

## Welcome to our Exhibition

### Who is SP Manweb?

SP Manweb holds the electricity distribution licence for Merseyside, Cheshire and North Wales. It is part of ScottishPower, itself a subsidiary of the Spanish company Iberdrola.

### Background to the Project

The UK faces a major challenge with increasing demands for energy at a time when ageing power plants are closing and there is an urgent need to tackle climate change by reducing emissions. To meet this challenge, the Welsh Government is seeking to cut emissions and increase new low carbon energy generation.

The new energy will need connecting into the high-voltage electricity transmission network. It is SP Manweb's responsibility to do this in a safe, reliable and efficient way. This includes ensuring that the network has enough capacity to move electricity across the system from areas of generation to areas of demand, connecting new electricity generators such as wind farms to the distribution networks.

### Work in North Wales

North Wales has been identified as an important location for renewable energy generation. There are a number of developers who are proposing to build wind farms in the area and SP Manweb is working closely with them. The proposed wind farms are concentrated in and around TAN8 Area A – one of the seven areas identified in the Welsh Government's Technical Advice Note (TAN) 8: Planning for Renewable Energy, as being relatively unconstrained and capable of accommodating large scale wind power developments. TAN 8 suggests that Area A could have an indicative generating capacity of 140 MW.

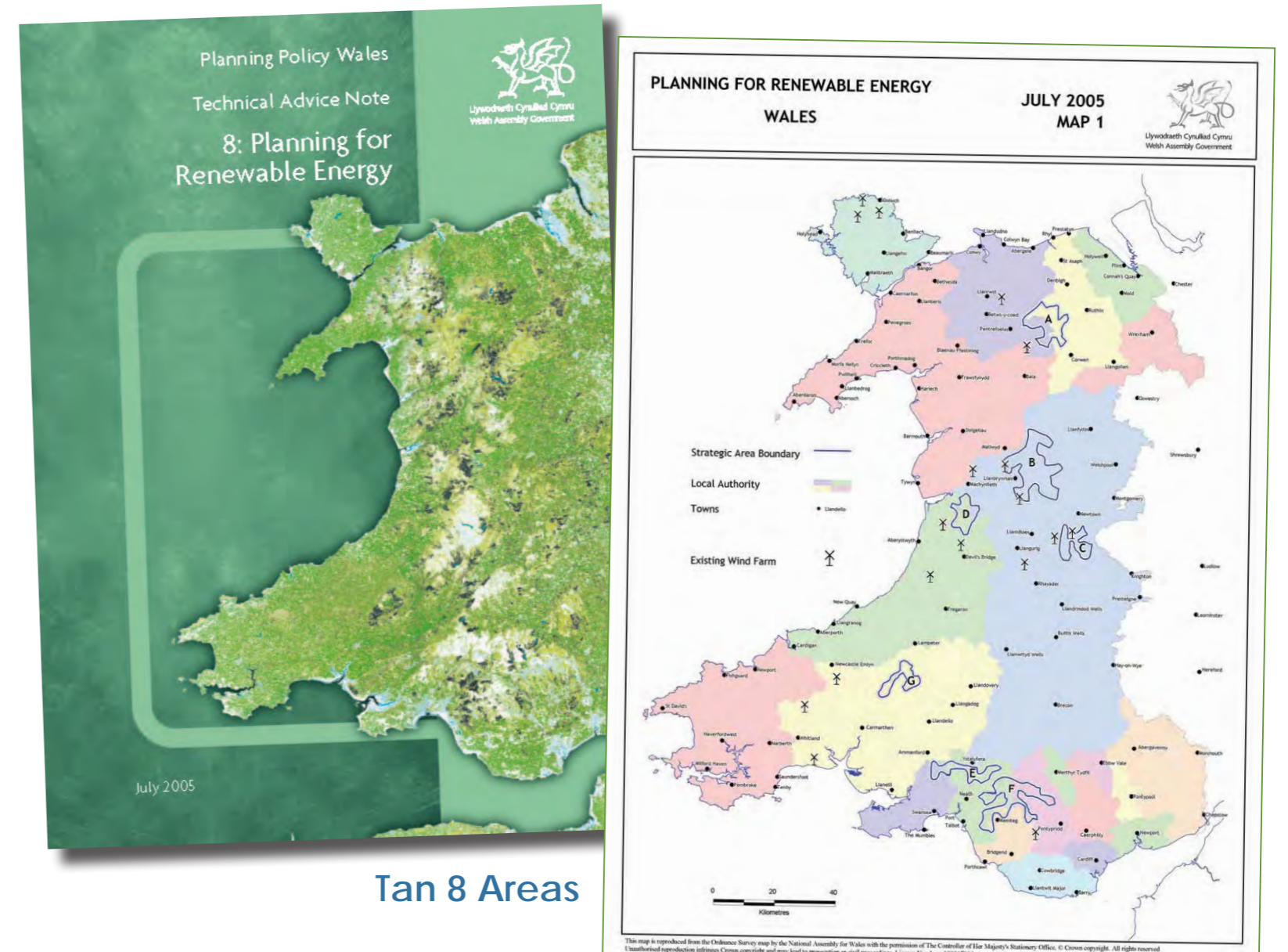
SP Manweb has agreements in place with four of the wind farm developers to provide them with a connection to the electricity network. These include Clocaenog, Brenig, Nant Bach and Derwedd Bach. This will require local connections from the project wind farm substations, to a new 33kV collector substation which will then transfer the power via a new 132,000 volt (132kV) connection to the national transmission network at St Asaph.

Wind Farm	Status	Developer
Wern Ddu	Operational	Tegni
Braich Ddu	Operational	Corwall Light & Power
Tir Mostyn and Foel Goch	Operational	Windjen
Brenig	Approved Scheme	Brenig Wind Ltd
Nant Bach	Approved Scheme	Nuon Renewables
Derwedd Bach	Approved Scheme	Tegni
Clocaenog	Pre-application - notified the PI	RWE npower Renewables
Llys Dymper	Application submitted	Windpower Wales
Mynydd Mynyllod	Pre-application request for scoping submitted to PI	Scottish Power Renewables
Gorsedd Bran	Appeal upheld in High Court	Tegni

### Purpose of the Consultation

This is the first of several stages of community consultation. This stage describes how we are proposing to make the connection and why. It also explains the work we still have to do and the potential effect it could have. Your comments can influence our work and play an important role in shaping the project as it moves forward.

The outcome from this first stage of consultation will help determine a preferred route corridor. This is a relatively wide corridor of land through which a connection could be routed. The next stage is to then define route alignment options within this broad corridor. We will hold our second stage of community consultation to present these route options and seek your feedback.



Tan 8 Areas

### Have Your Say

Today we will be asking for your feedback on the new substation and new 132kV connections

Forms are available at this event to provide your feedback. Talk to a member of our team for more information on how you can get involved

### The Planning Process

The Planning Act 2008 (as amended by the Localism Act 2011) requires the Planning Inspectorate (PI) to examine applications and help streamline the planning system for major infrastructure projects. These include large projects that support the economy and vital public services - high voltage overhead lines fall into this category. An application for consent for this project will therefore be submitted for determination by the PI. This will be accompanied by a full Environmental Impact Assessment.

The Planning Act 2008 provided for National Policy Statements (NPS). These establish the national case for infrastructure development and set out the framework for PI decisions. Two NPS are relevant to our project, both of which support in principle the need for energy infrastructure:

- Overarching Statement for Energy (EN-1) - which recognises that renewable energy generation will create a need for new electricity networks
- Electricity Networks Infrastructure (EN-5) - provides the primary basis for decisions taken by the IPC on applications it receives for electricity networks infrastructure

Before accepting our application, the PI must be satisfied that our pre-application consultation, which includes community consultation, has complied with the relevant regulations and guidance and that the views and impacts identified through our consultation have been taken into account. A Consultation Report will be submitted as part of our application. This report will detail how we have complied with the consultation requirements as set out by the PI.

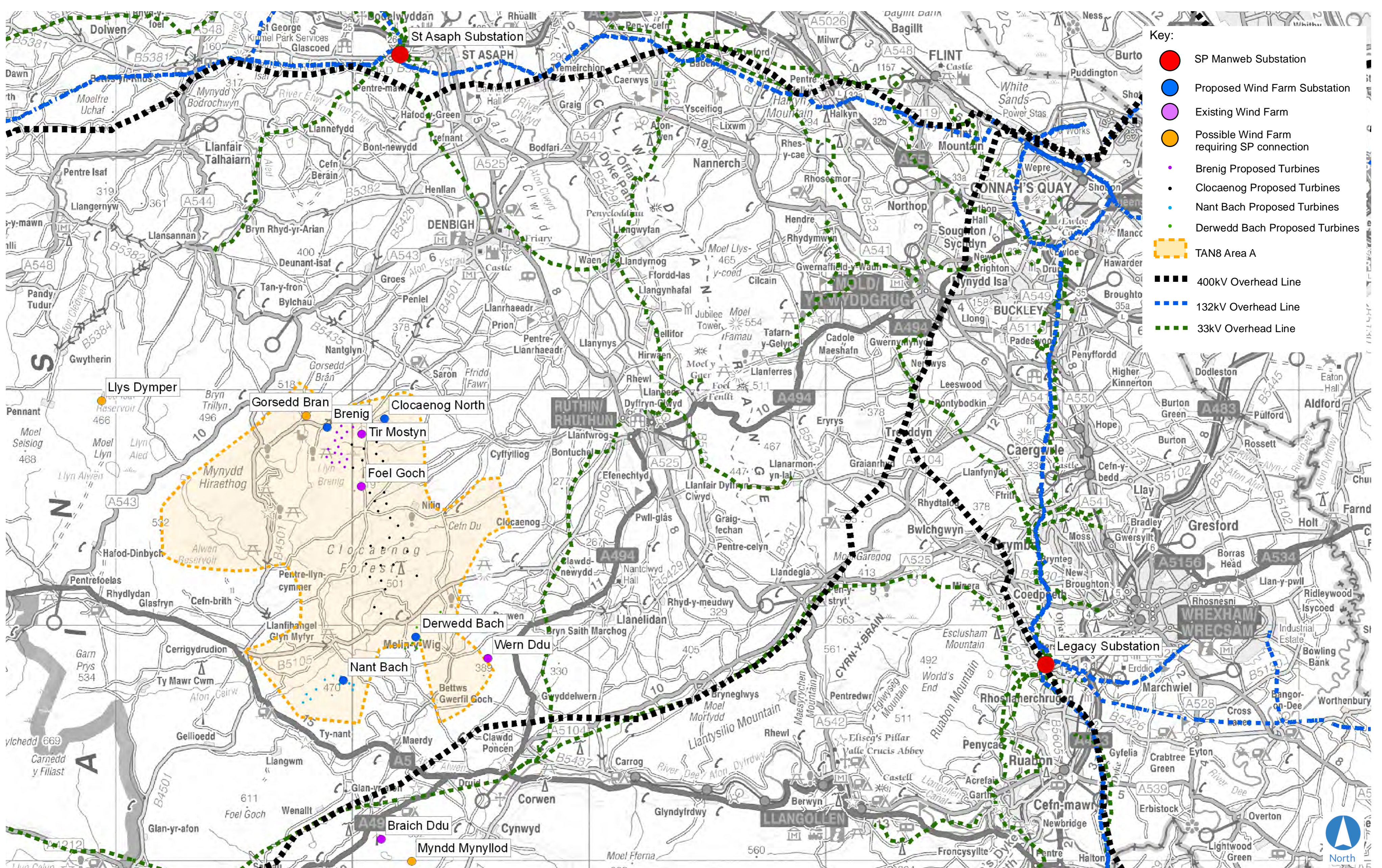


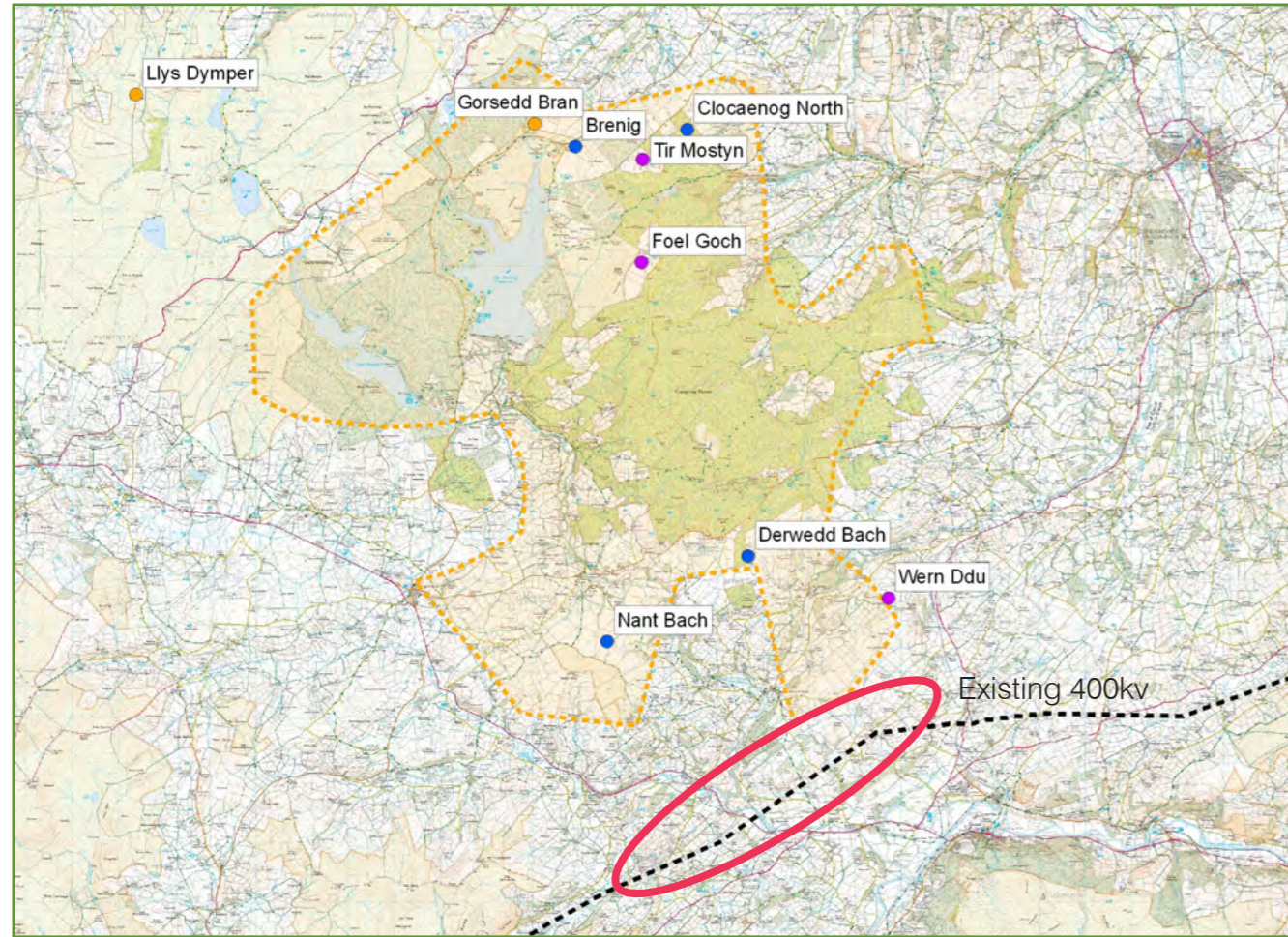
Figure showing Wind Farms, TAN 8 Area A & Existing Electrical Infrastructure

## Connecting the Wind Farms to the Electricity Network – Why St Asaph?

When seeking to connect new electricity generation to the national transmission network, the first step was to identify where on the network the connection will be made. To help determine this, we looked at a number of possible options. These included a connection to SP Manweb's existing substations at St Asaph and Legacy, Wrexham. We also looked at a connection to National Grid's existing 400kV overhead transmission line south of TAN8 Area A.

Each option was evaluated against a range of criteria including technical feasibility, environmental and community effects and cost. This showed that the best connection point is the existing substation at St Asaph. The main factors informing this decision are listed opposite:

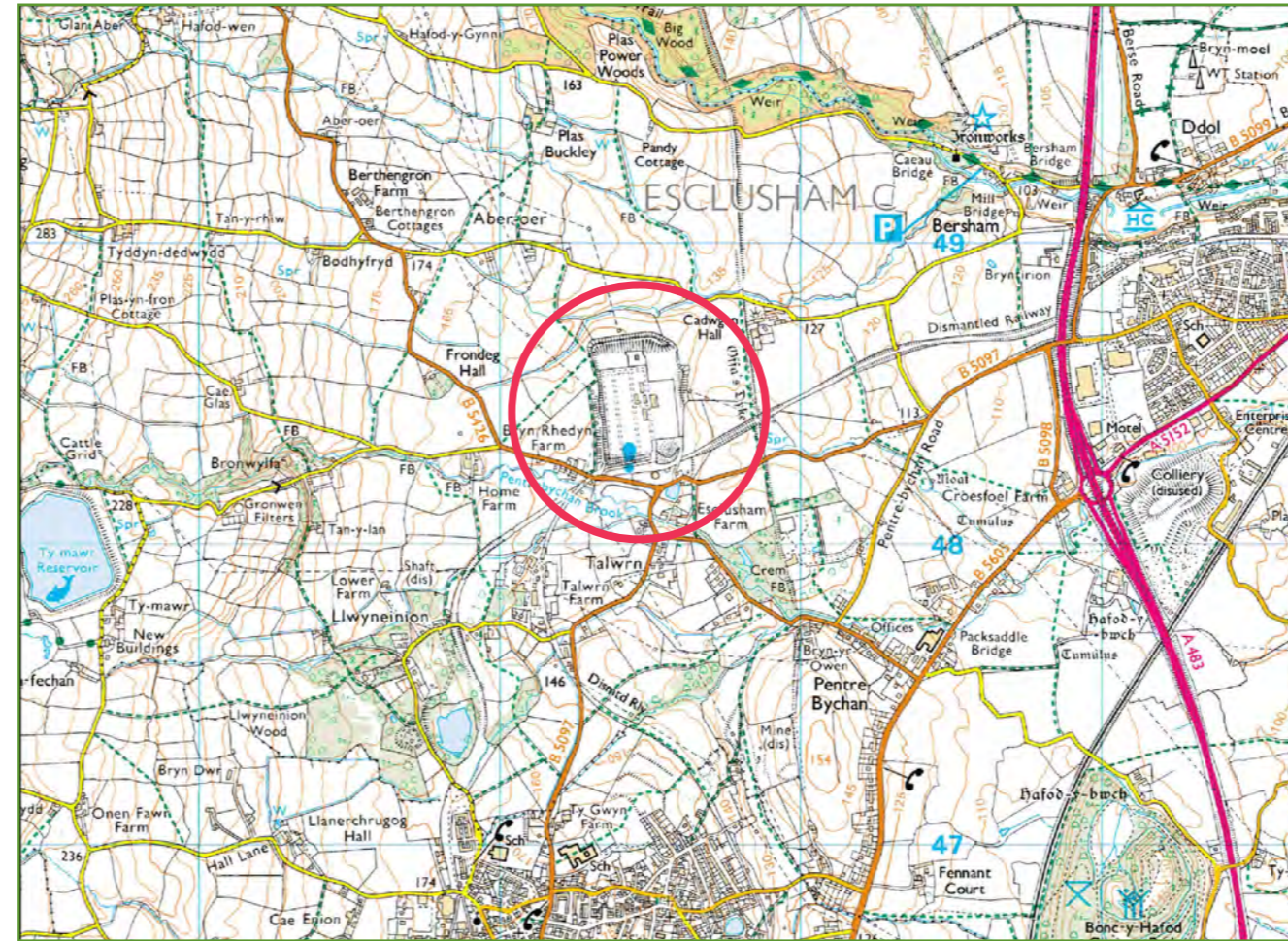
- The capacity of the network to receive a new connection
- The need to avoid, as far as possible, areas of sensitive landscape, including the Clwydian Range Area of Outstanding Natural Beauty (AONB)
- The need to avoid, as far as possible, effects on residential properties
- The need to avoid conflict with existing 400kV and 33kV overhead lines
- The length of connection required - shorter connections are more economical and likely to give rise to fewer environmental and community effects



### Connect into existing 400kV transmission line

Significant electrical infrastructure investment would be required for a connection into the existing 400kV line. This requires a minimum threshold of 300MW to be produced from TAN8 Area A, which is beyond the scope of the current connections. Therefore it is currently economically unviable.

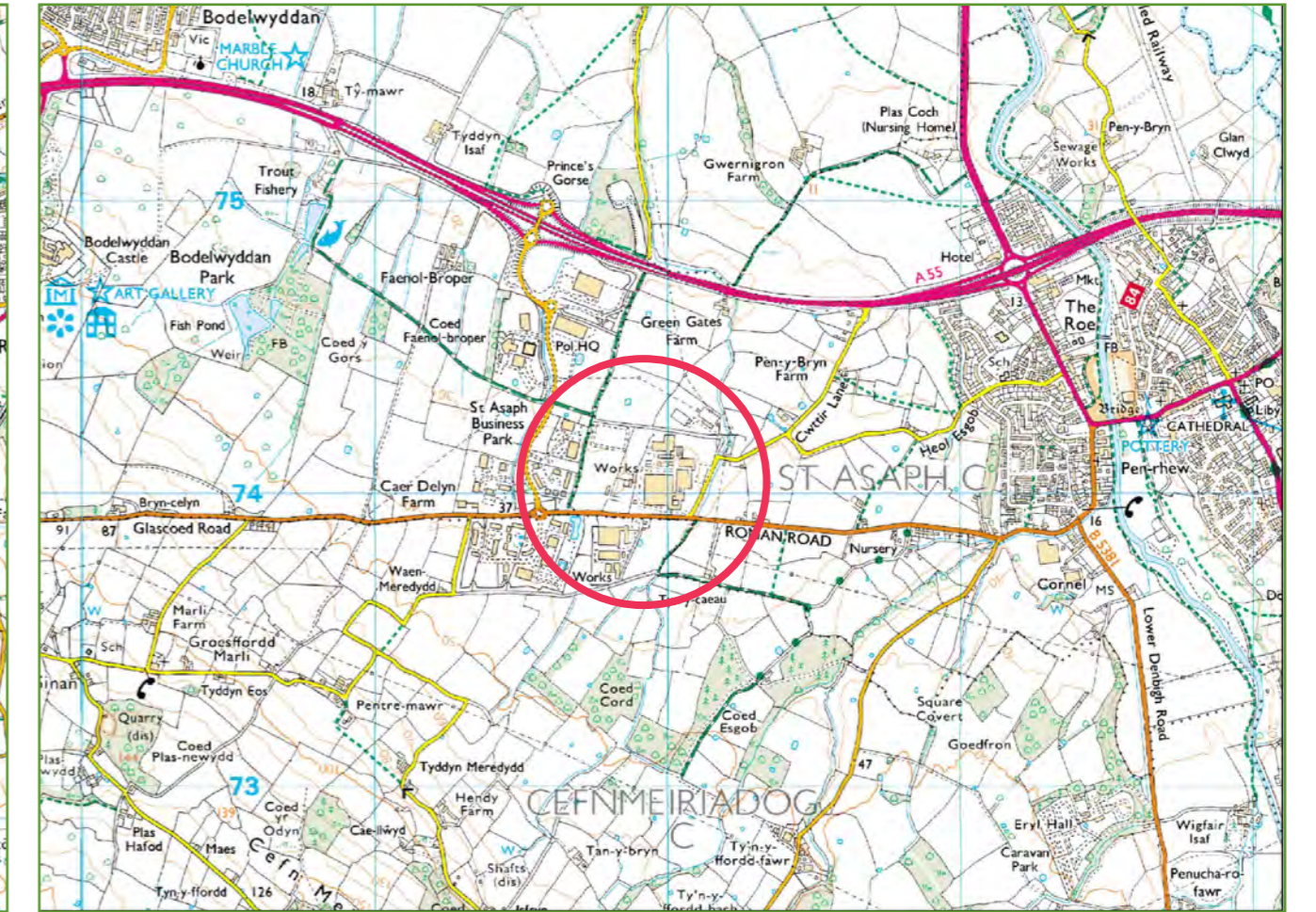
Option – Discounted.



### Legacy Substation

Several significant environmental constraints were identified, including the recent extension to the Clwydian Range AONB (now the Clwydian Range and Dee Valley AONB) through which the proposed connection would need to pass (see map below).

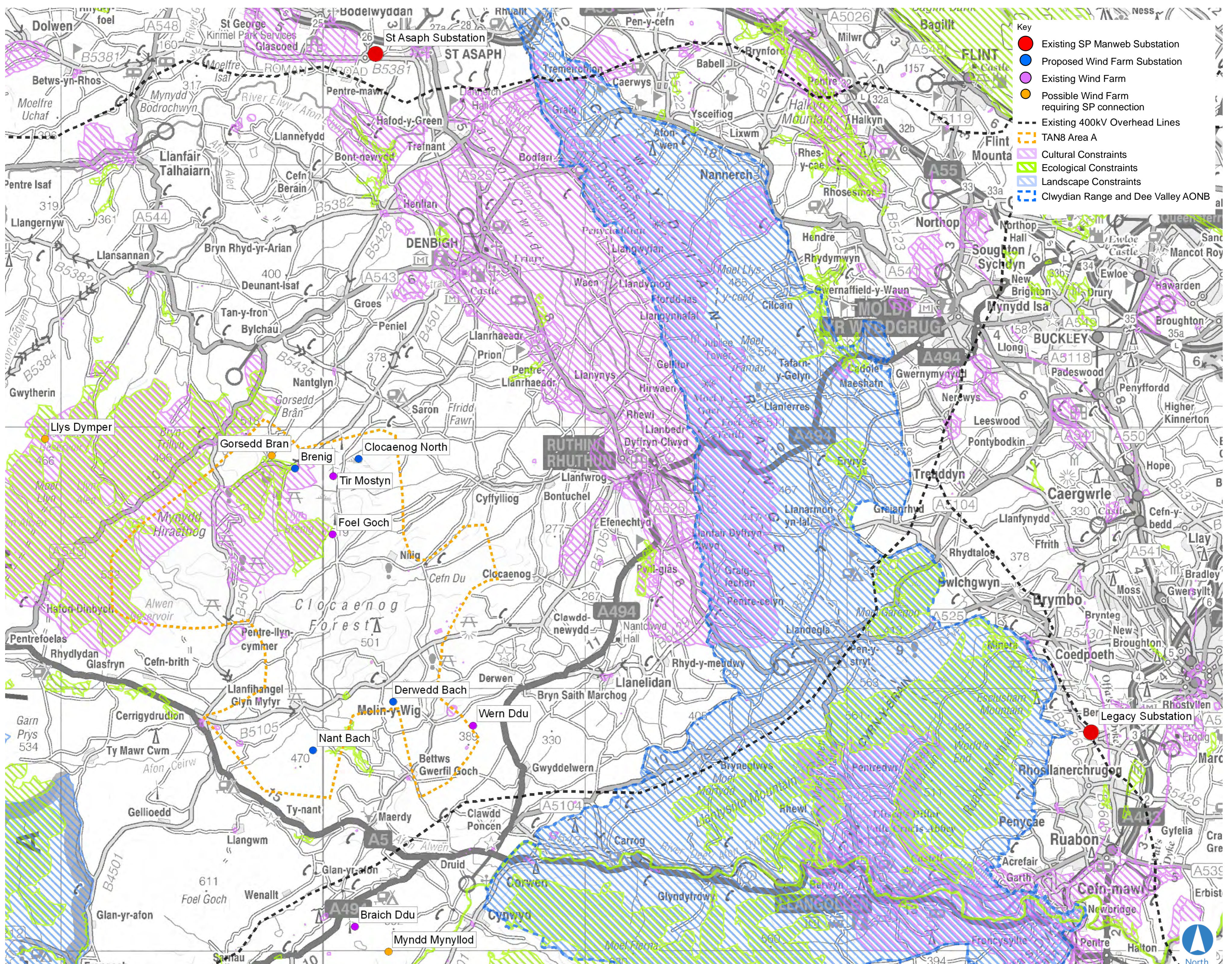
Option – Discounted.



### St. Asaph Substation

Some issues were identified but overall this is considered the least constrained option. The landform and tree cover offers scope for sensitive routing to lessen the likely effects.

Option – Preferred connection point.



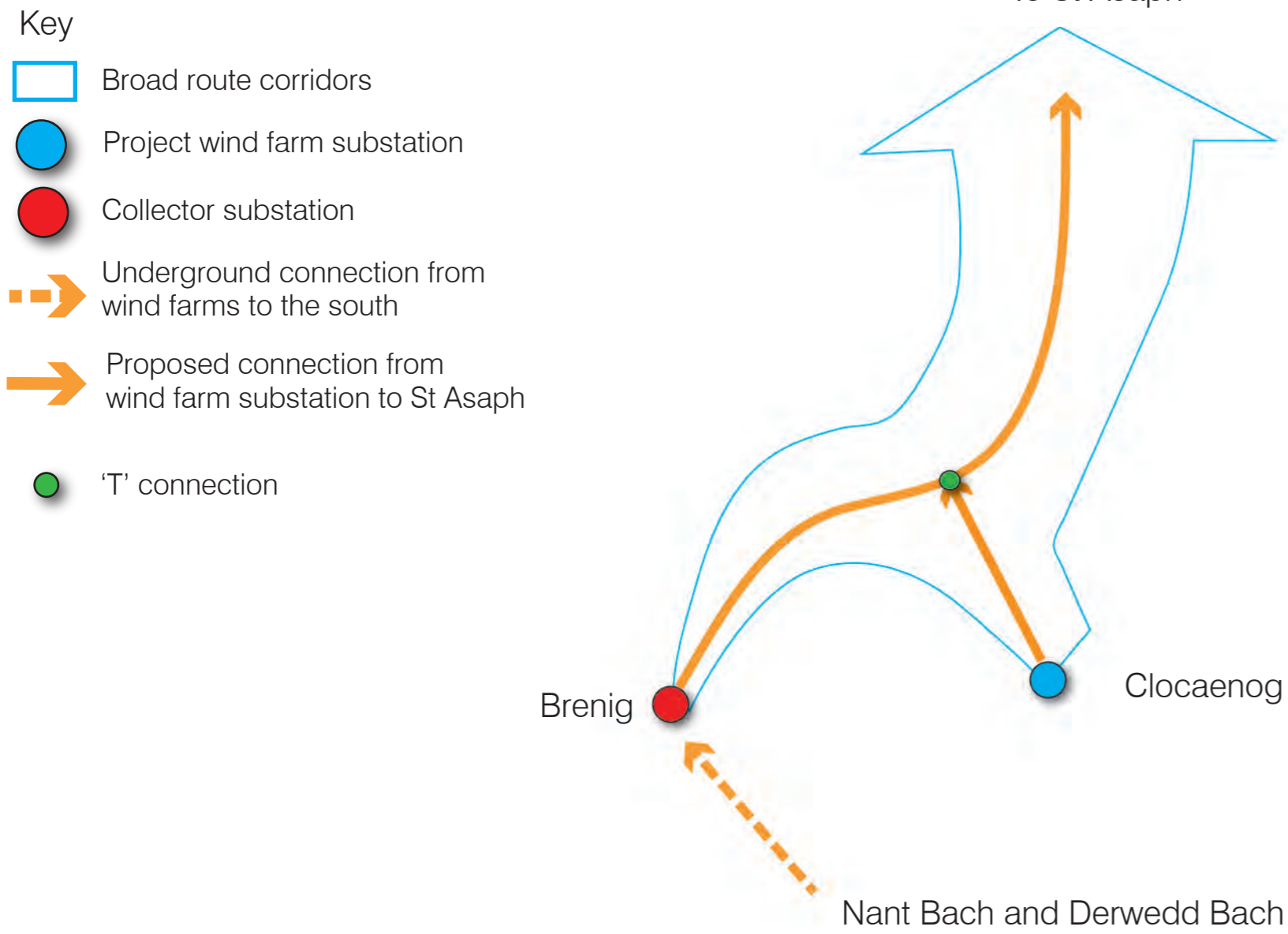
Map Showing Environmental Constraints between TAN 8 Area A, St. Asaph and Legacy Substations

## How will the Connection be Made?

THE ENERGY FROM THE WIND FARMS NEEDS TO BE CONNECTED TO THE NATIONAL ELECTRICITY TRANSMISSION NETWORK FOR USE IN OUR HOMES AND BUSINESSES

### Connecting the Wind Farms to a new Collector Substation

The power generated by the new wind farms will be connected to a new 33kV collector substation via new local 33kV connections. A new 132kV connection will then transfer the power into the distribution network at St Asaph.



Carno - a substation of comparable scale and appearance

### Substation Design

The detailed design of the substation is still to be confirmed, but would include a fenced site about 0.2ha (0.5 acres). This will contain electrical equipment up to 10m high and a small control building about 9m wide x 13m long x 3.5m high. The electricity from the wind farms will enter the substation via the overhead line conductors.

Locally sourced tree and shrub planting around the perimeter of the site will help blend the substation into the surrounding landscape. The electricity from the wind farms will enter the substation via underground cables.

### Choice of Technology

When planning a new connection, SP Manweb considers the use of underground cables, overhead lines (supported on wood poles or steel towers) or a combination of the two. We recognise that public preference is generally for connections to be placed underground because this creates less visual impact, but this is just one of many issues which we have to consider.

To help select the right technology, the landscape of the area was carefully studied and its key landscape and visual features identified. A landscape sensitivity plan was also prepared. This helped identify which local landscapes could best accommodate 132kV overhead lines without unacceptable harm to their character.

### The 1989 Electricity Act

SP Manweb as a registered licence holder has a variety of duties and obligations under the Electricity Act 1989. This includes the requirement to 'develop and maintain an efficient, co-ordinated and economical system of electrical transmission'. The cost of undergrounding is passed on to electricity consumers through their bills. Undergrounding is between five and seven times higher than an overhead line and therefore is only considered where the benefits significantly outweigh the costs.



#### Double Wood Poles

- Double wood poles average 15m in height and are spaced on average 100m apart.
- The poles carry three cables with an additional earth wire. The conductors are supported on a steel structure which sits on top of the double wood poles.
- This method of connection offers the greatest potential for sensitive routing, in hilly, small scale landscapes.



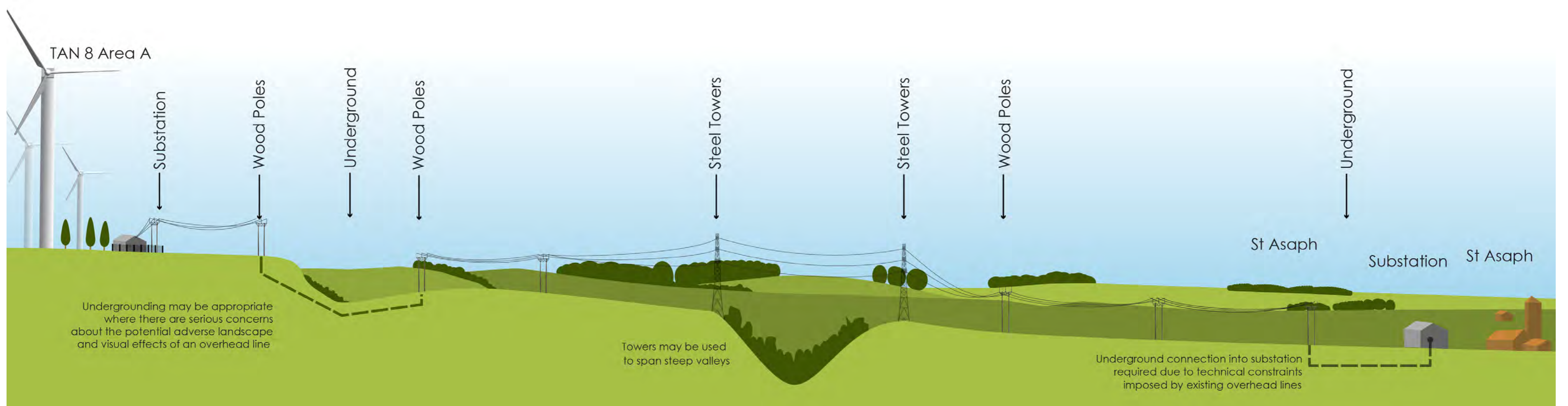
#### Steel Towers – L4

- L4 towers average 26m in height and are spaced on average 180m apart. The tower is slender in profile with a narrow base (4m x 4m). The towers can either be single circuit, carrying a 132kV line on one side, or double circuit, carrying two 132kV lines, one on either side.
- Steel towers offer less scope for sensitive routing and are more suited to expansive, relatively flat landscapes. Their longer spans make them useful for crossing steep sided valleys which would be too steep for wood poles.



#### Undergrounding

- The trench for an underground cable is approximately 1.5m wide. In agricultural land the overall working width would be approximately 15-20m. Cables can be laid in ducts in roads or across agricultural fields.
- Undergrounding may be appropriate where there are serious concerns about the potential adverse landscape and visual effects of an overhead line.



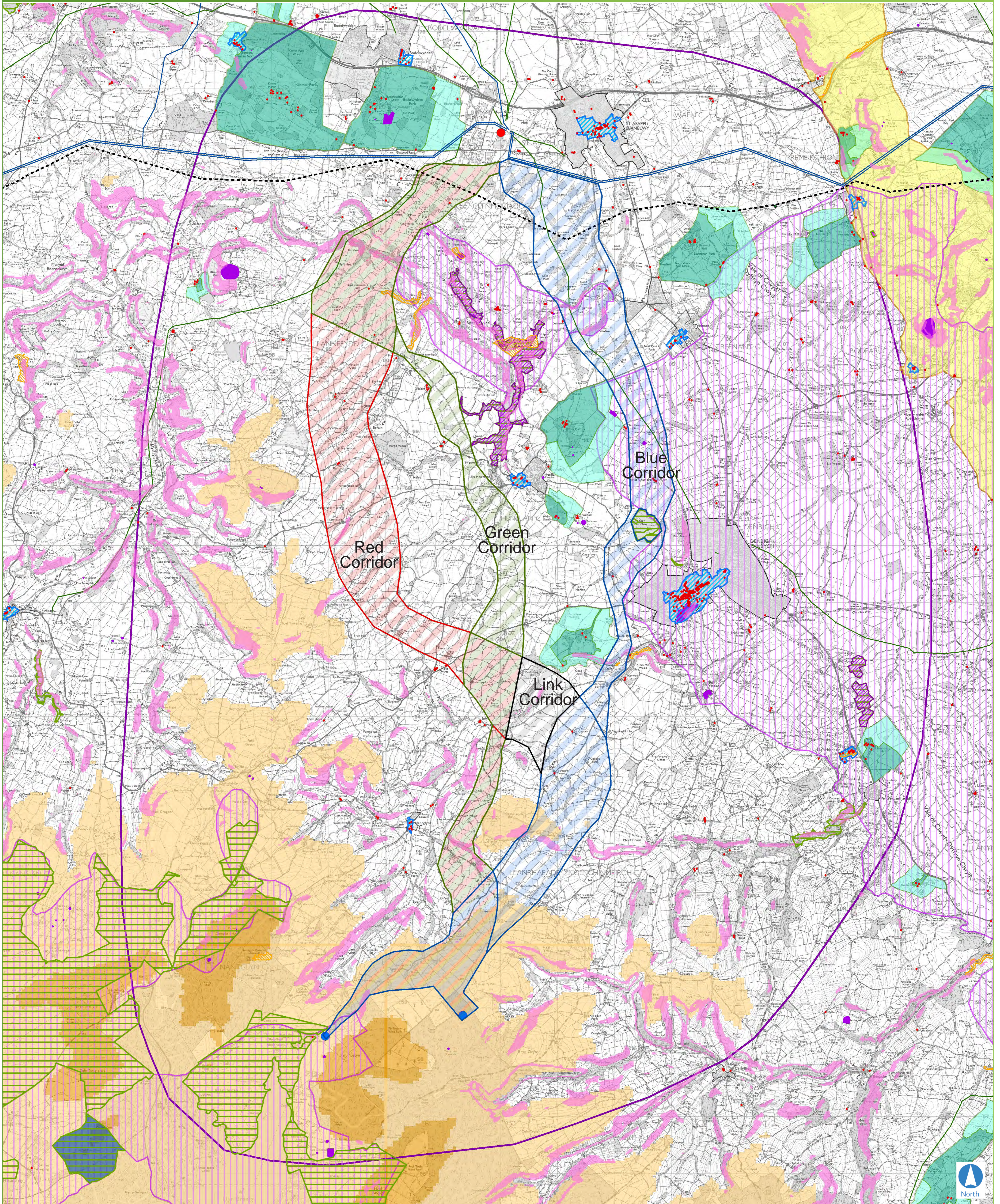
Illustrative Sketch Showing Connection Strategy

### The decision making process

The route corridors we are presenting in this exhibition allow for the connection to be made by overhead lines, underground cables or a combination of the two. The farmland through which we need to build is considered more suited to wood poles than steel towers. Steel towers may be considered in selected locations for example crossing steep sided river valleys.

- Being taller, steel towers are more visually intrusive and more likely to be seen on the skyline
- Wood poles are more flexible for routing and can provide a better landscape 'fit' with existing features
- Steel towers are more urban in appearance
- Steel towers can be used to span steep sided valleys

# North Wales Wind Farms Connection



## Combined High Level Ecological, Cultural, Landscape and Technical Constraints with Broad Route Corridor Options

KEY	
	St Asaph Study Area
	St Asaph Substation
	Wind Farm Substation
Route Corridors	
	Blue Route
	Green Route
	Red Route
	Link: Links and Creates Blue / Red Corridor and Blue / Green Corridor

### Landscape & Technical Constraints

	Area of Outstanding Natural Beauty (AONB)		400kV Overhead Lines
	Settlement		132kV Overhead Lines
	Slope Over 22°		33kV Overhead Lines
	Slope Between 15-22°		
	300 - 450m AOD		
	450+ AOD		

### Ecological Constraints

	Special Area of Conservation (SAC)
	Site of Special Scientific Interest (SSSI)
	National Nature Reserve (NNR)
	Regionally Important Geological Site (RIGS)

### Cultural Constraints

	Listed Buildings
	Conservation Area
	Scheduled Ancient Monuments
	Parks & Gardens Essential Settings
	Registered Parks & Gardens
	Registered Historic Landscapes



## Identifying Route Corridors

A corridor is a broad width of land through which a connection could be routed. Corridors typically vary in width from 300m to 1300m depending on a variety of constraints. Corridors are indicative rather than definitive - a final route alignment may lie outside the extent of route corridor shown on the maps. For this project, the start and end point of the corridor are the proposed new substation near Brenig wind farm and SP Manweb's substation at St Asaph.

A Route Corridor Study was prepared for the project. This identifies and evaluates potential route corridors against a range of constraints. The approach to this study was based on the Holford Rules. These are guidelines produced in 1959 which are still regarded as the industry standard for overhead line routing. These rules advise avoiding major areas of highest amenity value.

An assessment of landscape sensitivity to 132kV overhead lines was prepared for the study area and was used to help identify route corridors.

Discussions with stakeholders including Denbighshire County and Conwy County Borough Councils, The Countryside Council for Wales (CCW), the Environment Agency (EA), Forestry Commission Wales (FCW), RSPB and Cadw helped inform the appraisal.

Three route corridors were shortlisted and presented here.

The corridors we have selected minimise as far as possible the effect on the environment and local communities.

## Routeing Considerations

### Environmental

These include:

- Communities
- Landscape and views
- Ecology including woodlands
- Cultural heritage
- Residential amenity
- Geology and hydrology
- Soils, forestry and agriculture
- Tourism and recreation
- Transport
- Cumulative effects

### Engineering & Technical

These relate to both construction and operation of the overhead line:

- Existing overhead lines
- Altitude
- Rock outcrops
- Flood risk areas
- Steep slopes
- Peat deposits

### Planning

These include UK wide and Welsh policy considerations.

At a local level, the area is covered by two planning authorities, Denbighshire County Council and Conwy County Borough Council. Their local plans refer to a number of relevant planning policy designations:

- Flood Risk Areas
- Housing Allocations
- Employment Allocations
- Mineral Sites
- Green Barriers/Protected Open Spaces
- Open Space/Recreational Allocations

### Economic

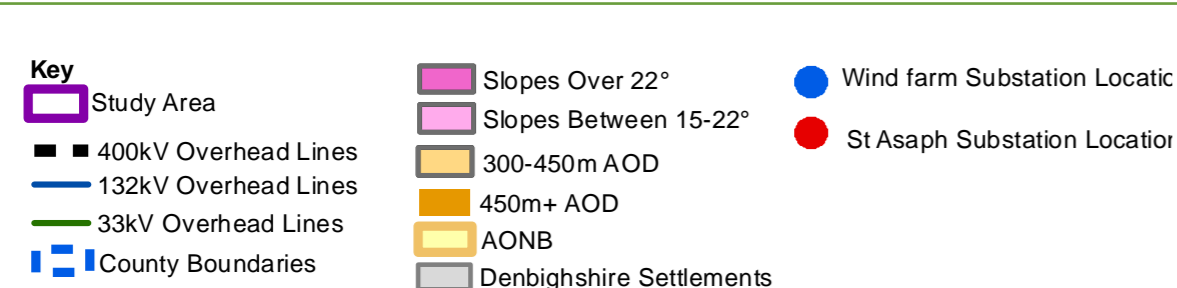
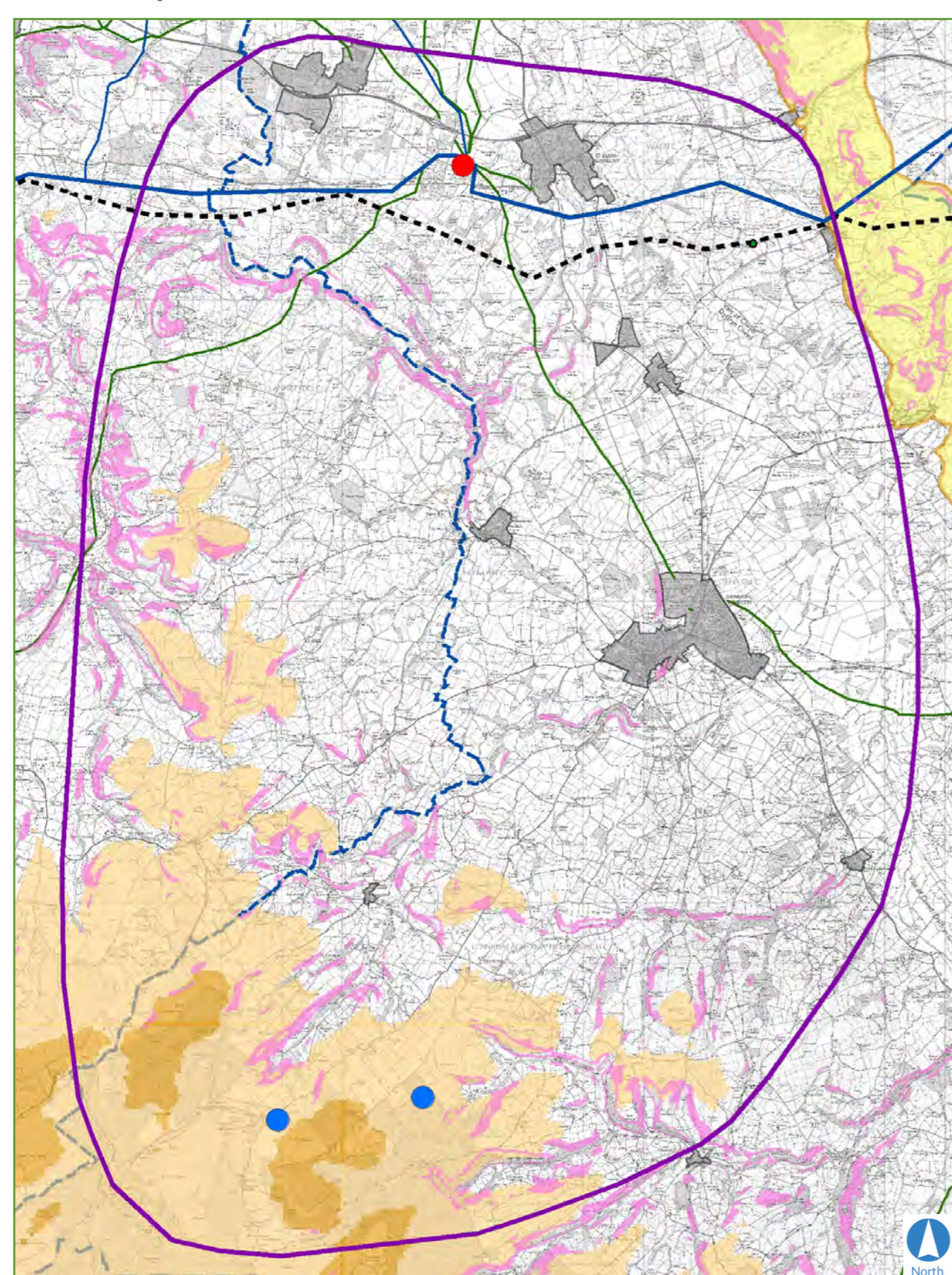
Under the Electricity Act 1989, we are obliged to make the connection as economically as possible. This means that it should be as direct as possible and should avoid areas where technical difficulty or compensatory requirements would increase costs disproportionately.

## The Holford Rules

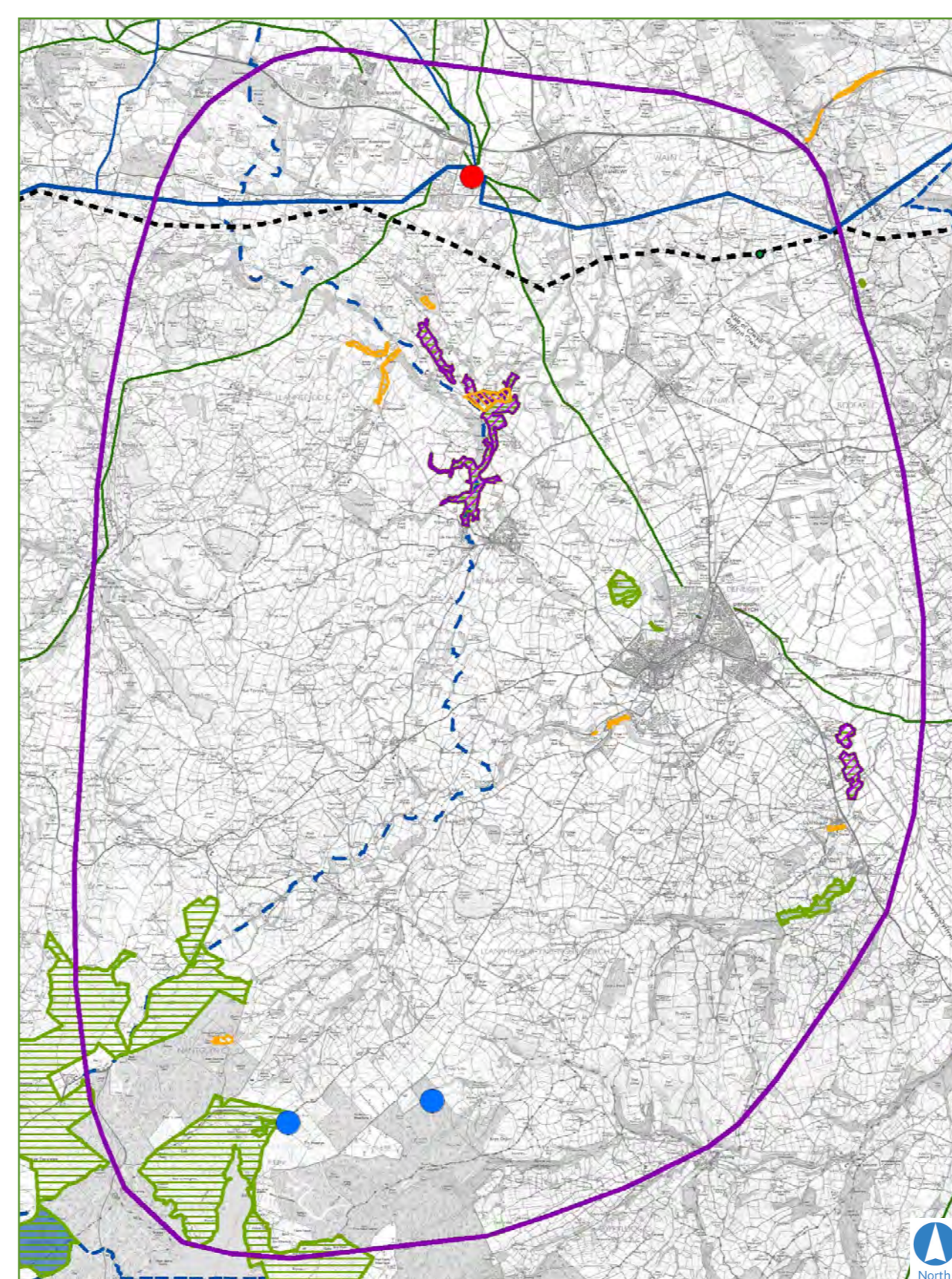
The recognised principles for overhead line routeing in the UK are 'The Holford Rules'. These rules recognise that the major impact of an overhead line is visual, and that the most effective way of reducing visual effects is through the careful routeing of the overhead line.

At all times during the routeing process, the environment of the area and the people living, working, recreating or travelling through were the main focus of the studies and the assessments undertaken to support the routeing process. In some locations, a balance had to be struck between different adverse effects on the different aspects of the environment, as it was not always possible to find a solution that removed all adverse effects in any one area.

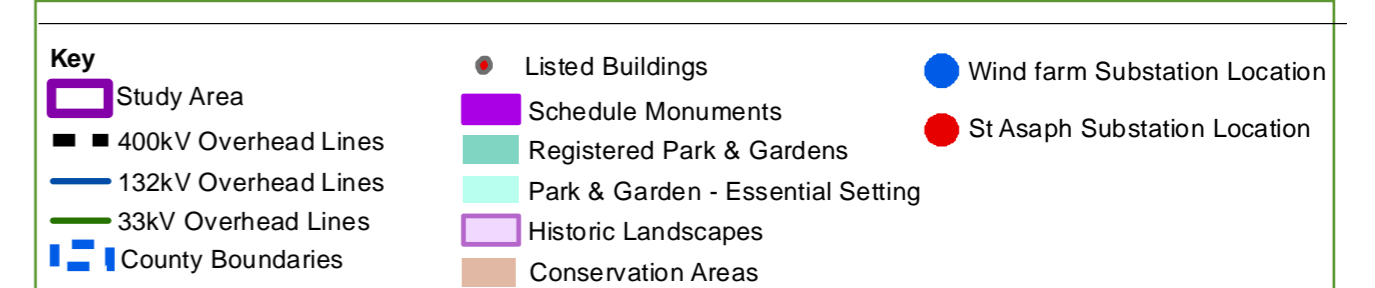
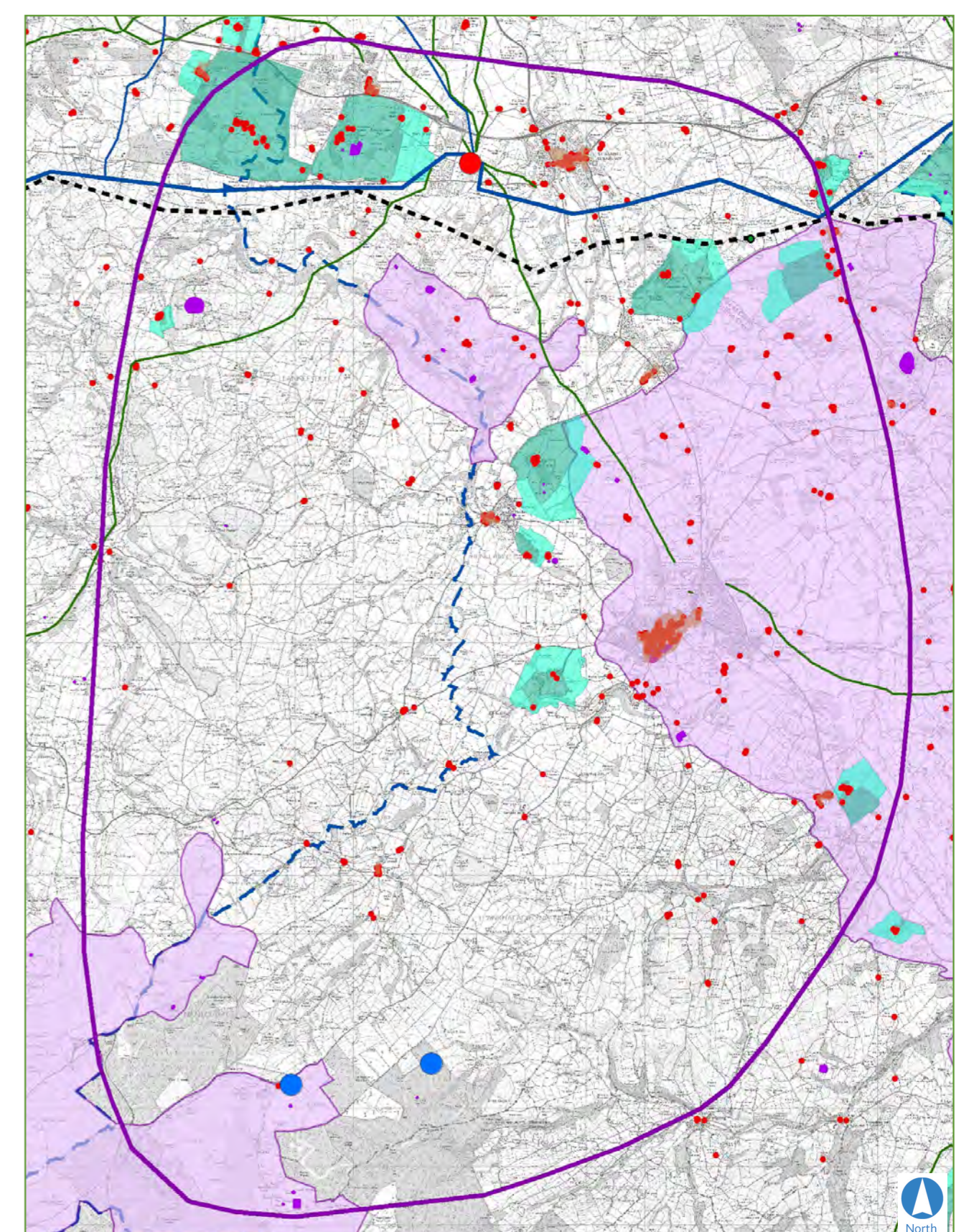
### Landscape & Technical Constraints



### Ecological Constraints



### Cultural Constraints

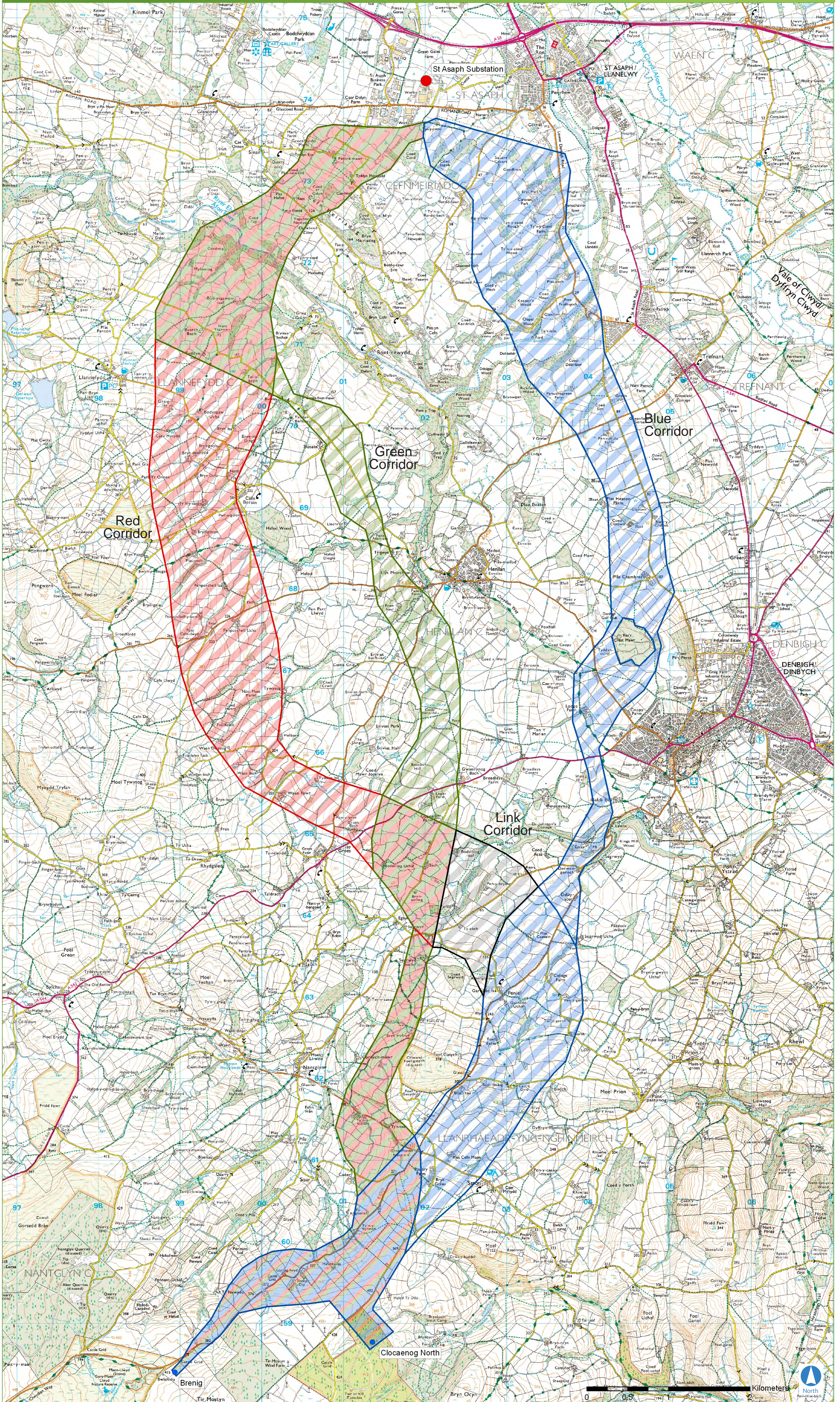


## Have Your Say

We welcome your feedback on the corridors. Your opinion is valuable to us and will help influence the decision on which corridor is taken forward.

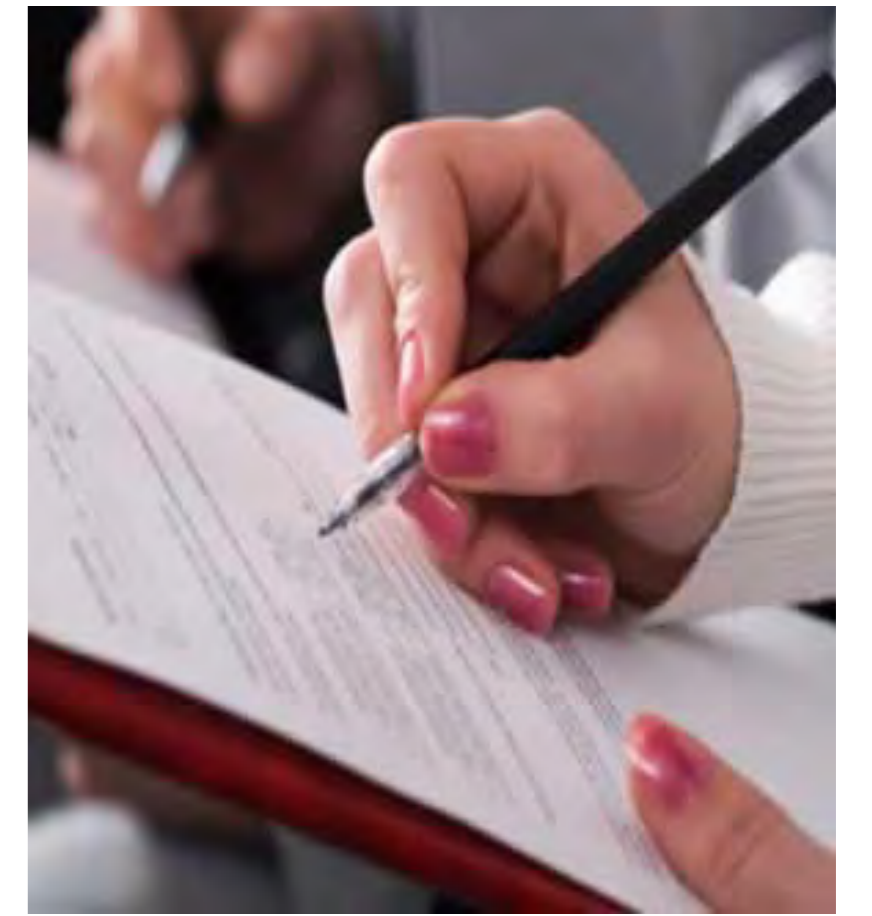
Maps showing the corridors are displayed on the next boards and you can register your views using one of the feedback forms which are available. Please talk to a member of our team for more information.

# North Wales Wind Farms Connection



Route Corridor Options

## Have Your Say



### Feedback

Involving local people in the project is extremely important to us. Talking to you will help us understand the issues and your concerns.

This is a long process and, as you can see from the project timeline below, it includes several stages of consultation. Our first stage of consultation begins now with the aim of finding out your views on which route corridor you prefer and whether there are any particularly sensitive areas. Your views really do count and will help inform the next stages in our decision making.

Maps of the corridors and feedback forms are available today for you to take away.

*You can then submit your comments for this first phase of consultation up until 1st February 2013.*

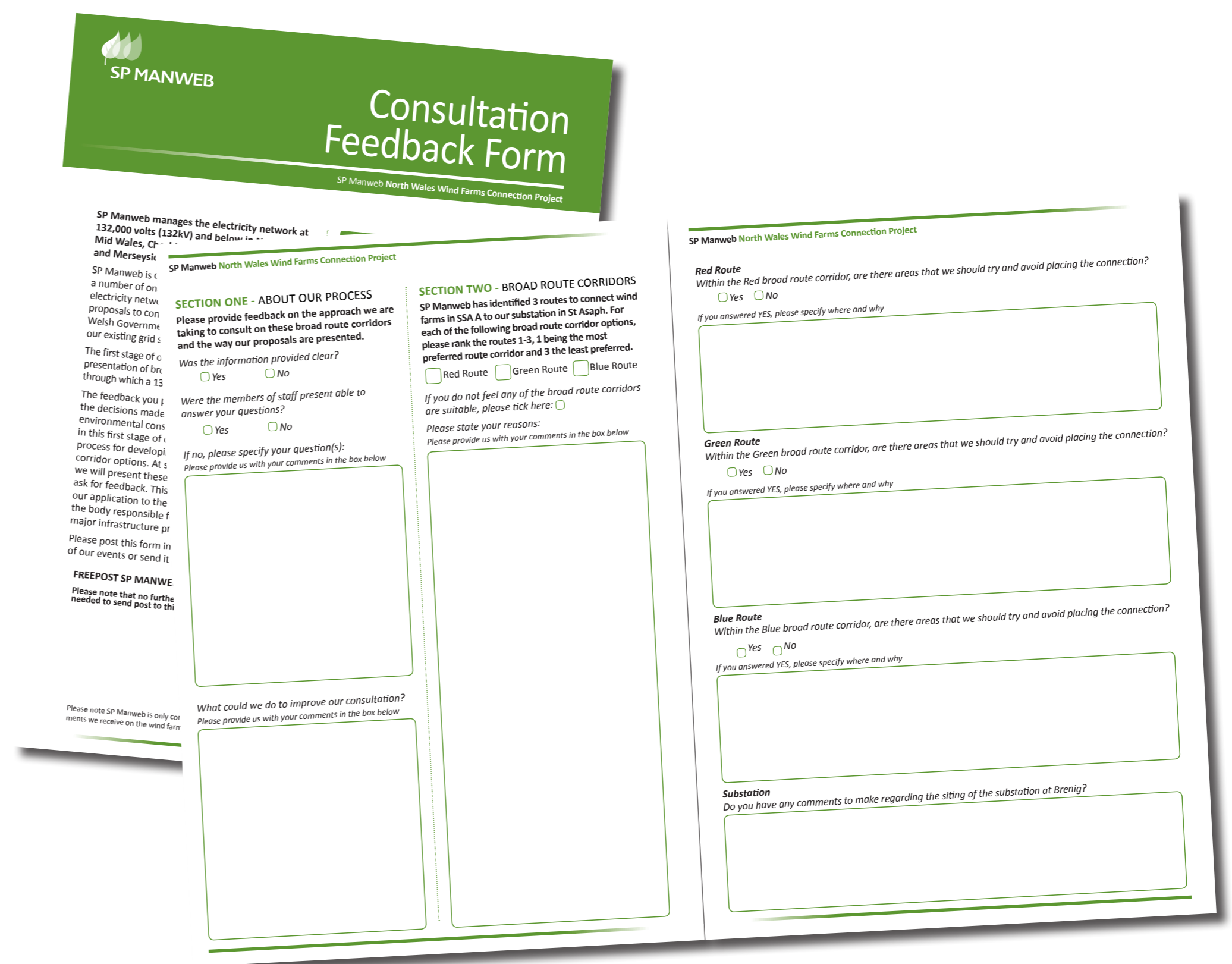
There are several different ways you can register your views:

### Have Your Say

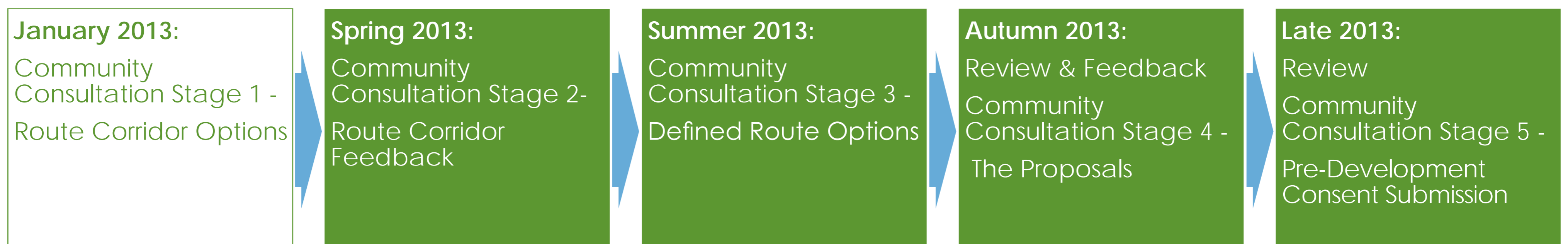
- You can submit your comments at our exhibition
- You can send your comments to the address below:

**FREEPOST SP MANWEB NW CONNECTION**

Please note that no further stamp or address is needed to send post to this address



### Indicative Project Timeline



### Next Steps

All of the comments we receive will be combined with the environmental and technical studies we have undertaken to help determine which route corridor is taken forward for the development of route alignment options. We will keep you informed on the outcome of this process.

The third phase of consultation will be to present and seek your views on route alignment options within the chosen corridor. This phase of consultation will be widely publicised.

Further detailed environmental and technical studies and outcomes of the consultation will be used to select the preferred route alignment. The proposals will then be designed in detail.

### The EIA Process

The European Environmental Impact Assessment Directive requires an Environmental Statement (ES) to be undertaken which describes the aspects of the environment likely to be significantly affected by the project. A full Environmental Impact Assessment will be carried out for the proposals to assess the possible positive or negative impacts that the proposals may have on environmental, social and economic aspects of the environment. It will allow the Planning Inspectorate to understand the potential impacts of the project and understand how the sensitive design of the project could reduce those effects through mitigation.

### Contact Us

If you have any questions please come and talk to a member of the project team. Alternatively you can write to us at the address above.

Find out more about SP Manweb and the ScottishPower group at [www.spenetworks.co.uk](http://www.spenetworks.co.uk).