

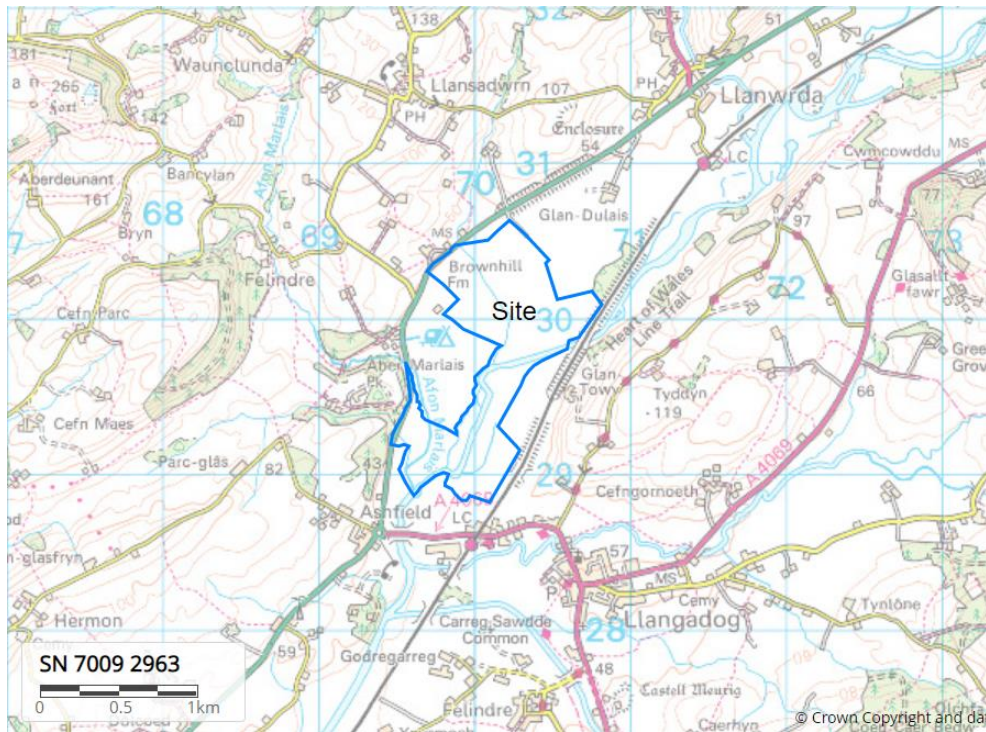
Woodland Creation at Brownhill

Introduction

Natural Resources Wales (NRW) acquired the site at Brownhill on the open market, for the purpose of woodland creation in February 2022. This is part of NRW's programme to create new woodland, to compensate for woodland permanently lost from the Welsh Government Woodland Estate (WGWE) and meet policy commitments to maintain the WGWE.

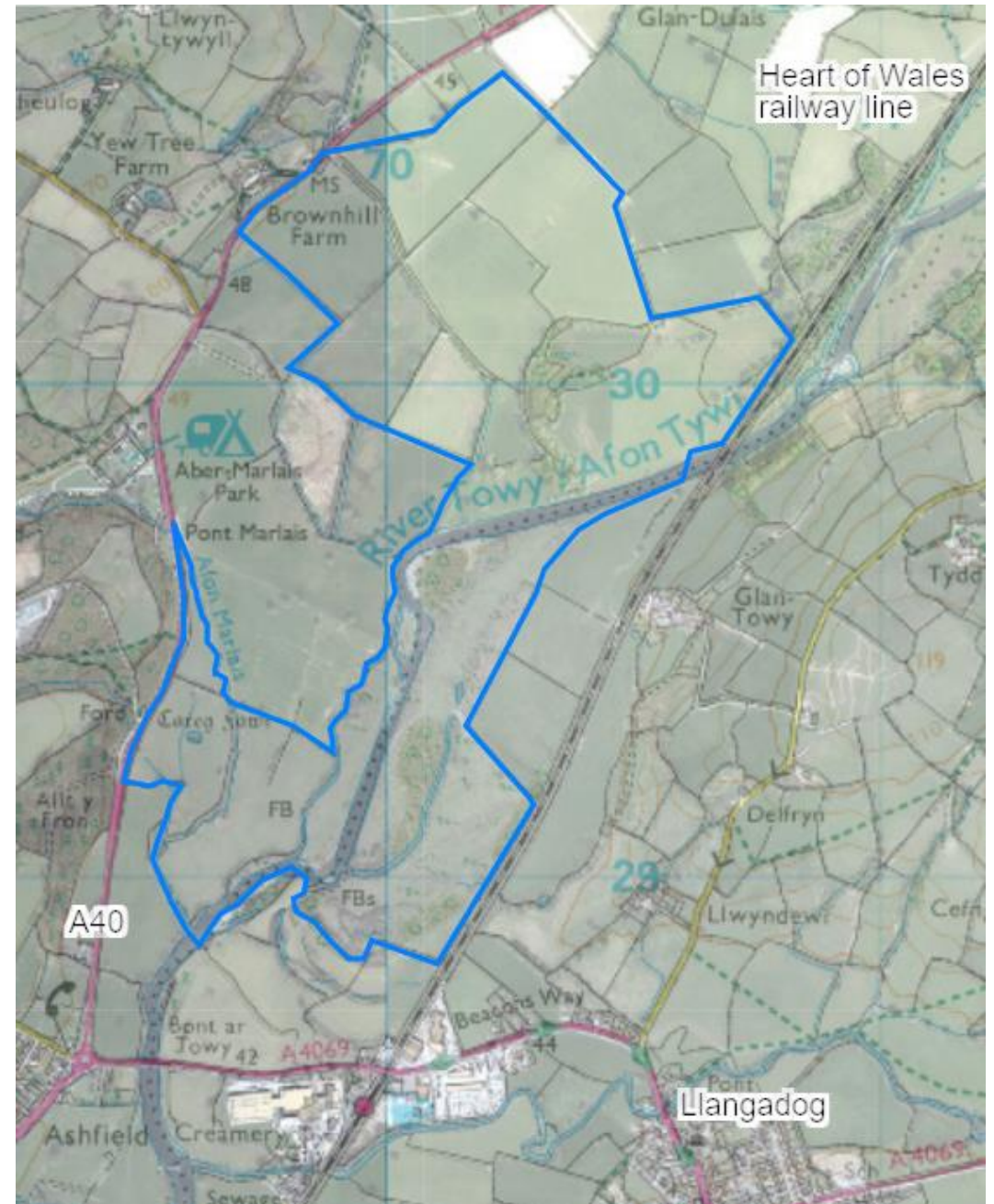
The site was announced as a commemorative woodland by the First Minister for Wales, Mark Drakeford. This is part of a Welsh Government Project to create woodland to commemorate those who have sadly lost their lives during the Covid 19 crisis, and the way society in Wales responded to the crisis. Welsh Government's vision is for commemorative woodlands to be created and made accessible to the public across Wales.

Site Location



The site lies directly to the East of the A40 between the villages of Llangadog and Llanwrda, the river Tywi (Towy) crosses the site from North to South. The heart of Wales Railway line forms some of the Western Boundary of the site.

The Town of Llandovery is around 5.5 miles via the A40 to the North, Llandeilo is around 6 miles to the south



Site Context

The site is 94ha and is predominantly flat floodplain land.

The North of the site has been used for silage/hay and grazing, while the remainder tends to be wetter ground and has recently been used for grazing and includes permanent pasture some of which is rushy. The parcel to the east of the river has largely been fallow in recent times. The fields to the west of the river have been drained historically.

The fields are divided by hedgerows, some of which are mature and some more recently planted, with mature and veteran hedgerow and in-field trees (mainly Oak). The remaining hedgerows largely follow the historic field pattern but have not been recently managed, and some historic field boundaries have been lost to enlarge the fields.

To note, the land was sold as five lots of which we secured three. The remaining two consisted of a higher proportion of more productive agricultural land. The three we secured all included a proportion of rougher and/or less accessible ground, less attractive for agricultural purposes.

Prior to acquisition a full constraints check was carried out along with site assessment by NRW experts. This information and that gathered through engagement with key stakeholders and statutory consultees informs the information set out under each of the headings below. The headings reflect the elements of sustainable forest management set out by the UK Forest Standard (UKFS). This woodland will be designed and managed in accordance with the UKFS and certified through the UK Woodland Assurance Standard (UKWAS) along with the wider WGWE.

Ecology and Biodiversity

The site has a mosaic of habitat types including shingle banks, marshy grassland, neutral grassland, wet woodland, mature hedgerows, veteran trees, different sizes of watercourses and standing water. The semi-natural habitats present are rare for this area of the Tywi valley and if managed sympathetically, have great potential to support a rich biodiversity and provide a significant contribution to the resilience of ecosystems in the local area.

Local records centre records show Otter sightings on the watercourses in the surrounding area and there is evidence of otter using the site for foraging but no records or evidence of breeding. Local records centre records show lapwing sightings on the site. Snipe have been seen on the site and the areas of wetland habitats associated with the infield marshy ditches and rushy grassland are likely to provide important overwintering sites for these and other wading birds.

The river Tywi is designated as a Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI).

Annex II species that are a primary reason for selection of this site:

- 1103 **Twaite shad** *Alosa fallax*

A large spawning population of twaite shad *Alosa fallax* occurs in the Tywi, south Wales, and is considered to be self-sustaining. Spawning sites occur throughout the lower reaches of the river between Carmarthen and Llangadog, with most spawning occurring downstream of Llandeilo. Water quality and quantity are considered adequate to maintain this internationally vulnerable species, and there are no impassable obstructions along the migration route, though one weir at Manorafon may be an obstacle during low flow conditions. The presence of Llyn Brianne reservoir at the headwaters provides the potential to manipulate river flows to aid shad migration.

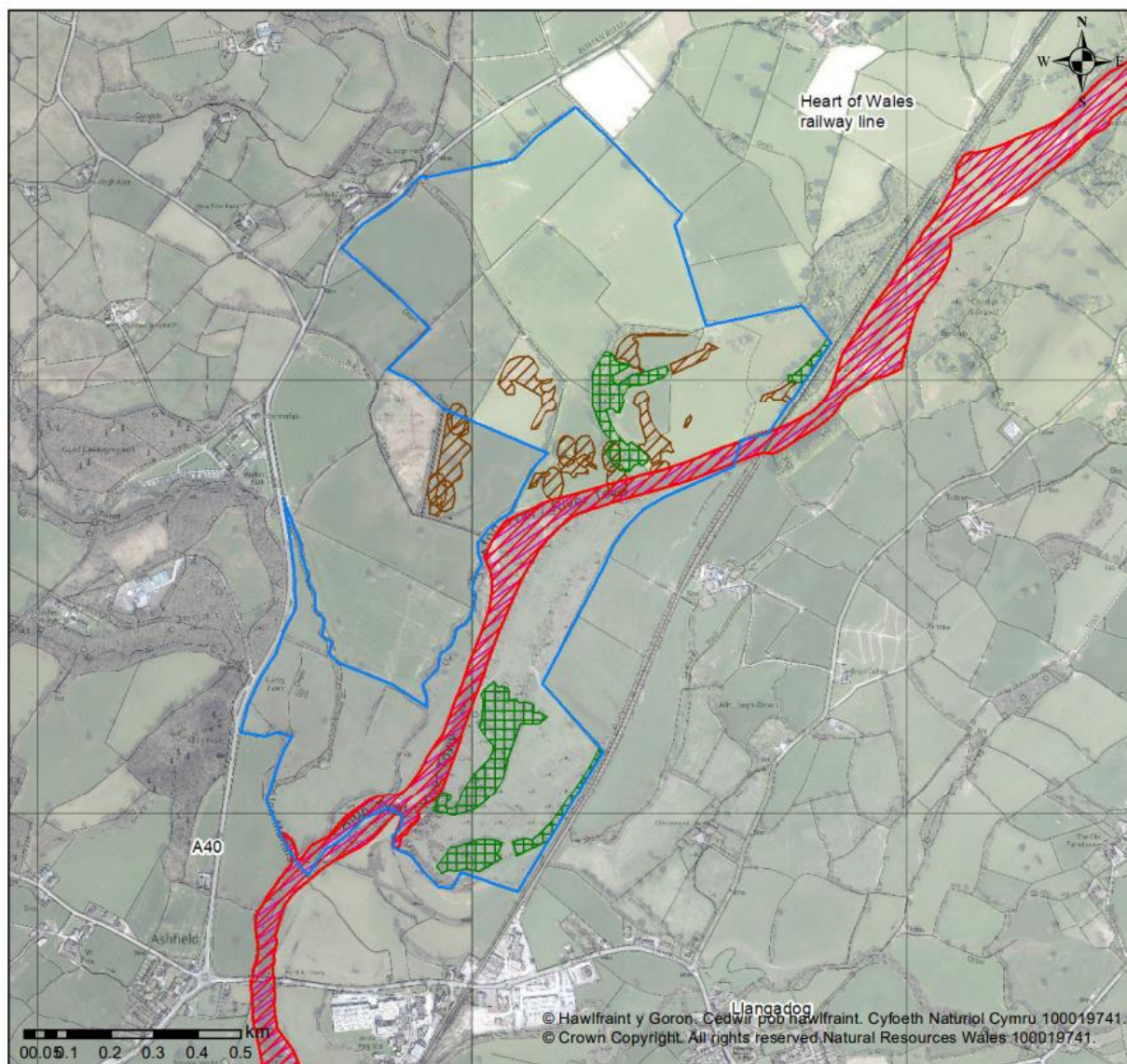
- 1355 **Otter** *Lutra lutra*

The Afon Tywi is one of the best rivers in Wales for otters *Lutra lutra*. There are abundant signs of otters, and they are regularly seen on the river. The water quality is generally good and there is an ample supply of food. There are suitable lying-up areas along the river bank, but there are few known breeding sites on the main river, although cubs have been seen.

Annex II species present as a qualifying feature, but not a primary reason for site selection

- 1095 **Sea lamprey** *Petromyzon marinus*
- 1096 **Brook lamprey** *Lampetra planeri*
- 1099 **River lamprey** *Lampetra fluviatilis*
- 1102 **Allis shad** *Alosa alosa*
- 1163 **Bullhead** *Cottus gobio*

SSSI designation: [OCR Document \(naturalresources.wales\)](#)




Title: Brownhill Priority habitat

Date: 7 November 2022


Author: Miriam Jones-walter

Scale @ A4: 1:12,500

Sites of Special Scientific Interest (Wales)

 Sites of Special Scientific Interest (Wales)

Special Areas of Conservation (Wales)

 Special Areas of Conservation (Wales)

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 Brownhills_Mem...



This map shows priority habitat areas present on site:

The river Tywi is a SAC/SSSI

Brown hatched areas indicate semi-natural grassland habitat and a 25m buffer surrounding veteran trees. To note some of this is outside the project area.

The green hatched area is comprised of species poor improved grassland and existing woodland.

Landscape

The site falls within the Tywi Valley landscape character area¹ and historic landscape area² with a strong agricultural tradition. The following is a summary from the historic landscape characterisation:

From Llandovery to Carmarthen, this lowland river meanders on a wide but contained, active flood plain. The River Tywi is both scenically and ecologically outstanding. The alluvial soils have produced a good living for generations of farmers.

There is a regular pattern of fields, enclosed by hedgerows with many hedgerow trees. The valley has been used as a transport corridor since prehistoric times. There are a number of historic towns at bridging points and a larger county town, Carmarthen, with associated busy roads and modern expansions.

Historically the valley was protected by a string of fortifications, from stone castles to simple mottes and ancient prehistoric hill forts and Roman encampments. In more peaceful times its beauties lured the wealthy gentry who established parklands and mansions overlooking the landscape. The Tywi Valley has attracted artists and poets such as John Dyer. The lower reaches of the river were formerly navigable, and were thus associated with trade, communications and transport. Today the river is celebrated for sports-fishing and is associated with coracle fishing.

208 Ystrad Tywi: Llangadog-Llandovery character area consists of the flood plain and lower slopes of the Tywi valley. Large dispersed farms and a regular field system characterise the area. Distinctive trees lend a parkland appearance to the landscape



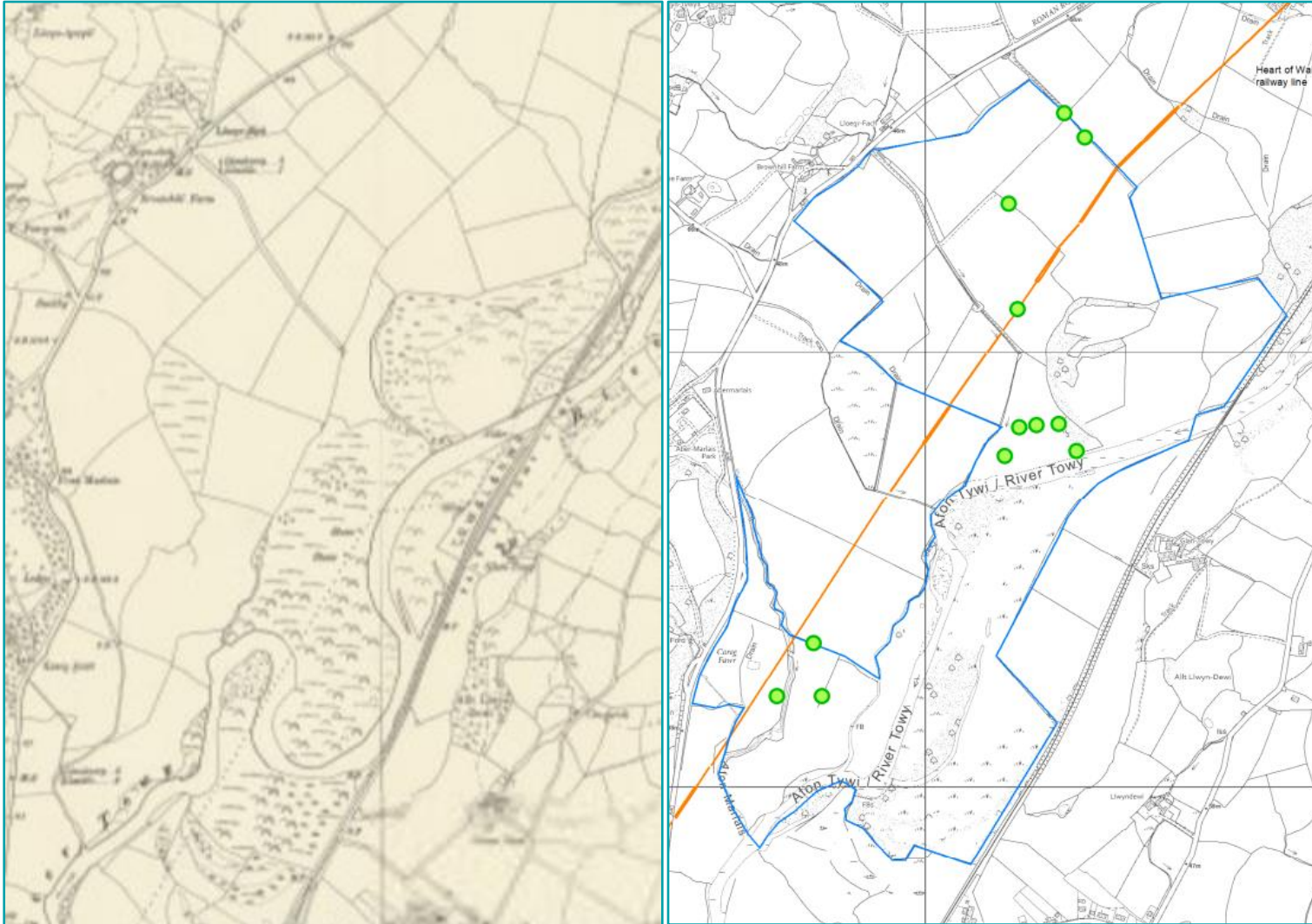
There are no prominent vantage points due to the frequent hedgerows and the whole site can only be viewed from the distant valley sides.

¹ [nlca41-tywi-valley-description.pdf \(cyfoethnaturiol.cymru\)](#)

² [Archaeology in Wales - Ymddiriedolaeth Archaeolegol Dyfed - Dyfed Archaeological Trust \(dyfedarchaeology.org.uk\)](#)

Historic Environment

Along with the historic landscape area described above, the course of a Roman road crosses the site. The site forms part of the historic Abermarlais estate and several significant ancient and veteran trees.



The map to the left shows a portion of the Ordnance survey map from 1888-1913.

The map to the right is today's Ordnance survey map, with the course of the Roman road indicated in orange and the significant trees (green) within the site boundary (blue).

The comparison shows how the course of the river has altered significantly and some of the historic field boundaries are no longer present.

Soil

The land is sheltered with medium to rich soil nutrients and moist to fresh soil moisture.

The soil survey of England and Wales indicates the following regarding the soils. This is broadly confirmed by on site investigation of the soils and means the soils are suitable for a wide range of tree species. The introduction of woodland and removal of agricultural inputs and ground disturbance has the potential to reduce some of the risks to water quality indicated by the soil type.

Soilscape 12:

Freely draining floodplain soils

Texture: Loamy

Coverage: England: 0.6% Wales: 1.8% England & Wales: 0.7%

Drainage: Freely draining

Fertility: Moderate to high



Habitats: Grassland; wet carr woodlands in old river meanders

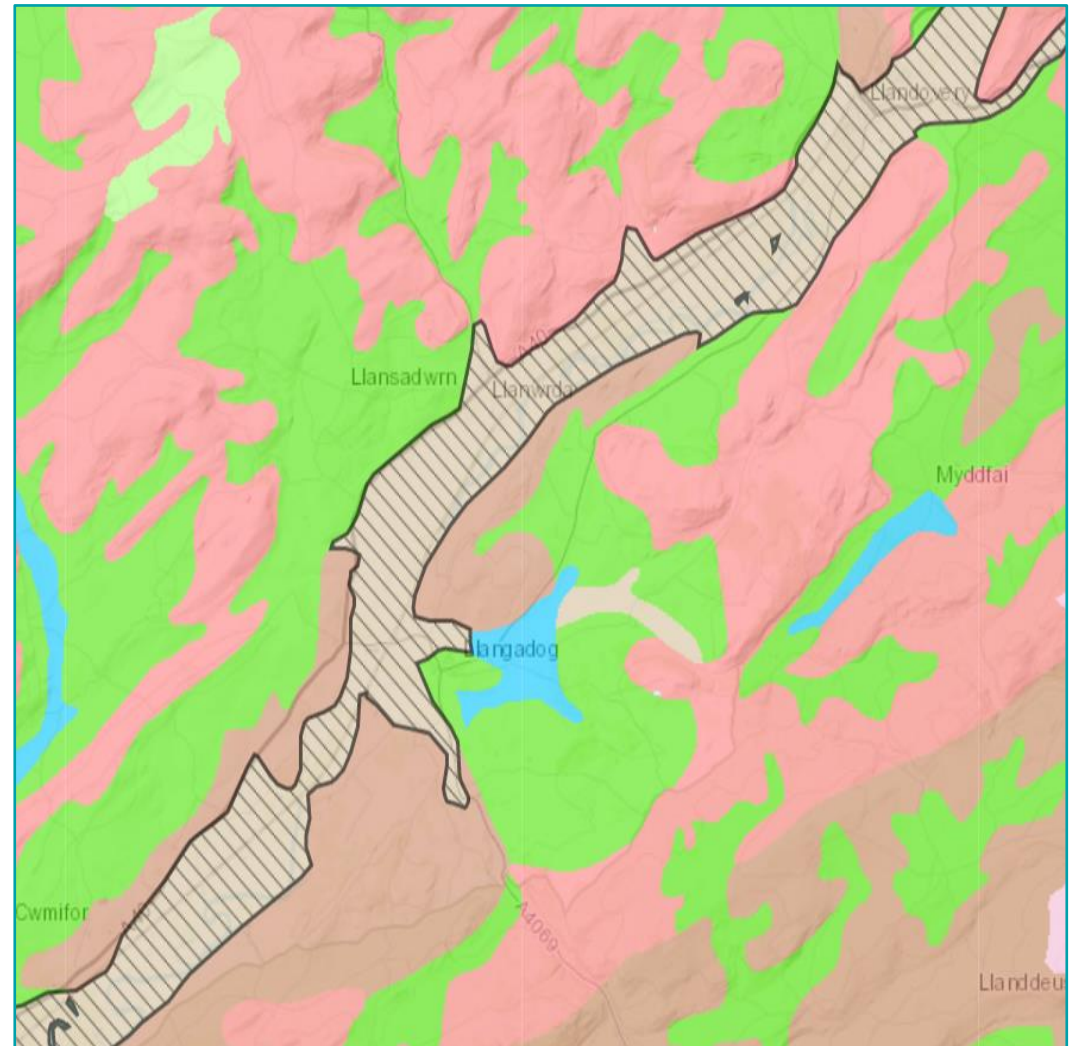
Landcover: Grassland some arable

Carbon: Low

Drains to: Local groundwater feeding into river

Water protection: Groundwater tables are shallow and therefore vulnerable to leached pollutants such as nitrate and pesticides. Flooding of cultivated fields can scour topsoil and increased silt in the river

General cropping: Cropping potential determined by vulnerability to flooding; soils are typically stoneless and contain large supplies of available water; potential for a wide range of crops including cereals, roots and potatoes but flooding can limit land to grass.



Water

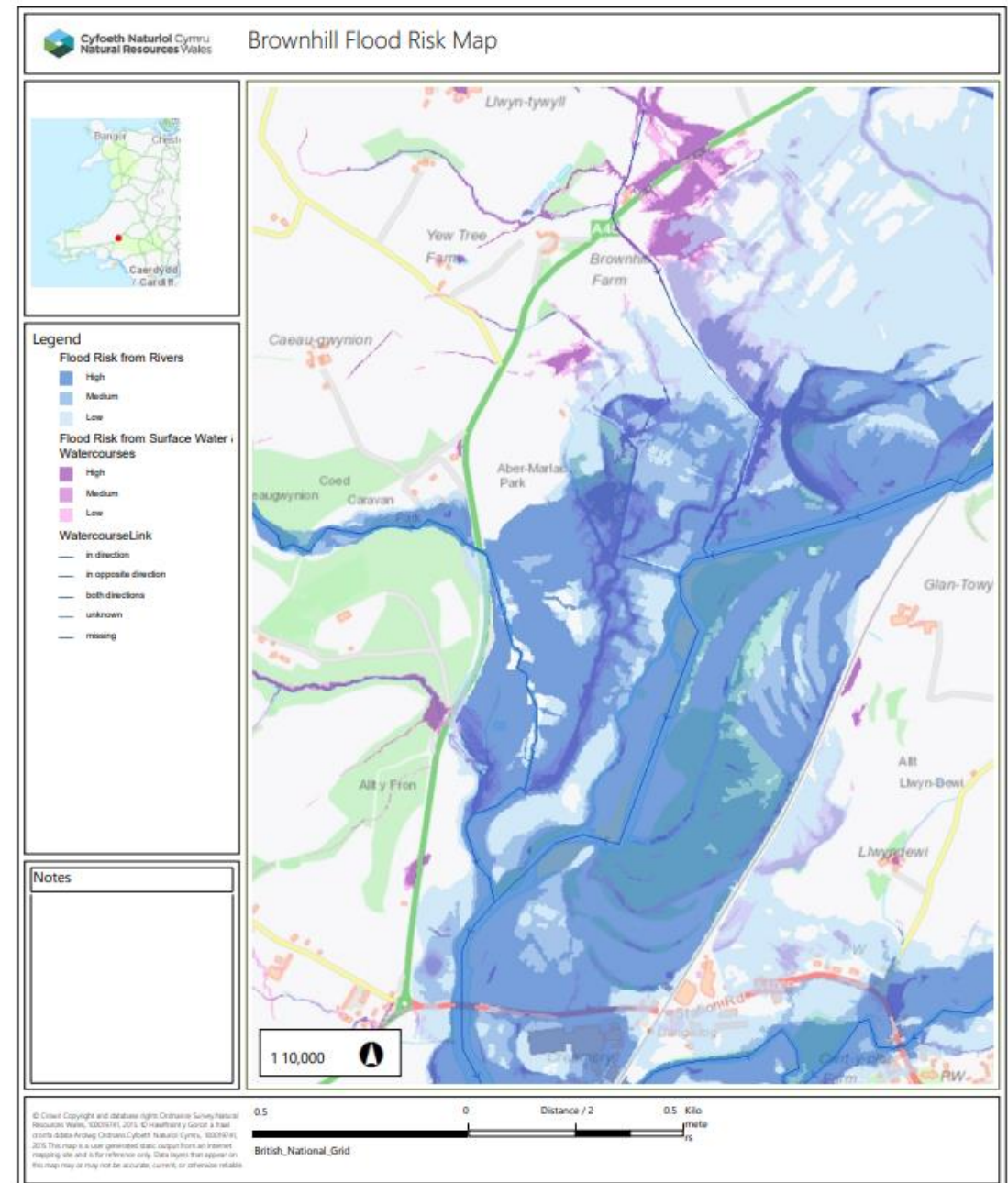
Features of an active floodplain such as oxbow lakes and river channels which support Alder Carr and standing water are present.

The site straddles the Tywi (SSSI and SAC designated). To the East of the main river the land has been left fallow and is developing as naturally regenerated riparian woodland.

Much of the site is at high or medium risk of flooding from the river.

From the SAC management plan:

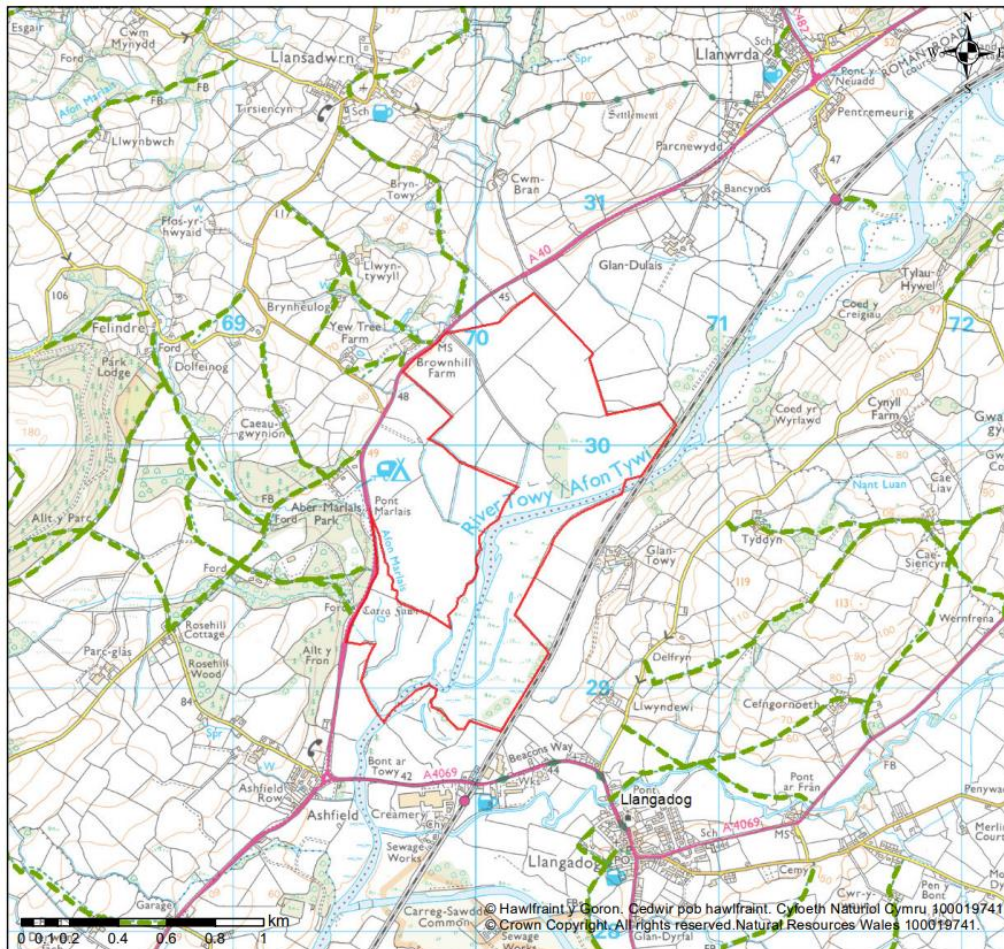
In the Tywi catchment, the most significant sources of diffuse pollution and siltation are from agriculture, including fertiliser run-off, livestock manure, silage effluent and soil erosion from ploughed land. The most intensively used areas such as heavily trampled gateways and tracks can be especially significant sources of polluting run-off.



People

A few properties and businesses border the site on the opposite side of the A40 and there are several neighbouring landowners. There are three nearby villages, Llangadog, Llawrda and Llansadwrn.

The land currently has no public access and, in this area, public access to the river Tywi is limited. A number of public rights of way have the potential to link with the site, however the site does not benefit from direct pedestrian access from any of the local populations. Public transport routes to the site are limited.



 **Cyfoeth Naturiol Cymru**
Natural Resources Wales

Title: **Brownhill adjacent PROW**

Date: 25 October 2022

Author: Miriam Jones-walter

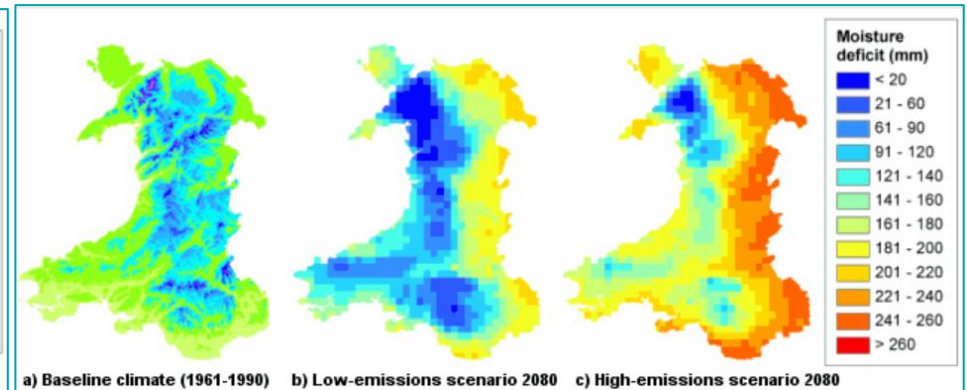
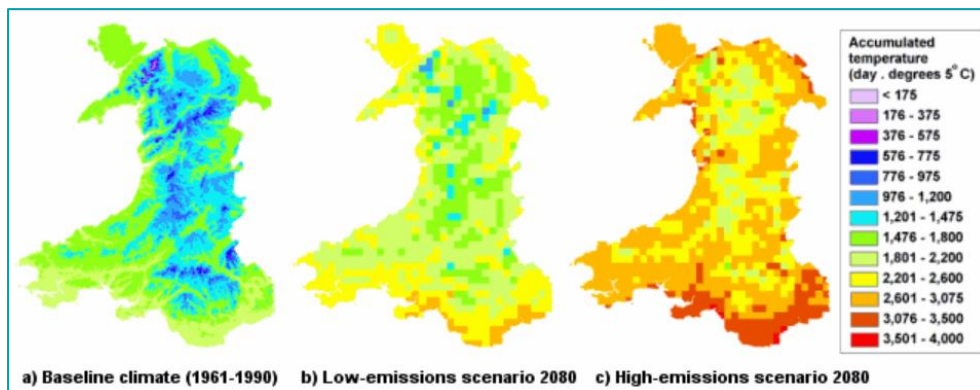
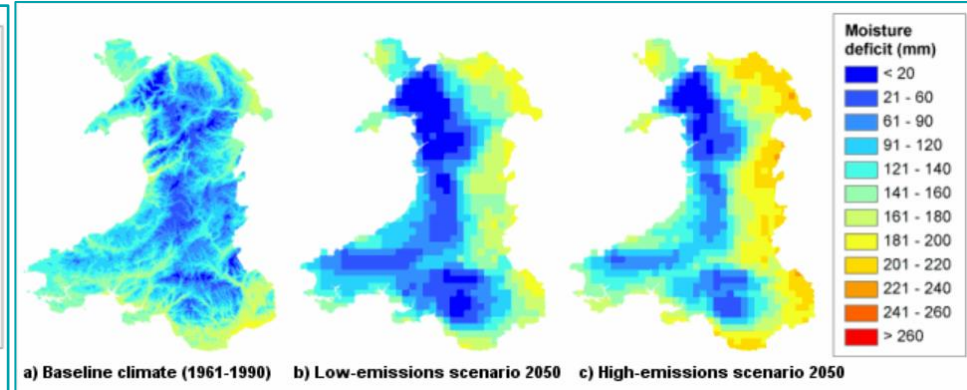
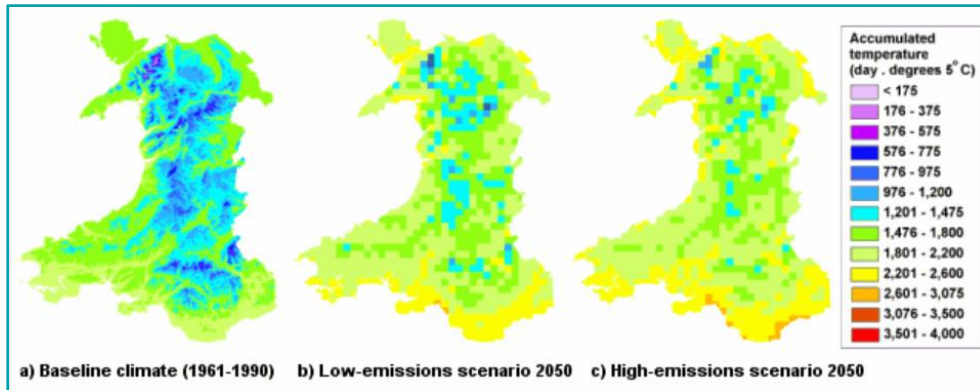
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Public Rights of Way

 Public Rights of Way

Climate Change

Climate change projections show the site is likely to become warmer and drier in the future. The climatic zone for this area of Wales is currently described as 'warm and moist'. In high emissions scenarios much of lowland Wales will be dominated by a 'Warm and dry' climatic zone. This alters the types of vegetation likely to be supported in the area. It is also predicted that extreme weather events will increase. This is likely to mean an increase in frequency and severity of flood events on this site.



Public Consultation results

Phase One

In March 2022 we held a consultation to inform the public about our plans for the site and provide an opportunity for people to raise concerns, questions, and ideas. This was conducted through an online consultation on citizen space and a drop-in event at Llangadog village hall. We also directly contacted the neighbours to the site and key stakeholders. The consultation was advertised via a press release and social media channels.

We received a total of 117 responses, through a combination of mediums: online (via citizen space), at our drop in event and via email and letter. We received 68 responses to the survey which provided an opportunity to input 'free text' comments, the remainder were general comments about the plans.

The greatest proportion of responses cited biodiversity as the most important thing to consider when creating new woodland. We received a range of contributions about how this could be achieved, such as through creation of wetland habitat, reinstating hedges and planting species beneficial to pollinators. Several respondents were concerned about the introduction of public access to the site and the disturbance of wildlife (and neighbouring livestock) from recreation and dogs.

Other suggestions included the potential for planting an orchard, or creating an 'edible' trail through the woodland. Several comments suggested that some of the site could be used for community growing.

Several issues were raised.

- displacing agricultural production from 'good' land was the concern raised most often. This was centred on the most improved fields to the North of the site although some respondents were concerned about the creation of woodland on any of the land.
- accessibility of the site. Pedestrian access from nearby populations is limited by the busy A40 and the site necessitates car travel. The potential for antisocial behaviour was raised, particularly if a car park is created, the provision of bins and toilets was raised.
- Questions regarding the management of deer were raised and the potential for the site to encourage more deer to cross the A40 from neighbouring woodland.

Objectives

As a result of the feedback received in phase one of the public consultation we divided the site into three areas, each of which will be approached slightly differently as set out in the following objectives.

Area One – Conservation space

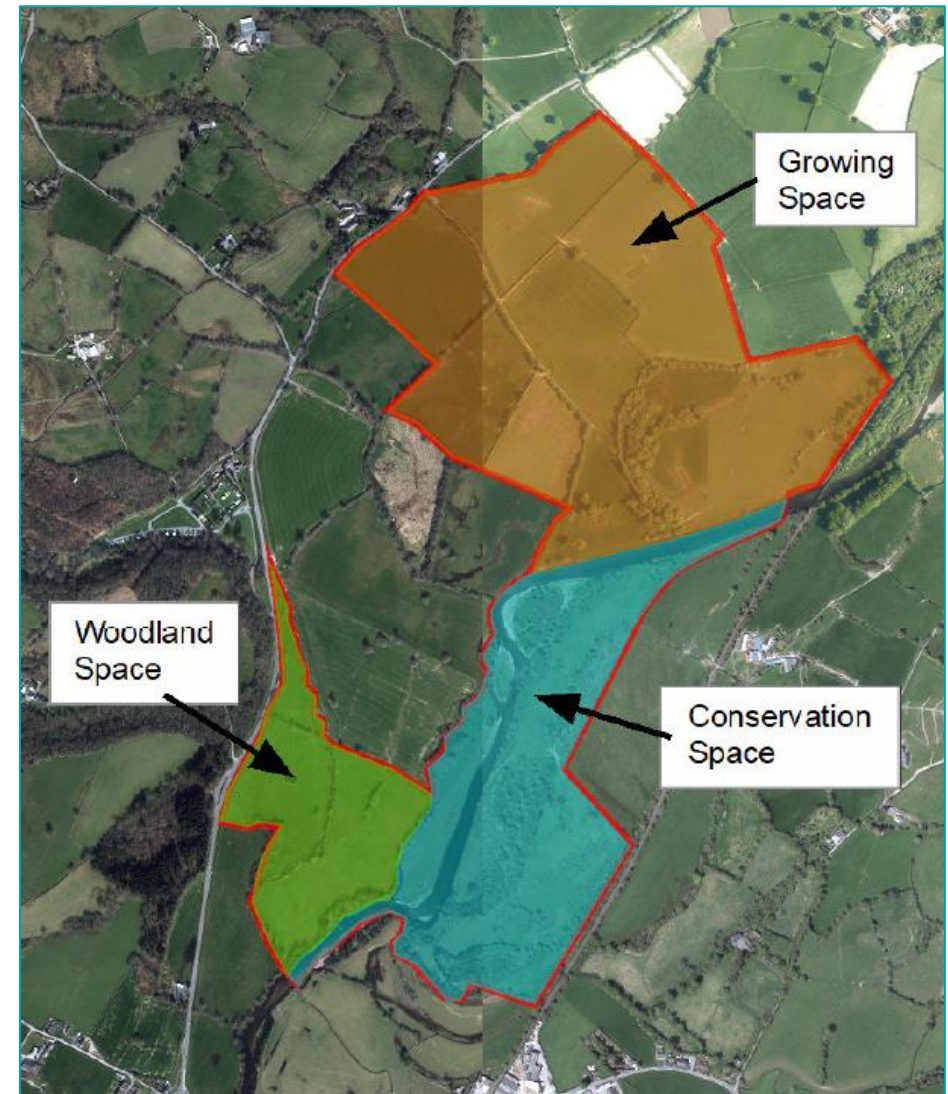
- a. Riparian and wet woodland with minimum intervention primarily to benefit biodiversity and to promote a healthy active floodplain.
- b. Identify areas where the public can safely access the river with minimal disturbance allowing wildlife to flourish.
- c. Improve access points to the river and ensure that anglers can continue to access the space safely.

Area Two – Woodland Space

- a. Create a native broadleaf woodland that maximises habitat diversity.
- b. A contemplative and commemorative space that is accessible to all.
- c. Create a green resource for community use.

Area Three - Growing Space

- a. Work in partnership to deliver sustainable opportunities to grow food, trees, and enhance nature.
- b. Increase tree cover to demonstrate how government planting initiatives to help tackle the climate and nature emergencies can be achieved alongside other land uses.
- c. Improve water quality, soil health and the habitat and species diversity.



Public Consultation results

Phase Two

In response to the initial feedback we carried out a second round of consultation. We focussed discussion for phase two around the more productive fields present on site, the area we called the ‘growing space’ to address the key concern that was raised around displacing agricultural land with woodland.

We received 18 responses to the survey which provided an opportunity to input ‘free text’ comments about the plans. These were online (via citizen space), via email and letter, and in person during a ‘drop-in’ session held on the 14th of July at Llansadwrn Reading Room. The consultation was advertised through a press release to local media and NRW’s social media channels where it was shared with partners. Signage advertising both the drop-in session and consultation was also placed at the community hall in Llansadwrn, with a QR code linking to our website. All participants in phase 1 of the consultation were contacted via email or letter with an invitation to participate.

We recognise there was some opposition about the creation of woodland on the land, however most of the feedback from the first round of consultation indicated general support for the objectives set out for 1, the “Conservation space” and 2, the “Woodland space”. We will approach the design of these areas to ensure public access and space for wildlife complement each other. In the longer term we will investigate ways to make the site more accessible without a car.

For the “Growing Space” We presented several ‘options’ for increasing tree cover alongside continued agricultural production and asked consultees to discuss the various benefits these options might deliver and which they would most like to see established on the site.

Like phase one, habitat diversity was voted as the most important benefit that could be delivered by the various options for tree cover. This was followed by climate change mitigation, interestingly timber/wood products and livestock were voted least important.

Wood pasture and ‘mega hedges’ were the most popular options with ‘community growing/allotments’ receiving the least number of votes. It should be noted that there is some overlap between the options, with parkland (which was the second least popular) being a similar type of land use to wood pasture (most popular). The fact that wood pasture was a more popular option may be due to the association with agriculture versus the more formal ornamental associations that come with parkland.

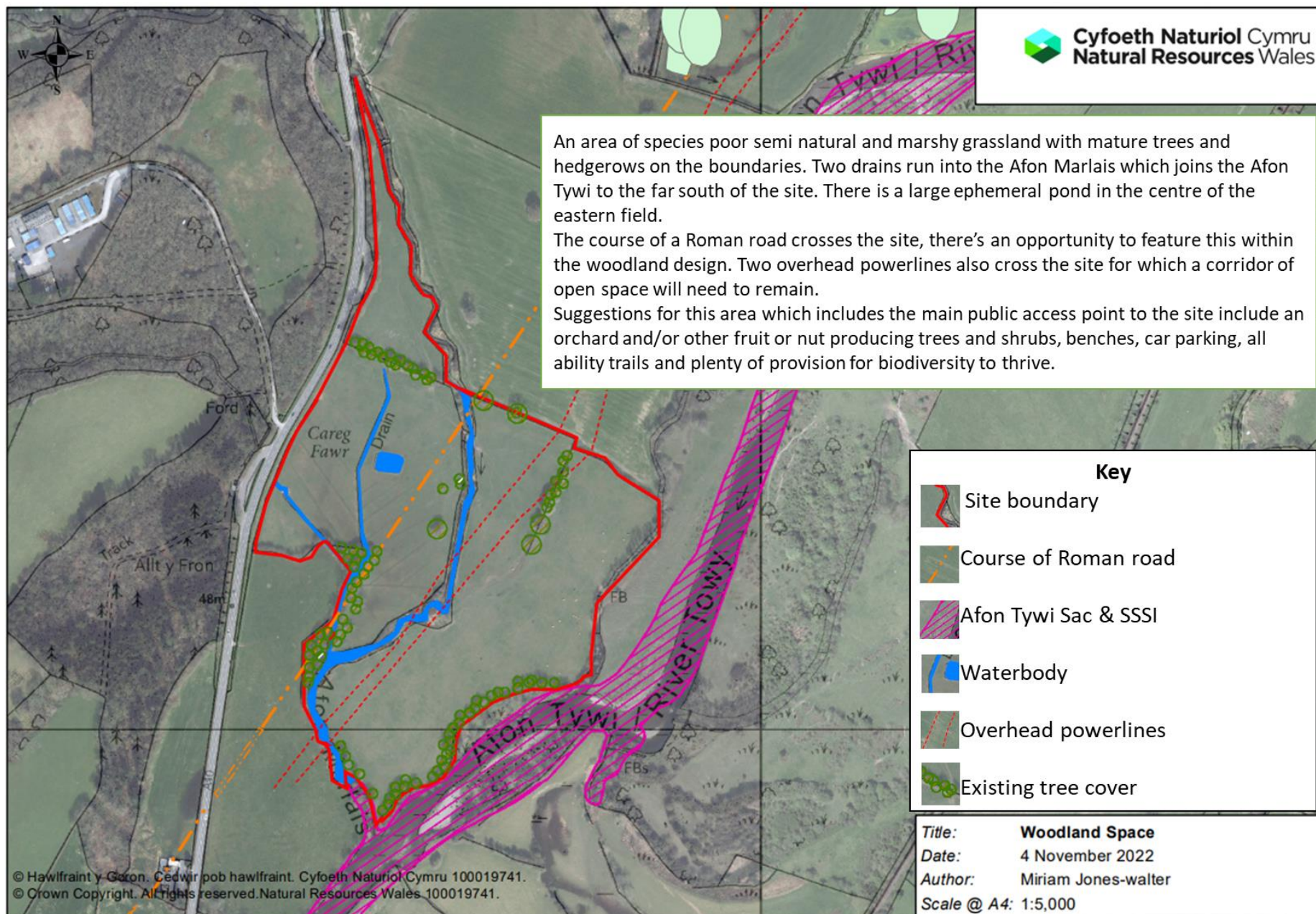


Options (clockwise from top left): Infilling field corners, parkland, orchards, allotments/community growing, wood pasture, groups of infield trees, continuous woodland and ‘mega’ hedges.

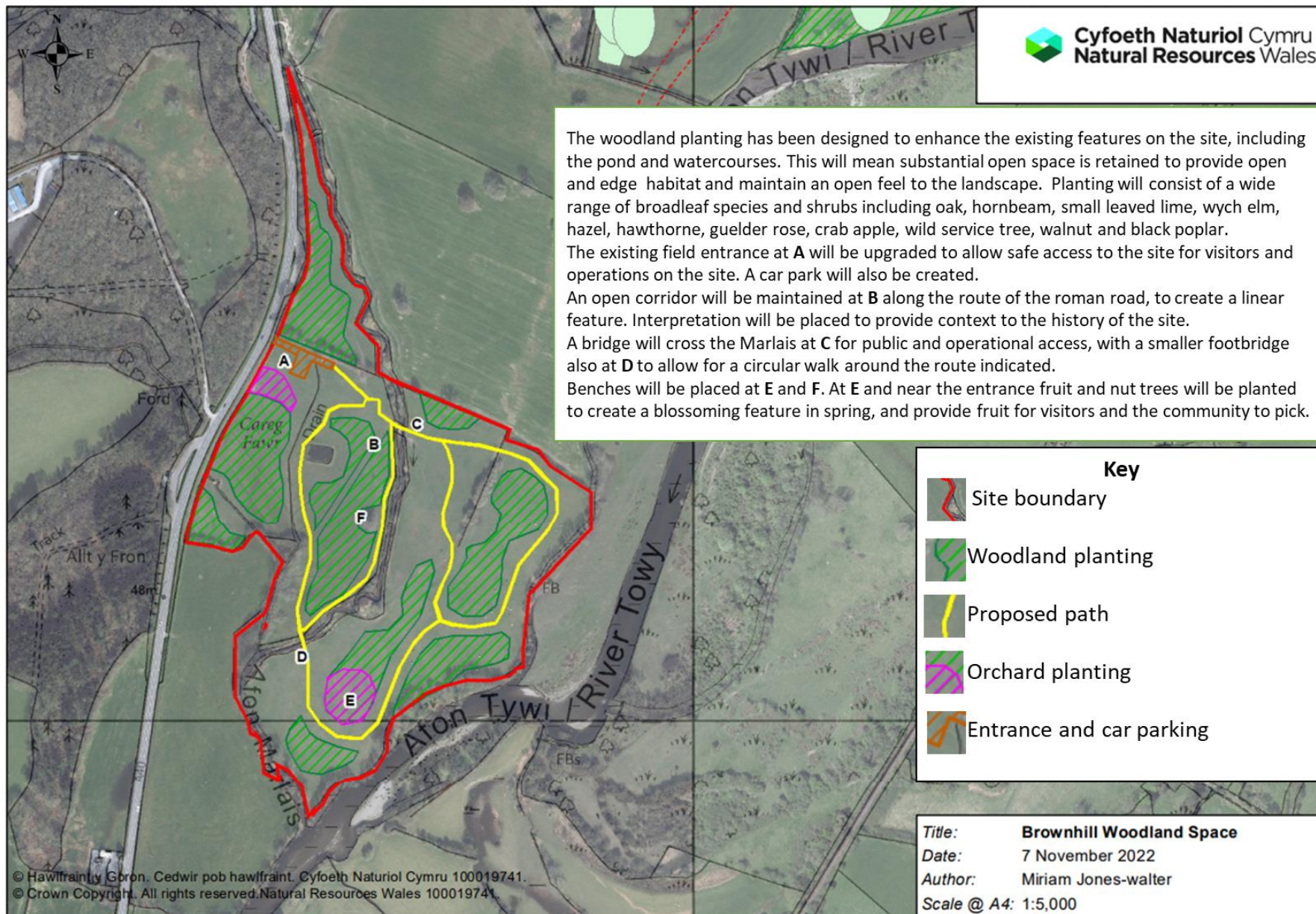
Woodland Plan

The following maps set out the constraints and opportunities as described above. All this information in this document has been brought together to produce the plans for each area.

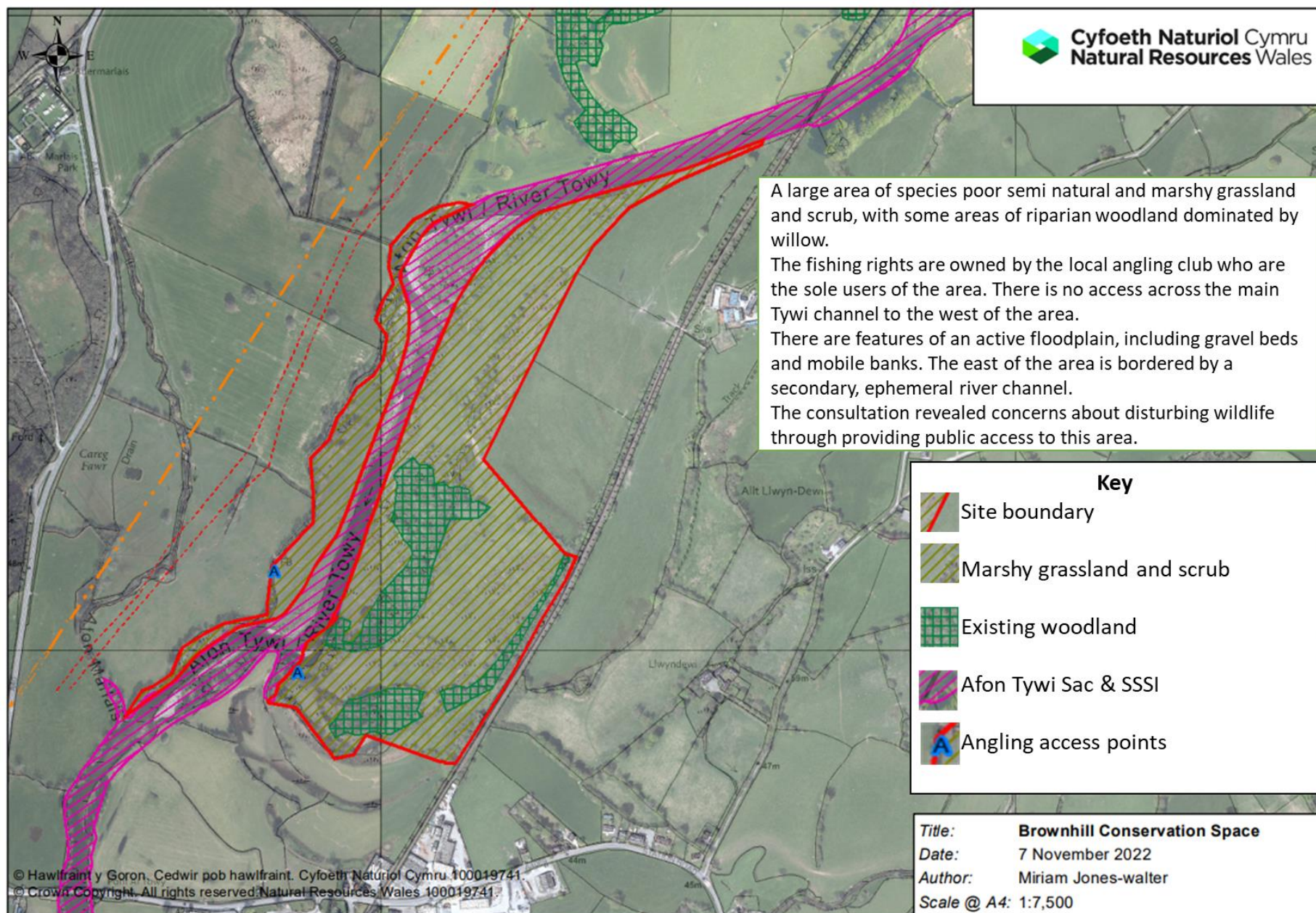
Key Features/ Constraints: Woodland Space



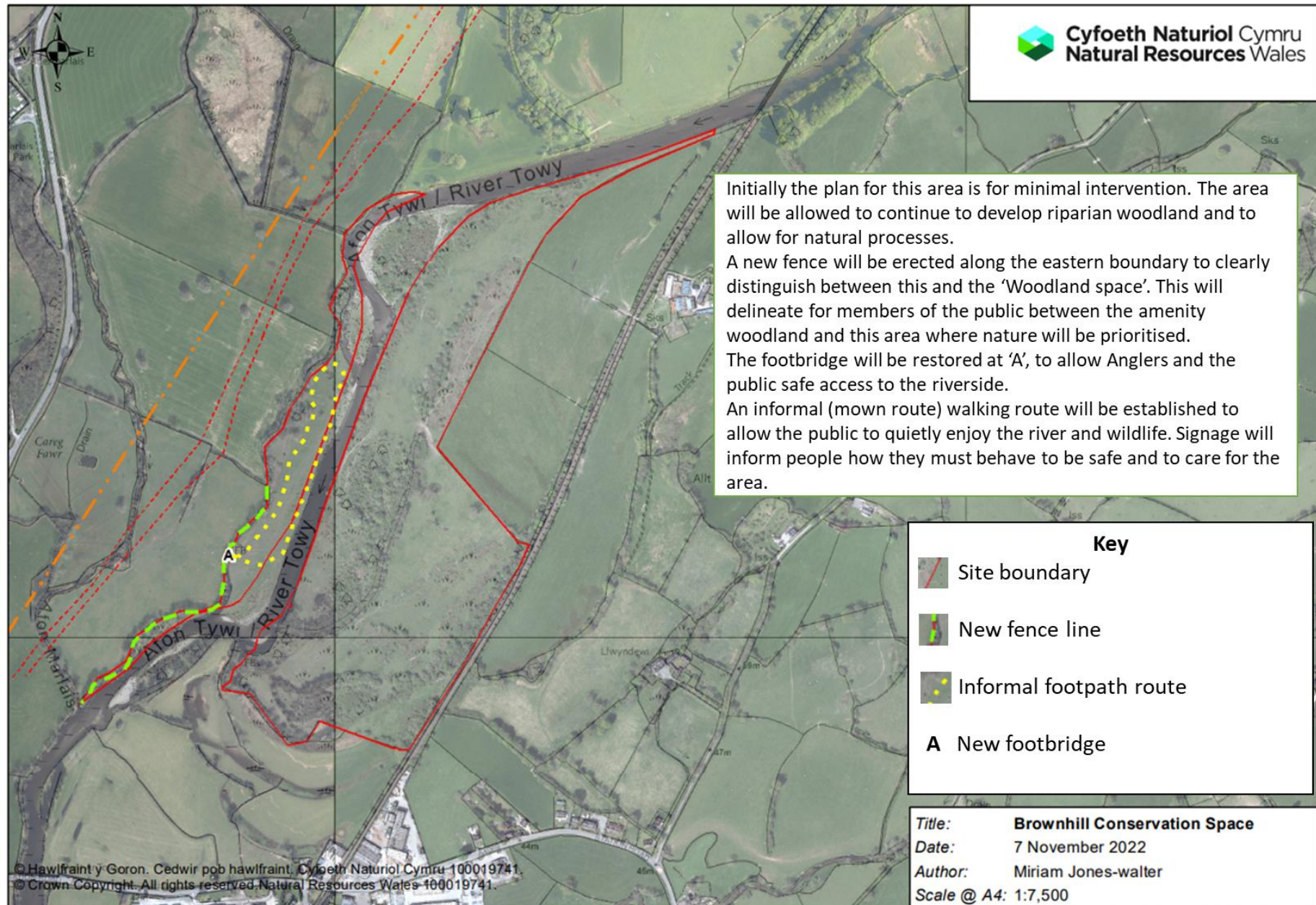
Opportunities: Woodland Space



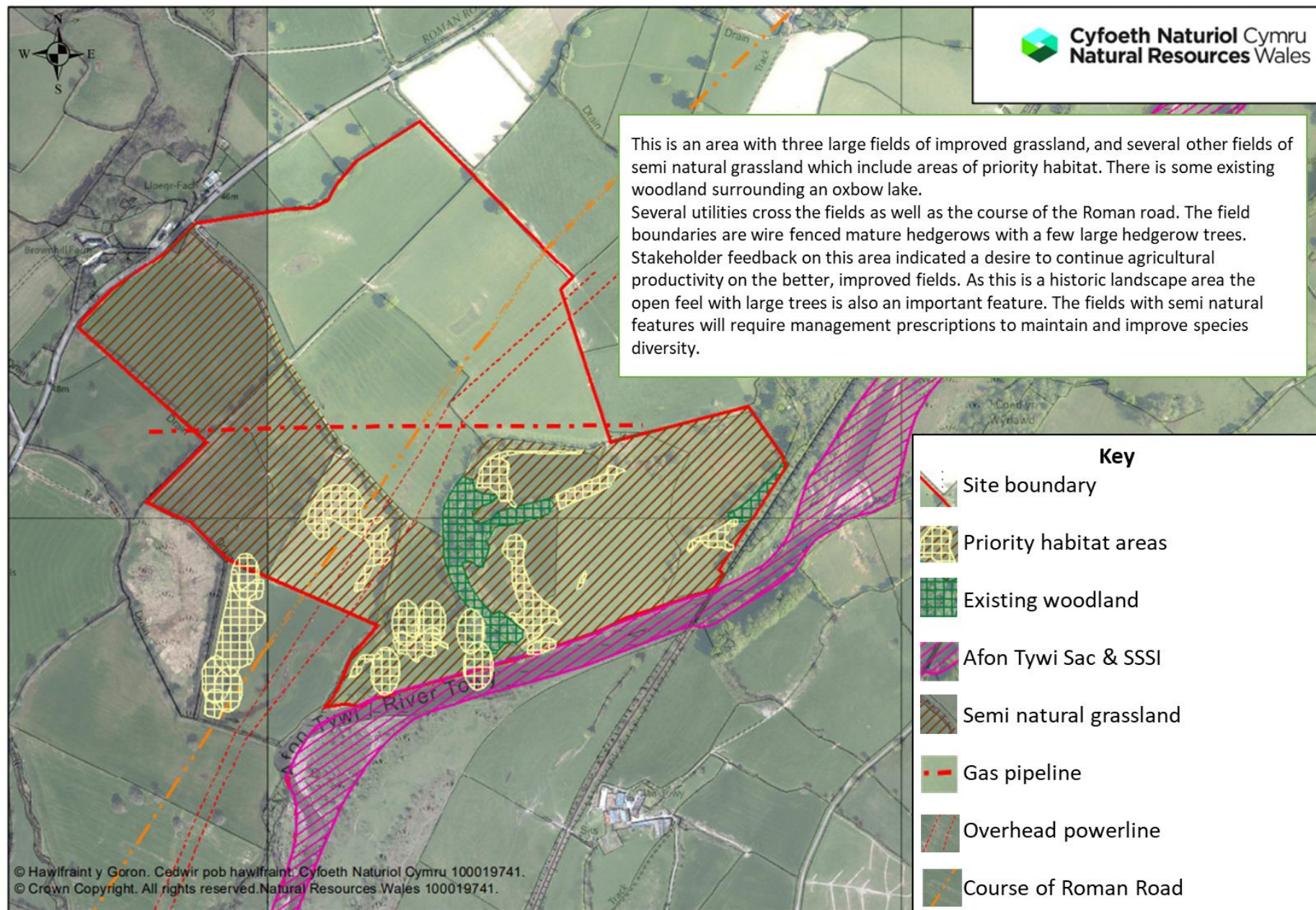
Key Features/ Constraints Conservation Space



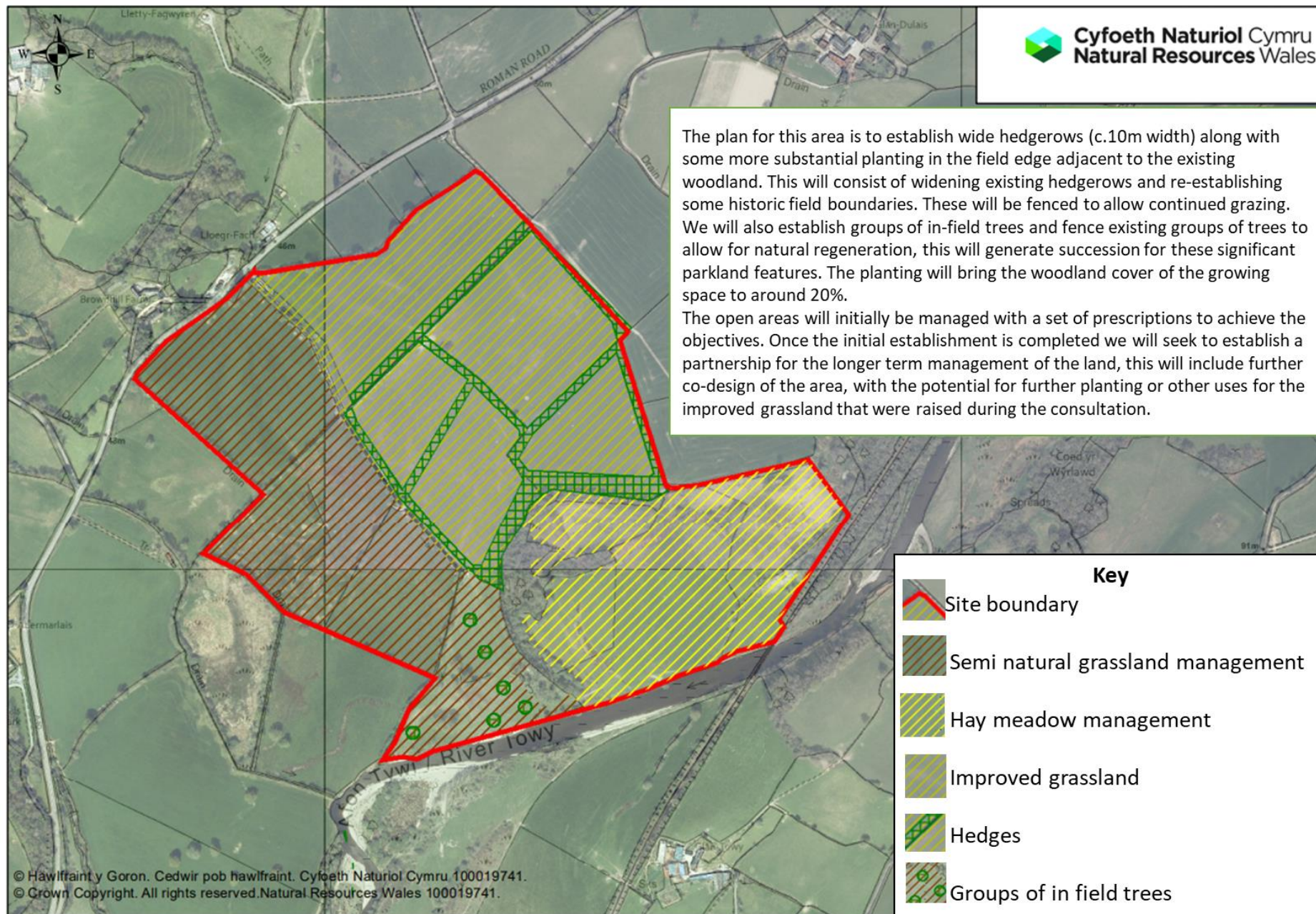
Opportunities Conservation Space






Key Features/ Constraints Growing Space



Opportunities Growing Space



Prescriptions Growing Space

 <p>Semi natural grassland management</p>	<p>To be managed as Grazed permanent pasture with no inputs and mixed grazing. Maintain as grass and rushes by grazing. Cut no more than one third of the area of rushes in each field each year in rotation. Do not cut between 15 March and 1 August. Maintain a sward height where 80% of the grasses (excluding rushes) are between 5 and 30cm.</p> <p>The land must be managed without, inorganic or organic fertilisers (including FYM) and must not be ploughed or cultivated or subjected to any drainage works. Do not harrow or roll between 1 April and 30 June.</p> <p>A minimum of 30% of the livestock units (LUs) must be grazing cattle in each calendar year and a minimum of 15% of the livestock units (LUs) must be grazing sheep in each calendar year. Do not supplementary feed.</p>
 <p>Hay meadow management</p>	<p>As above. In addition, close off meadow from grazing before 15 May. Meadows must be closed off for at least 10 weeks.</p> <p>Do not cut before 8 July. At least 5% of hay meadow must be left uncut each year. Hay meadow aftermaths must not be grazed until at least 4 weeks after the cut. Maintain an aftermath sward height where 80% of the grasses are between 5 and 15cm.</p>
 <p>Improved grassland</p>	<p>To be managed as Grazed permanent pasture with low inputs and mixed grazing. Maintain as grass. Do not apply more than 50Kg/Hectare nitrogen per year as inorganic fertiliser. Where FYM is applied, either alone or in addition to inorganic fertilisers, the total rate of nitrogen must not exceed 100Kgs/Hectare nitrogen per calendar year.</p> <p>Maintain a sward with a range of heights during the growing season. At least 20% of the sward must be less than 7cm and at least 20% must be more than 7cm to allow plants to flower and to provide a more varied habitat. Do not top at any time, except in patches to control injurious weeds (i.e., creeping and spear thistles, curled and broad-leaved docks or common ragwort). Rush may be topped after 15 July. Do not supplementary feed. Do not harrow or roll between 1 April and 30 June.</p>
<p>All areas</p>	<p>On all areas there must be no use of herbicides unless to spot treat and control notifiable weeds or invasive alien species such as spear thistle, creeping thistle, curled dock, broad-leaved dock, ragwort, Japanese knotweed, rhododendron, or Himalayan balsam. If Japanese knotweed and Himalayan balsam occur or colonise within the corridor.</p>

Design Principles

The woodland design will follow the principles of the UK Forestry Standard. The planting will follow these principles to ensure that we meet the objectives as set out above, and considering the input we have received throughout the consultation process so far:

- The areas of priority habitat will be maintained and managed to enhance their habitat value.
- Existing mature trees will be buffered from planting. All the watercourses will be protected with a 20m buffer between bank and tree planting.
- The open spaces will be managed to create a graded edge to the future woodland habitat, this will create a rich network of habitats across the site.
- Existing hedgerows will be allowed to widen and thicken. In the 'Growing space' new hedgerows will be established to restore the historic field boundaries. These will be wide hedges, allowed to mature to produce potential products (such as timber and fodder), providing benefits for stock (shelter and shade), whilst retaining the historic field pattern and pastoral character of the land.
- In the growing space, field corners will be planted up and groups of in field trees will be established, maintaining the "parkland" feel of the landscape and ensuring the succession of veteran trees for the future, enhancing the landscape character seen in the valley.
- Tree species have been chosen to suit the site conditions now and in the future as the climate changes and increase the diversity of species across the site and in the surrounding landscape. Increased diversity is known to increase resistance to disturbances, such as climate change, extreme weather events (such as drought) and pests and diseases.
- The character of the site will change over time, but open areas will be maintained so habitat diversity across the site and views are retained.
- A habitat risk assessment has been carried out to ensure all the operations linked to creating and establishing a woodland do not risk negative impacts to the Afon Tywi SSSI and SAC.

Species Mix

Tree species	Shrubs
<ul style="list-style-type: none">- Pedunculate Oak- Hornbeam- Wild Cherry- Bird Cherry- Black Poplar- Small leaved lime- Common Walnut- Wych Elm- Wild Service Tree	<ul style="list-style-type: none">- Crab apple- Hazel- Hawthorne- Guelder Rose- Damson- Field maple

Timeline

Below is a rough outline of the next steps for the site.

November 2022 to April 2023	<p>Initial planting on the site, including volunteer planting opportunities.</p> <p>Finalise access design and complete preparatory work.</p> <p>Carry out other establishment work such as removal of old fencing and fencing newly planted hedges.</p>
May 2023 to October 2024	<p>Short term grazing lease for growing space in line with prescriptions.</p> <p>Carry out establishment work such as weeding, invasive species control</p> <p>Begin access infrastructure work, entrance, car park and footpaths in the woodland space.</p> <p>Tender exercise for long term partnership on growing space, including further co-design.</p>
November 2023 to April 2024	<p>Remainder of planting on site and beat up of year 1 planting (replacing missing trees).</p> <p>Carry out other establishment work such as fencing newly planted hedges and groups of in-field trees and additional work agreed as part of co-design, also creation of ponds and wet areas.</p>
May 2023 onwards.	<p>Start of long-term partnership agreement.</p> <p>Continued establishment and aftercare work.</p>