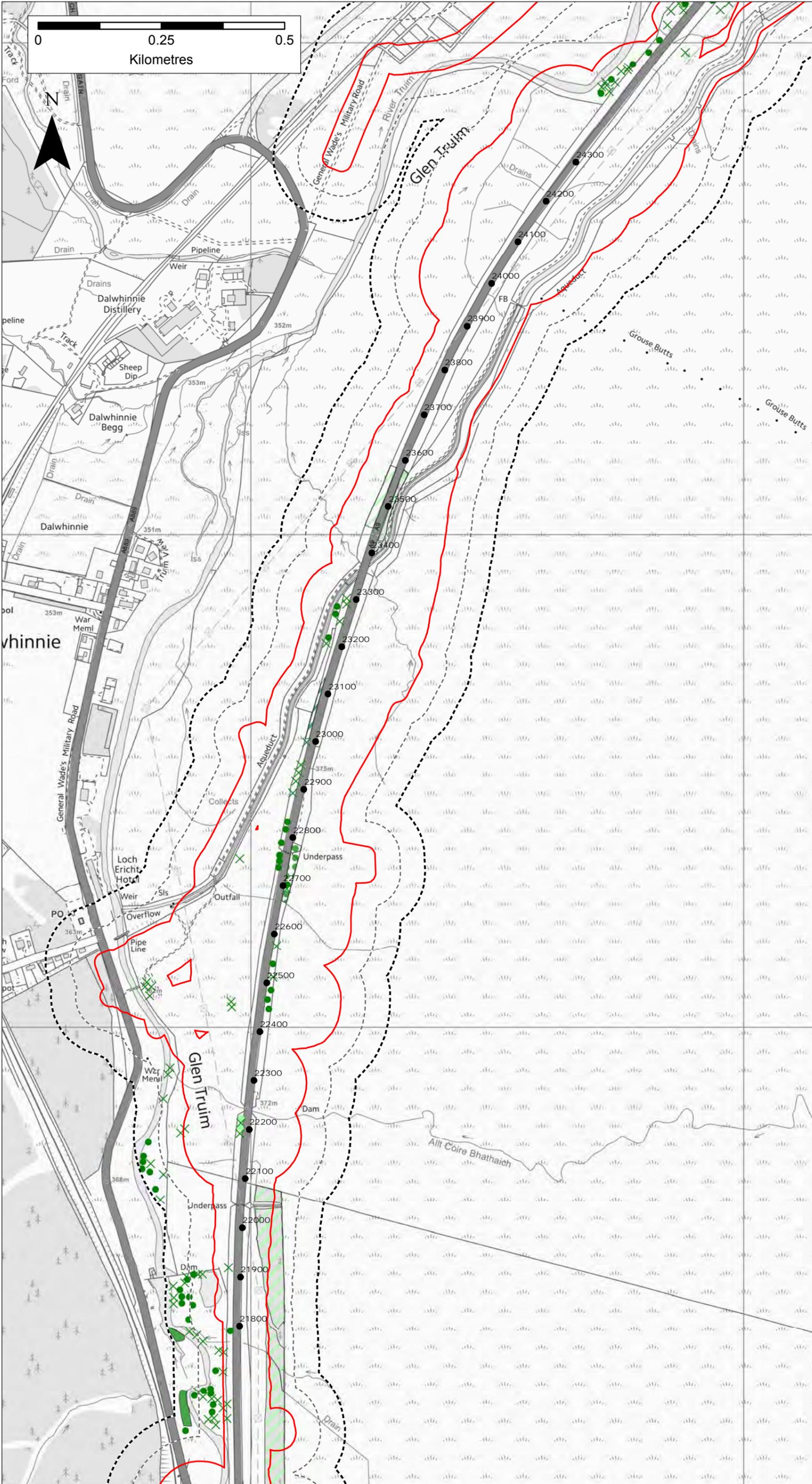
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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Red Squirrel Records  
 Section 1

Drawing No:  
 A9GGDALR - MAP 1 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for squirrel dreys based on Phase 1 habitats**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.1.2, Broadleaved woodland - plantation
  - A1.2.2, Coniferous woodland - plantation
  - A3.1, Broadleaved Parkland/scattered trees
  - ✕ A2.2, Scrub - scattered
  - A3.1, Broadleaved Parkland/scattered trees
  - A3.2, Coniferous Parkland/scattered trees

REV	SUIT	DATE	DESCRIPTION	BY	APP
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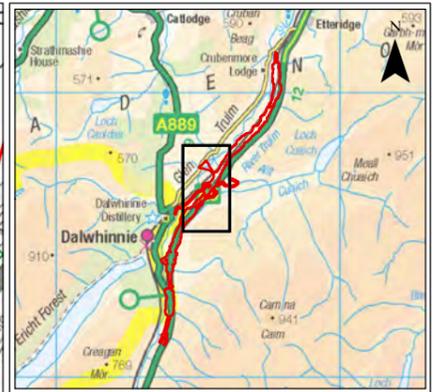
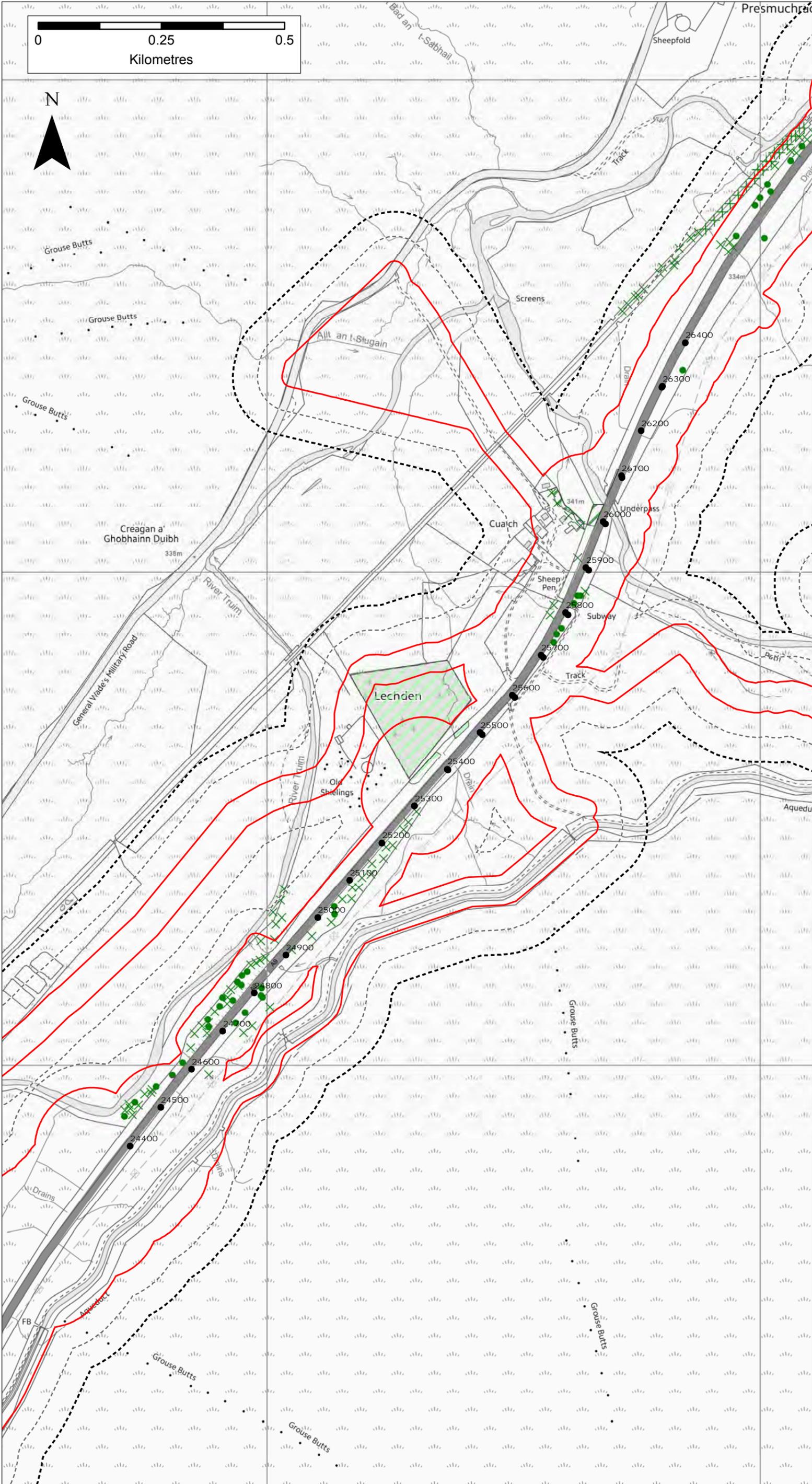
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Project: A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing: Project 8 – Ecology Desk Study  
 Red Squirrel Records  
 Section 2

Drawing No: A9GGDALR - MAP 2 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for squirrel dreys based on Phase 1 habitats**
- A1.1.2, Broadleaved woodland - plantation
  - A1.2.2, Coniferous woodland - plantation
  - A1.2.2, Coniferous woodland - plantation
  - A2.2, Scrub - scattered
  - A3.1, Broadleaved Parkland/scattered trees

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		11/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

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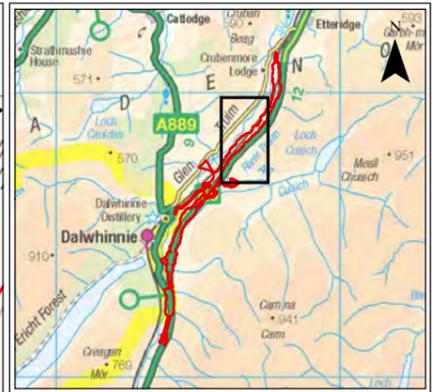
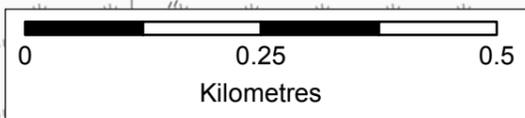
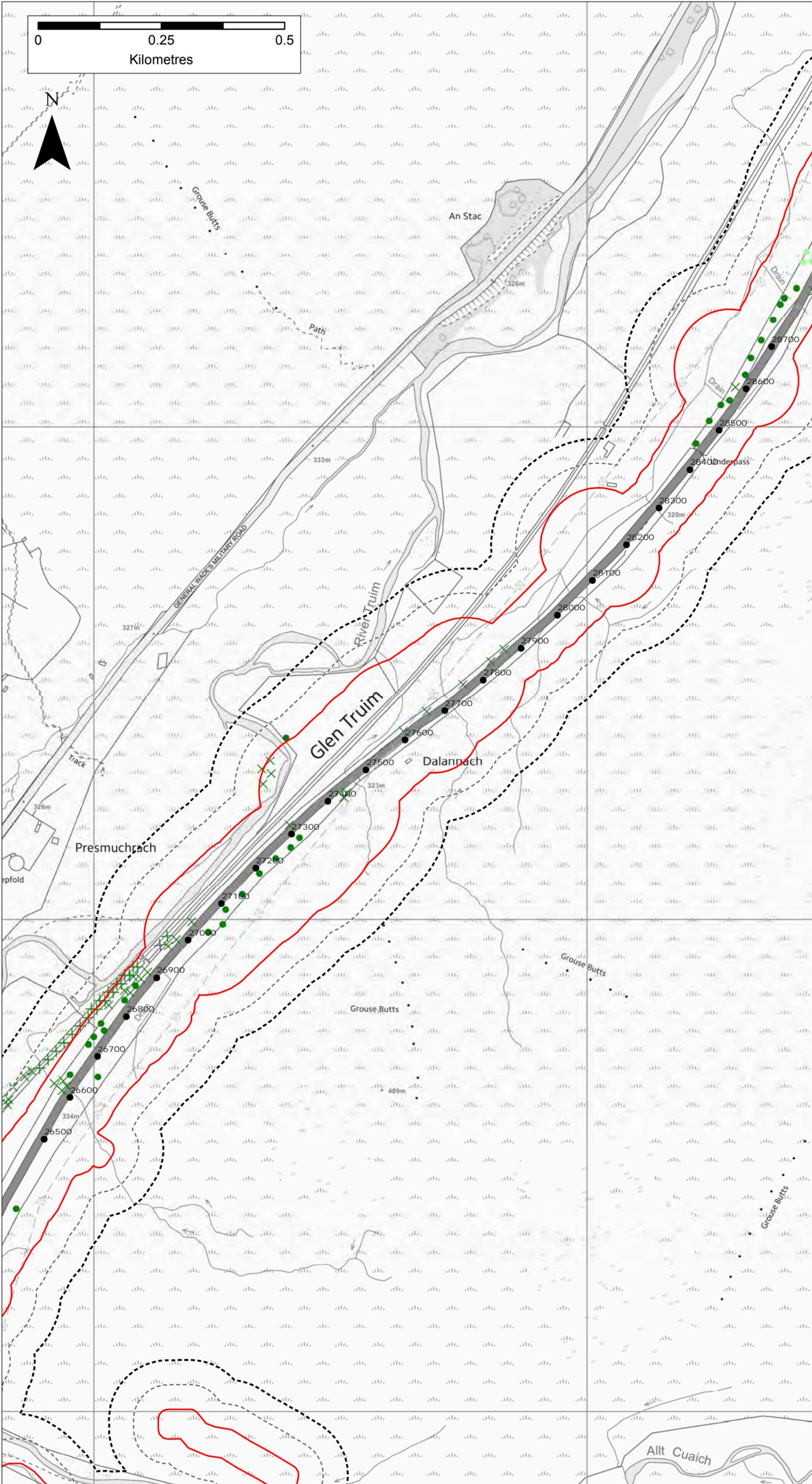


Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Red Squirrel Records  
 Section 3a

Drawing No:  
 A9GGDALR - MAP 3 of 5

Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for squirrel dreys based on Phase 1 habitats**
- ×××× A1.2.2, Coniferous woodland - plantation
  - × A2.2, Scrub - scattered
  - A3.1, Broadleaved Parkland/scattered trees
  - A3.2, Coniferous Parkland/scattered trees

REV	SUIT	DATE	DESCRIPTION	BY	APP
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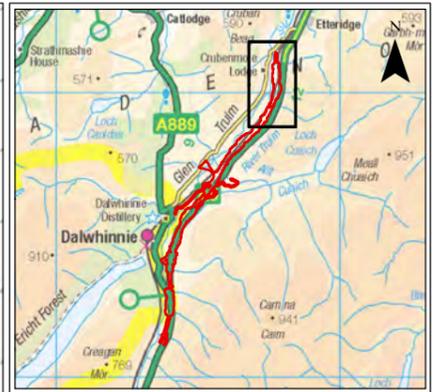
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Desk Study  
 Red Squirrel Records  
 Section 3b

Drawing No: A9GGDALR - MAP 4 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
  - Ancient woodland inventory
- Habitat potentially suitable for squirrel dreys based on Phase 1 habitats**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.2.2, Coniferous woodland - plantation
  - A1.3.2, Mixed woodland - plantation
  - × A2.2, Scrub - scattered
  - A3.1, Broadleaved Parkland/scattered trees
  - A3.2, Coniferous Parkland/scattered trees

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

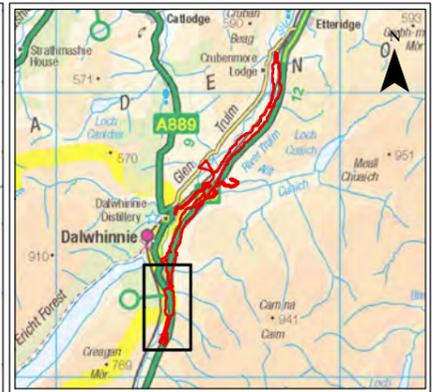
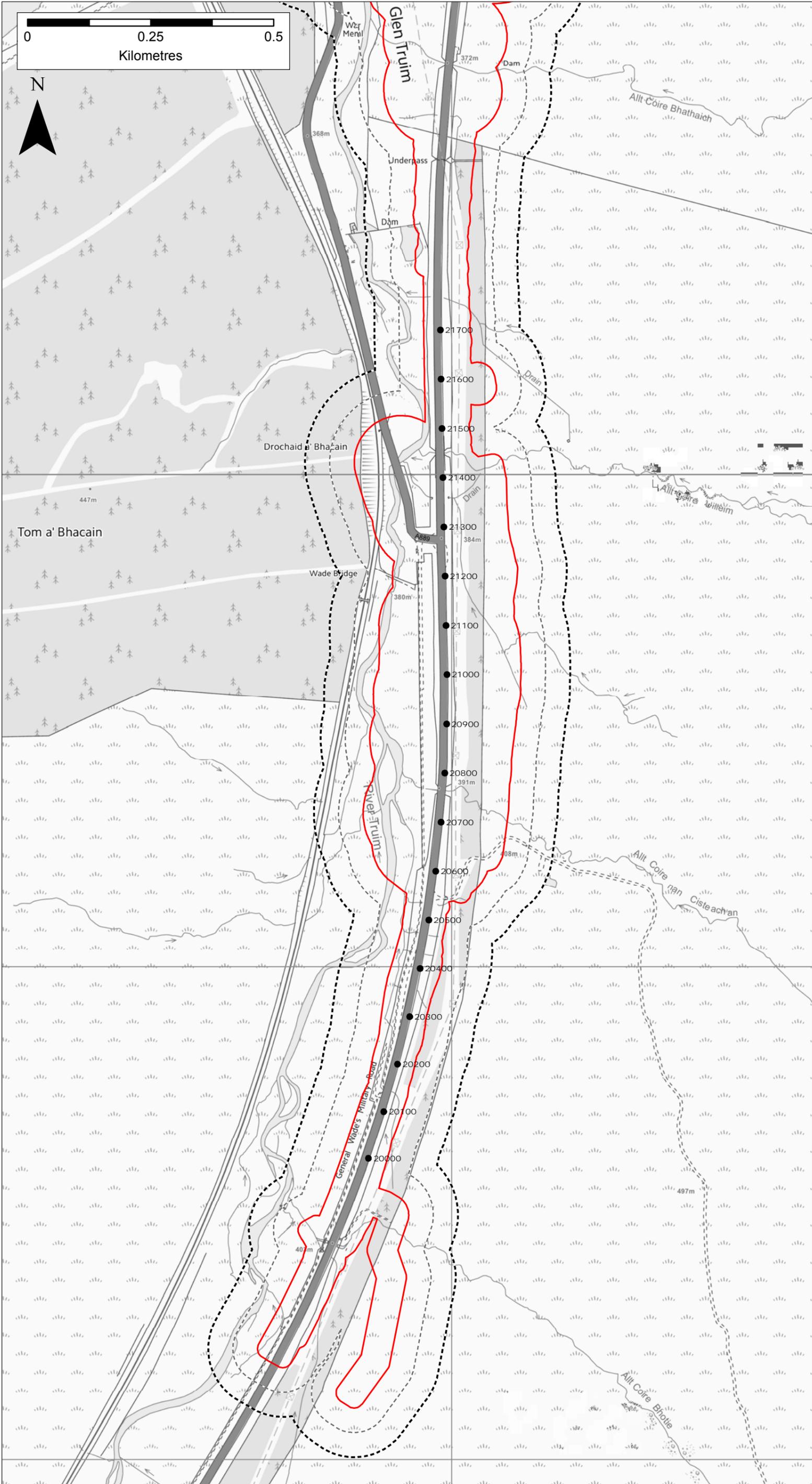
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Project:  
 A9 DUALING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Red Squirrel Records  
 Section 4

Drawing No:  
 A9GGDALR - MAP 5 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

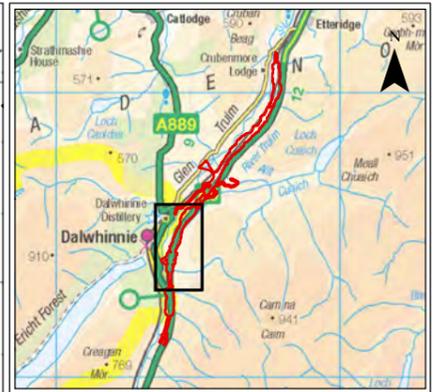
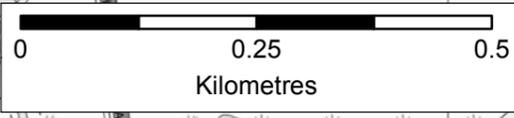
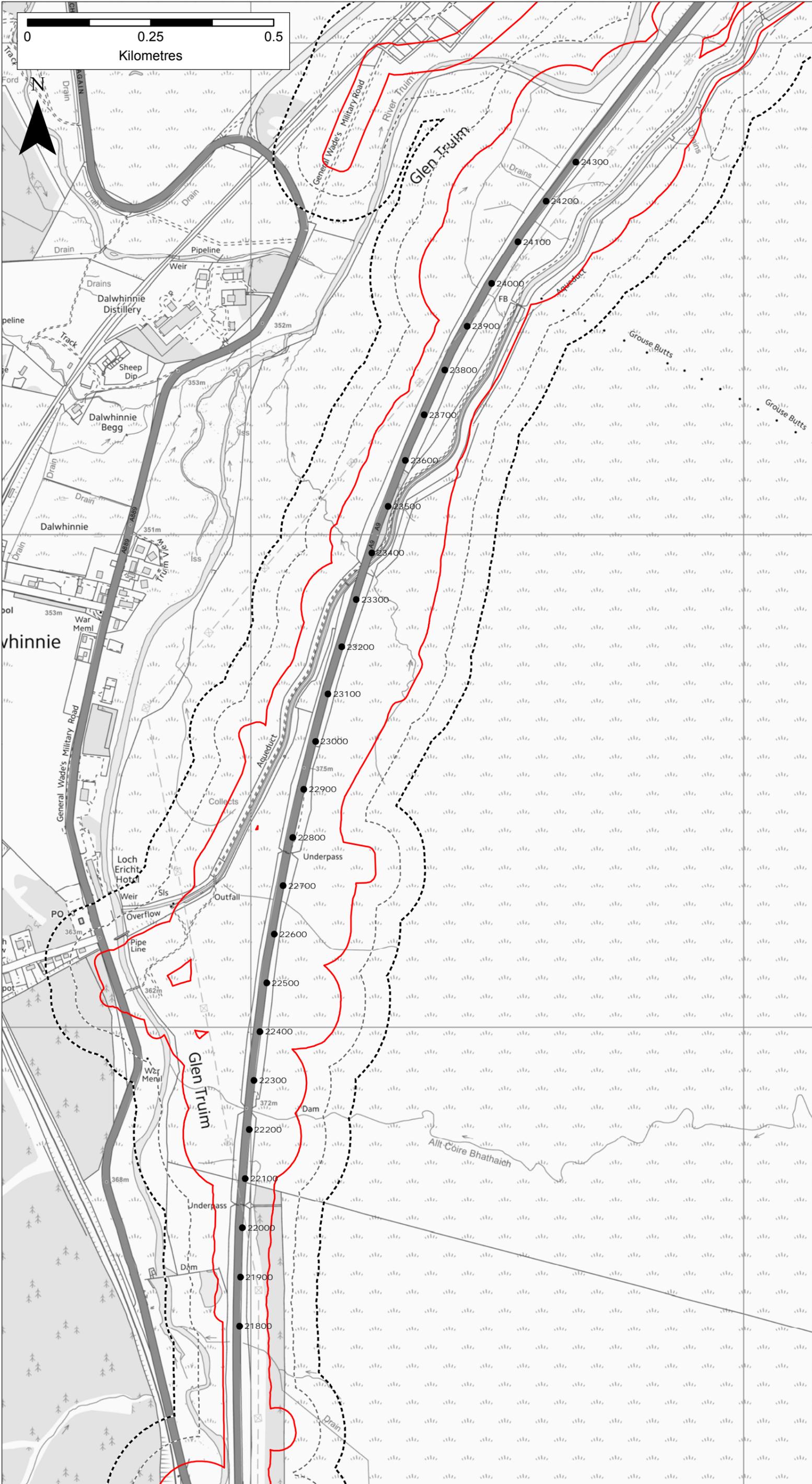
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Desk Study  
 Reptile Records  
 Section 1

Drawing No:  
 A9GGDALR - MAP 1 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		11/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

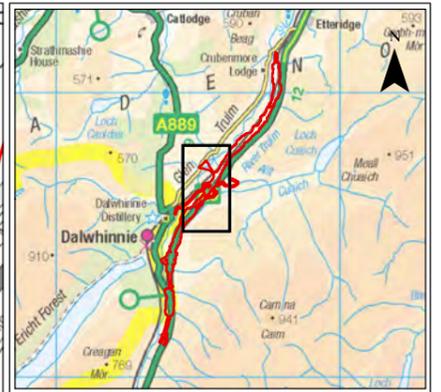
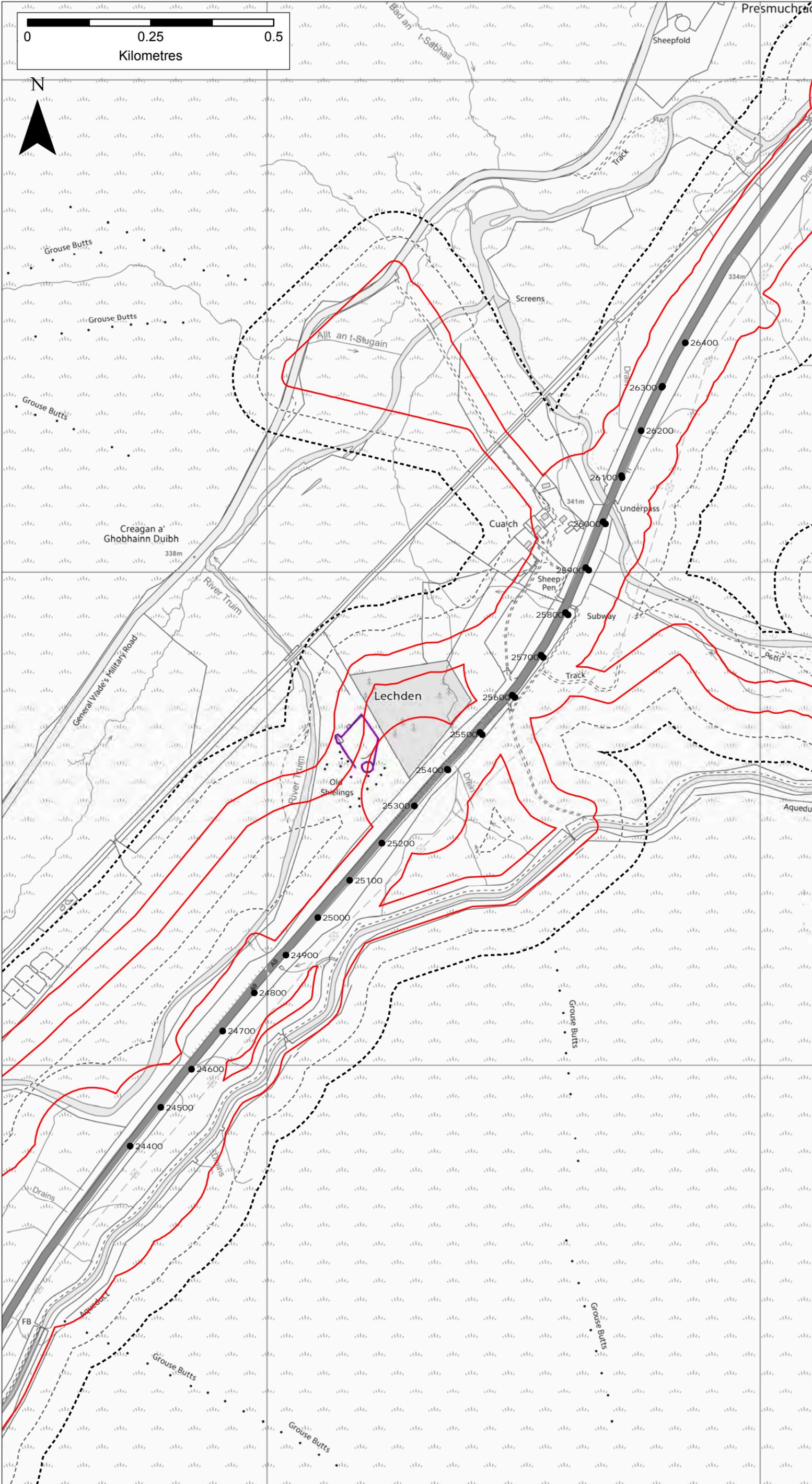
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Desk Study  
 Reptile Records  
 Section 2

Drawing No: A9GGDLR - MAP 2 of 5  
 Drawing scale @ A3 = 1:7,500



**KEY**

- Project 8 footprint
- 50m from project footprint
- 100m from project footprint
- Section chainage

Potential hibernacula habitat

- J2.5, Wall

REV	SUIT	DATE	DESCRIPTION	BY	APP
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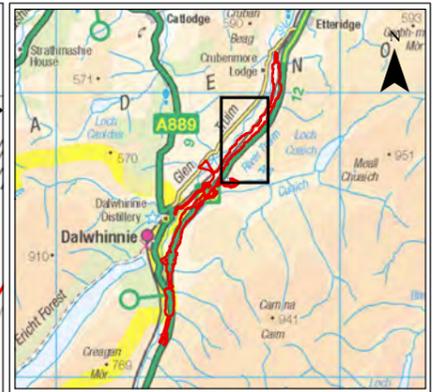
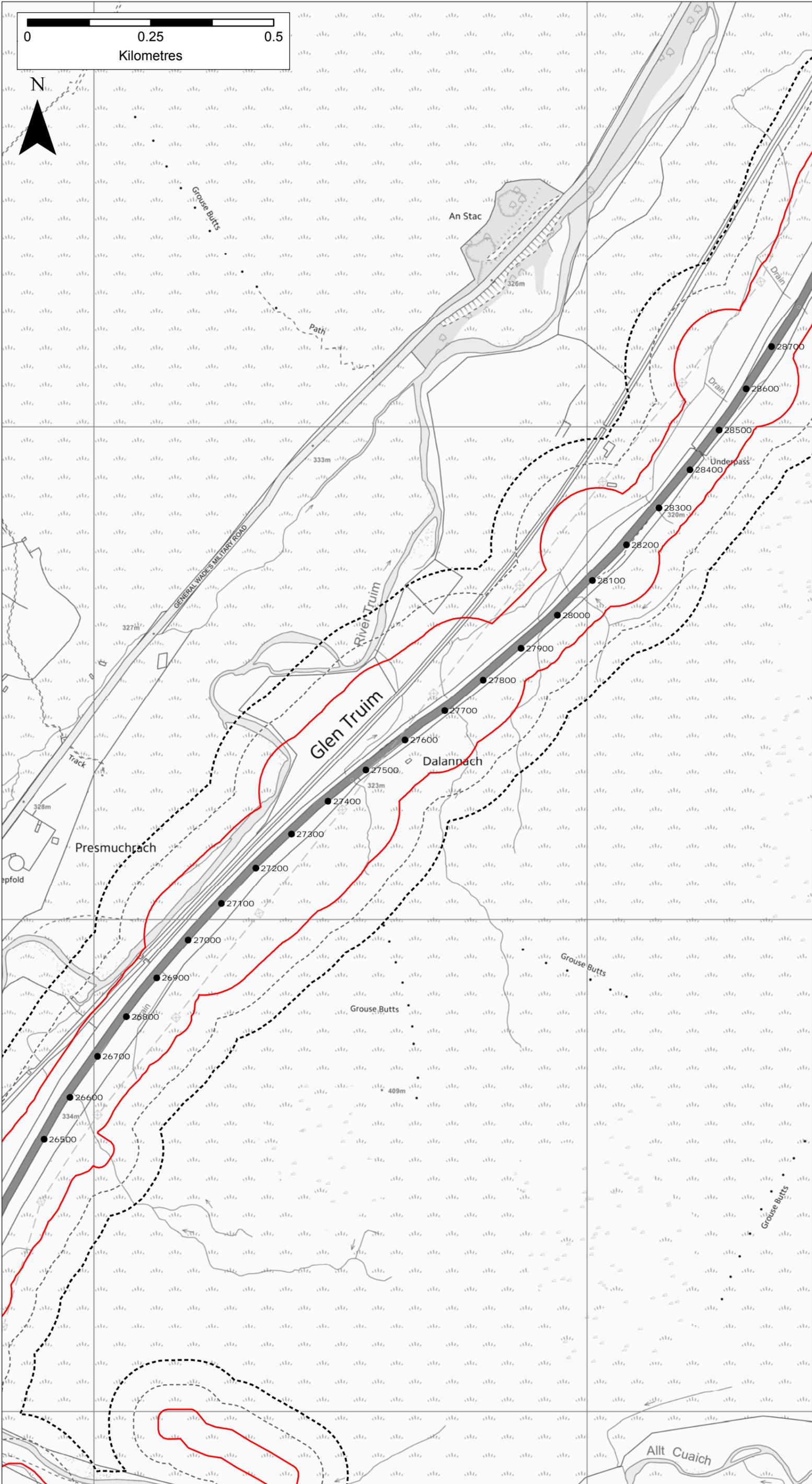


Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Reptile Records  
 Section 3a

Drawing No:  
 A9GGDALR - MAP 3 of 5

Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage

REV	SUIT	DATE	DESCRIPTION	BY	APP
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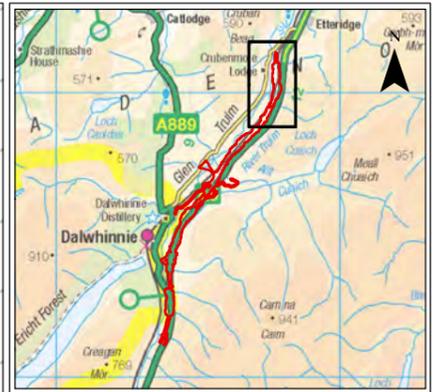
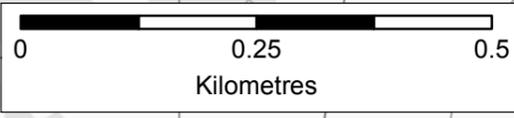
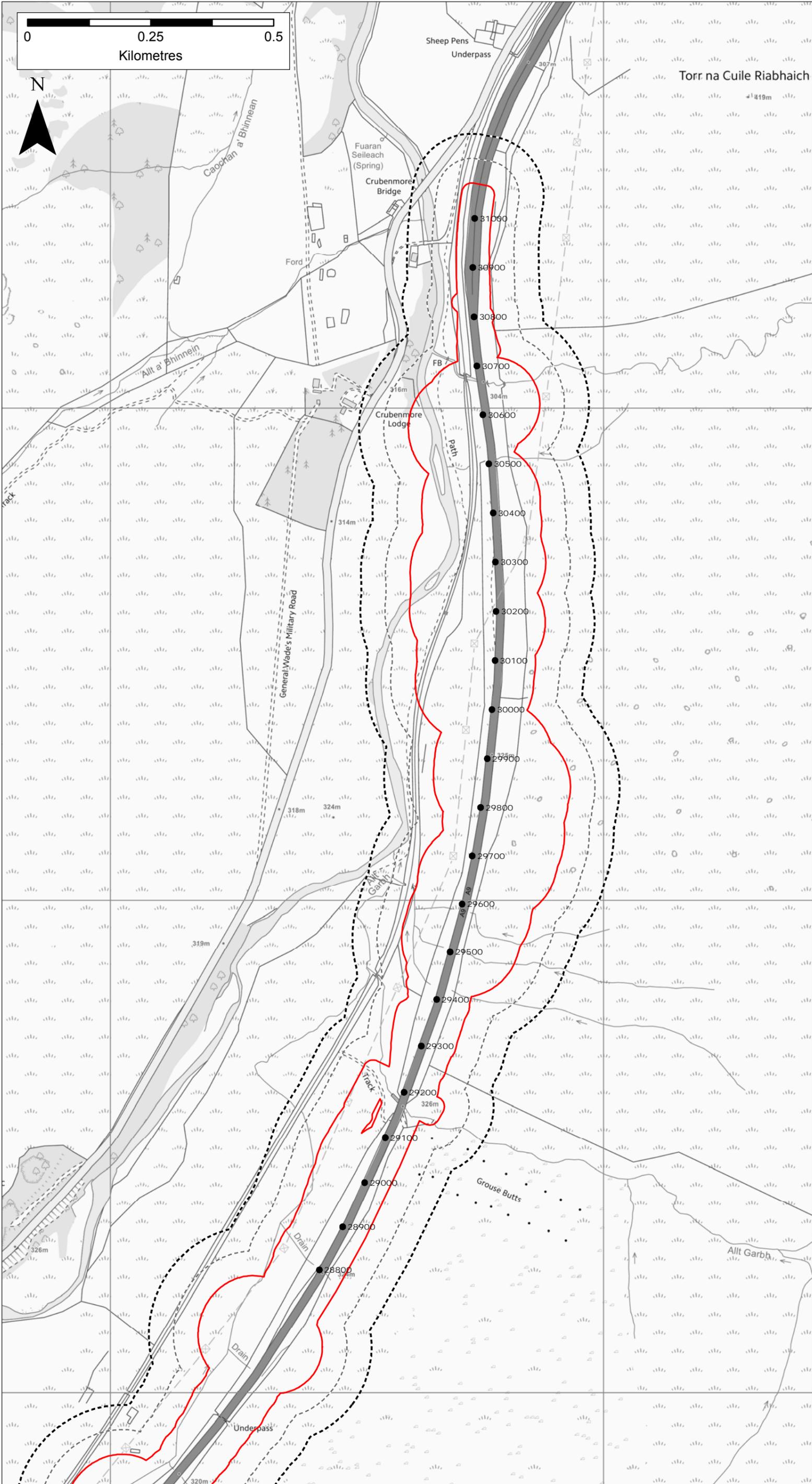



Project:  
A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
Project 8 – Ecology Desk Study  
Reptile Records  
Section 3b

Drawing No:  
A9GGDALR - MAP 4 of 5

Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

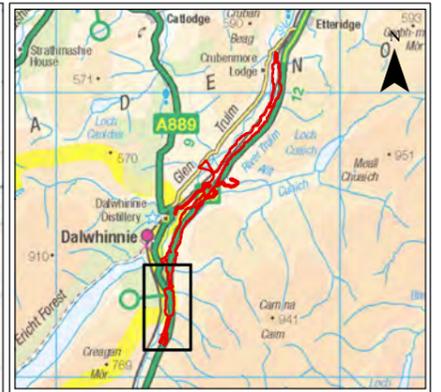
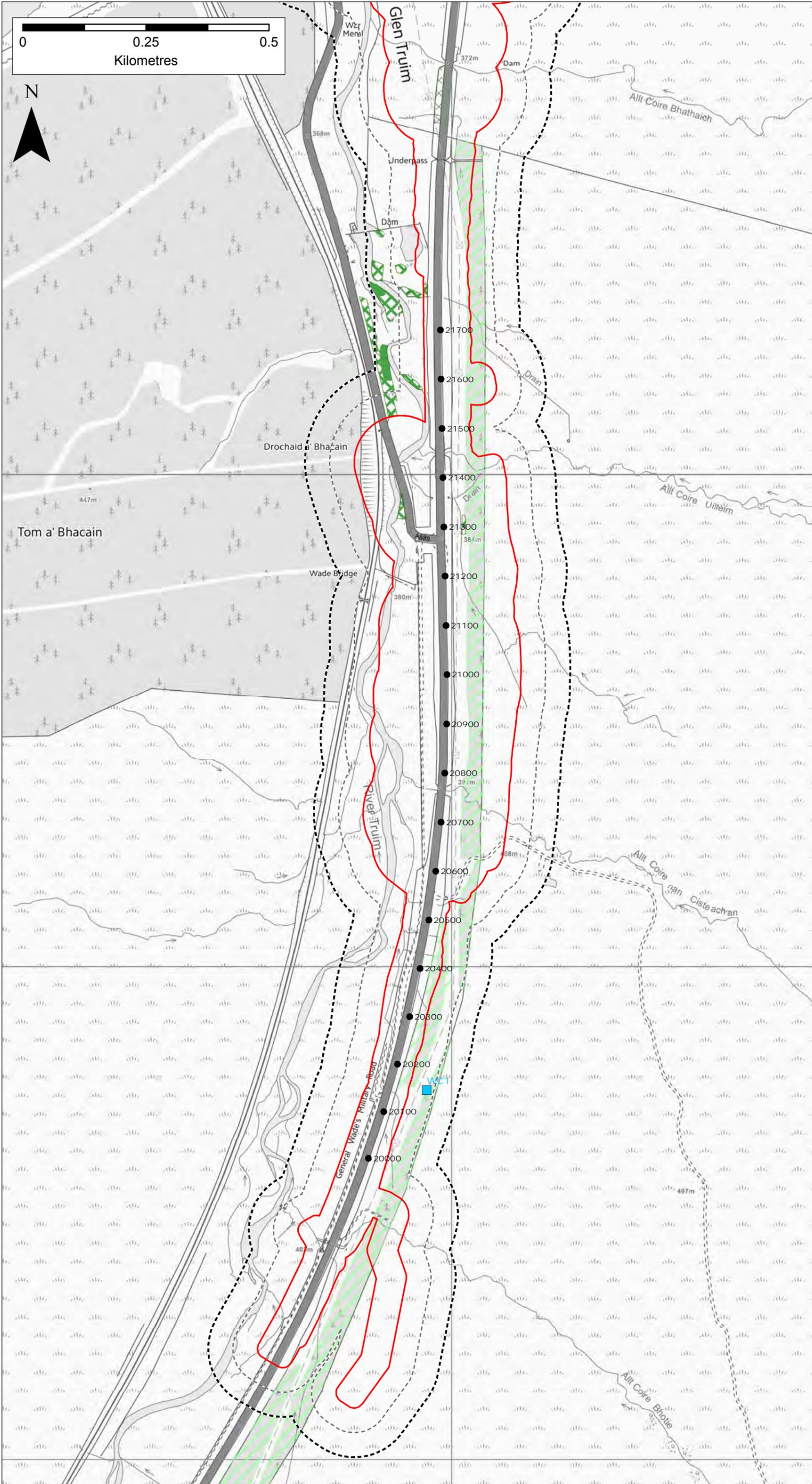
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Project:  
**A9 DUALING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Desk Study  
 Reptile Records  
 Section 4

Drawing No:  
 A9GGDALR - MAP 5 of 5  
 Drawing scale @ A3 = 1:7,500



**KEY**

- Project 8 footprint
- 50m from project footprint
- 100m from project footprint
- Section chainage

**Species record**

- Wild cat

**Potentially suitable habitat for wildcat and pine marten den sites**

- A1.1.1, Broadleaved woodland - semi-natural
- A1.2.2, Coniferous woodland - plantation
- A2.1, Scrub - dense/continuous
- A2.2, Scrub - scattered

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		11/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

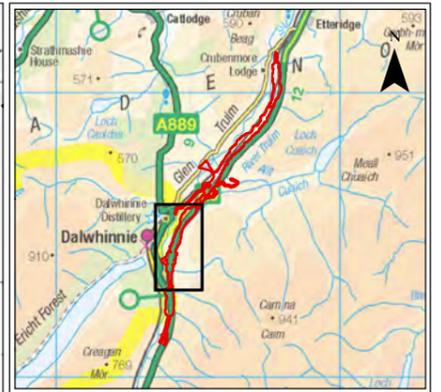
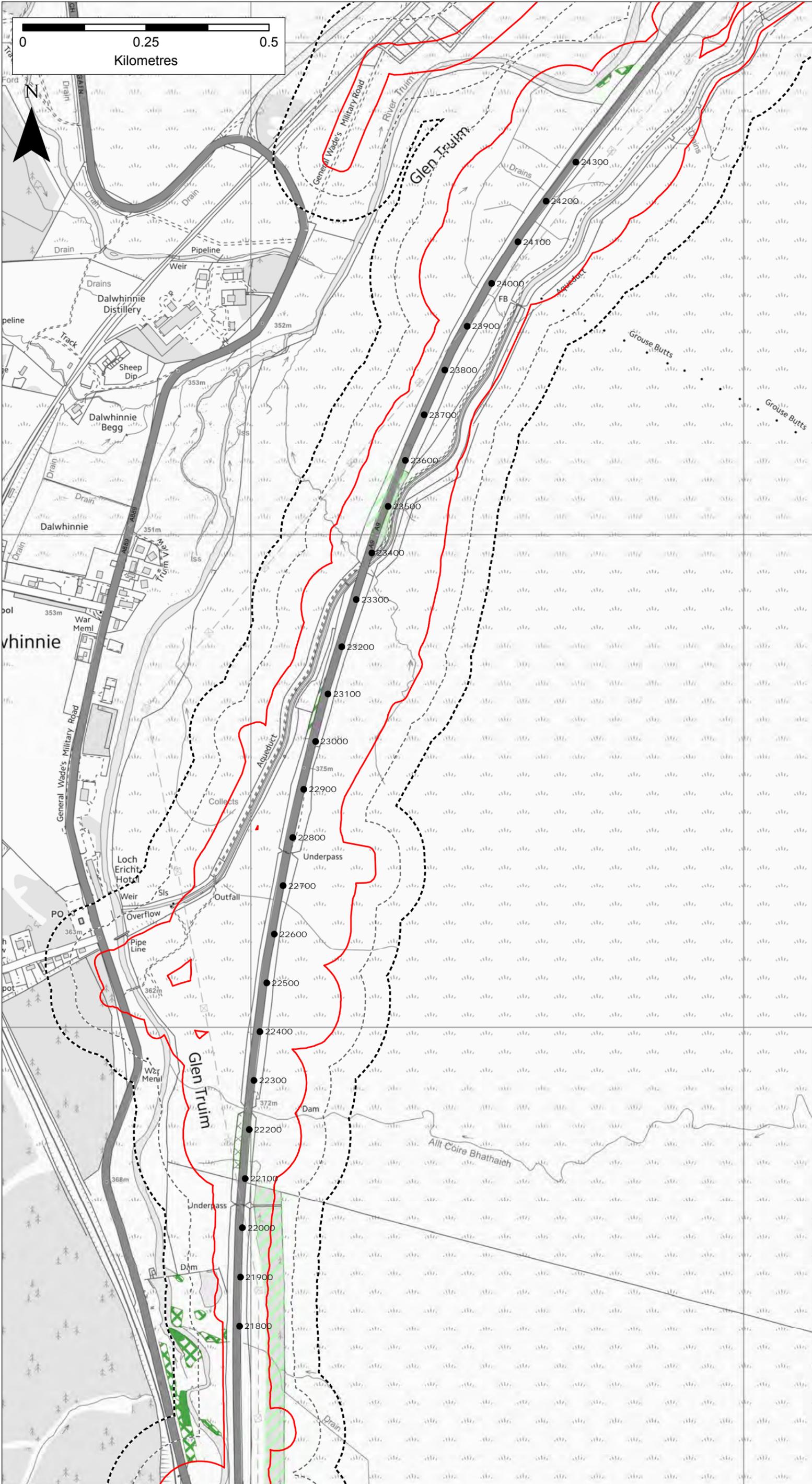
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Project: A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing: Project 8 – Ecology Desk Study  
 Wildcat and Pine Marten Records  
 Section 1

Drawing No: A9GGDALR - MAP 1 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Potentially suitable habitat for wildcat and pine marten den sites**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.1.2, Broadleaved woodland - plantation
  - A1.2.2, Coniferous woodland - plantation
  - A2.1, Scrub - dense/continuous
  - A2.2, Scrub - scattered

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

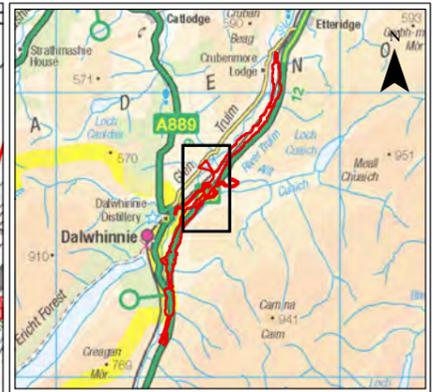
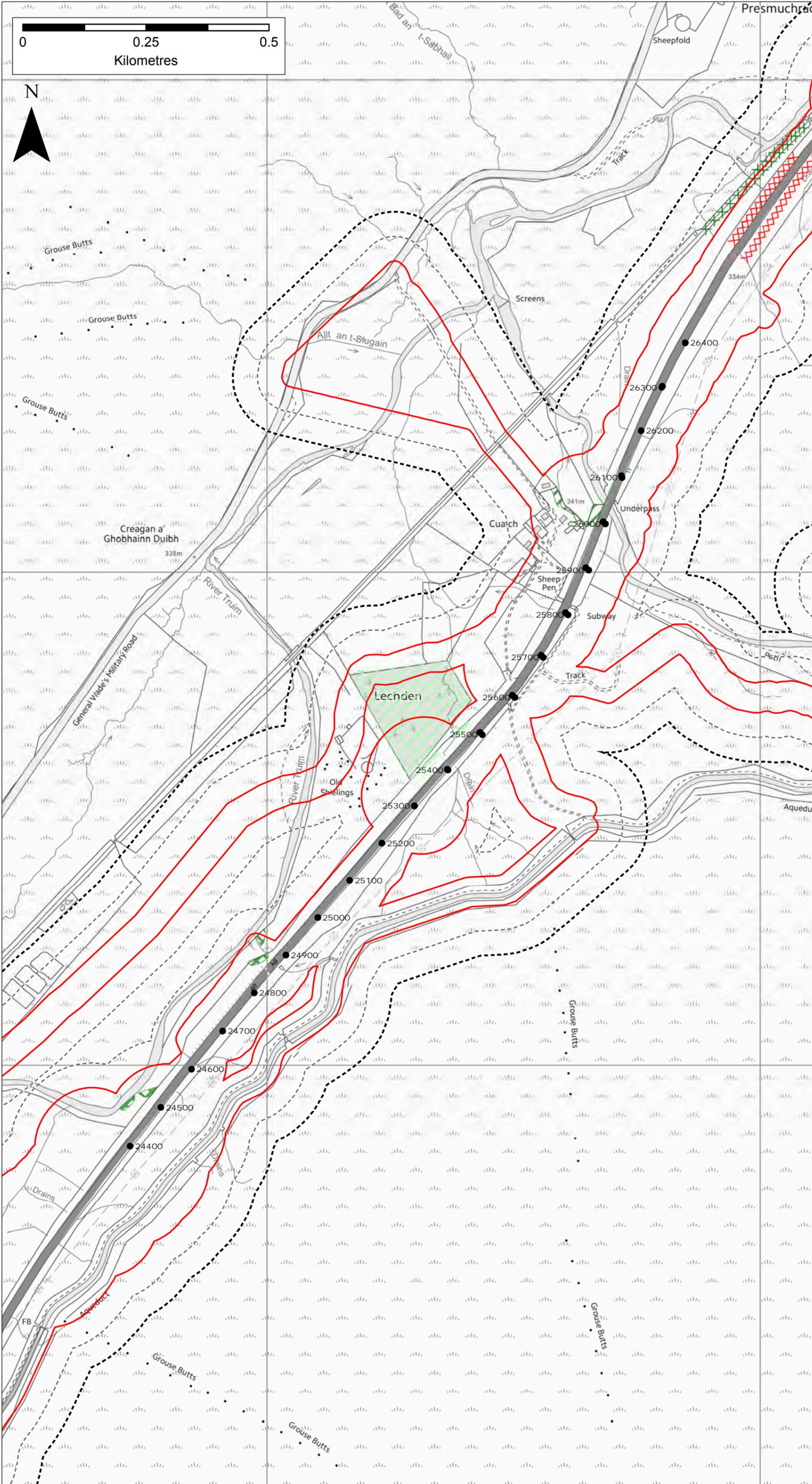
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Project: A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing: Project 8 – Ecology Desk Study  
 Wildcat and Pine Marten Records  
 Section 2

Drawing No: A9GGDALR - MAP 2 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Potentially suitable habitat for wildcat and pine marten den sites**
- A1.1.2, Broadleaved woodland - plantation
  - A1.2.2, Coniferous woodland - plantation
  - A2.1, Scrub - dense/continuous
  - A1.2.2, Coniferous woodland - plantation
  - I1.1.2, Inland cliff - basic

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		11/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

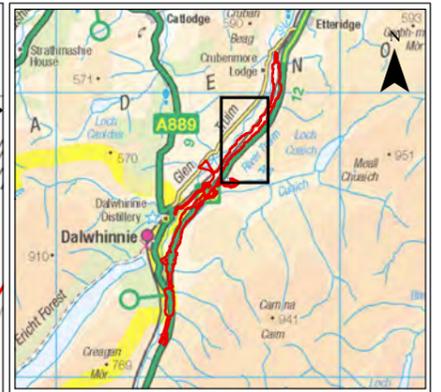
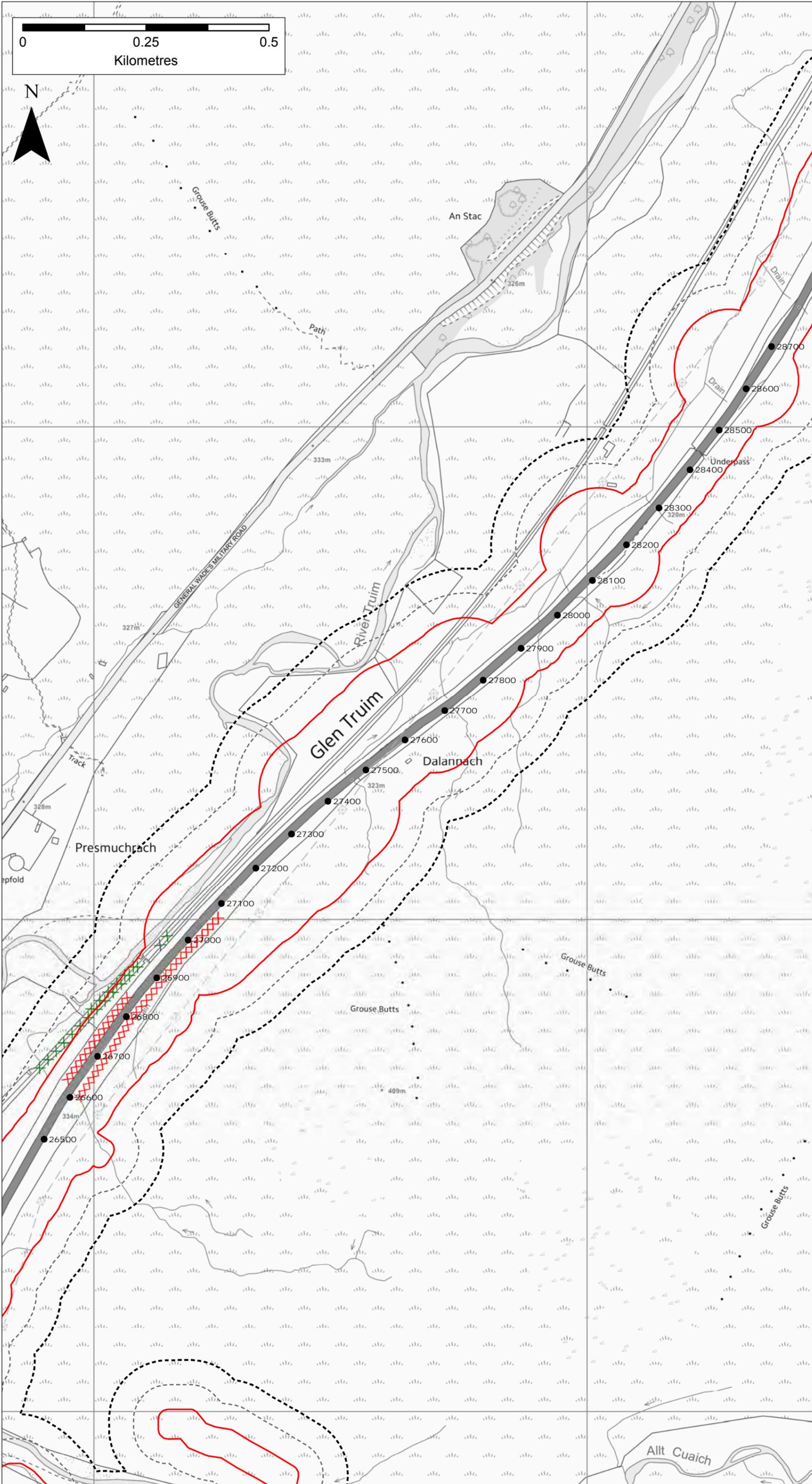
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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Wildcat and Pine Marten Records  
 Section 3a

Drawing No:  
 A9GGDALR - MAP 3 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Potentially suitable habitat for wildcat and pine marten den sites**
- XXXX A1.2.2, Coniferous woodland - plantation
  - XXXX I1.1.2, Inland cliff - basic

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

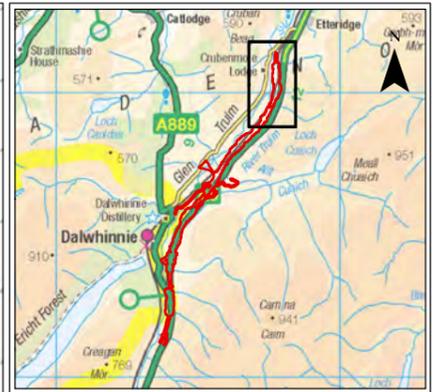
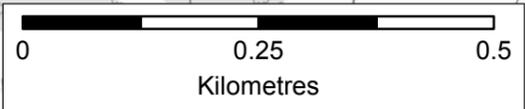
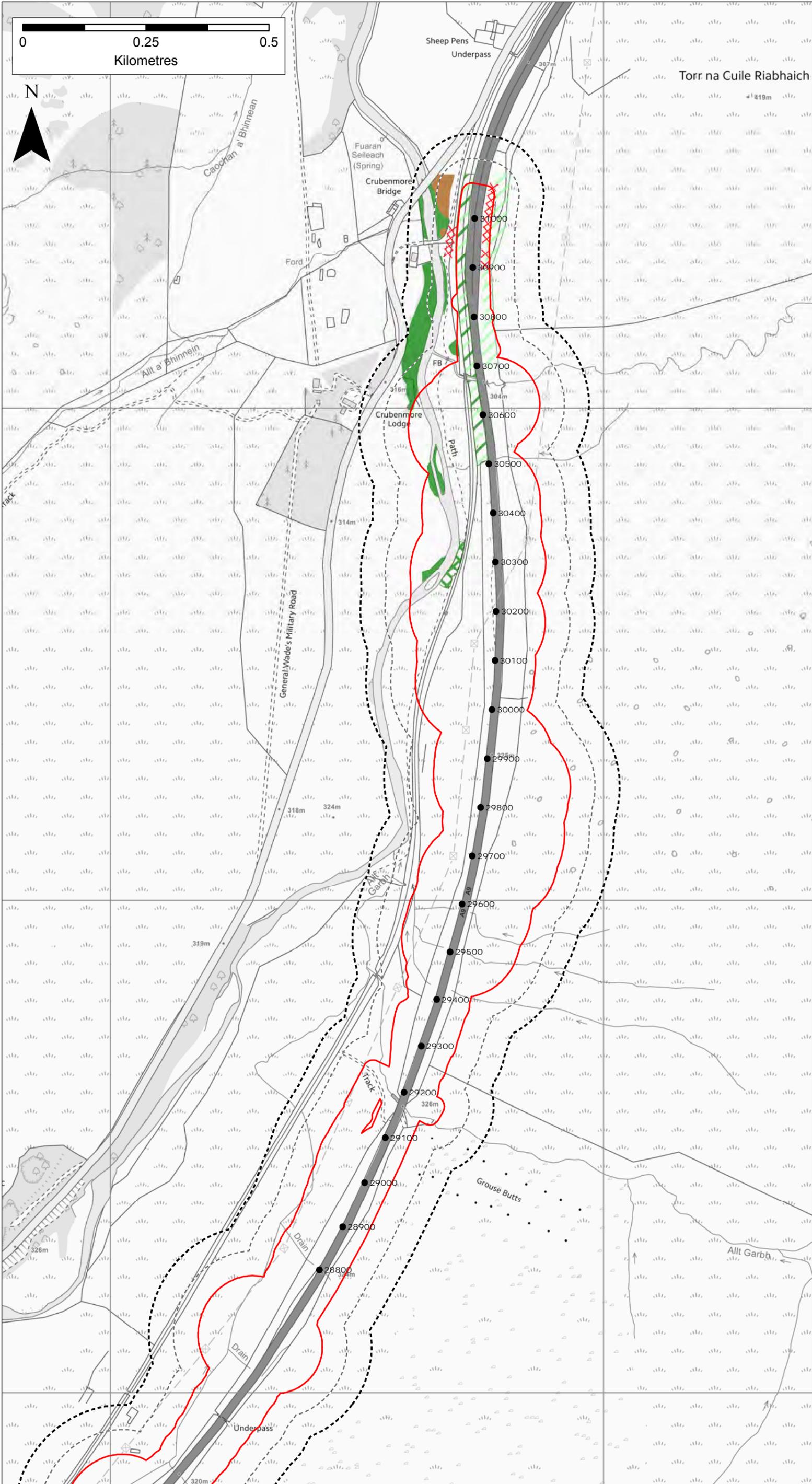
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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Wildcat and Pine Marten Records  
 Section 3b

Drawing No:  
 A9GGDALR - MAP 4 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Potentially suitable habitat for wildcat and pine marten den sites**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.2.2, Coniferous woodland - plantation
  - A1.3.2, Mixed woodland - plantation
  - A2.1, Scrub - dense/continuous
  - C1.1, Bracken - continuous
  - I1.1.2, Inland cliff - basic

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		11/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

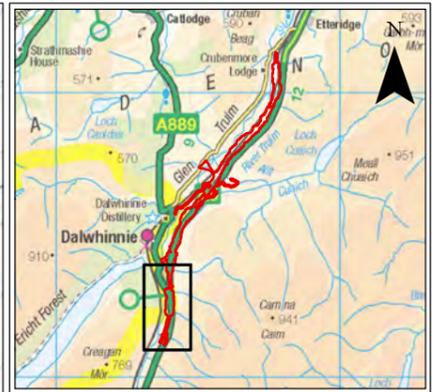
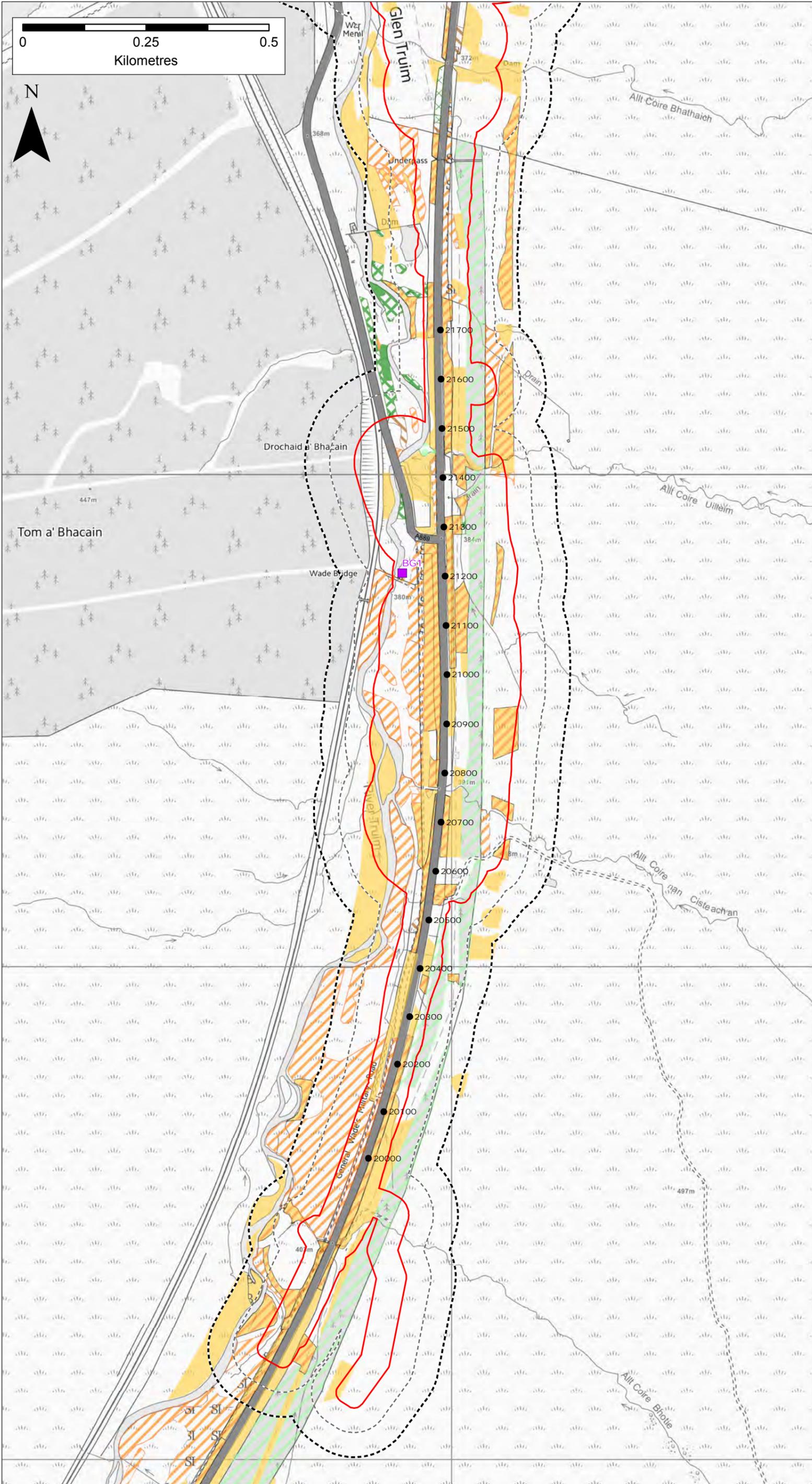
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Project: A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing: Project 8 – Ecology Desk Study  
 Wildcat and Pine Marten Records  
 Section 4

Drawing No: A9GGDALR - MAP 5 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Species**
- Badger
- Habitat potentially suitable for badger sett construction based on Phase 1 habitats**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.2.2, Coniferous woodland - plantation
  - A2.1, Scrub - dense/continuous
  - A2.2, Scrub - scattered
  - A3.2, Coniferous Parkland/scattered trees
  - B1.1, Acid grassland - unimproved
  - B1.2, Acid grassland - semi-improved
  - B2.1, Neutral grassland - unimproved
  - B3.1, Calcareous grassland - unimproved
  - C3.1, Other tall herb and fern - ruderal
  - D1.1, Dry dwarf shrub heath - acid
  - D1.2, Dry dwarf shrub heath - basic
  - D5, Dry heath/acid grassland

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

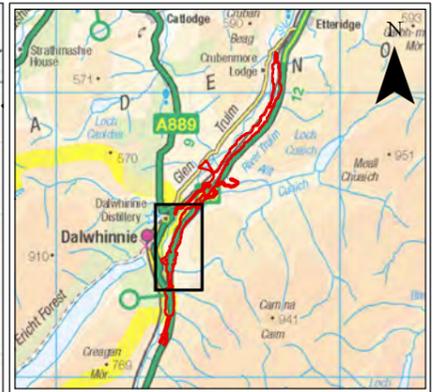
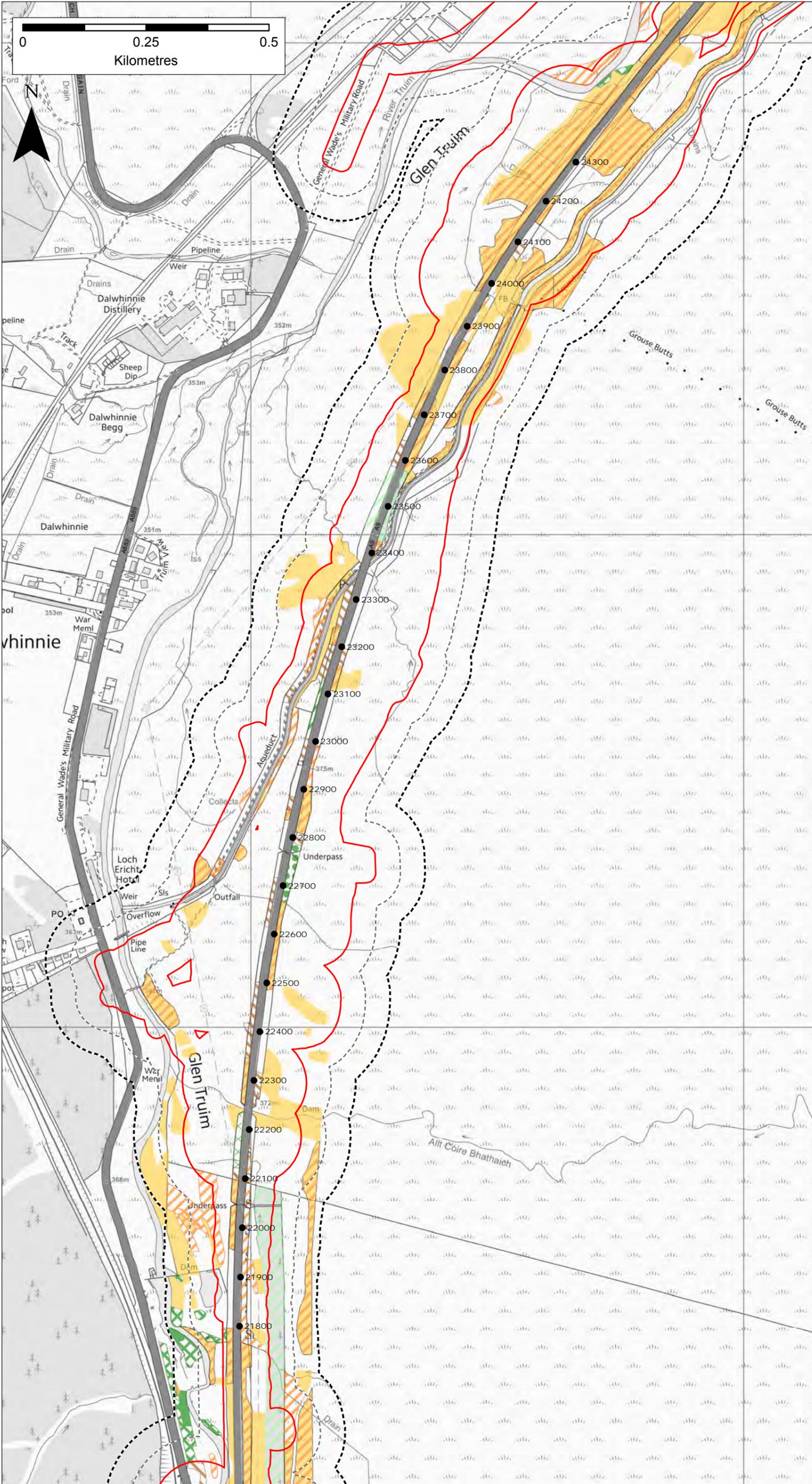
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Project: A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing: Project 8 – Ecology Desk Study  
 Badger Records  
 Section 1

Drawing No: A9GGDALR - MAP 1 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for badger sett construction based on Phase 1 habitats**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.1.2, Broadleaved woodland - plantation
  - A1.2.2, Coniferous woodland - plantation
  - A2.1, Scrub - dense/continuous
  - A2.2, Scrub - scattered
  - A3.1, Broadleaved Parkland/scattered trees
  - B1.1, Acid grassland - unimproved
  - B1.2, Acid grassland - semi-improved
  - B2.1, Neutral grassland - unimproved
  - B3.1, Calcareous grassland - unimproved
  - B6, Poor semi-improved grassland
  - C3.1, Other tall herb and fern - ruderal
  - D1.1, Dry dwarf shrub heath - acid
  - D1.2, Dry dwarf shrub heath - basic
  - D5, Dry heath/acid grassland

REV	SUIT	DATE	DESCRIPTION	BY	APP
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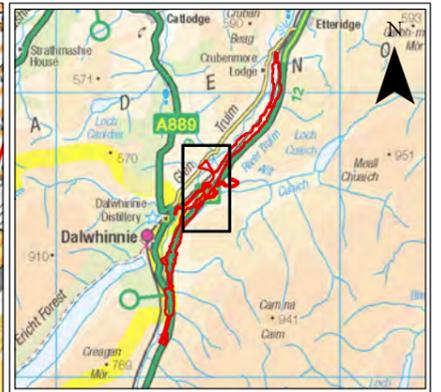
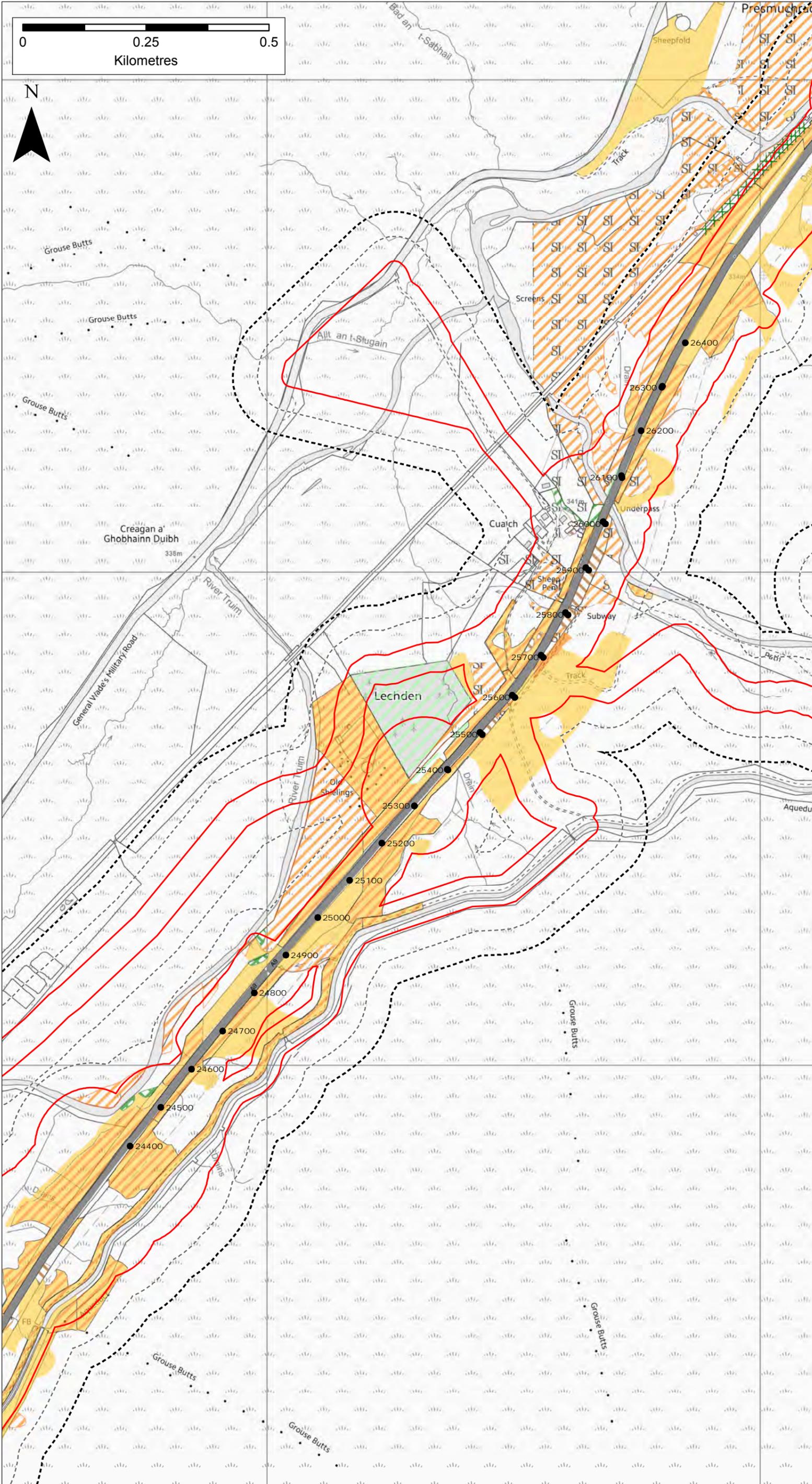
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Project: A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing: Project 8 – Ecology Desk Study  
 Badger Records  
 Section 2

Drawing No: A9GGDALR - MAP 2 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for badger sett construction based on Phase 1 habitats**
- A1.1.2, Broadleaved woodland - plantation
  - A1.2.2, Coniferous woodland - plantation
  - A2.1, Scrub - dense/continuous
  - B1.1, Acid grassland - unimproved
  - B1.2, Acid grassland - semi-improved
  - B2.1, Neutral grassland - unimproved
  - B3.2, Calcareous grassland - semi-improved
  - B6, Poor semi-improved grassland
  - C3.1, Other tall herb and fern - ruderal
  - D1.1, Dry dwarf shrub heath - acid
  - D5, Dry heath/acid grassland
  - A1.2.2, Coniferous woodland - plantation

REV	SUIT	DATE	DESCRIPTION	BY	APP
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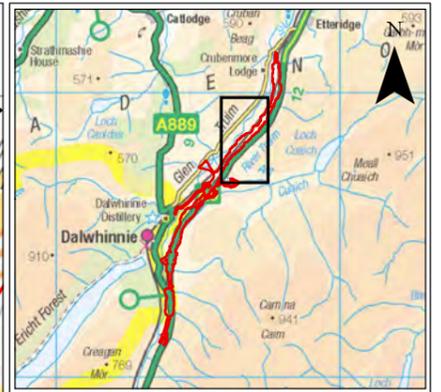
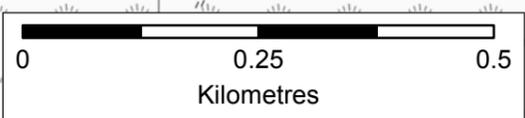
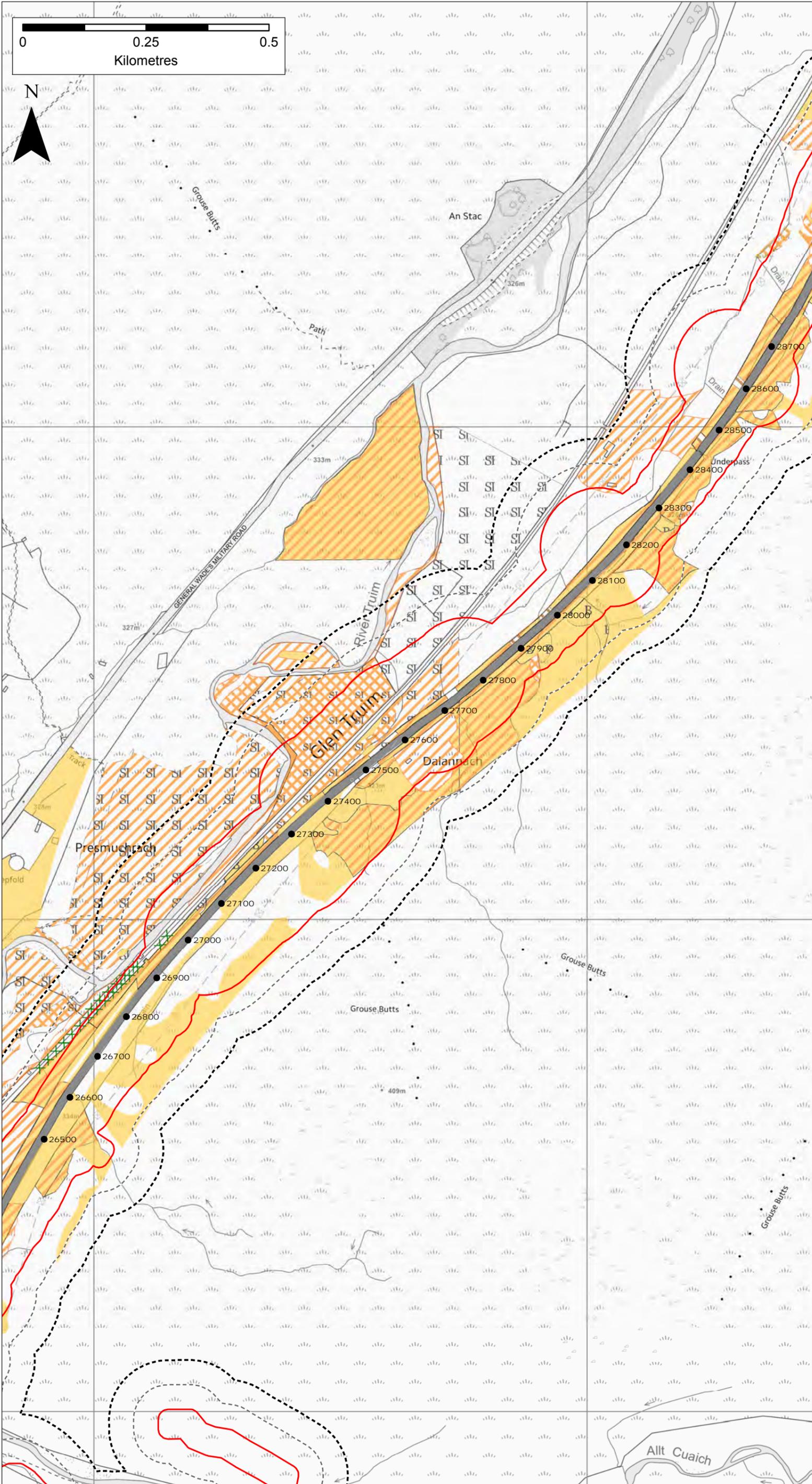


Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Badger Records  
 Section 3a

Drawing No:  
 A9GGDALR - MAP 3 of 5

Drawing scale @ A3 = 1:7,500



**KEY**

- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for badger sett construction based on Phase 1 habitats**
- B1.1, Acid grassland - unimproved
  - B1.2, Acid grassland - semi-improved
  - B2.1, Neutral grassland - unimproved
  - B2.2, Neutral grassland - semi-improved
  - B3.1, Calcareous grassland - unimproved
  - B3.2, Calcareous grassland - semi-improved
  - B6, Poor semi-improved grassland
  - C3.1, Other tall herb and fern - ruderal
  - D1.1, Dry dwarf shrub heath - acid
  - D1.2, Dry dwarf shrub heath - basic
  - D5, Dry heath/acid grassland
  - A1.2.2, Coniferous woodland - plantation

REV	SUIT	DATE	DESCRIPTION	BY	APP
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1		15/06	Desktop study	EL	SB

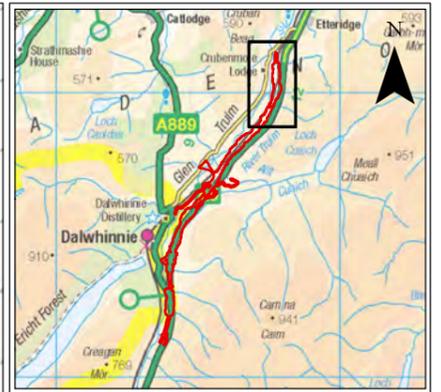
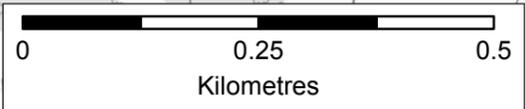
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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Badger Records  
 Section 3b

Drawing No:  
 A9GGDALR - MAP 4 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for badger sett construction based on Phase 1 habitats**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.2.2, Coniferous woodland - plantation
  - A1.3.2, Mixed woodland - plantation
  - A2.1, Scrub - dense/continuous
  - B1.1, Acid grassland - unimproved
  - B1.2, Acid grassland - semi-improved
  - B2.1, Neutral grassland - unimproved
  - B2.2, Neutral grassland - semi-improved
  - B3.1, Calcareous grassland - unimproved
  - B3.2, Calcareous grassland - semi-improved
  - B6, Poor semi-improved grassland
  - C1.1, Bracken - continuous
  - C3.1, Other tall herb and fern - ruderal
  - D1.1, Dry dwarf shrub heath - acid
  - D1.2, Dry dwarf shrub heath - basic
  - D5, Dry heath/acid grassland
  - J1.2, Cultivated/disturbed land - amenity grassland

REV	SUIT	DATE	DESCRIPTION	BY	APP
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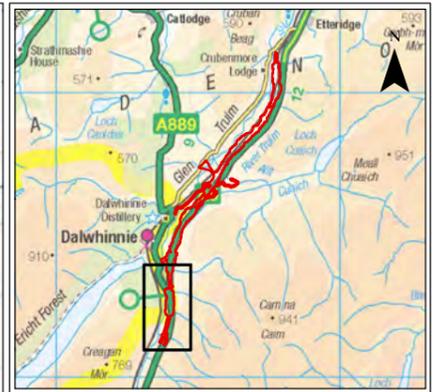
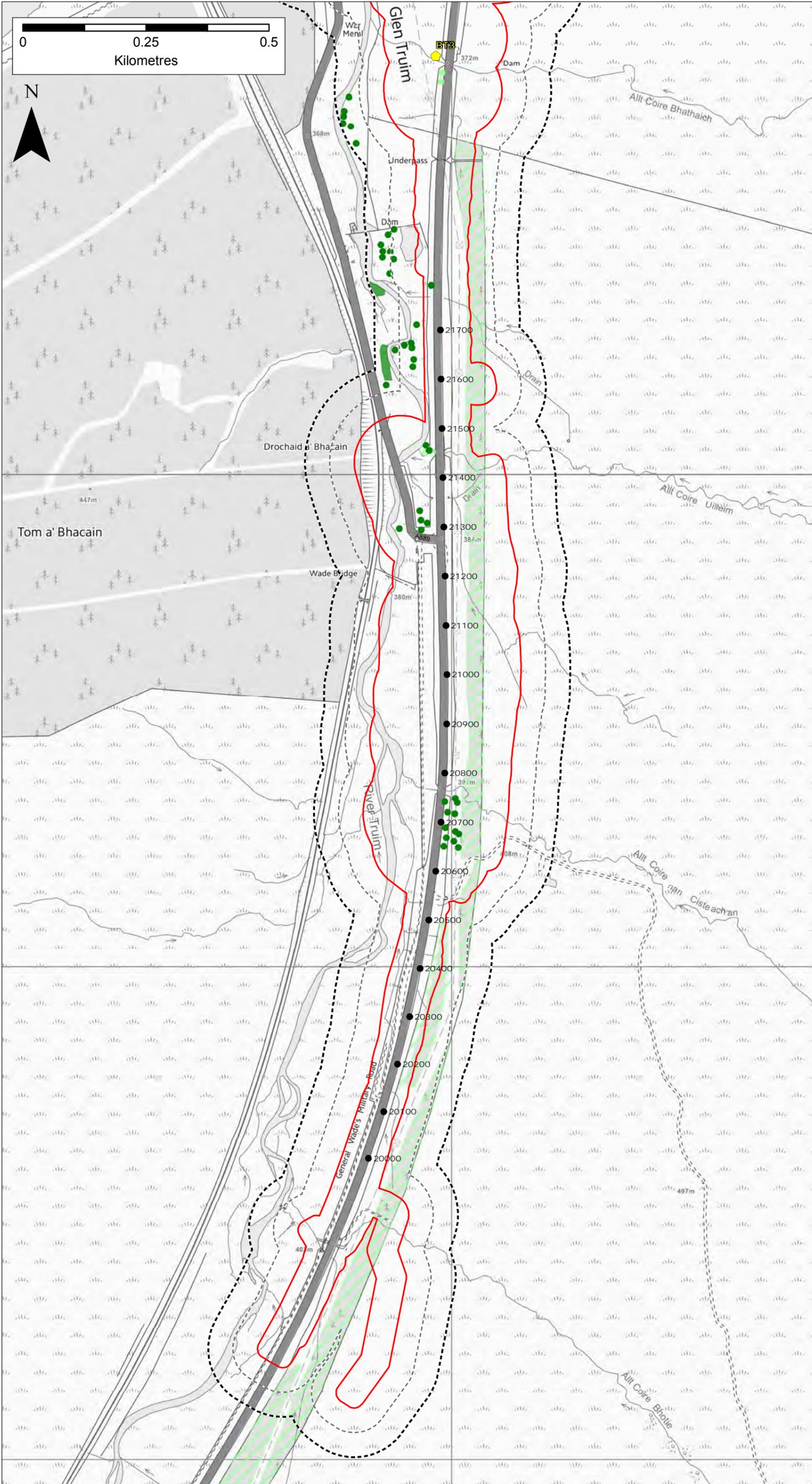
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Project: A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing: Project 8 – Ecology Desk Study  
 Badger Records  
 Section 4

Drawing No: A9GGDALR - MAP 5 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Bat record**
- Bridge/ culvert with BRP
- Habitat potentially suitable for roosting bats based on Phase 1 habitats**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.2.2, Coniferous woodland - plantation
  - A3.2, Coniferous Parkland/scattered trees
  - A3.1, Broadleaved Parkland/scattered trees
  - A3.2, Coniferous Parkland/scattered trees

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		11/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

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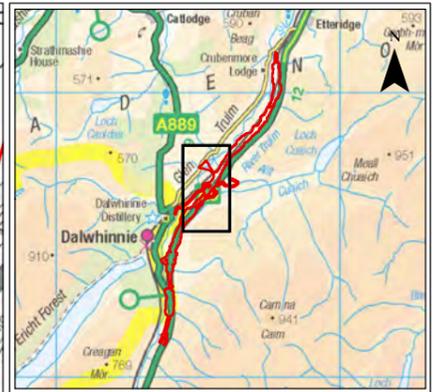
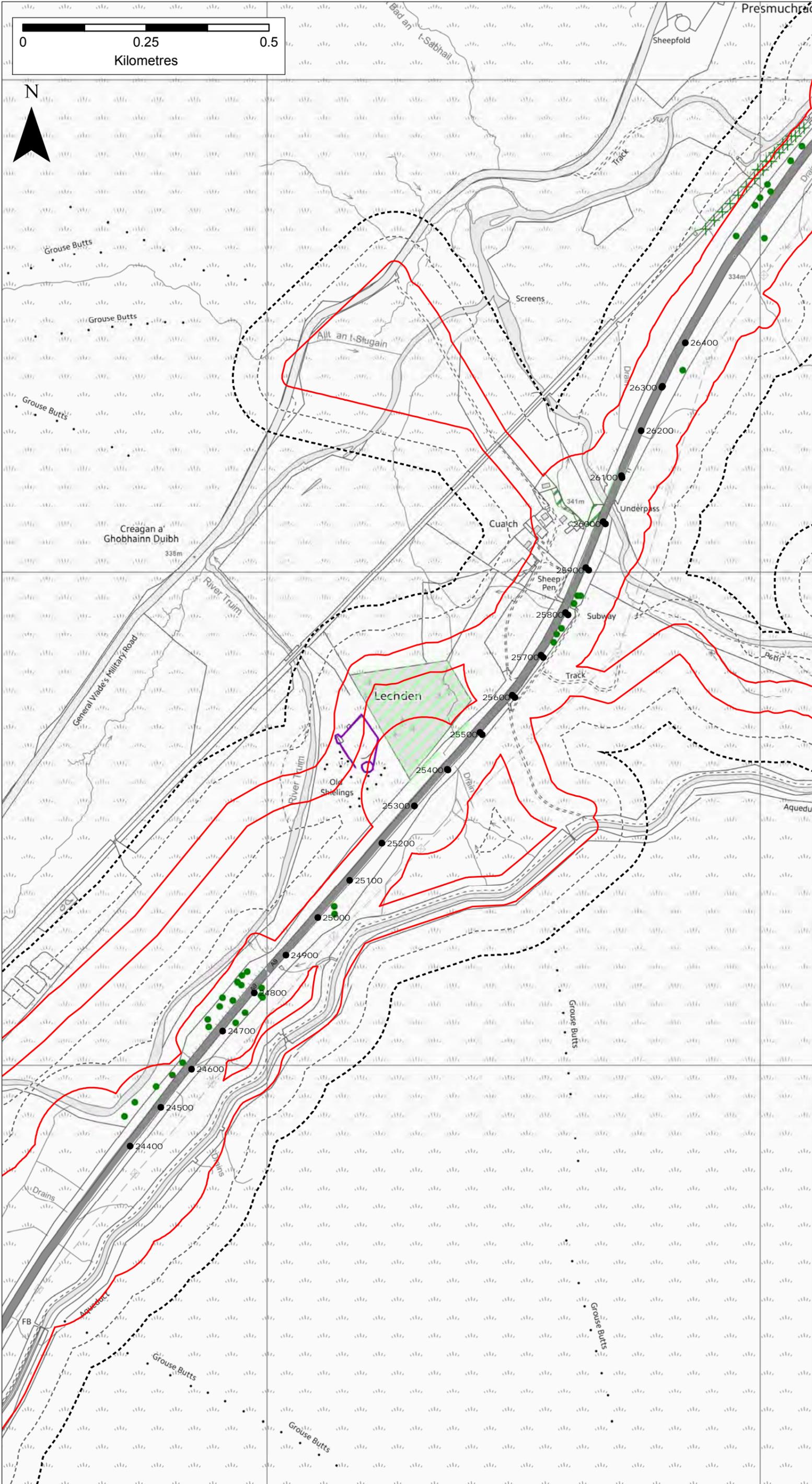


Project: A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing: Project 8 – Ecology Desk Study  
 Bat Records  
 Section 1

Drawing No: A9GGDALR - MAP 1 of 5  
 Drawing scale @ A3 = 1:7,500





**KEY**

- Project 8 footprint
- 50m from project footprint
- 100m from project footprint
- Section chainage

**Habitat potentially suitable for roosting bats based on Phase 1 habitats**

- A1.1.2, Broadleaved woodland - plantation
- A1.2.2, Coniferous woodland - plantation
- A1.2.2, Coniferous woodland - plantation
- J2.5, Wall
- A3.1, Broadleaved Parkland/scattered trees

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		11/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

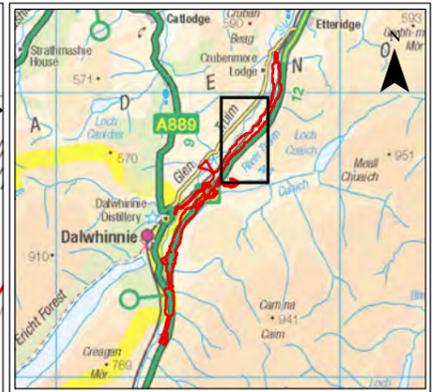
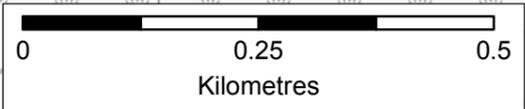
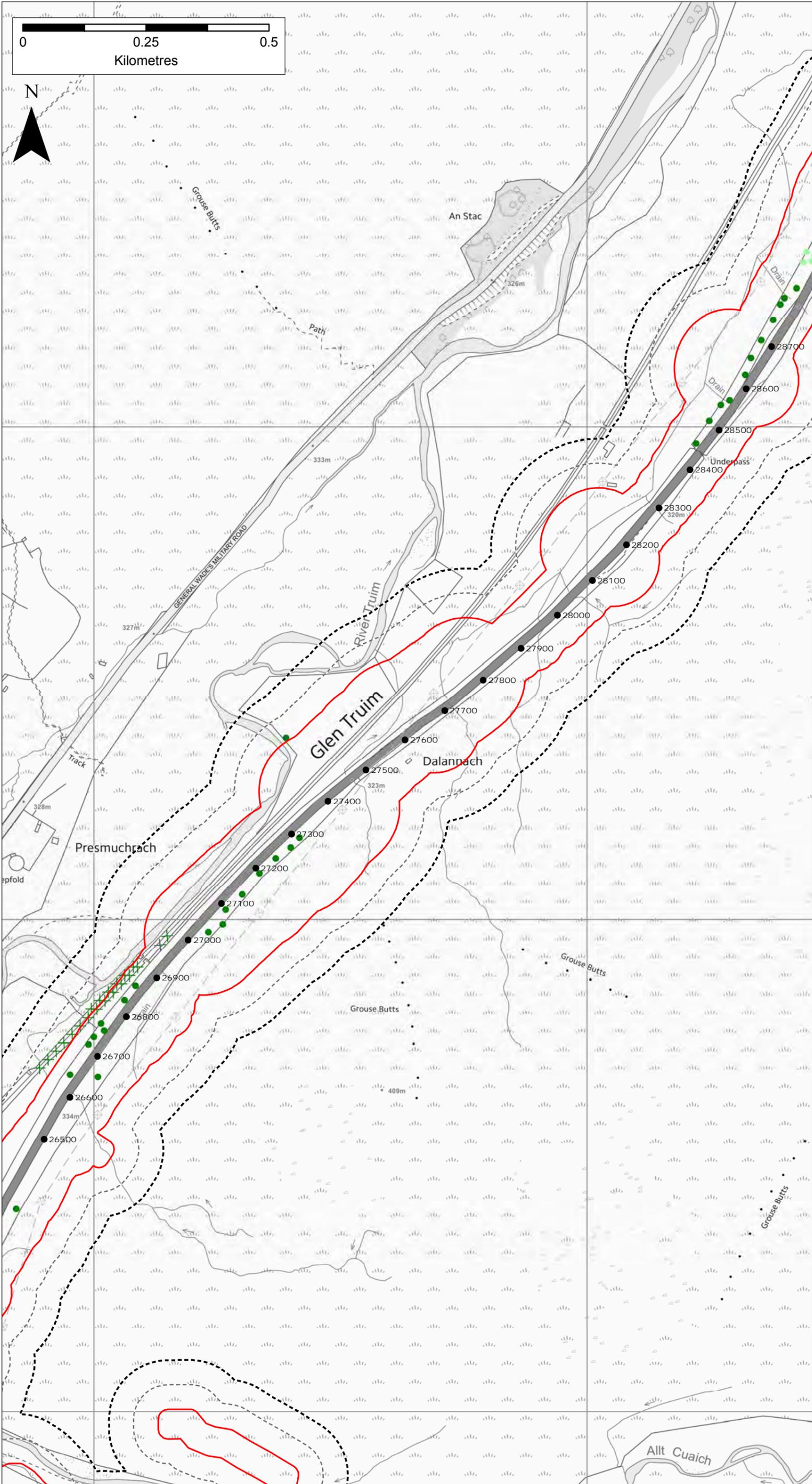
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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Bat Records  
 Section 3a

Drawing No:  
 A9GGDALR - MAP 3 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for roosting bats based on Phase 1 habitats**
- x A1.2.2, Coniferous woodland - plantation
  - A3.1, Broadleaved Parkland/scattered trees
  - A3.2, Coniferous Parkland/scattered trees

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		11/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

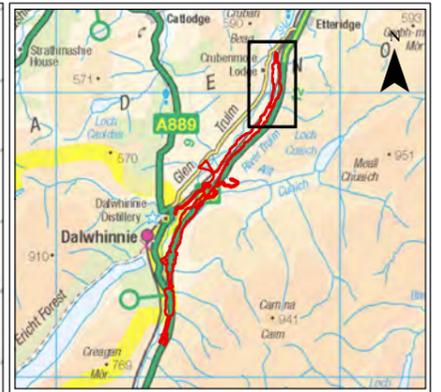
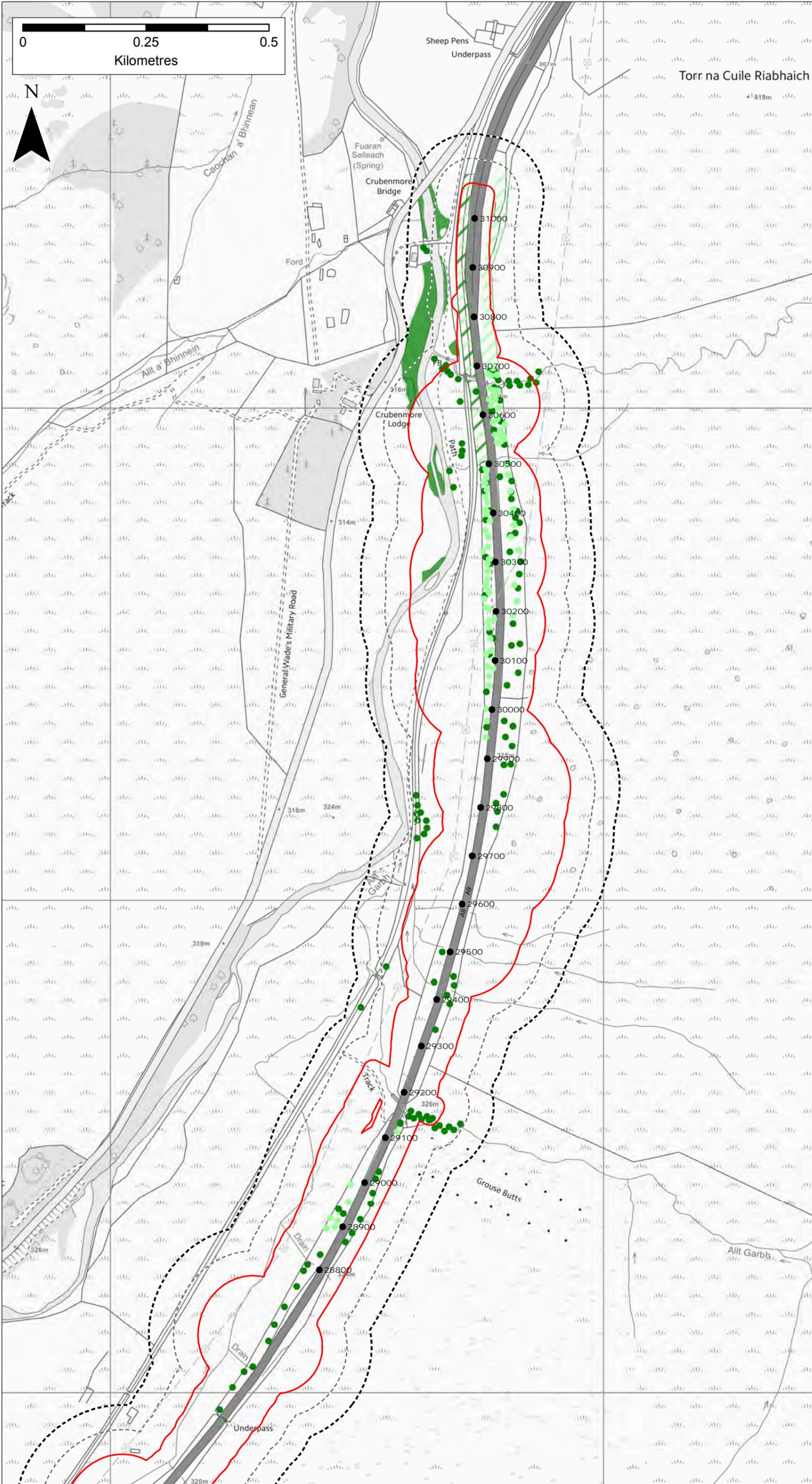
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Project:  
**A9 DUALLING - GLEN GARRY TO DALRADDY**

Drawing:  
 Project 8 – Ecology Desk Study  
 Bat Records  
 Section 3b

Drawing No:  
 A9GGDALR - MAP 4 of 5  
 Drawing scale @ A3 = 1:7,500



- KEY**
- Project 8 footprint
  - 50m from project footprint
  - 100m from project footprint
  - Section chainage
- Habitat potentially suitable for roosting bats based on Phase 1 habitats**
- A1.1.1, Broadleaved woodland - semi-natural
  - A1.2.2, Coniferous woodland - plantation
  - A1.3.2, Mixed woodland - plantation
  - A3.1, Broadleaved Parkland/scattered trees
  - A3.2, Coniferous Parkland/scattered trees

REV	SUIT	DATE	DESCRIPTION	BY	APP
2		11/08	Desktop study	EL	SB
1		15/06	Desktop study	EL	SB

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Project:  
 A9 DUALLING - GLEN GARRY TO DALRADDY

Drawing:  
 Project 8 – Ecology Desk Study  
 Bat Records  
 Section 4

Drawing No:  
 A9GGDALR - MAP 5 of 5  
 Drawing scale @ A3 = 1:7,500

