SP ENERGY NETWORKS

T ROUTE REBUILD PROJECT

CONSULTATION PRESENTATION BOARDS

JUNE 2022

P11571-00-001-0709-06

01 WELCOME

THIS CONSULTATION

Thank you for visiting the project website for the T Route Rebuild Project.

These information boards along with a copy of the Routeing and Consultation Document, including all technical appendices and figures to support the report, are available to download from the project website:

https://www.spenergynetworks.co.uk/pages/trouterebuild.aspx

This consultation will run for 30 days between 11th July and 9th August 2022.

but all information will remain accessible on the project website after this date.

The purpose of this consultation is to:

- Explain the need for the T Route Rebuild Project;
- Explain the routeing process which has resulted in a number of route options;
- Explain which of those routes has been identified as a preferred route and why;
- View the preferred route;
- Explain the next steps and how you can provide feedback; and
- Identify any local issues or concerns that people wish to draw to our attention.

Photo 1: Tower T137A south of Gretna

02 INTRODUCTION

Due to the age of the overhead line, SP Energy Networks needs to rebuild approximately 13.5km of the existing 132kV, steel tower connection (known as 'T Route'), which currently extends between 'AK Route' north of Annan to the shared license boundary with National Grid Energy Transmission (NGET) in the Solway Firth, south east of Gretna. The existing steel tower route is shown on Figure 1.

There are three main elements to the project:

- The existing steel lattice tower line forming 'T Route' will be rebuilt as a wood pole line on a different route between a point close to tower AK008 and tower T137A. A preferred route has been established and is the subject of this consultation.
- Additionally, one new terminal steel lattice tower will be needed adjacent to the AK Route near Annan and two new towers will be required at the NGET boundary south of Gretna.
- The existing 132kV steel lattice towers along the redundant section of the route will be dismantled, removed and the ground restored following construction of the replacement overhead line.

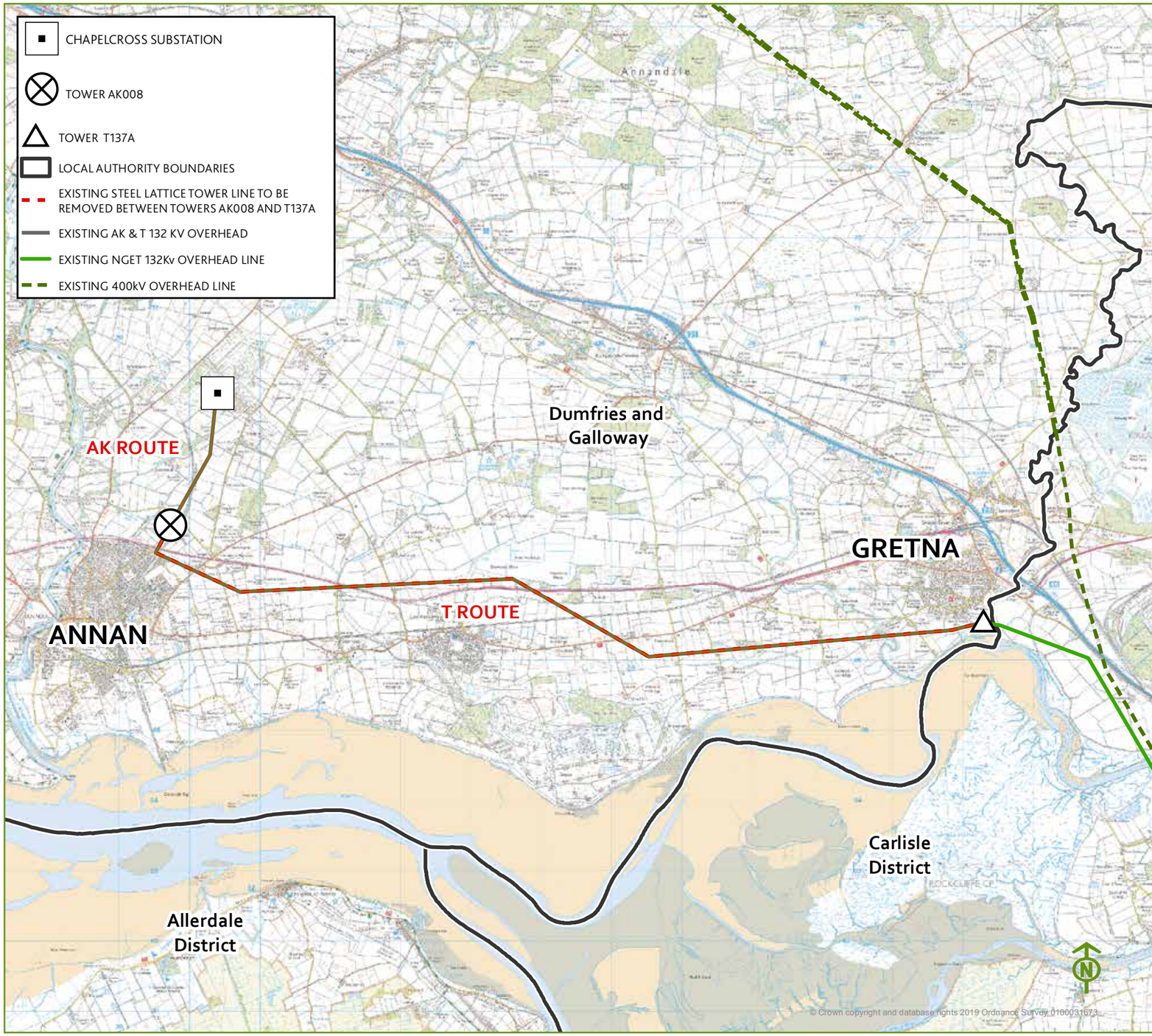

Figure 1: The existing AK and T Route Overhead Lines

03 NEED FOR THE PROJECT

WHY IS THE WORK NECESSARY?

The existing electricity transmission network in Dumfries and Galloway was developed between the 1930s and 1970s. As this area of the network is getting older, the need for maintenance work becomes more critical and more difficult, and there is an increased risk from unplanned outages (faults). The existing line is therefore in need of replacement to cope with the additional generation and ensure secure and reliable supplies to existing and future customers.

Towers on the AK Route remain in good condition and can be reused and hence it is proposed to re-conductor the section from Chapelcross substation to a point close to tower AK007 on the AK Route. From here, the route will be rebuilt on wood pole overhead line to Tower T137A in the Solway Firth on the Scotland/ England border.

The rebuild will comprise a new 132kV single circuit wood pole overhead line around 13.5km long. In addition to the removal of tower AK008 on the AK Route, a new terminal tower will also be required at the western end of the route adjacent to the AK Route. Two new towers will be required at the Gretna end of T Route to transition to the NGET connection, one of which will be a tension tower.

Photo 2: Existing steel towers of T Route

ABOUT SP ENERGY NETWORKS

Part of the ScottishPower Group of 'asset-owner' companies who hold the regulated assets and Electricity Transmission and Distribution Licenses of ScottishPower (SPT). SPT takes electricity generated from power stations, windfarms and various other utilities and transports it through the transmission network, which comprises over 4000km of overhead lines and 320km of underground cables. SPT also has 132 grid substations on the transmission network where the high voltage supply is reduced to a lower voltage for distribution to customers. SP Energy Networks operates, maintains and develops the transmission network and substations, ensuring homes and businesses in Southern and Central Scotland stay connected.

SP Energy Networks has a legal duty to keep its network up to date in order to safeguard electricity supplies.

04 UNDERGROUND CABLE CONSIDERATIONS

Statutory obligations and license obligations require SP Energy Networks to balance economic, technical and environmental factors when considering undergrounding. Following a review, the Government, Ofgem and the electricity industry, including SP Energy Networks, consider that, In most cases, an overhead line approach is the preferred method.

Whilst there are specific circumstances in which an undergrounding approach should be considered, underground cables do have several technical, environmental and economic disadvantages including:

- Higher cost to project and ultimately to the consumer and bill payer (broadly 3x that of the equivalent overhead line);
- The physical extent of land required to accommodate cables;
- The fault repair time;
- Difficulties associated with general maintenance;
- Greater ground disturbance from excavating trenches; and
- The restriction of development and some types of planting within the cable corridor.

Photo 3: Construction site - laying underground cable

As a guide, SP Energy Networks would consider undergrounding a line under the following circumstances where no suitable route for an overhead line can be identified:

- Within a National Scenic Area or National Park;
- Within areas of local character and amenity not subject to a landscape or scenic designation which are considered to have no capacity to accommodate an overhead line;
- Where the likely visual impact on residential areas or areas of historic importance or other areas is very significant;
- Where the likely visual impact on a publicly accessible and recognised view or prospect visited and enjoyed by a large number of people is very significant. This could be within an area of importance for its scenic beauty, character, amenity or historical importance, that may include such features as listed buildings and conservation areas;
- Where from a review of the relevant environmental information it is concluded that the combination of likely adverse effects is very significant and that this cannot be satisfactorily avoided, reduced or offset; and/ or
- Where technical and/ or environmental constraints are such that no suitable overhead line route can be identified.

For the purposes of routeing the intention is to find an acceptable overhead line route. Consideration will only be given to undergrounding should one of the above situations arise.

05 UNDERGROND CABLE CONSTRUCTION

UNDERGROUND CABLE CONSTRUCTION

Figure 2 Construction of a 132kV line using underground cable

Typically, undergrounding of 132kV cables is by means of an open cut trench. Horizontal directional drilling is used as an alternative to this where a watercourse or road is crossed.

With an underground cable, the conductors are encased in insulated material and buried in a backfilled trench. A typical 132kV underground cable would require a number of cables laid in 200mm diameter ducts at an approximate depth of 1.4m. A permanent operational corridor, 10m wide, is required to accommodate this and an additional working area of similar width is needed during the construction. The 10m wide operational corridor would be secured by a servitude agreement with the landowner. It would become sterilised land for the lifetime of the underground cable, restricting anything being built or planted upon it which might prevent access to the cable.

Manhole covers at intervals of 500-600m enable access for routine maintenance along the connection. Where an underground cable section is located between overhead line poles, there would need to be terminal support poles which tend to be more visually intrusive.

06 WHAT WILL THE NEW INFRASTRUCTURE LOOK LIKE?

WOOD POLES

The new wood pole support structures will be mainly single poles of the 'trident' design (*Photo 4*). There will be two double pole structures (known as 'H pole' - see *Photo 5*) at the east and west ends of the route respectively in order to transition onto the steel lattice towers. Four double (H-poles) will therefore be required in total.

Wood poles are typically 11m to 16m high, but can be taller, for instance at road and rail crossings. Conversely they can be smaller, for instance where the spans are short.

Above-ground height can range between 9.1m and 21.1m, depending on factors such as obstacles and landform. Wood poles only rarely need concrete foundations and so construction methods are less intrusive than with steel infrastructure.

Wood poles have a dark brown appearance, which weathers to a silver/ grey colour over a period of approximately five years following installation. Wood used for the poles is selected from sustainable sources and is seasoned and pressure treated with a prescribed wood preservative.

Photo 4: Typical Trident Wood Pole

Photo 5: Typical H Pole

THREE STEEL LATTICE TOWERS

Three steel lattice towers will be required – two at the eastern end of the route and one at the western end. These will be of a steel lattice construction fabricated from high tensile steel. As the new overhead line will be single circuit, only one side of the tower will carry conductors (wires) as shown in *Photo 6*.

Photo 6:Single Circuit Steel Lattice Tower with conductors only on one side

OVERHEAD LINE SPAN LENGTHS

Spans normally vary from approximately 80 to 100m. Minimum safety clearance must be maintained under the conductors. The clearances are greater over roads.

Taller than standard wood poles are needed in this situation to maintain clearances.

Valleys allow the use of long spans but excessive spans may require the use of angle poles at either end.

A short span at hilltops keeps pole heights down while maintaining clearances. A pole is only used on a summit when unavoidable.

Figure 3: Overhead Line Span Lengths

07 METHODOLOGY

ROUTEING OBJECTIVE

The objective of route selection is to identify a technically feasible and economically viable overhead line route, between AK Route and the license boundary with NGET, which causes the least disturbance to the environment and to people who live, work and enjoy recreation within it and which takes opportunities to achieve no net loss of biodiversity as well as seeking to include biodiversity net gain where possible.

SP Energy Networks has created a method for overhead line routeing within its 'Approach to Routeing and Environmental Assessment' document which aims to carefully plan routes and limit disturbance to people and the environment in accordance with its statutory and licence duties. A reduction in visual intrusion can be achieved by routeing the line to fit the topography, by using landform and trees to provide screening and/ or background, and by routeing the line at a distance from settlements and roads. In addition, a well-routed line takes into account other environmental and technical considerations and avoids, wherever possible, the most sensitive and valued natural and man-made features.

Key features of the approach are that it:

- It is an iterative process;
- Incorporates feedback from stakeholders; and
- Utilises professional judgement and engagement with relevant stakeholders (including local communities) to create a balance between engineering requirements, economic viability, land use and the environment.

The environmental considerations include:

- Landscape and visual amenity;
- Biodiversity and geological conservation (including ornithology, woodlands/ trees and peat);
- Historic environment (including archaeology); and
- Hydrology and soils.

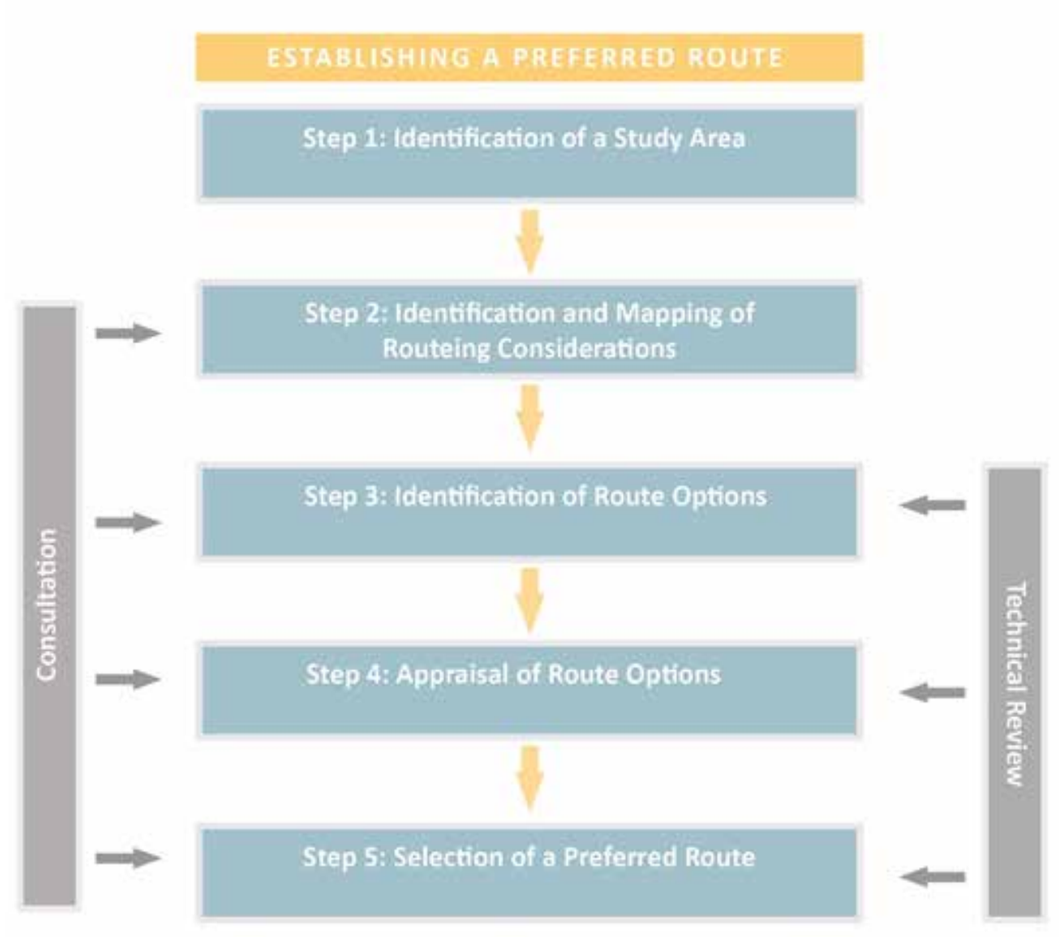

Figure 4 Key Steps in the identification of a preferred route for the T Route Rebuild

The step-by-step process for establishing a route is shown in *Figure 3*. Whilst presented as a linear process for simplicity, the approach is iterative and the steps may be re-visited several times. The outcome of each step is subject to a technical and, where relevant, consultation 'check' with key stakeholders and the public, prior to commencing the next step. Professional judgement is used to establish explicitly the balance between technical, economic and environmental factors.

08 ROUTEING CONSIDERATIONS

Once a routeing study area for the project was established, the main routeing considerations were mapped. This includes areas of highest environmental value, areas of historic interest, topography, landscape character and technical considerations such as slope, altitude and watercourses. This helped establish a number of 'route options' (steps 3 and 4 on *Figure 3*) and as shown on *Figure 4*.

As each route option was developed, its effect on the routeing considerations was recorded and assessed. Route options at this stage could be modified, rejected and re-appraised until the best performing options became apparent.

The main effect of overhead transmission lines is typically visual, whether on the visual component of landscape character or on the visual amenity people experience. The best way to limit adverse effects on landscape and visual amenity is through careful routeing in accordance with the Holford Rules.

The main routeing objectives (after avoiding, where possible, areas of highest environmental value) were as follows:

- Avoid the higher ground, ridges and skylines;
- Follow the grain of the landscape, running within valleys, in parallel with woodland edges, field boundaries etc. wherever possible;
- Use woodland and topography as a backdrop to the line, or as a foreground screen;
- Minimise the number of crossings of linear features (e.g. roads and rivers), and when appropriate cross at a perpendicular angle;
- Minimise the exposure of the line over prominent ridges and skylines;
- Avoid creating wirescape with existing infrastructure;
- Avoid residential areas as far as practicable, including individual properties which could be adversely affected, particularly by steel towers; and
- Other things being equal, prefer the shortest and/ or most direct alignment.

Six main routes were identified (numbered 1 to 6 from north to south) in addition to a series of alternate links between those routes. The identified routes and links are identified on *Figure 4* and *Figure 5* below.

Photo 7:Existing T Route south of Gretna

09 IDENTIFICATION OF ROUTE OPTIONS

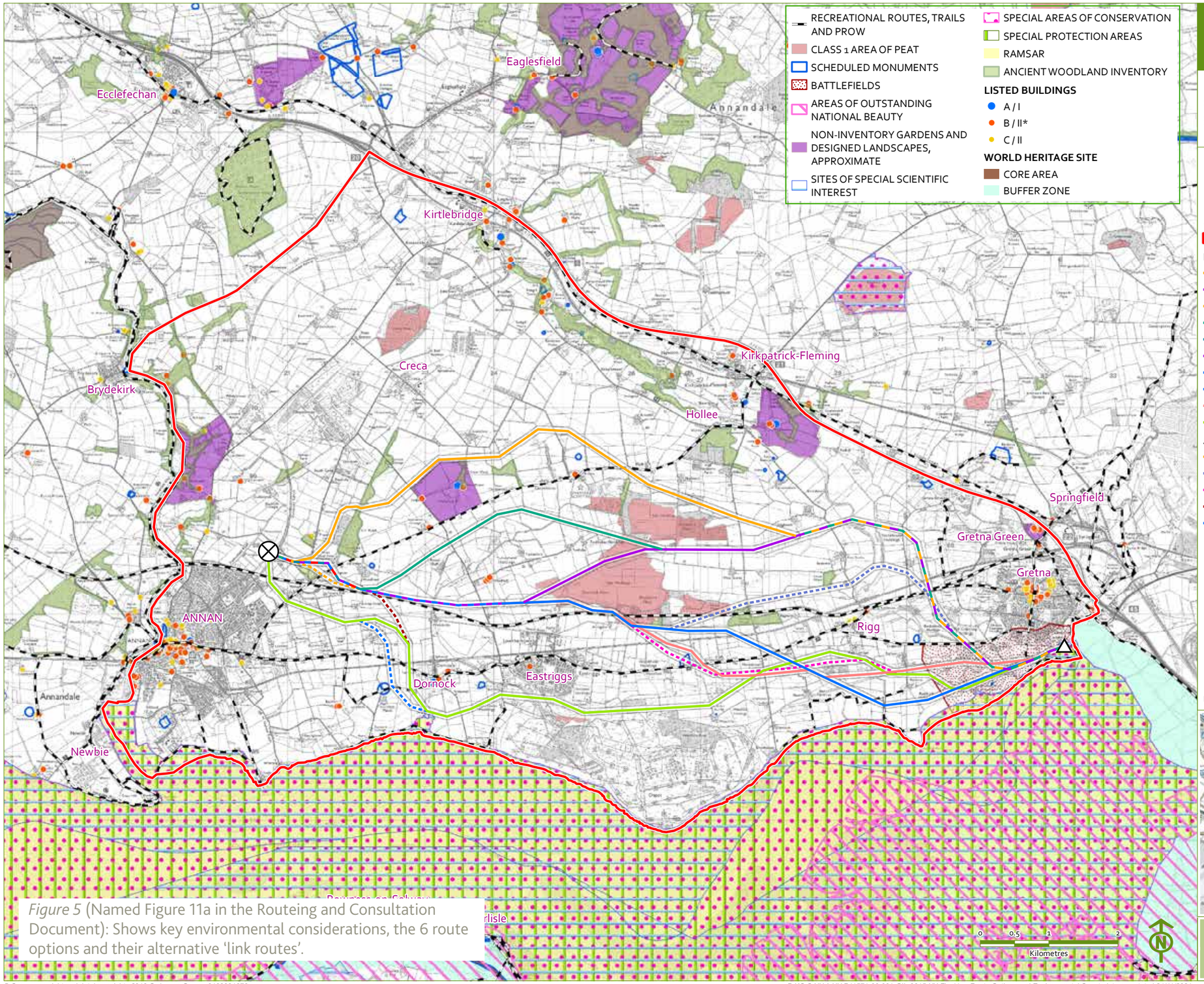

Figure 5 (Named Figure 11a in the Routeing and Consultation Document): Shows key environmental considerations, the 6 route options and their alternative 'link routes'.

T ROUTE REBUILD

FIGURE 11a
ROUTE OPTIONS AND ENVIRONMENTAL CONSTRAINTS

KEY

- TOWER AK008
- TOWER T137A
- ROUTEING STUDY AREA

ROUTE OPTIONS

- 1
- 1+2+3
- 1+2+3+4+5
- 2
- 2+3+4+5
- 3
- 3+4
- 4
- 5
- 6

ALTERNATE LINK ROUTES

- L1
- L2
- L3
- L4
- L5

MAP SCALE AT A3 - 1:50,000

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D:KC C:XX A:XX P11571-00-001-GIL-0615-XX Fig 11a - Route Options and Environmental Constraints_annotated 24/11/2021

10 THE ROUTE OPTIONS

KEY

- TOWER AK008
- TOWER T137A
- ROUTEING STUDY AREA
- 100M CORRIDOR (50M EITHER S OF ROUTE OPTION)

ROUTE OPTIONS

- 1
- 1+2+3
- 1+2+3+4+5
- 2
- 2+3+4+5
- 3
- 3+4
- 4
- 5
- 6

ALTERNATE LINK ROUTES

- L1
- L2
- L3
- L4
- L5

Figure 6: The 6 route options and their alternative 'link routes'.

11 APPRAISAL OF THE ROUTE OPTIONS

Having identified a series of route options, these are then appraised with the objective of examining each route in a comparable, documented and transparent way to identify a preferred route option.

Each route is appraised in terms of the following criteria:

- length of route;
- landscape and visual amenity;
- biodiversity and geological conservation;
- historic environment;
- hydrology and soils; and
- technical constraints.

The appraisal process applied the professional judgement of ecologists, landscape experts and archaeologists to comment on biodiversity, landscape and visual impacts and historic environments respectively. Where expert professional judgement could be supported by data/ information in a quantitative format this was included.

The process sought to continue to reflect the overall routeing objective. It also sought to continue to reflect the Holford Rules, which are the generally accepted industry guidelines for the routeing of overhead transmission lines. The process also sought to draw out the distinctions between the routes to enable the relative strengths and weaknesses of each to be identified.

Photo 8: Routeing considerations included identifying feasible crossing points over the A75 and the Glasgow South Western Line railway.

Photo 9: Routeing considerations included limiting the length of route crossing areas of class 1 peat at Nutberry Moss.

12 SELECTION OF PREFERRED ROUTE

A full evaluation of route options can be found within the Routeing and Consultation Document. In summary, Routes 4, 5 and 6 were discounted on historic environment criteria due to their proximity to Scheduled Monuments or because they crossed more of the site of the Battle of Sark (included within Inventory of Historic Battlefields) than Routes 1, 2 and 3.

Routes 1 and 6, whilst entirely avoiding areas of Class 1 peat at Nutberry Moss, in doing so were the longest and required the most directional changes and so on balance were not preferred.

Route 6 had the most potential impact on residential visual amenity.

Routes 2 and 3 were left remaining as the most viable options having regard for all of the environmental criteria. These two routes were therefore taken forward for further consideration.

On balance, Route 3 was considered preferable. This is because it follows the A75 and the existing T Route for a longer distance and is therefore in a landscape already influenced by infrastructure but which will also benefit from the dismantling of the existing steel lattice line and its replacement with a wood pole line. Route 3 also follows field boundaries more closely as it heads north-east in order to avoid the peat working area at Nutberry Moss. This is in contrast to Route 2 which is required to cross open countryside to the north-west of Nutberry Moss. Route 3 is also further away from properties at this section of the route and therefore less likely to result in significant effects on their visual amenity. Route 3 was therefore recommended as the preferred route and is shown on *Figure 7.* The wider context of the Preferred Route is shown on *Figure 8.*

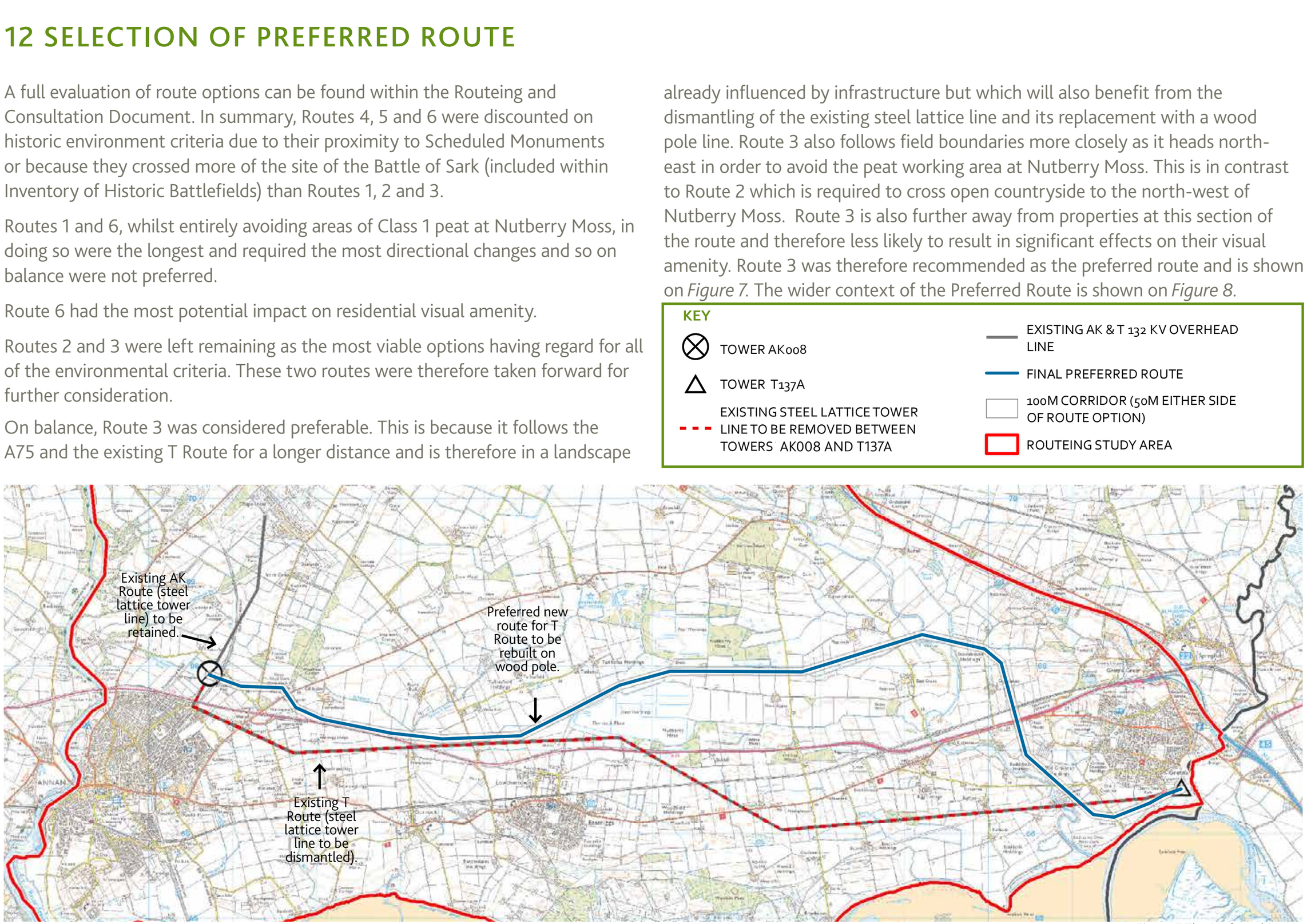

Figure 7 The Preferred Route

13 THE PREFERRED ROUTE

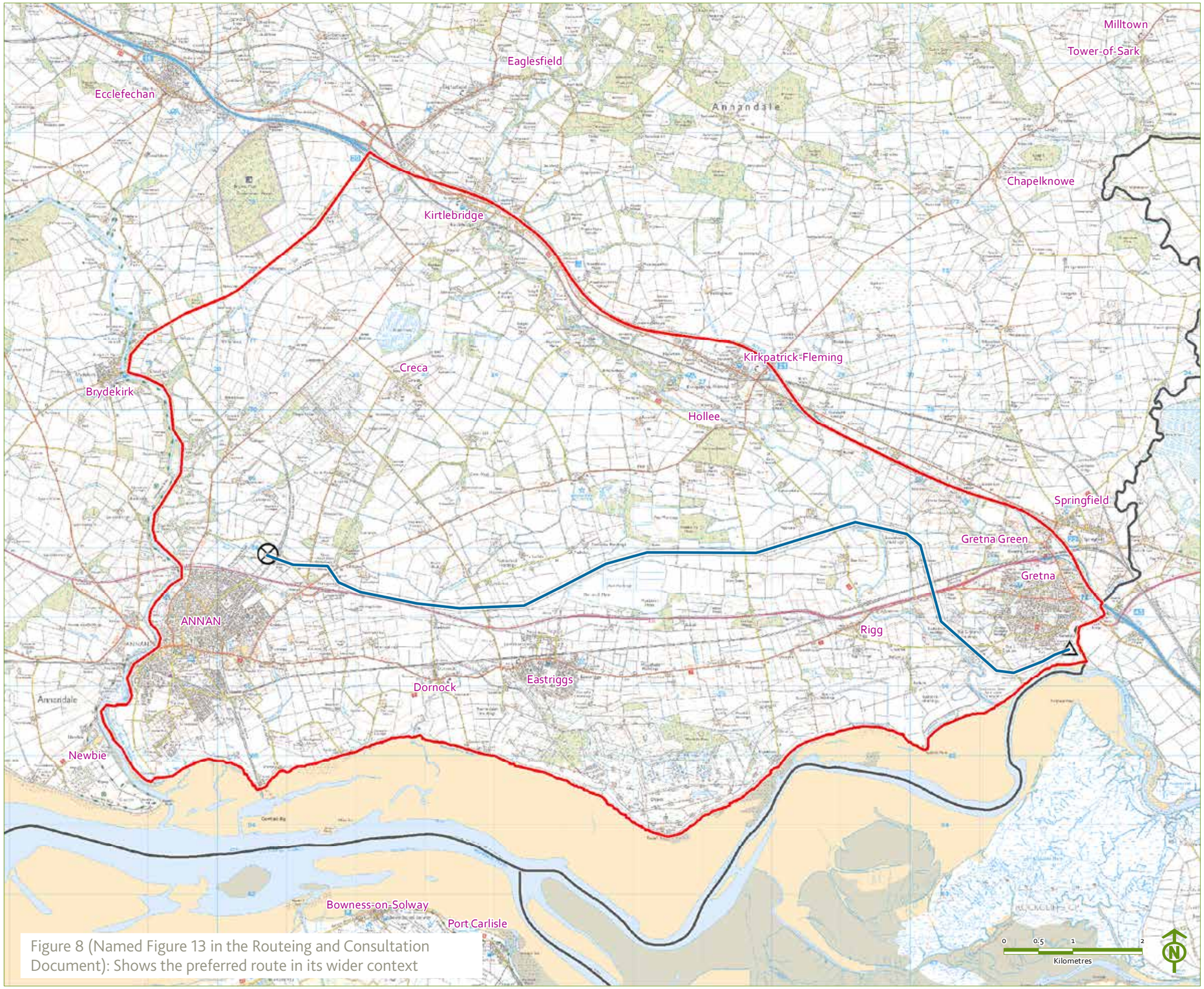

Figure 8 (Named Figure 13 in the Routeing and Consultation Document): Shows the preferred route in its wider context

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T ROUTE REBUILD

FIGURE 13
THE PREFERRED ROUTE

KEY

- TOWER AK008
- TOWER T137A
- THE PREFERRED ROUTE
- 100M CORRIDOR (50M EITHER SIDE OF ROUTE OPTION)
- ROUTEING STUDY AREA
- LOCAL AUTHORITY BOUNDARIES

MAP SCALE AT A3 - 1:50,000

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14 WHAT HAPPENS NEXT?

SP Energy Networks attaches great importance to early engagement with stakeholders and the public in advance of planning applications being made. This is to help it develop its projects in the best way and ensure that all parties with an interest in the T Route Rebuild Project continue to have access to up to date information and are given clear and easy ways in which to shape and inform the proposals as they develop during the pre-application stage.

Stakeholders and the general public will be consulted on both sides of the border - adopting a consistent approach to consultation in both countries to ensure that local communities are treated in the same way, despite the different governing bodies.

The responses received from the consultation process will be considered in combination with the findings of the Routeing and Consultation Document to enable SP Energy Networks to decide on the proposed route to be progressed to the Second Round of consultation and EIA (Environmental Impact Assessment) stage.

'Round Two Public Consultation' on the proposed route and detailed route alignment, is anticipated to be carried out later in 2022/ early 2023.

SP Energy Networks will be required to apply to Scottish Ministers for consent for the T Route Rebuild, in addition to applying for planning permission for the lines and associated works, including the removal of the existing steel lattice tower.

HOW DO I GET IN TOUCH?

The consultation period runs for 30 days between 11th July to 9th August 2022. People can comment in the following ways:

- By post, to the address opposite, allowing 7 days for receipt; and
- By email to TRoute@spenenergynetworks.co.uk.

Project Website:

https://www.spenergynetworks.co.uk/pages/trouterebuild.aspx

Email us at: TRoute@spenergynetworks.co.uk

Write to us at:

Brendan Tinney
T Route Rebuild
Land and Planning
55 Fullarton Drive
Cambuslang
G32 8FA

As part of the consultation, we would be grateful for your views on the following:

- The preferred route for the connection;
- Any of the alternative route options considered during the routeing process; and
- Any other issues, suggestions or feedback you would like SPEN to consider.

Please note that comments made at this stage are informal and are made to allow SPEN to determine whether changes to the route are necessary. An opportunity to comment formally to the Energy Consents Unit will follow at a later stage in the process following consultation by the Scottish Government once the application is submitted to them. Commenting at this stage does not remove the right or the potential need to comment on the final application once it is made to the Scottish Ministers.