

The Glenmuckloch to Glenglass Reinforcement Project

Environmental Impact Assessment Report
Non-Technical Summary

January 2023



**SP ENERGY
NETWORKS**

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Image 1: Photomontage of the GGRP from Viewpoint 1: A76 near Cockroy)

Introduction

Background

1.1 This document is a Non-Technical Summary (NTS) of the Environmental Impact Assessment (EIA) Report which accompanies an application for development consent made by SP Energy Networks (SPEN) for the construction and operation of the Glenmuckloch to Glenglass Reinforcement Project (GGRP).

1.2 The NTS summarises the key findings of the EIA which has been undertaken by LUC and technical specialist consultants on behalf of SPEN to assess the effects of the GGRP. The GGRP is located within the administrative boundary of Dumfries and Galloway Council (D&GC). The location of the project is shown in **Figure 1**.

1.3 SPEN owns and operates the electricity transmission and distribution network in central and southern Scotland¹ and has a statutory duty to develop and maintain an economic, co-ordinated and efficient network of electricity transmission and distribution. In recent years, SPEN has received several requests from developers wishing to develop renewable energy schemes in the Sanquhar area of Dumfries and Galloway. To address this requirement, SPEN is proposing to extend the transmission network via a new 132 kilovolt (kV) overhead line (OHL) from the existing 132kV substation at Glenglass² to the new proposed substation at Glenmuckloch to allow connection of renewable energy projects in the area.

1.4 Consent for the GGRP³ is required from the Scottish Ministers (via the Energy Consents Unit (ECU)), who will

reach their decision in consultation with consultees including D&GC⁴.

Environmental Impact Assessment

1.5 EIA is required where a proposed development has the potential to result in significant environmental effects. As it is considered possible that the GGRP may result in significant environmental effects, an EIA has been undertaken.

1.6 EIA involves the compilation, evaluation and presentation of any likely significant environmental effects resulting from a proposed development, to assist the consenting authority, statutory consultees, and wider public in considering an application.

1.7 EIA is an iterative process whereby the identification and assessment of effects can also inform the design of a proposed development so that potentially significant adverse environmental effects can be avoided, reduced and if possible, removed at an early stage. A proposed development can then be refined to avoid or reduce potential environmental effects, where necessary, through the use of additional mitigation measures.

1.8 The EIA Report presents information on the identification and assessment of the likely significant environmental effects resulting from the GGRP across a number of environmental topics. The significance of these effects has been assessed using criteria defined in the topic chapters of the EIA Report. Where appropriate, or as otherwise defined, the significance of effects has been categorised as major, moderate, minor or none. In the context of the Electricity Works (Environmental

¹ Through its wholly-owned subsidiaries SP Transmission plc (SPT) and SP Distribution plc (SPD). SPT is the holder of a transmission licence and the reference to SPEN's duties should be read as applying to SPT.

² An extension to the existing Glenglass substation extension is being progressed separately to the GGRP. This will allow work to commence on Glenglass substation prior to consent being granted for the GGRP, as the proposed Glenglass substation extension is required regardless of whether or not the GGRP is built. As such, the Glenglass substation extension does not comprise part of the GGRP but was included in the cumulative assessment as part of the EIA. The Glenglass substation extension has been subject to a separate EIA

screening application submitted to Dumfries and Galloway Council (Application Reference 22/0892/SCR). As Dumfries and Galloway Council did not respond to the screening application, a screening direction was sought and The Scottish Ministers issued a formal screening direction (EIA-170-001) on 15th September 2022 confirming that the Glenglass substation extension does not require EIA

³ SPEN is seeking Section 37 consent under the Electricity Act 1989 for the 132kV OHL forming part of the GGRP, and deemed planning permission for the GGRP and associated works under Section 57 (2) of the Town and Country Planning (Scotland) Act 1997.

⁴ D&GC will not be the determining authority, but its inputs will be key to the decision-making process.

Impact Assessment) (Scotland) Regulations 2017 (hereafter referred to as the 'EIA Regulations') likely effects assessed as being of 'major' or 'moderate' significance are considered to be significant effects.

1.9 The scope of the EIA was informed by the Scoping Opinion provided by ECU in December 2020, and included comments from a number of consultees, including D&GC, Scottish Environment Protection Agency (SEPA), NatureScot, and Historic Environment Scotland (HES).

1.10 Where no likely significant effects have been identified for a particular topic, these have been 'scoped out of detailed assessment. Topics not assessed in detail include:

- forestry⁵;
- construction and operational noise;
- air quality;
- socio-economics, recreation and tourism;
- climate change;
- human health;
- major accidents and disasters;
- electromagnetic fields; and
- aviation.

1.11 As required by the EIA Regulations, the EIA Report has been prepared by 'competent experts' in relevant specialisms.

Location of the GGRP

1.12 The area in which the GGRP is located is solely within the administrative boundary of D&GC, as shown on **Figure 1**. Much of the area surrounding the GGRP is rural in nature, comprising primarily of minerals (coal), agriculture and forest areas. Outside of the main settlements of Kirkconnel, Kelloholm and Sanquhar which are located to the east of the GGRP, the population is dispersed, comprising individual and small clusters of farmsteads and residential properties.

1.13 Much of the landscape within which the GGRP is located is largely defined by the valley of the River Nith and the adjacent South Uplands, highlighted by the range in elevation across the route of the new 132kV OHL. The valley is characterised by medium scale agricultural landholdings and existing infrastructure, including the railway and A76.

1.14 The GGRP crosses areas of coniferous plantation forestry. There are also smaller areas of mixed and deciduous woodland in the area, often associated with farmsteads and narrow stretches alongside the River Nith and smaller watercourses positioned in the incised tributary valleys. Above

the valley floor and lower slopes, land use gives way to rough grazing and managed moorland mixed with plantation forestry. Several of the hilltops and ridges have been developed for wind energy production, including Hare Hill Wind Farm, Sandyknowe Wind Farm, Sanquhar Community Wind Farm and Whiteside Hill Wind Farm.

⁵ Felling required for the GGRP includes the 80m wayleave corridor (40m either side of the route of the 132kV OHL) required to safely construct and maintain the new 132kV OHL, as well as 'windthrow' areas outside of the 80m corridor, where trees would be at risk of falling over if only the wayleave corridor was felled, and so are

proposed to be felled as a preventative measure. SPEN has no mechanism to control felling and/or replanting in the windthrow areas but is committed to liaising with landowner to agree that these areas will be felled to mitigate the risk of forest damage through windthrow.



Image 2: Photomontage of the GGRP from Viewpoint 3 A76 near Guildhall Bridge

Development Description

Overview of the Glenmuckloch to Glenglass Reinforcement Project

2.1 The GGRP will comprise the construction of a new 132kV double circuit steel tower OHL, approximately 9.3km in length, and the construction of 40 L7 steel lattice towers. In addition to the new 132KV OHL, a new permanent substation at Glenmuckloch and access to it will be constructed.

2.2 In addition to the components detailed above, other ancillary development will be required on a temporary basis during the construction phase of the GGRP and will be reinstated upon completion:

- 80m wayleave through woodland⁶;
- access tracks;
- temporary topsoil storage;
- watercourse crossings;
- temporary Sustainable Drainage Systems (SuDS), including settlement ponds and ditches; and
- working areas (around steel towers and the new Glenmuckloch substation).

2.3 **Figure 2** shows the layout of the GGRP including the key components noted above, as well as the construction access routes.

Access

2.4 To facilitate construction of the GGRP, and reduce effects on the local transport network, access will be via a number of different locations from the public road network. These temporary access points will be confirmed by the contractor following appointment; however, based on SPEN's experience of constructing similar OHLs, a series of access

points have been identified (labelled from Access A to Access G on **Figure 2**).

2.5 Some of the access points will require access via bellmouths from the public road. These will be designed in accordance with the approved Traffic Management Plan (TMP), appropriate legislation, and consent sought as part of the application for deemed planning permission for GGRP.

2.6 Access to every steel tower of the new 132kV OHL is required during construction. The overall design objective for the access tracks has been to avoid and/or reduce effects upon natural and cultural heritage interests and to cause least disturbance to current land use and land management practices. The principal method employed to achieve this has been to maximise the use of existing tracks, with upgrading of these tracks where necessary.

2.7 The type of temporary track required will depend on a variety of factors including the sensitivity of the location, the type of land use and the ground conditions, with the latter confirmed through pre-construction ground investigations.

Forestry

2.8 In total 57.65 hectares (ha) of forestry will be felled for the construction of the GGRP, with the majority of the trees proposed for felling comprising Sitka Spruce; the dominant species in Scottish forestry. Of this, 26.94ha will be lost permanently for the substation and 80m wayleave corridor.

2.9 In some areas, the felling of forestry for the wayleave will only be part of a forest compartment and as such, expose those remaining, and previously sheltered trees to the wind. Where these trees are semi-mature or mature this is described as creating a 'brown edge'. The remaining trees in these forest compartments in many cases will be less stable and as such, prone to future windthrow. In total area likely to

⁶ Within the 80m wayleave corridor there is a need to retain a safe separation distance between the infrastructure (towers and conductors). As such, this area will not be fully replanted during the

lifetime of the GGRP, albeit that some vegetation may be introduced by the natural reseeded, regrowth of existing trees and shrubs or in certain areas by active replanting.

be subject to windthrow is likely to be 22.52ha (forming part of the total 50.4ha felling for the GGRP).

2.10 Felling will be undertaken utilising a mixture of mechanical harvesting, mulching and hand felling techniques.

Peat Management

2.11 Whilst the GGRP has been designed to minimise disturbance to peatland, it has not been possible to avoid areas of peatland entirely. Consequently, a Peat Management Plan (PMP) has been produced which will ensure that excavated peat is appropriately managed and re-used onsite. It is anticipated that all excavated peat can be reused for reinstatement ground, at the point of excavation.

Lifespan of the GGRP

2.12 Subject to the granting of consent, it is anticipated that the construction of the GGRP will last for up to 16 months.

2.13 OHLs require refurbishment after approximately 20 to 40 years, whilst towers are expected to have a lifespan of approximately 80 years. When the operational life of the new 132kV OHL comes to an end, the line may be i) re-equipped with new conductors and insulators, or if the towers are 80 years old, the towers replaced, or ii) the towers dismantled and removed. The operational lifetime of the new Glenmuckloch substation is likely to be shorter than the new 132kV OHL (approximately 40 years) at which point it may be i) fitted with new equipment or ii) demolished and removed.

Embedded Mitigation Measures

2.14 Embedded mitigation measures, comprising general good practice measures will be employed as standard techniques during the construction of the GGRP. Therefore, these measures are considered to be an integral part of the design and implementation of the construction phase. This is considered a realistic scenario given the current regulatory context and accepted good practice across the construction industry.

2.15 These measures include:

- Construction and Environmental Management Plan (CEMP);
- Construction Traffic Management Plan (CTMP);
- Bird Protection Plan (BPP); and
- Peat Management Plan (PMP).

2.16 Embedded mitigation can also include measures adapted as part of the design of the GGRP to avoid the potential for significant effects on specific receptors.

2.17 Where relevant, embedded mitigation measures, including those incorporated through the design process, are mentioned below.



Image 3: Photomontage of the GGRP from Viewpoint 3 A76 near Guildhall Bridge

Routeing and Design Strategy

3.1 A Routeing and Consultation Report (2019) was prepared setting out the methodology adopted for the routeing of the new 132 kilovolt (kV) OHL, the routeing objective, the routeing strategy and the outcome of the appraisal of route options culminating in the 'preferred route'.

3.2 Following identification of a preferred route, consultation with the general public, as well as with the local authority and consultees was carried out, culminating in the identification of the 'proposed' route to be progressed to the EIA Scoping stage.

3.3 An EIA Scoping Report was prepared in December 2019 and in the intervening period since EIA Scoping, extensive field work has been undertaken across the proposed route of the new 132kV OHL and at the location of the new Glenmuckloch substation. Both were further refined to allow further consultation to take place at the end of 2021.

3.4 Key environmental considerations which influenced the route included:

- Length of route;
- Biodiversity and geological conservation;
- Landscape and visual amenity;
- Cultural heritage;
- Land use;
- Forestry; and
- Peat.

3.5 Technical issues considered during routeing included physical constraints such as existing infrastructure. Other factors including slope, altitude, access, large waterbodies. The location of other consented or proposed developments (including proposed or existing wind farms and single turbine developments) were also taken into account.

3.6 The final detailed design of the GGRP was led by SPEN and reviewed by LUC's environmental team and also landowners, with changes to the design being made where possible to avoid/minimise environmental effects and meet landowners' objectives for land use.

3.7 The final design of the GGRP and associated infrastructure which is the subject of the assessment reported in the EIA Report and applications for section 37 consent and deemed planning permission, is shown in **Figure 2**.



Image 4: Photomontage of the GGRP from Viewpoint 4 Main Street Kirkconnel

Landscape and Visual Amenity

Introduction

4.1 The landscape and visual assessment has considered the likely effects of the GGRP on the physical landscape and landscape character of the 5km study area and visual amenity from key viewpoints (VP), settlements, and routes during construction and operation. Effects on views and visual amenity experienced by visual receptors at publicly accessible locations in the vicinity of residential properties located within 600m of the GGRP have been assessed. The likely cumulative landscape and visual effects with other developments were also considered.

4.2 The method for assessing landscape and visual effects included field survey, desk study creation of zone of theoretical visibility (ZTV) maps, photography and preparation of viewpoint visualisations. Field survey work was carried out between spring 2020 and autumn 2022 and included visits to the proposed GGRP route, viewpoints and travel around the study area to consider likely effects on landscape character and on experience of views seen from settlements and routes.

Baseline Conditions

4.3 The landscape within which the GGRP is located is defined by the River Nith Valley and adjacent Southern Uplands. It is mostly rural in nature comprising agricultural and forested areas outside the main settlements of Kirkconnel and Sanquhar. There is a notable change in topography across the area with the hills rising to around 530m Above Ordnance Datum (AOD) and the valley floor at approximately 140m AOD.

4.4 Several of the slopes, hilltops and ridges have been developed for wind energy production, including Hare Hill Wind Farm, Sanquhar Community Wind Farm, Whiteside Hill Wind Farm and the Sandy Knowe Wind Farm (under construction).

4.5 The A76 which runs through the River Nith Valley is identified as a key transport corridor for the area. The Glasgow South Western Line Railway also runs parallel to the

A76 within the study area. A number of core paths connecting Kirkconnel with the uplands are present to the north and south, while a section of the Southern Upland Way is also present within the 5km study area.

4.6 The GGRP is not located within any locally designated landscapes, however part of the East Ayrshire Sensitive Landscape Area (SLA) is within the western part of the study area. Part of the Thornhill Uplands Regional Scenic Area (RSA), a Dumfries and Galloway landscape designation, is within the south-western part of the study area.

Embedded Mitigation

4.7 The mitigation of potential landscape and visual effects has been embedded through the routing of the GGRP and, since identification of a proposed route, the consideration of individual steel lattice tower and substation location. An iterative process of design modification, appraisal and assessment has been ongoing since project inception.

Effects

Construction Effects

4.8 Whilst a number of **moderate** and **significant** effects have been identified during the construction period, the majority of these will be short-term and largely reversible, typically limited to the immediate vicinity from which activities may be perceptible. Over time, these will be replaced by the longer-term operational effects.

Operational Effects

4.9 During operation there will be a **moderate** and **significant** effect on localised extents of the Upper Nith Valley and Incised Tributary Valley LLCTs.

4.10 **Significant** visual effects are predicted at 5 of the 10 representative viewpoints. **Significant (moderate)** effects are predicted from the closest viewpoints (from Viewpoint 1: A76 near Crockroy, VP2: Lagrae Road & VP3: A76 near Guildhall Bridge). **Significant (moderate)** effects are also predicted

from elevated hill tops with close views across the route (VP6: Libry Moor and VP7: Southern Upland Way).

4.11 Significant (moderate to major) effects will be experienced by localised sections of the A76, u432N (minor road in Euchar Water Valley), U459N and U460N north of the A76 (minor roads passing towards Lagrae and Kirkland), Southern Upland Way, Core Path 84 (Kirkconnel to Mynwhirr Hill), and Core Path 88 (Kirkconnel to Black Law via Fingland & Kirkland). These however reduce to **minor (not significant)** for the routes as a whole with the exception of U459N and U460N north of the A76 which will remain as **moderate (significant)**.

4.12 In terms of settlements, **significant (moderate)** effects will be experienced by residents at Residential Property Group A: 3 and 4 Knowe Cottages, Crockroy Cottage and Euchar Filter Station House and Cottage.

Cumulative Effects

4.13 No significant cumulative effects have been identified within the assessment of landscape and visual receptors.

Additional Mitigation Proposed

4.14 Beyond embedded mitigation through routeing and design and reinstatement of disturbance associated with the construction of the GGRP, no additional mitigation measures have been identified that would materially reduce the level of effects assessed.

Residual Effects

4.15 The residual significant effects will be equal to those outlined above.

Introduction

5.1 The hydrology, hydrogeology, geology and peat assessment has considered the likely effects of construction of the GGRP project on effects during construction on surface and ground water quality, hydrology and consequent increase in flood risk, channel morphology and peat. Direct effects during operation on hydrology and cumulative effects during construction on water quality, hydrology and peat have also been assessed.

5.2 The assessment was informed by desk-based research, field survey and consultation with D&GC, Scottish Water, Marine Scotland, NatureScot and SEPA.

5.3 Field surveys were undertaken between November 2020 and August 2022 to obtain peat depth data, establish potential watercourse crossing locations and identify private water supplies. The peat survey followed relevant guidance in Scotland. A total of 2,908 probes and 37 cores were collected across the route of the GGRP and at the proposed Glenmuckloch substation as part of the field surveys.

Baseline Conditions

5.4 The GGRP is located entirely within the River Nith catchment. The route of the GGRP also crosses the River Nith, Kello water and several small tributaries and watercourses.

5.5 There is no peat (0 – 50cm) in 80.4% of the probed areas, peat (over 100cm depth) makes up 9.5% of the surveyed area and is classified as deep peat.

5.6 The majority of the GGRP route is underlain by solid bedrock and sedimentary coal measures. Field surveys by ecologists and hydrologists confirmed that there are no GWDTes present along the route of the GGRP.

5.7 There are now PWS or licenced groundwater abstractions within the 1km buffer from the OHL infrastructure. Available data on Scottish Water utilities show that there are several areas where Scottish Water pipework is located close to the proposed OHL route.

5.8 There are no surface water-related designated sites within or close to the OHL route, however the Polhote and Polneul Burns Site of Specific Scientific Interest (SSSI) and the Lagrae Burn SSSI⁷ are both located near the proposed OHL (approximately 1.2km and 200m from the closest infrastructure respectively).

⁷ The Polhote and Polneul Burns SSSI and Lagrae Burn SSSSI are designated for geological features.



Image 5: Watercourse along the Route of the GGRP

Embedded Mitigation

5.9 During initial design, a buffer of 50m from all watercourses was recommended for infrastructure and construction activities. However, given the number of small watercourses and drains, this was not achievable for all watercourses due to the spacing of OHL towers required to meet span widths. The final design achieves a 10m buffer on all watercourses, with larger buffers protected on larger watercourses.

5.10 Embedded mitigation such as, good practice pollution prevention and control measures will be put in place during felling operations and construction through the CEMP. The assessment has been undertaken on the basis that these measures will be in place and will be effective.

5.11 Measures will be put in place during construction to minimise the risk of any peat landslide occurring around the area of Tower 28 and the approaching temporary access track. This will include excavating the access track and isolating the downslope area above the Polmeur Burn from drainage for the duration of the works. This will reduce the risk of peat slide risk to negligible.

Effects

Construction Effects

5.12 The likely effect of pollution on water quality of surface water and groundwater caused by the release of hydrocarbon pollution and concrete resulting from accidental oil or fuel leaks or spillages is considered to be of **minor** significance

5.13 The significance of the effect on channel morphology (bank erosion and channel form) is assessed as **none**, as embedded mitigation measures, including a minimum 10m buffer zone and environmentally sensitive bridge design, have been incorporated into the project design.

5.14 The effect on run-off rates and flood risk is **none**.

5.15 The effect before mitigation on ground-water levels and local recharge is assessed as **minor** and not significant.

5.16 Peat is absent for the majority of the route of the OHL but where present, effects on peat loss/disturbance and instability are **minor** and not significant.

Operational Effects

5.17 During operation, the increase in hardstanding areas (tower legs) within the rivers' catchments could result in a very slight increase in the rate and volume of surface water runoff, leading to an increase in flood risk in watercourses downstream. However, given the size of the areas of hardstanding compared to the catchment areas of the downstream watercourses, the significance of the effect is assessed as **none**.

Cumulative Effects

5.18 There are a number of wind farm developments and proposed OHL connections within the River Nith catchment area, which all drain (directly or indirectly) into the River Nith. Assuming these wind farm schemes have all been designed and will be constructed good practice and national guidelines with respect to SuDS and pollution control, no cumulative effects are anticipated.

Additional Mitigation Proposed

5.19 Where the 50m watercourse buffer has not been attained and where a minor effect is predicted, additional mitigation will be put in place in the form of SuDS (e.g., silt fences, settlement ponds) to reduce the risk of sediment/silt run-off to the water environment during construction. The remaining effect will remain as **minor** significance.

5.20 Dewatering and physical cut-offs will be avoided where possible and drainage measures will be designed to minimise the effect on the lowering of the groundwater table. Permanent physical cut-offs will be avoided. This will reduce the effect on ground-water levels and local recharge to **none**.

5.21 Excavated peat will be stored appropriately and re-used as soon as possible for reinstatement. Further ground investigation will be undertaken for the foundation and temporary track locations to determine the most suitable foundation and temporary track type so that the volumes of excavated peat can be reduced further. No additional mitigation is required for peat slide risk. The overall effect on peat will remain **minor**.

5.22 Cognisance of Scottish Water services and pipework will be required during detailed design and prior to and during construction works.

Residual Effects

5.23 Following implementation of additional site-specific mitigation, all residual construction effects remain as either **minor** or **none** and will not be significant in the context of the EIA Regulations.

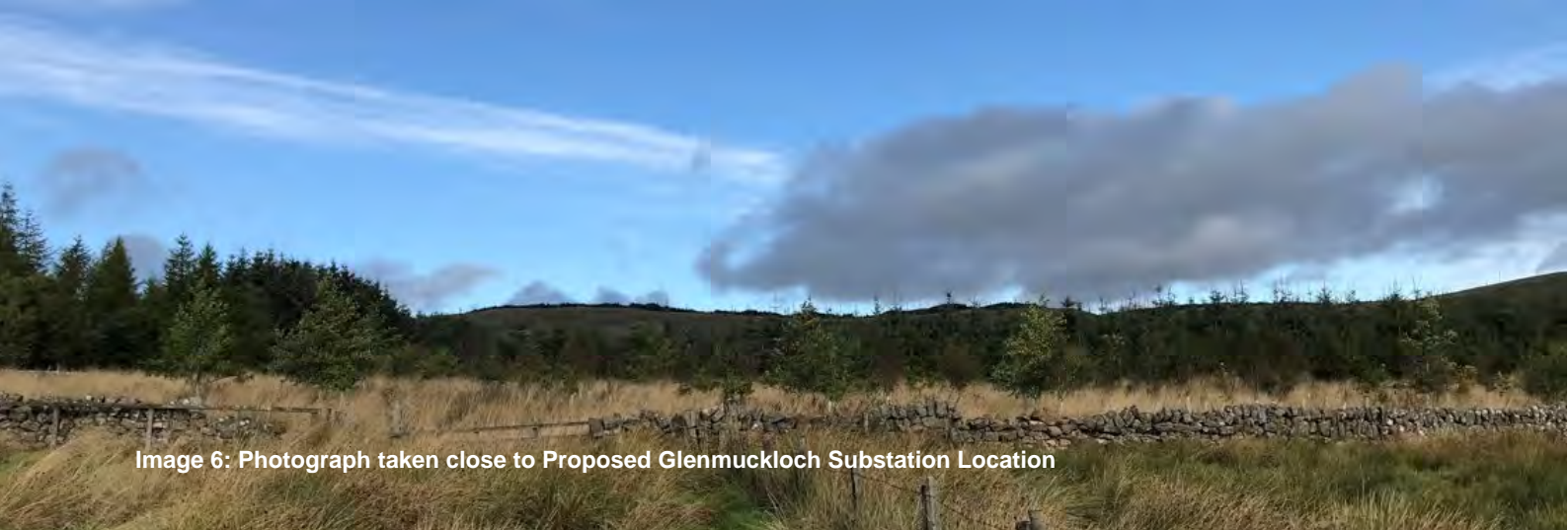


Image 6: Photograph taken close to Proposed Glenmuckloch Substation Location

Ecology

Introduction

- 6.1** The ecology assessment has considered the likely construction, operational and cumulative effects of the GGRP on habitats of conservation concern and direct and indirect effects on sheltering or foraging habitat of protected species.
- 6.2** Desk studies have been carried out to identify known ecological features within the relevant study areas, which varied by feature.
- 6.3** Field surveys have also been undertaken to inform the assessment. For the protected species survey, a study area of the development footprint, wayleave and 200m buffer was used. While the Habitat and Vegetation Surveys used a study area of development footprint, wayleave and 250m buffer for potential GWDTEs. All surveys were undertaken between August 2019 and September 2022.

Baseline Conditions

- 6.4** The Muirkirk Uplands Site of Special Scientific Interest (SSSI) and North Lowther Uplands SSSI which are located approximately 1.7km north-east but are not connected to the GGRP and will not be affected by its construction or operation⁸.
- 6.5** Commercial woodland and marshy grasslands are the most abundant habitat type within the study area (approximately 22.5 & 31.7% respectively). The majority of the habitats are considered to be common and widespread in the wider area.
- 6.6** Protected species have been scoped out of the assessment on the basis that activity levels were very low during the surveys.

Embedded Mitigation

- 6.7** The assessment has been undertaken on the basis that good practice during construction will be in place including CEMP and PMP. Pre-construction surveys will be undertaken

to confirm the status of protected species prior to works commencing, and an Advisory Environmental Clerk of Works (ECoW) will be appointed to advise, monitor and report on compliance with relevant legislation, policy and project specific mitigation during the works.

Effects

Construction Effects

- 6.8** The GGRP will result in the permanent loss of 1.33% of the habitats of conservation concern present within the study area, there the significance of the effect will be **none**.

Operational Effects

- 6.9** Operational effects have been scoped out of assessment.

Cumulative Effects

- 6.10** Cumulative effects have been scoped out of the assessment on the basis of the GGRP Study Area's limited Ecological Importance and the lack of receptor connectivity with other developments. Cumulative effects with the substation extension works at Glenglass have been scoped out due to the minor effects of the substation extension works at Glenglass (which in itself does not constitute EIA development, in line with the Screening Direction dated 15th September 2022 (EIA-170-001).).

Additional Mitigation Proposed

- 6.11** The assessment has confirmed that effects on habitats of concern will be **none**, therefore specific mitigation is not required.

Residual Effects

- 6.12** There are no likely significant residual effects.

⁸ Notified for assemblage of upland habitats (including blanket bog, wet and dry heath and acid grassland).

Introduction

7.1 The ornithology assessment has considered the likely effects of the GGRP project on bird species considered to be of high or moderate Nature Conservation importance (NCI) and for which a population is known to be present or is potentially present in the study area.

7.2 The study area was defined with reference to the location of the route for the GGRP and access tracks and encompasses a series of buffers of up to 2km radius, dependant on species and reflecting NatureScot guidance.

7.3 A desk study was undertaken to collate existing bird records / data from published sources and consultees. Baseline field surveys were carried out between April 2018 and March 2022.

Baseline Conditions

7.4 The GGRP does not intersect any site that is designated at international or national levels for ornithological interests. The nearest internationally designated site is the Muirkirk and North Lowther Uplands SPA which is located approximately 1.7km north-east of the GGRP, and which is designated for breeding short-eared owl, merlin, peregrine and golden plover and breeding and non-breeding hen harrier. The SPA overlaps with the Muirkirk Uplands and North Lowther Uplands SSSIs, both of which are also designated for breeding hen harrier as part of the SSSI citations. Muirkirk uplands SSSI is also designated for breeding short-eared owl, and North Lowther Uplands SSSI is also designated for the diverse upland bird community which is of national importance⁹.

7.5 Information provided by the Royal Society for the Protection of Birds (RSPB) and Dumfries and Galloway Raptor Study Group (DGRSG) highlighted that goshawk and peregrine are known to use habitats in the area in the vicinity of the GGRP for nesting. A number of other species of NCI are also known to use habitats in the vicinity of the GGRP, including black grouse and breeding waders.

7.6 Hen harrier, peregrine and barn owl were recorded during the field surveys. Results from surveys and historical data of breeding goshawk did not include any pairs nesting within the Study Area. Buzzard, sparrowhawk and kestrel were also recorded and are present all year however they are species of low NCI. Black grouse and some wading birds including curlew, snipe, lapwing and the common sandpiper were recorded.

⁹ In addition to hen harrier, species cited include short-eared owl, merlin, peregrine, golden plover, red grouse, raven, dunlin, snipe, teal, curlew, redshank, whinchat and wheatear.

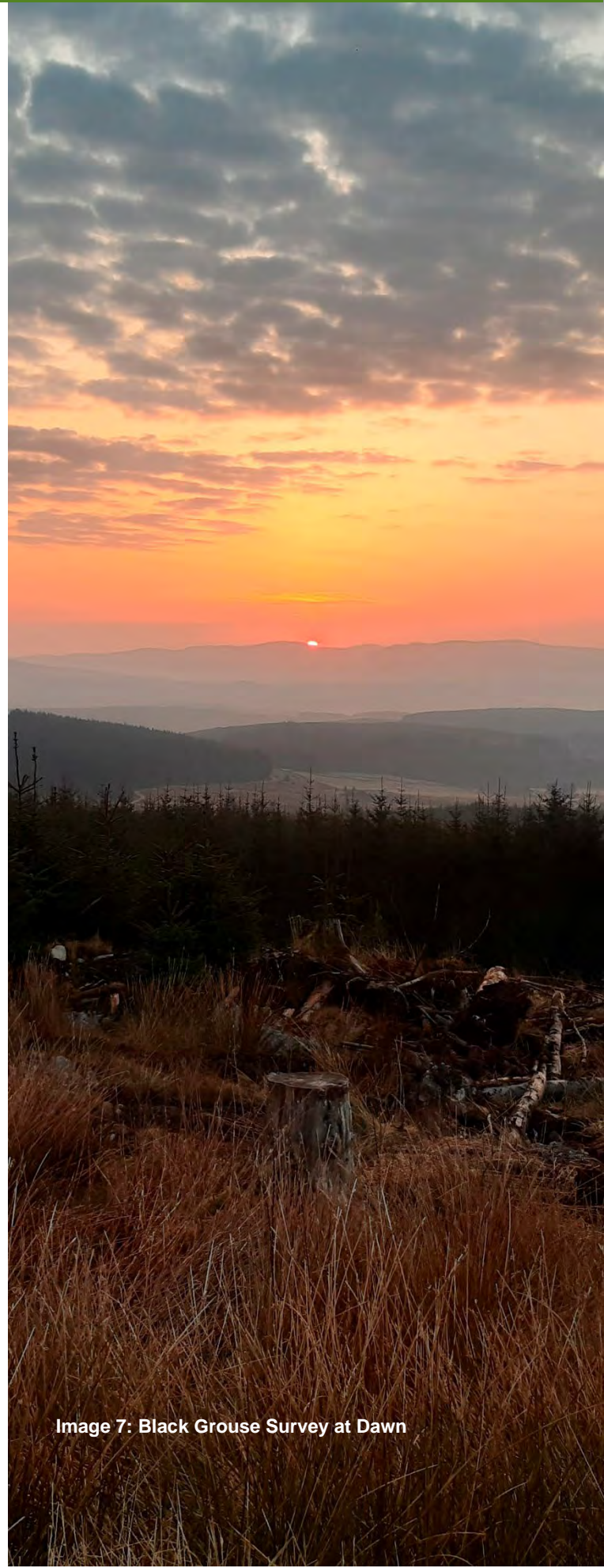


Image 7: Black Grouse Survey at Dawn

Embedded Mitigation

7.7 As noted above, a BPP, devised in consultation with NatureScot, will be in place prior to the commencement of construction activities. The BPP will describe the survey methods for the identification of sites used by protected birds and will detail protocols for the prevention, or minimisation, of disturbance to birds as a result of activities associated with the GGRP. The implementation and compliance with BPP will be overseen by the ECoW.

Effects

Construction Effects

7.8 Construction effects are likely to be **none** for all species assessed (peregrine, barn owl, black grouse, lapwing and curlew) on the assumption that embedded mitigation proposed is taken forward through implementation of a Bird Protection Plan (BPP).

Operational Effects

7.9 The long-term operational effects on peregrine and curlew due to collision mortality are assessed as **none**.

7.10 The long-term operational effects on black grouse due to collision mortality are likely to be, at worst, **minor**, and therefore **not significant** in the context of the EIA Regulations.

Cumulative Effects

7.11 No significant residual effects of construction or operation resulting from the GGRP were identified therefore no cumulative effects are predicted.

Additional Mitigation Proposed

7.12 It is proposed that line marking along the length of OHL extending either side of the known black grouse lek site will be in place for the duration of the operational period of the GGRP. Markers would be spaced at 5m intervals and maintained for the duration of the operational period.

Residual Effects

7.13 Residual effects of construction and operation of the GGRP on birds are likely to be **none** and therefore **not significant**.



Image 8: Deil's Dyke by the gate south of Crockroy Farmstead (looking southwest)

Cultural Heritage

Introduction

8.1 The cultural heritage assessment has considered the likely effects of the construction and operation of the GGRP on the historic environment and cultural heritage assets within two study areas. A 200m Study Area has been used to consider direct effects upon heritage assets arising from the GGRP. To assess the likely setting effects, a 3km Study Area (measured from tower locations) has been used.

8.2 A baseline study comprising desk-based research, walkover survey, site visits and consultation with D&GC and Historic Environment Scotland (HES) have been undertaken to identify cultural heritage assets that may be affected by the GGRP. Computer modelling and the creation of zone of theoretical visibility (ZTV) maps has helped understand which assets may have views of the GGRP which could affect their setting.

Baseline Conditions

8.3 There three Listed Buildings in the 200m study area. These Listed Buildings are all located near existing accesses and are not at risk of physical change as a result of construction or operation of the GGRP. Within the 3km study area the designated assets recorded include five listed buildings, all of which have theoretical visibility of the GGRP, and one scheduled monument (St Connel's Church and graveyard) which also has theoretical visibility of the GGRP.

8.4 Following desk-based research and site surveys 48 non-designated assets have been identified. These are for the most part medieval to post medieval assets of low or unknown importance. This is with the exception of the nationally important Deil's Dyke which is crossed by the route of the GGRP.

8.5 Baseline studies have fed into the design of the GGRP to minimise impacts. The design of the GGRP has therefore avoided almost all known heritage assets.

Embedded Mitigation

8.6 Embedded mitigation includes good practice measures to prevent, reduce, and/or where possible offset potential physical effects to unknown archaeological remains.

Effects

Construction Effects

8.7 Whilst most assets have been avoided through the design process as noted above, this has not been possible in the case of Deil's Dyke which has the potential to be directly affected by the construction and operation of the GGRP. The effect on Deil's Dyke is assessed as **minor** and not significant.

8.8 There is also the potential for unknown archaeological remains to be present across part of the route, but any remains present are anticipated to be of no more than low to medium importance and would only be partially harmed given nature of the scheme. As such, significant effects are not anticipated in relation to unrecorded archaeological remains.

Operational Effects

8.9 In addition to considering operational effects on Deil's Dyke, three designated assets of high importance (St Connel's Church and Churchyard, and two listed buildings) were assessed for likely changes to their setting as a result of operation of the GGRP. All setting effects were assessed as either **minor** or **none** and **not significant**.

Cumulative Effects

8.10 Cumulative effects would be no more than **minor** and not significant.

Additional Mitigation Proposed

8.11 Additional mitigation is also proposed to protect Deil's Dyke during construction. This will include use of matting and low-pressure vehicles in the area of the dyke and cordoning off the area of interest during construction to prevent damage.

8.12 As no significant effects have been identified, no monitoring is required. However, it is proposed that monitoring and supervision will be undertaken by an Archaeological Clerk of Works (ACoW). The ACoW would be on site to supervise the installation of protection measures for cultural heritage assets during construction, including use of the protective matting for the crossing of Deil's Dyke. The ACoW will also supervise ground-breaking works in areas of elevated archaeological potential and be available to advise on any issues during construction.

8.13 Additional mitigation has been proposed in respect of operational effects on the setting of other heritage assets assessed.

Residual Effects

8.14 Following mitigation and best practice measures there would be no physical effect to the cultural significance of Deil's dyke. Therefore, in EIA terms, the residual effect will be **none**.

8.15 Following the assessment of St Connel's Church and Churchyard, and the two listed buildings the level of residual effect is **minor** and is not significant in EIA terms.



Image 9: Photomontage of the GGRP from Viewpoint 7 Southern Upland Way near Whing Head

Traffic and Transport

Introduction

9.1 The traffic and transport assessment has considered likely construction effects of the GGRP on users of the surrounding public road network and nearby sensitive receptors. Operational traffic associated with maintenance of the GGRP will be minimal and so operational effects of traffic on the public road network are not considered.

9.2 The assessment of effects relating to access, traffic and transport identifies the likely volume of traffic that will be generated during construction (including cumulatively with other committed developments which could be constructed at the same time as the GGRP) and the subsequent effect that this will have on the local road network, including on sensitive receptors, compared to baseline traffic volumes.

9.3 The assessment has been undertaken through desk-based research, field survey and consultation with statutory bodies. Predicted volumes of felling and construction vehicle movements have been compared with baseline traffic flows to identify if there are likely to be periods where the increase in general traffic (or HGV traffic) exceeds standard thresholds. Field surveys were undertaken on four days between March 2020 and October 2022.

Baseline Conditions

9.4 It is assumed that the GGRP will be accessed via the A76 from the north of Sanquhar.

9.5 The Study Area for traffic and transport is effectively the public road network in the vicinity of the GGRP which will be used during construction of the new connections. This includes the primary route in the area the A76, C128n (Blackaddie Road), C125n (C128N [at Nithbank Cottage] to A76T), U459 (Lagrae Road) and U432n (Euchan Water Road) between the C128n and Euchan Cottage.

9.6 The locality is used for leisure and tourist trips and a key recreational route which could potentially be affected by the increase in traffic volume is the Southern Upland Way which is a long-distance walking route in southern Scotland.

9.7 A number of core paths also intersect with or overlap with proposed construction routes for the GGRP including Kirkconnel to Mynwhirn Hill and Euchan Fall.

9.8 There are no notable crash clusters (accident 'blackspots') and there is no historical evidence of a prevalent road safety problem on any of the route sections appraised.

Embedded Mitigation

9.9 A number of embedded mitigation measures will be put in place as part of standard good practice to avoid or minimise traffic and transport effects, delivered through the CTMP. The framework CTMP provides preliminary details of proposed traffic management measures and associated interventions to be implemented during the construction phase of the GGRP to minimise disruption and improve safety. The CTMP will be enhanced and expanded as appropriate by SPEN's appointed contractor(s) in consultation with Roads Authorities and the Police prior to commencement of construction activities and as necessary during the construction phase.

Effects

Construction Effects

9.10 The GGRP would lead to a temporary increase in traffic volumes on the study road network during the construction phase.

9.11 The following potential effects were considered in this assessment:

- Driver Delay: **minor**;
- Road Safety: **none**;
- Community Effects (Pedestrian and Cyclist Amenity, Fear and Intimidation, and Severance): **minor**.

Operational Effects

9.12 As noted above, operational effects were not considered in detail in the assessment.

Cumulative Effects

9.13 SPEN will be required to liaise with other developers regarding the scheduling of deliveries which combined with adherence to measures outlined in the Construction Traffic Management Plan (CTMP; see below), will ensure that cumulative effects will be of no more than **minor** significance.

Additional Mitigation Proposed

9.14 No additional mitigation is proposed.

Significant Residual Effects

9.15 Due to the embedded mitigation measures and operational procedures as proposed in the framework CTMP, the significance of the residual effects associated with the levels of traffic anticipated during the construction of the GGRP is considered to be **minor** and **not significant**.



Image 10: Photomontage of the GGRP from Viewpoint 8 Nith Valley near Hall Bridge

Summary of Significant Effects

10.1 The EIA for the GGRP has been carried out in accordance with regulatory requirements and guidance on good practice. The findings of the surveys undertaken, in addition to consultation, have informed the design process and have reduced effects as a result.

10.2 Prior to mitigation, significant adverse effects have been assessed as likely in relation to landscape and visual amenity.

10.3 A number of embedded mitigation and good practice measures are assumed to be in place during construction and operation of the GGRP. Whilst with the exception of landscape, no significant effects are identified prior to mitigation, there remains scope to reduce these minor effects further and some additional mitigation is also proposed.

10.4 Significant adverse residual effects from the GGRP are limited to effects on landscape and visual amenity. These effects cannot be mitigated further given the inherent nature of the GGRP, but they have been reduced to the lowest practical level via the iterative design process.

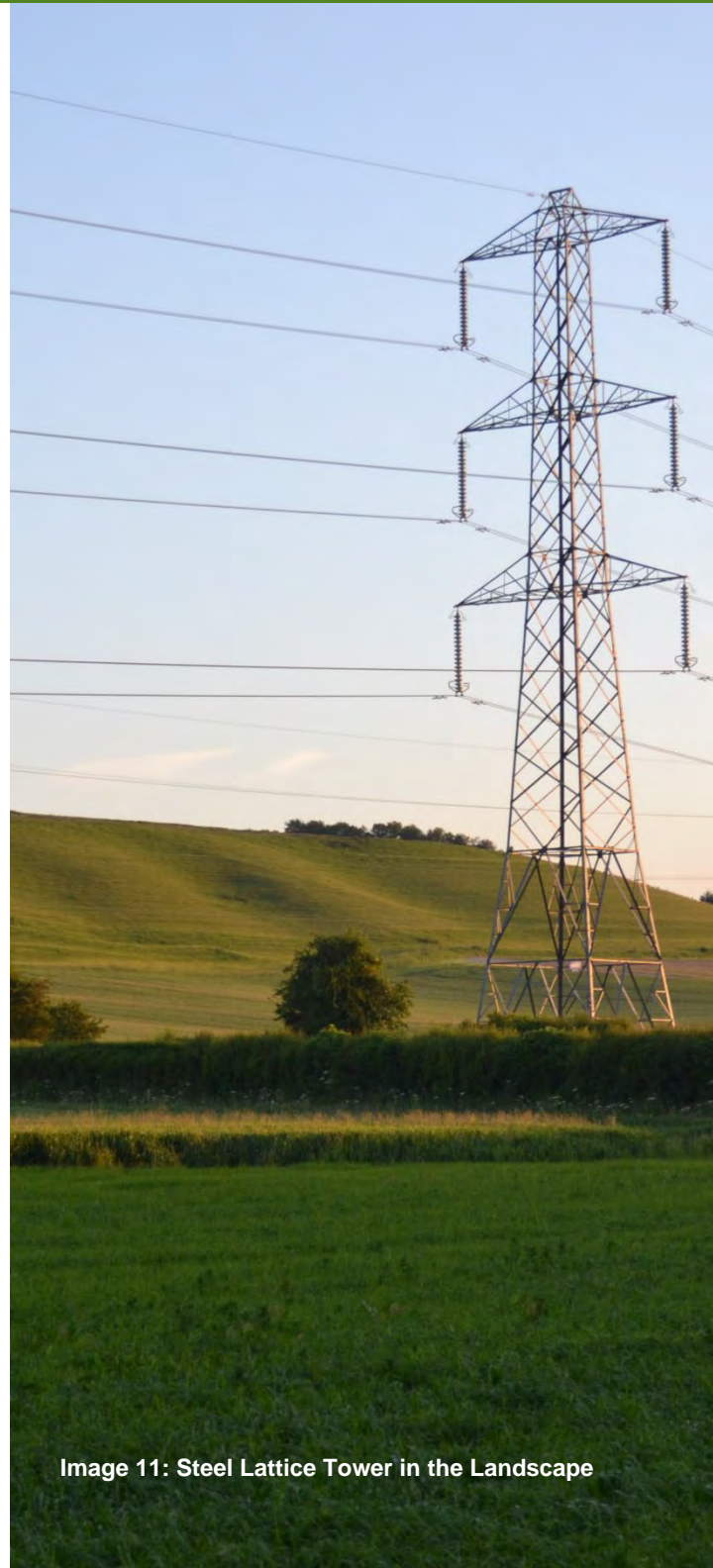
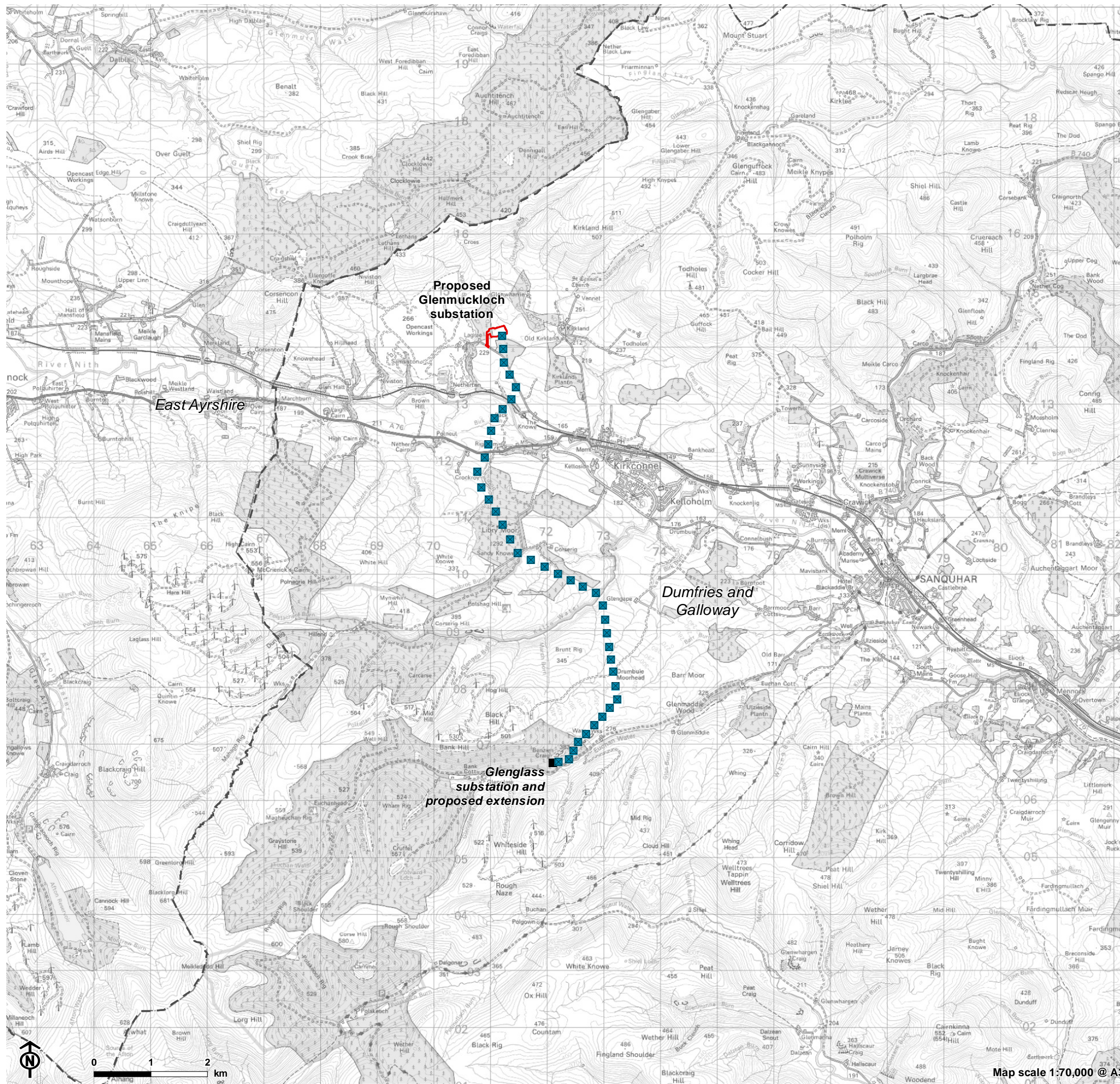


Image 11: Steel Lattice Tower in the Landscape



Figure 1: Glenmuckloch to Glenglass Reinforcement Project Location



Overhead line infrastructure

- Tower (steel lattice tower)

Substations

- ▭ Glenmuckloch substation site boundary
- Glenglass substation and proposed extension (does not form part of this application)
- ▭ Local authority boundary

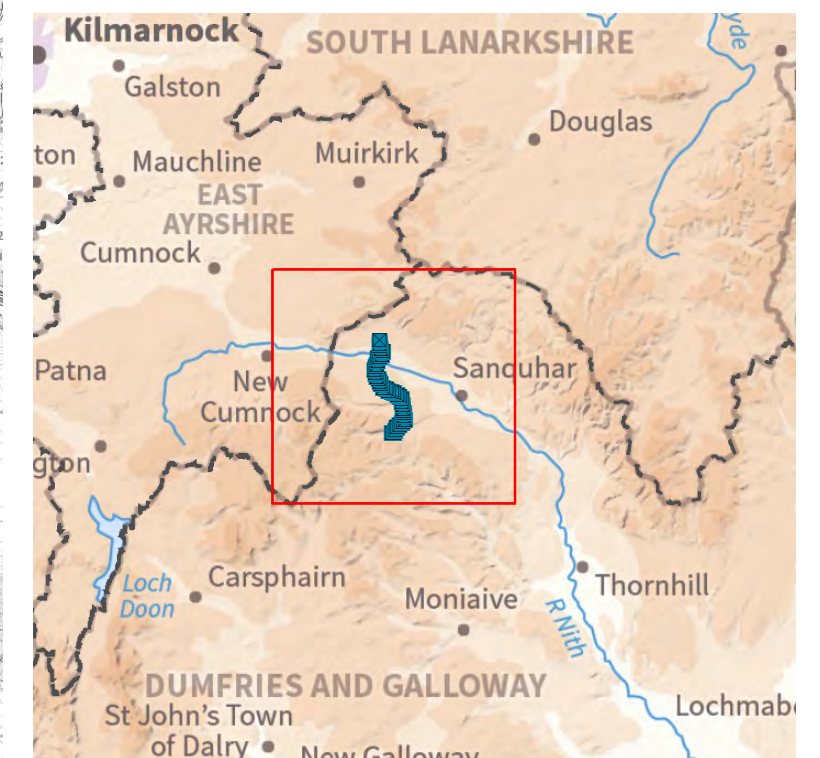
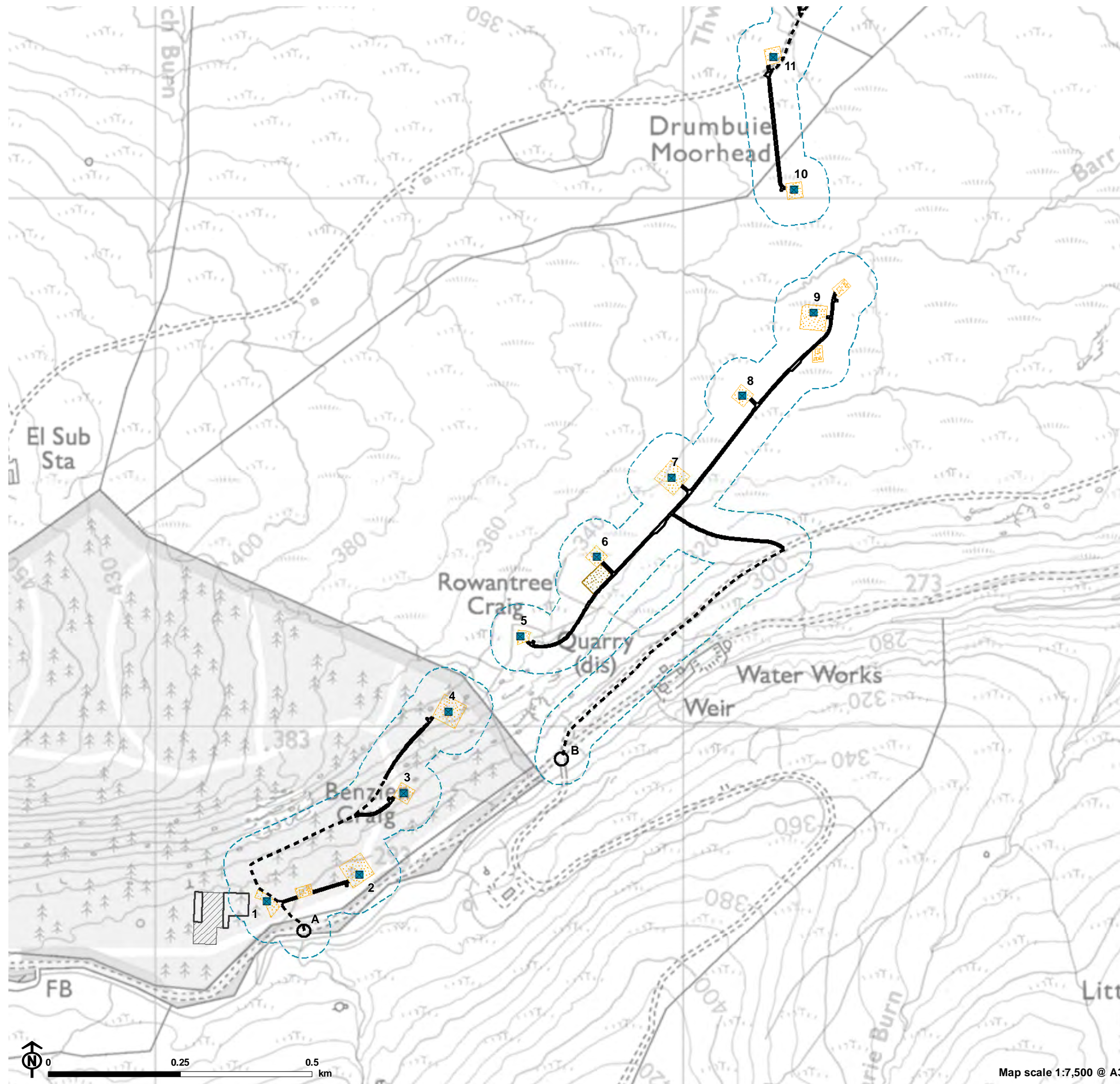
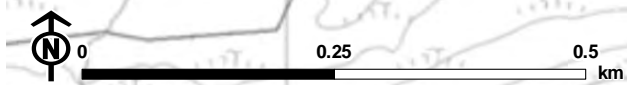
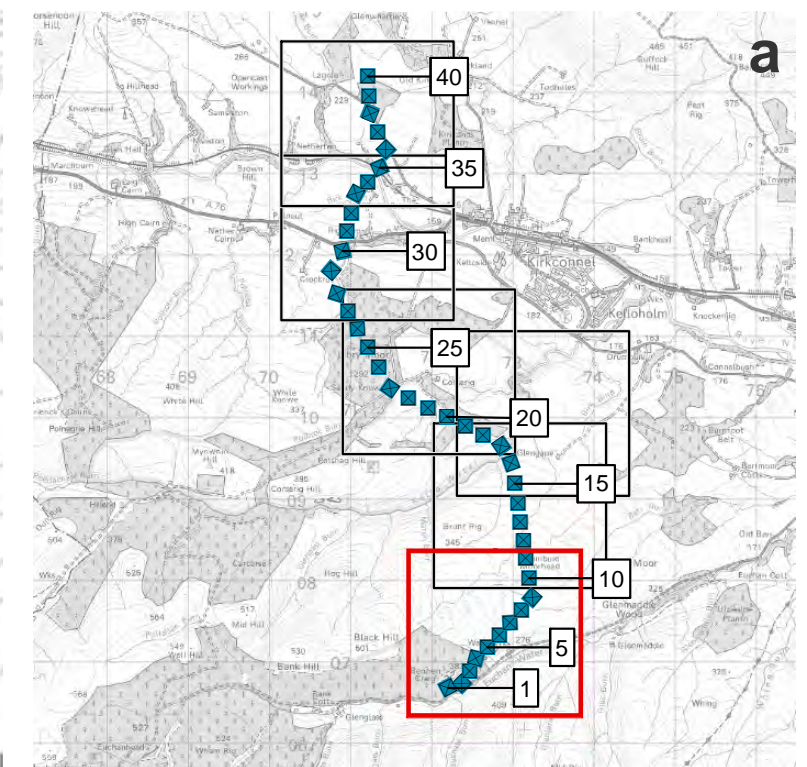


Figure 2a: The Glenmuckloch to Glenglass Reinforcement Project

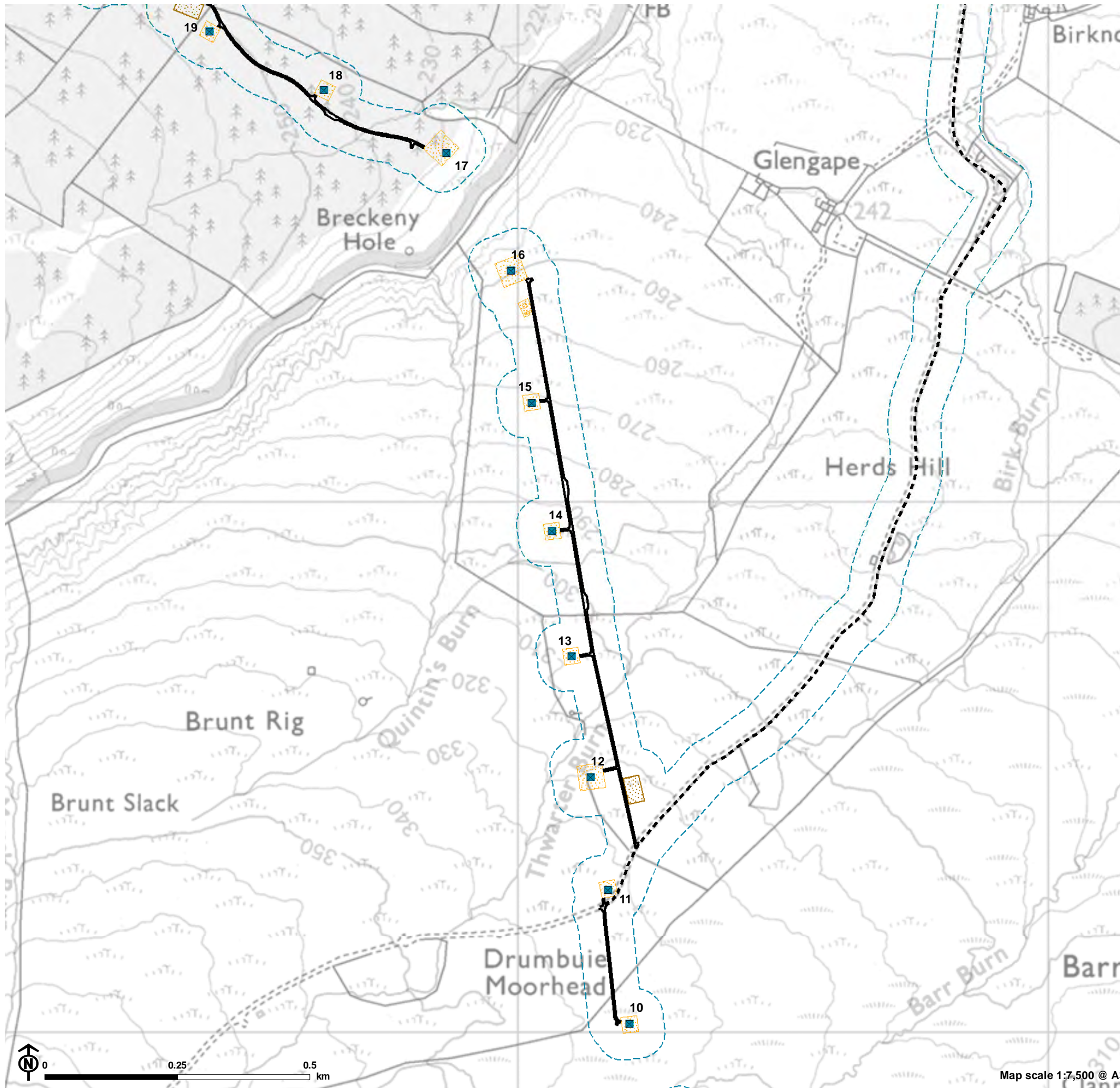


- Overhead line infrastructure**
- Tower (steel lattice tower)
 - Laydown area
 - Working area
 - Infrastructure location allowance (ILA)
- Access to proposed towers and temporary work**
- Existing access track
 - New access track
 - Access point
- Glenglass substation (does not form part of this)
- Existing substation
 - Proposed substation extension

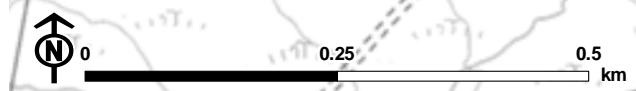
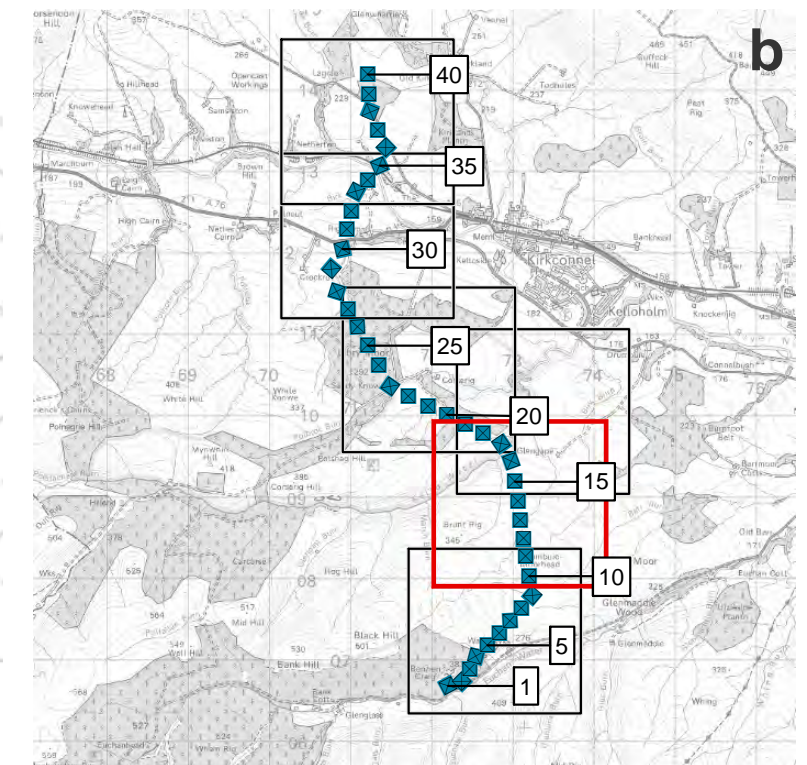


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Figure 2b: The Glenmuckloch to Glenglass Reinforcement Project

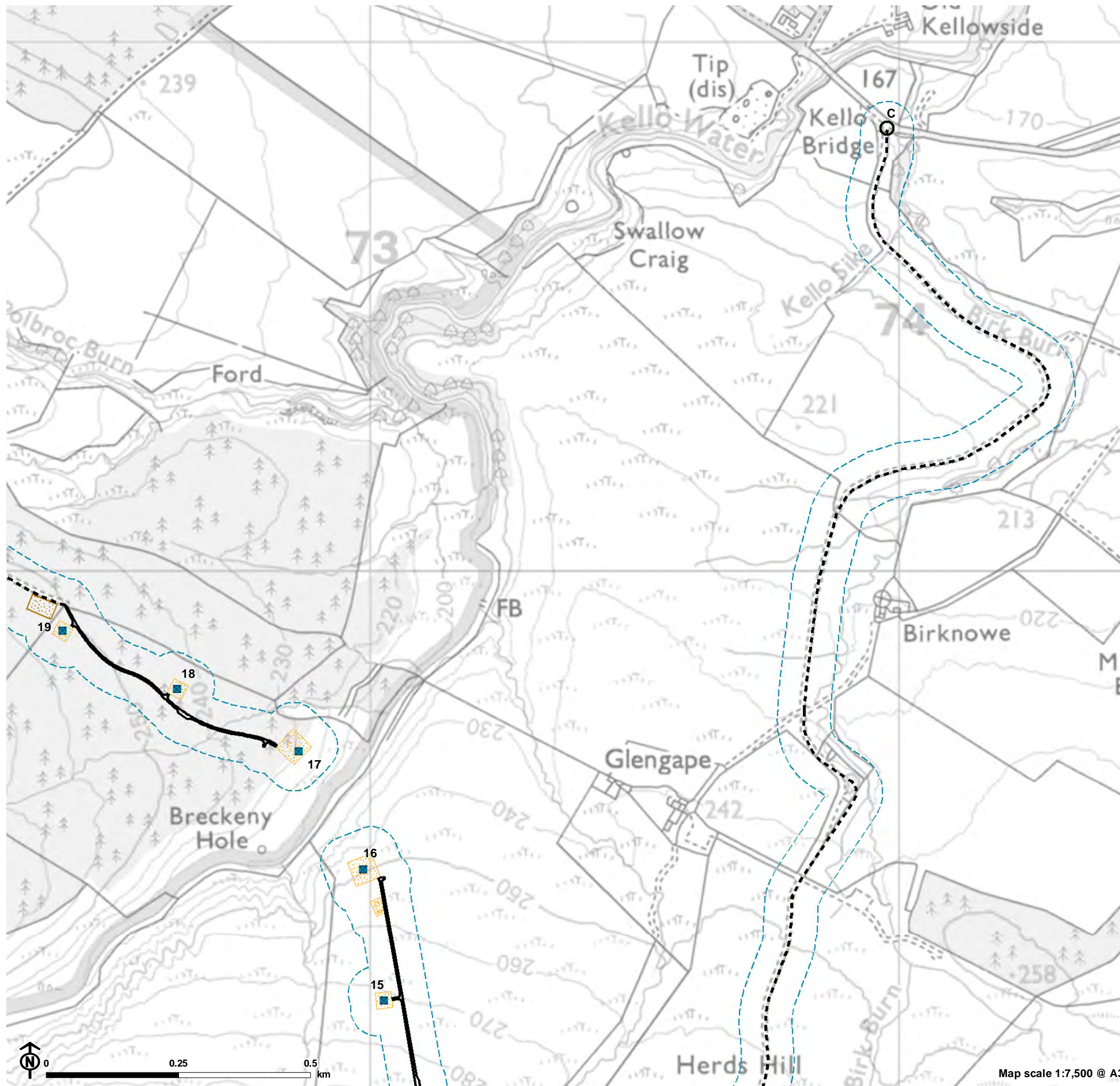


- Overhead line infrastructure**
- Tower (steel lattice tower)
 - Laydown area
 - Working area
 - Infrastructure location allowance (ILA)
- Access to proposed towers and temporary work**
- Existing access track
 - New access track

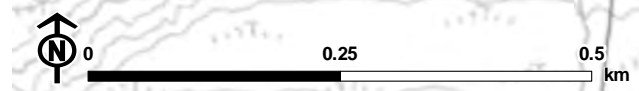
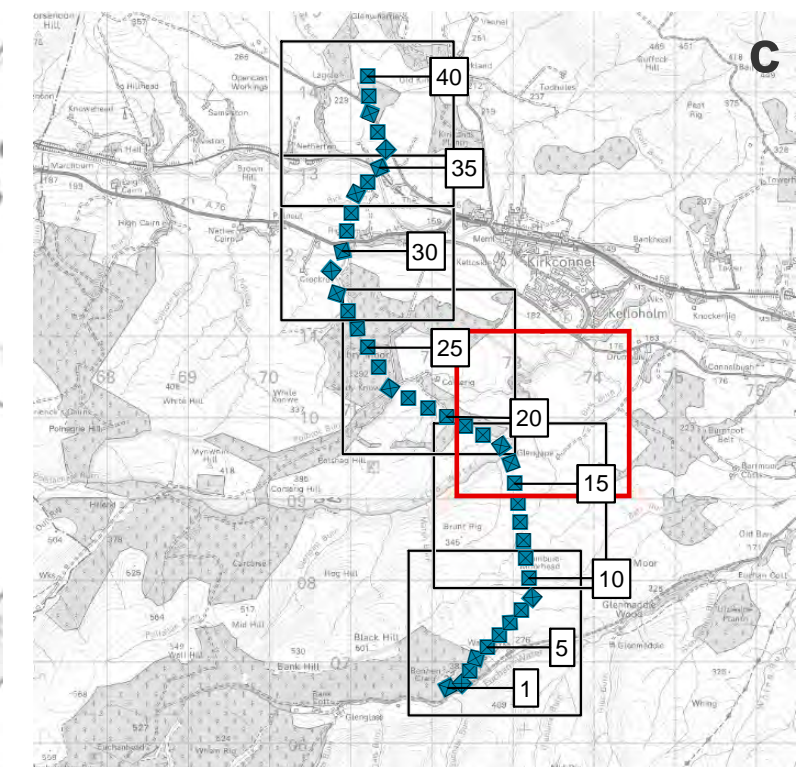


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Figure 2c: The Glenmuckloch to Glenglass Reinforcement Project



- Overhead line infrastructure**
- Tower (steel lattice tower)
 - Laydown area
 - Working area
 - Infrastructure location allowance (ILA)
- Access to proposed towers and temporary work areas**
- Existing access track
 - New access track
 - Access point



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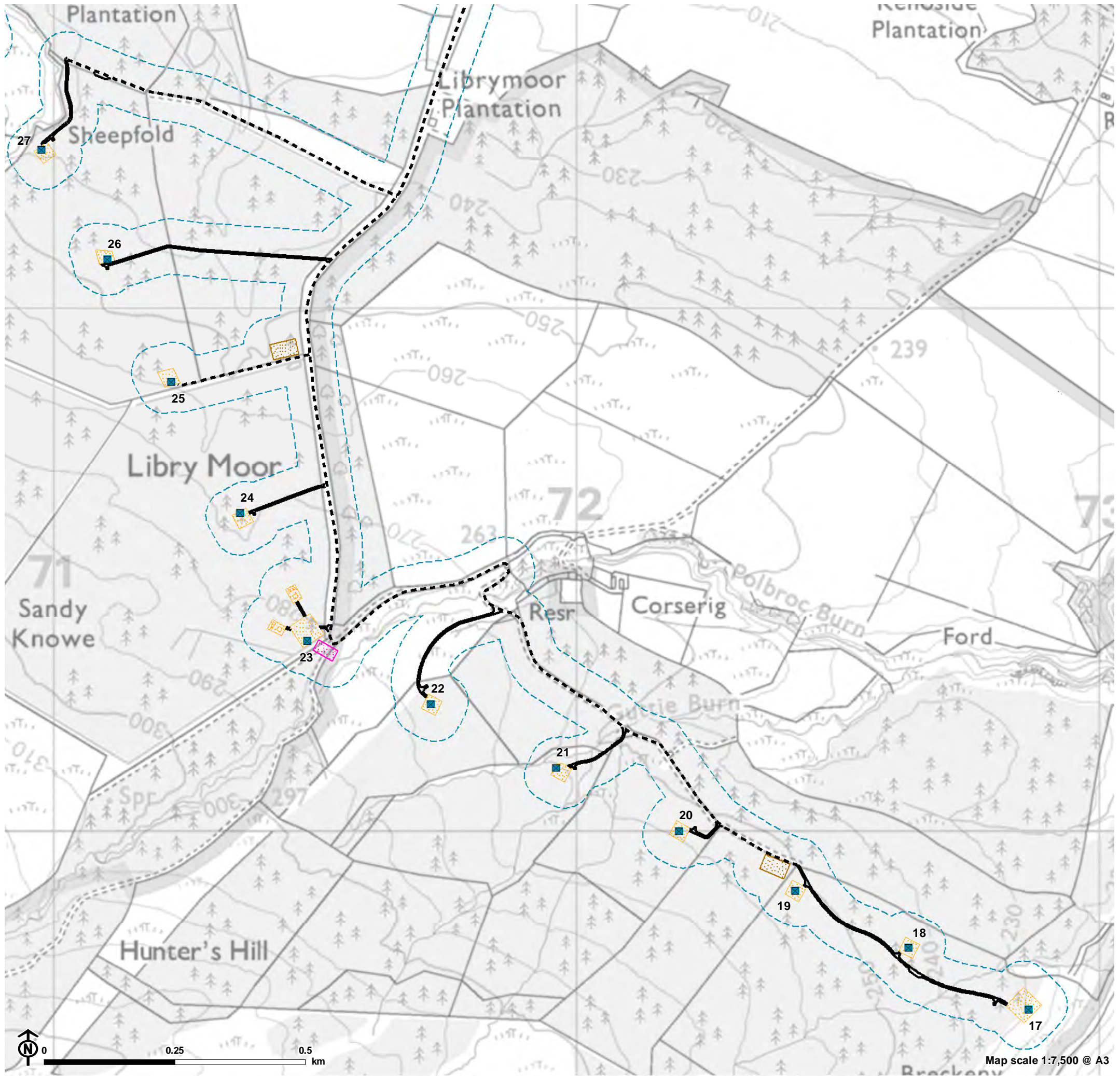


Figure 2d: The Glenmuckloch to Glenglass Reinforcement Project

- Overhead line infrastructure**
- Tower (steel lattice tower)
 - ▣ Laydown area
 - ▣ Scaffolding
 - ▣ Working area
 - ▭ Infrastructure location allowance (ILA)
- Access to proposed towers and temporary work areas**
- - - Existing access track
 - New access track

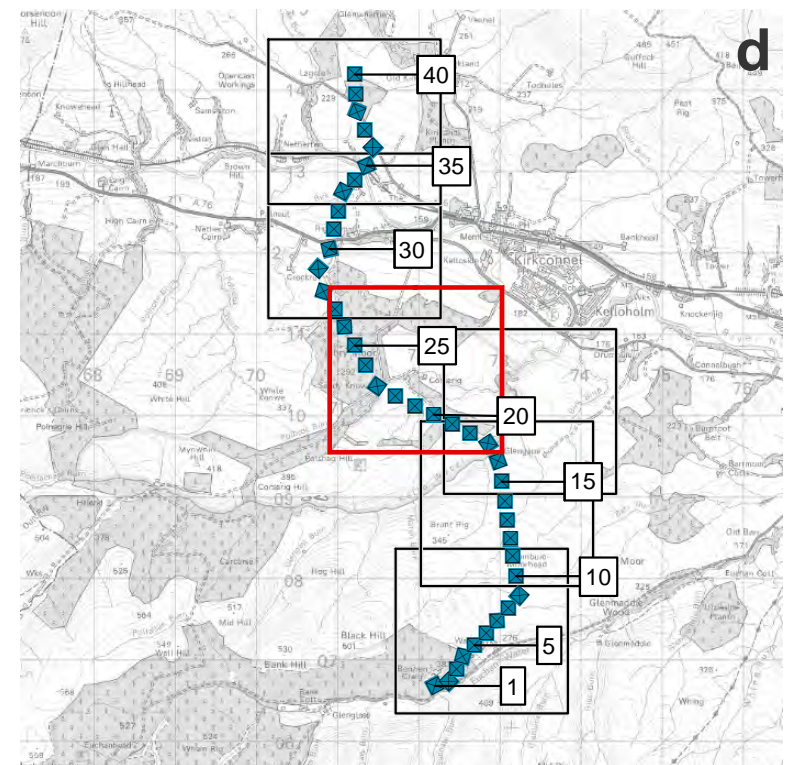
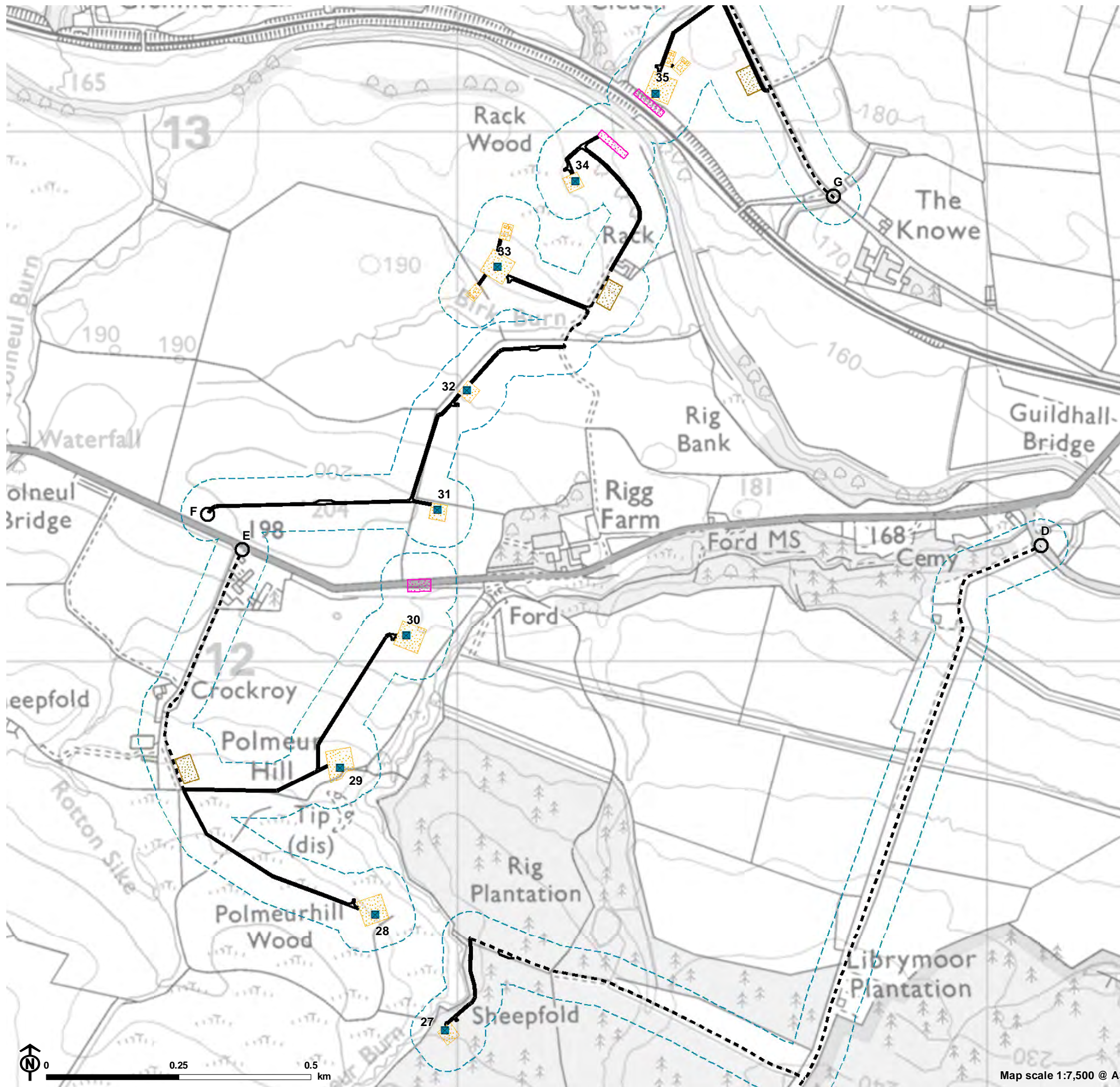


Figure 2e: The Glenmuckloch to Glenglass Reinforcement Project



- Overhead line infrastructure**
- Tower (steel lattice tower)
 - Laydown area
 - Scaffolding
 - Working area
 - Infrastructure location allowance (ILA)
- Access to proposed towers and temporary work areas**
- Existing access track
 - New access track
 - Access point

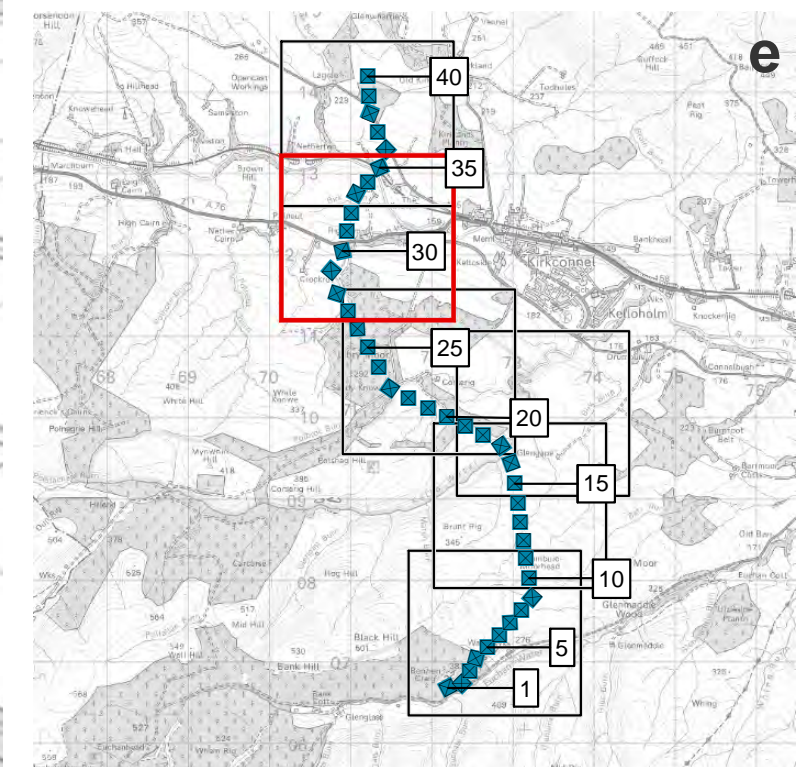
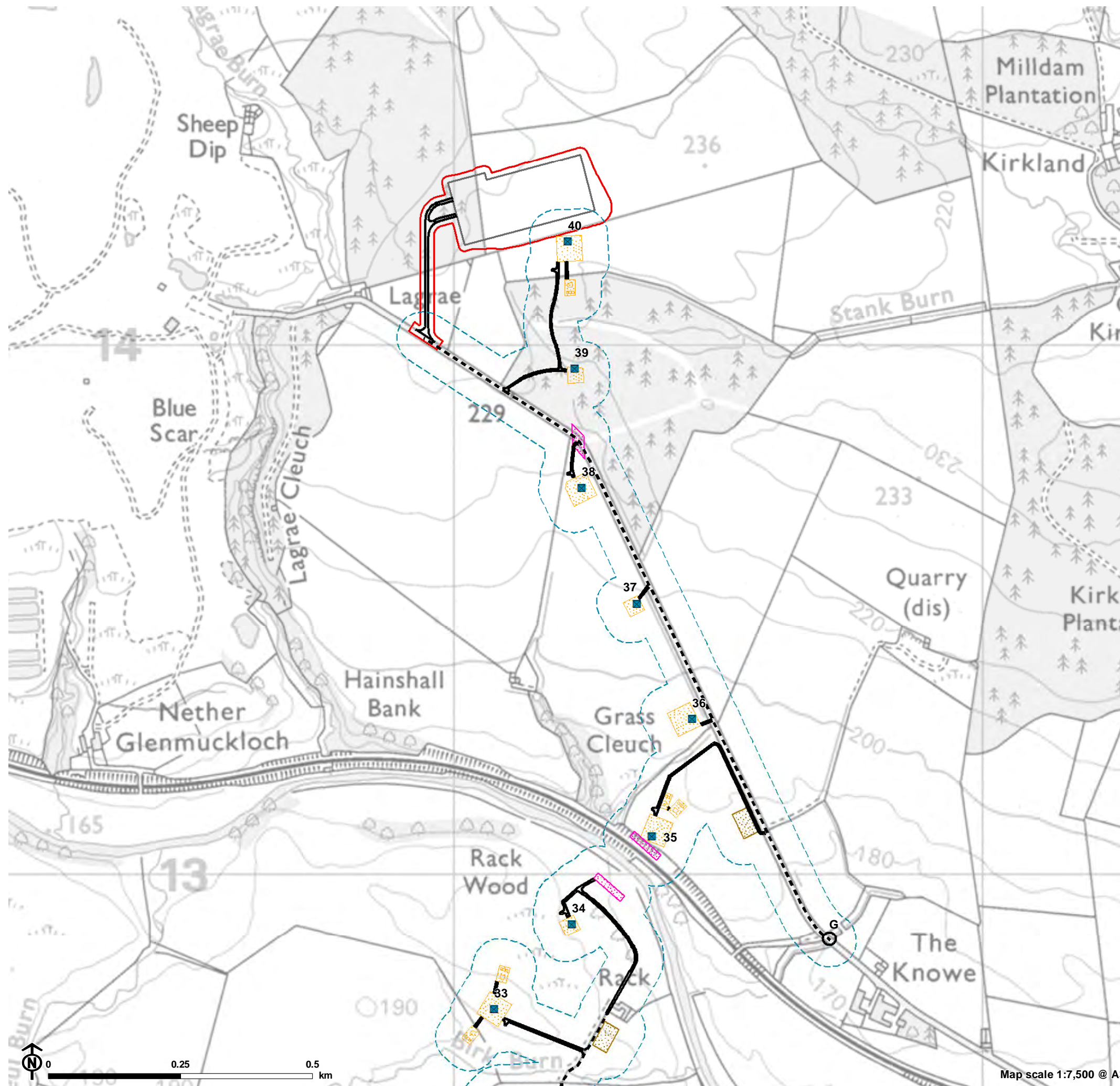
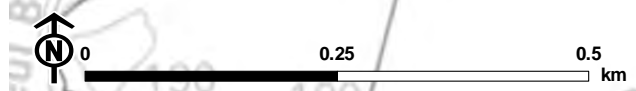
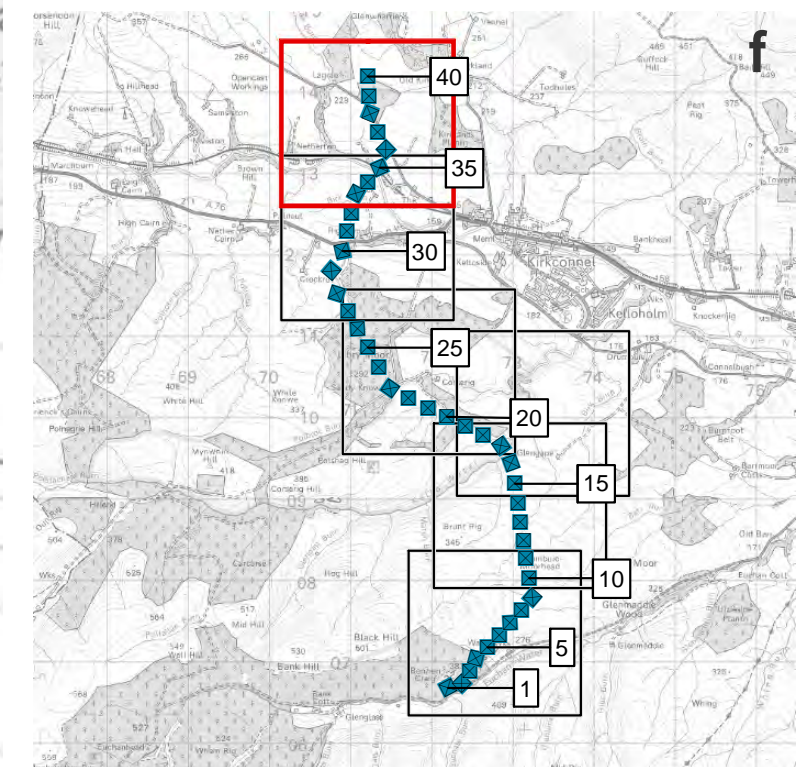


Figure 2f: The Glenmuckloch to Glenglass Reinforcement Project



- Overhead line infrastructure**
- Tower (steel lattice tower)
 - ▨ Laydown area
 - ▨ Scaffolding
 - ▨ Working area
 - ▭ Infrastructure location allowance (ILA)
- Access to proposed towers and temporary work areas**
- Existing access track
 - New access track
 - Access point
- Proposed Glenmuckloch substation**
- ▭ Glenmuckloch substation
 - ▭ Glenmuckloch substation site boundary
 - Glenmuckloch substation new access track



Map scale 1:7,500 @ A3