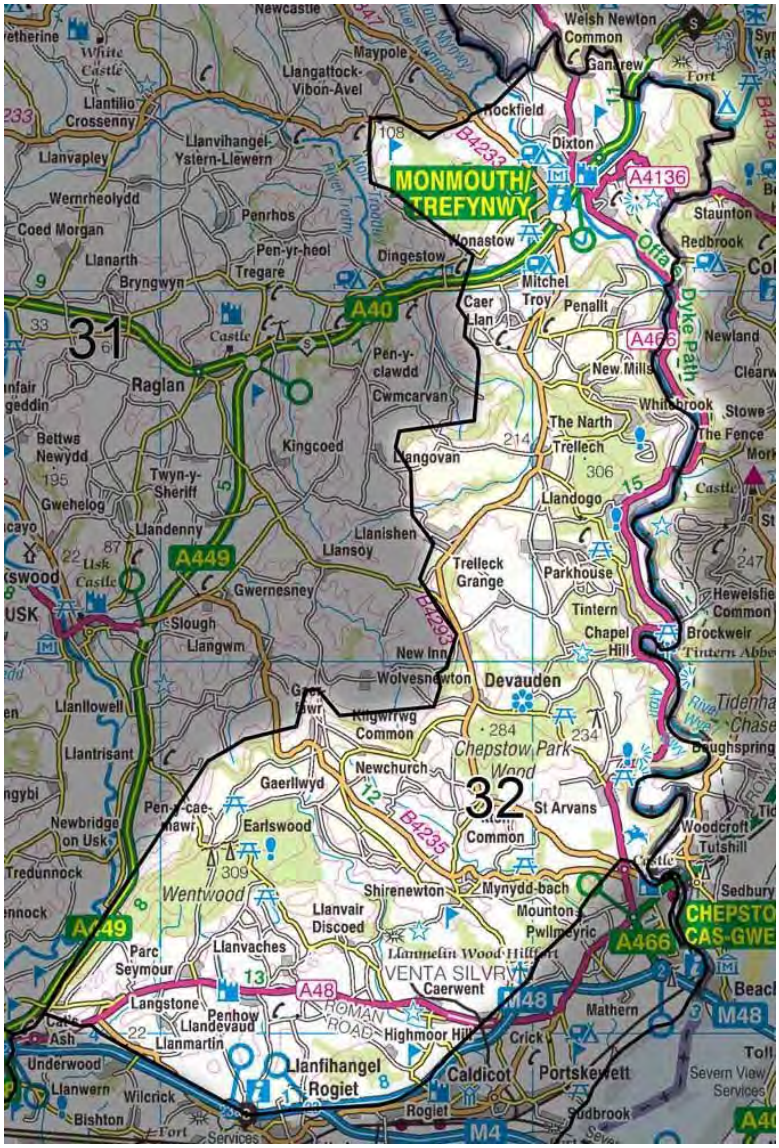
WYE VALLEY AND WENTWOOD
LANDSCAPE PROFILE



1. Overview

Tier	Designation	Name	Area with Wye-Wentwood (Ha)
European	Special Protection Area (SPA)		0
	Special Area of Conservation (SAC)	Wye Valley Woodlands, River Wye, Wye Valley and Forest of Dean Bat Sites	606
National	Area of Outstanding Natural Beauty (AONB)	Wye Valley	11,728
	Sites of Special Scientific Interest (SSSI)	A total of xx sites wholly or partly within NLCA	xx

Before describing the natural resources of the 'Wye to Wentwood Area' and the issues surrounding them, it is imperative to flag some key overarching issues that need to be addressed in order for meaningful progress on the ground to be delivered. Without appropriate mechanisms and resources to influence large scale and long-term change our efforts will be tokenistic. Our hope is that at a national/central level these issues/policies/legislation/resources can be addressed collaboratively by Welsh Government and NRW.

Key Points:-

- Ecosystem Resilience recovers over longer times scales than previous and current agri-environment schemes have permitted and therefore it is essential that longer-term objectives and resource agreements transcend political timescales. Single Farm Payments are claimed by 255 farms in the Wye – Wentwood Area, representing just over 50% of the landscape. Reduced Ecosystem Resilience often relates to the intensification of farming methods (https://www.ipbes.net/global-assessment-reportbiodiversity-ecosystem-service). The scale of the farmed environment presents by far the greatest opportunity to influence positive change. Many of the Area Statements outcomes could be met through the allocation of 'appropriately' incentivised funding and resources to landowners in key areas. This should be provided through a revised, ambitious and targeted Common Agricultural Policy with a long-term view.

- To achieve the sustainable management of natural resources, it is essential that land use decisions are no longer evaluated simply based on measures of economic progress or provision of housing quotas, but fully reflect the impacts (both beneficial and negative) in relation to ecosystem and wellbeing approaches.

As an organisation we need to clarify internally and externally exactly how:-

- Area Statements will influence Local Development Plans and planning decisions to ensure we maintain and enhance biodiversity and promote ecosystem resilience.
- Sites of Importance for Nature Conservation (SINC's) and Section 7 listed habitats and species will be appropriately recognised in the planning process and afforded the protection they require to avoid loss of biodiversity and ecosystem resilience.
- the impacts of development on biodiversity and ecosystem will be audited at a national scale. NRW should highlight this as a need to WG when developing further guidance following review of the Section 6 reports published by the Public Authorities in 2019. This will allow us to begin the discussion of the impacts that human population expansion (and lifestyles) is having on the environment – currently an elephant in the room.

- As an organisation NRW would stand to benefit from undertaking a review of all legislation within its remit and the powers of influence these permit it. The allocation of resources could then be targeted towards areas of its legal remit with the greatest potential to deliver the aspirations of the Area Statements and its overriding purpose to pursue and apply the principles of sustainable management of natural resources.

The following Broad Habitat Categories are listed in order of their abundance. Whilst habitats like semi-natural grasslands, peatlands, fens and swamps are rare and should by default be maintained, enhanced and increased as a priority, the importance of the farmed and wooded landscape to assist with these objectives should be embraced. In addition, specialist groups such as the deadwood invertebrates of the parkland sites and woodlands of the Wye to Wentwood area should not be overlooked.

It has not been possible to write sections on every broad habitat type. Effort has therefore been focussed towards habitat types that are prevalent in the Wye to Wentwood area. A lot of the data used in the following sections is historic (e.g. Phase I data from 1979-1997) and some datasets were not used because they were not set up to be easily queried in ArcGIS – datasets like the Sites of Importance for Nature Conservation (SINC) layers could be tidied up in time and used to provide a better interpretation of the extent of our natural resources. Whether we or our partners have more up to date information needs to be explored – forestry colleagues will undoubtedly be able to provide more up to date figures on the composition of the Welsh Government Woodland Estate (WGWE) along with projected targets. The restrictions around the use of datasets for public consumption will also need to be reviewed/confirmed in the future.

This is a first attempt at providing an overview of the natural resources of the Wye – Wentwood Area and the opportunities and issues surrounding them. This provides an overview to build from through discussions with partners. It is by no means exhaustive and all contributions comments and opinions are welcome.

2. Ecosystems (broad habitats) and natural resources: What have we got, and what is special or significant about them in this landscape?

Woodlands

Found along the steeply sloping valley sides of the River Wye, the Wye Valley Woodlands Special Area of Conservation (SAC) forms part of this important resource and is internationally important for its beech, yew and ash woodlands. It also includes considerable plantations of conifer to the south including Chepstow Park Wood and Wentwood.

The Wye to Wentwood area is a heavily wooded landscape. Previous Phase I habitat mapping has shown that coniferous, mixed, broadleaf plantation and ancient semi-natural woodlands collectively covered 6,796Ha, roughly 30% of the landscape in this area (see table 3.1), the highest percentage cover of woodland in any of the National Landscape Character Areas (NLCA) in the SE Area by some way.

Table 3.1 – Extent of woodland communities (including parklands/wood pasture, traditional orchards & dense scrub) from historic Phase I data (collected between 1979-97)

Woodland Type	Extent of woodland (Ha)	Percentage cover of the 'Wye to Wentwood' Landscape Area (%)
Coniferous Woodland	3450.34	14.85
Ancient Semi-natural Woodland	2195.97	9.45
Plantation Broadleaved Woodland	823.22	3.54
Plantation Mixed Woodland	327.08	1.41
Parkland/Wood Pasture	174.88	0.75
Traditional Orchards	127.19	0.55
Dense Scrub	92.44	0.4
Semi-natural Mixed Woodland	0.92	0

Ancient Semi-natural woodlands (ASNW)

The 'ancient semi-natural woodlands' (wooded since AD1600) are the best examples of resilient woodland ecosystems, supporting a diverse array of typical woodland species (and ecological processes) dictated by 3 key environmental gradients - soil base status, hydrological regime and upland/lowland setting of the area. The biodiversity that these sites support will also be determined by historic and recent levels of human interventions that can have a bearing on the complexity and variety of a woodland's structure, along with the introductions of invasive non-native species.

Ancient semi-natural broadleaved woodlands cover just shy of 10% of the Wye to Wentwood area. The internationally important Wye Valley Woodlands Special Area of Conservation spans both the English and Welsh sides of the Lower Wye Valley. These blocks of ancient semi-natural woodland comprise over 900Ha of some of the best mixed ash, beech and yew woodlands in the UK.
The yew woodland situated on underlying limestone bedrock at Blackcliff/Wyndcliff SSSI and Pierce, Alcove and Piercefield Wood SSSI is nationally rare, with the only other Welsh example found at Creuddyn SSSI near Llandudno. These areas of exposed limestone in the Wye Valley support the second most diverse whitebeam assemblage in the UK, the UK being one of only 3 key hotspots for whitebeam in Europe. An array of rare bryophytes are also found on exposed limestone bedrock such as the nationally rare *Seligeria campylopoda* (90% of the UK population is found in the Wye Valley) amongst others.

The beech woodland that also grows in association with the underlying limestone is at the north western edge of its UK distribution and supports rarities such as the Yellow Bird's-nest Orchid and Hawfinch (the Wye Valley and Forest of Dean landscape being one of a handful of Hawfinch strongholds left in the UK).

The small leaved lime trees found throughout the ash woodland are at the western edge of their distribution in Europe and support a number of rare host dependant species including the scarce hook-tip moth and the bast bark beetle. Wet runnels in these ash woodlands support diverse bryophyte assemblages and rare species such as the oceanic bryophyte *Jubula hutchinsiae* and the caddis fly (*Adicella filicornis*) known from only 4 sites in Wales.

Other examples of important ancient semi-natural woodland sites in the Wye to Wentwood area include Coombe Valley Woods SSSI (upland mixed ash woodland), Penhow Woods SSSI (lowland mixed deciduous woodland) and Parkhouse Woods SSSI (upland oak woodland at the south eastern edge of its range) amongst others.

The woodlands, hedgerows, cave networks and old buildings and man-made structures of the Wye Valley and the Forest of Dean landscape support the strongest Lesser Horseshoe Bat population in Wales, along with other known rarities including Greater Horseshoe Bats, Barbastelle Bats and Bechstein's Bats.

As the Wye to Wentwood area already has a relatively well connected woodland resource, the key priorities to retain and enhance the resilience of the ASNW ecosystem should be to:-

1) **Ensure woodland habitats and features of the designated sites series are in favourable condition.** This will require monitoring of the sites/features to ascertain their condition and to determine and implement necessary management required to maintain and increase the biodiversity resource they harbour. This will involve the use of Section 16 agreements to deliver management options from thinning, coppice rotation, non-intervention, invasive species management to deer management.

2) **Improve woodland linkages** in order to enhance the ability of woodland species to move across the landscape **at two main gaps/barriers** (see Appendix 8):-

- Wentwood to Chepstow Park Wood (crossing the B4235)
- Trellech to Hendre (crossing the A40)

The bulk of the land in these areas is under private ownership and therefore landowners would need appropriate incentives from the Welsh Government in the form of woodland creation and management schemes along with targeted agri-environment options aimed and making the farmland in these areas more suitable to woodland species e.g. promotion of scrubby margins and natural regeneration, widening of hedgerows and promotion of trees within the landscape. To promote the migration of mobile species and reduce the incidents of road collisions, overpasses could be installed along the A40 and B4235 once woodland connectivity has been established.
(https://www.highwaywilding.org/index.php?fromsite=1)

The creation of woodland should be based on allowing nature to take its course, ultimately through taking land out of farmed production for the long term and being set aside for woodland reversion. This approach would ensure that the soil biota would recover and native species that are adapted to live in the setting would colonise through successional processes ensuring ecosystem resilience. The mycological associations, regeneration processes and wood decay processes are all vital components of a woodland to ensure a diverse structure and composition of associated wildlife. Resilient woodland ecosystems cannot simply be planted but instead take centuries to establish.

Work could be undertaken to identify key areas with the greatest potential for creation of specific (or preferable/rarer) woodland types based on environmental parameters (e.g. riparian woodlands, floodplain woodlands, yew woodlands) whilst also taking into consideration the connectivity requirements needed for higher priority habitat types such as bog, fen, swamp, lowland heath & semi natural grasslands (see Sections 1 and 2). Some examples of locations to target efforts can be found in Appendix 9 and 10. These woodland creation areas (and other habitat connectivity proposals) should be checked past current Flood Risk Management Plans (along with SCANN mapping and Community Risk Registers) to see if they fall within the footprint of proposals and could be bolted onto existing or proposed schemes. Restoration of degraded habitats and the natural re-establishment of habitats should be taken into consideration both for their ecological and flood risk merits. The 'Working with Natural Processes: Evidence Directory' provides a useful overview of the current evidence base around the effectiveness of nature-based solutions to flood alleviation – https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/681411/Working_with_natural_processes_evidence_directory.pdf

3) **Where necessary, improve the management of ASNW on the WGWE**. NRW are responsible for just under 600Ha of ASNW. Forest Resource Plans and more importantly local coupe plans should include detailed management prescriptions for areas of ASNW, with Section 7 listed habitats and species amongst the primary drivers for management decisions.

4) **Influence positive management of privately owned ASNW**. The bulk of the ASNW resource is in private ownership 1,559Ha (almost 7% of the Wye to Wentwood area) which apart from designated sites is outside of NRW's jurisdiction. Welsh Government Woodland Management Schemes/Incentives are needed and should be aimed at managing these woodlands for the benefit of the Section 7 listed habitats and species they harbour or that are in the near vicinity.

Coniferous Woodlands

NRW are responsible through their management of the Welsh Government Woodland Estate (WGWE) for 2,413Ha of coniferous woodland see table 3.2 below.

Table 3.2 – Extent of coniferous woodland ownership taken from historic Phase I data (collected between 1979-97)

Land Owner	Extent of woodland (Ha)	Percentage cover of the 'Wye to Wentwood' Landscape Area (%)
NRW	2413.45	10
Private	616.36	2.65
Woodland Trust	358.24	1.5
Ministry of Defence	62.57	0.26

The reversion of Plantation on Ancient Woodland Sites (PAWS) to native broadleaved woodlands through natural regeneration is the key area through which NRW can have a direct and significant impact on the extent of broadleaved woodland habitats but also and more importantly the connectivity of open habitats (see Sections 1 and 2).

The potential to maximise the ecological connectivity of rarer habitat communities and implement management requirements of rare species should be taken into consideration at both the Forest Resource Plan level as well as the local coupe plan level. The focus of these plans should aim to improve connectivity of grassland or wetland habitat types through the creation of extensive glade networks or belts of wood pasture.

- Woodlands for Wales: The Welsh Government's Strategy for Woodlands and Trees (https://gov.wales/sites/default/files/publications/2018-06/woodlands-for-walesstrategy_0.pdf)

Wood Pasture, Parkland, Traditional Orchards & Hedgerows

In the UK, the natural decay processes of wood are key to the survival of over 2,000 invertebrate species that require them to complete their life cycles, known as 'saproxylic' invertebrates. These decay processes provide a broad array of ecological niches, including:-

- Heartwood decay
- Rot holes
- Fruiting bodies of fungi
- Exposed wood (caused by physical damage)
- Freshly dead and dying bark (and the decay of the sugars in the phloem by fungi)
- Standing deadwood
- Decaying wood lying in water
- Decaying roots
- Sap runs

More information about these ecological niches and the types of species that frequent them can be found at:-
http://www.ancienttreeforum.co.uk/ancient-trees/ancient-tree-ecology-wildlife/invertebrates/
http://www.ancienttreeforum.co.uk/ancient-trees/ancient-tree-ecology-wildlife/fungi/

The diversity of saproxylic invertebrate in any given habitat is determined by tree age structure, quantity, quality and variety of available dead and decaying wood, tree density and the continuity/connectivity of the deadwood resource. All of these parameters stand to be influenced by management practices ranging from typical forestry operations (thinning, clear felling, coppice, removal of ivy), hedgerow management, tree safety operations to removal of fallen deadwood from parks.

The key habitats with the potential to support saproxylic invertebrates are typically woodlands, wood pasture, parklands, traditional orchards and ancient or veteran trees located either within ancient hedgerows or free standing in the wider landscape. Various parts of the Wye to Wentwood area have a good representation of these habitat types.

Complex networks of small fields supporting ancient hedgerows and veteran trees are apparent in the vicinities of Catbrook, Parkhouse, Pentwyn, Tre-gagle, Mitchel Troy and Earlswood amongst others. These networks of ancient hedgerows provide invaluable connectivity and stepping stones not only for saproxylic invertebrates but also for any wildlife dependant on the wooded environment for dispersal. Where the landscape is not subject to high agricultural inputs the open margins of hedgerows can also support good floral diversity. **These historic networks of ancient hedgerows need to be maintained and managed to prolong their value in combination with improving and promoting a similar hedgerow network in the parts of the SE area where hedgerows are sparser and more heavily managed.**

127Ha of traditional orchards were identified in the Wye to Wentwood area during the Phase I survey of 1979-1997, we do not know how many of these remain. Fruit trees within 'traditional' orchards were planted at greater spacings, allowing them to grow bigger and therefore support a greater abundance of structural variation and decay.

The most obvious accumulations of these orchards appear to be scattered across the landscape between Mitchel Troy, Blackbrook, Tre-gagle and the northern edge of Trelleck Hill (See Appendix 11). Whilst a lot of these orchards are small in size, they provide a valuable contribution to the deadwood resource of an area along with the early blossom/nectaring resource, important for early emerging insects. Whilst agri-environment schemes aimed at encouraging farmers to establish orchards of a traditional nature would be unlikely to receive much uptake, **the planting of fruit trees or other trees with blossom (e.g. Blackthorn, Hawthorn, Elder) could be incorporated as part of wider tree planting initiatives (see below). The importance of traditional orchards should also be highlighted to smallholders and community groups etc. who may be more likely to create orchards or plant the odd tree.** We would first need to establish which community groups are active in the area and ascertain if any works are ongoing with the 'Orchard Network' (https://ptes.org/campaigns/traditional-orchard-project/orchard-network).

The most important sites for diverse assemblages of saproxylic invertebrates are parklands and wood pastures. The historic longevity of these sites and the high numbers of veteran trees they support provide an abundance of key saproxylic niches (e.g. heart rot decay of veteran standards) seldom found in a closed woodland setting and thus home to some of our rarest saproxylic species. Great Britain is richer in ancient and veteran trees than most of continental European holding approximately 60% of Europe's ancient oaks.

Between 1993-1996, the Countryside Council for Wales contracted a provisional survey of Welsh parkland sites (Hammond & Hine, 1994). This work highlighted a number of sites considered to be of importance for their saproxylic assemblages in both a Welsh setting (7 sites) and a UK setting (6 sites). Of these Llanover Park, Wyelands & Piercefield Park were deemed of U.K significance. It should be noted that Dingestow Court was not visited as part of the parkland survey and is also of significant potential for saproxylic invertebrates. Other parkland sites that stand to harbour saproxylic invertebrates and act as potential stepping-stones for these poor colonisers are Penhein, Clytha Park, Oakgrove and Itton Court.

There are two key areas within the SE Area for parkland sites; namely:-

- Ysgrydd Fach to Hendre (see Appendix 12)
- Earlswood, Llanvaches, Shirenewton & St Arvans (see Appendix 13).

These two areas should be the focus of future survey to build on our limited knowledge of the saproxylic assemblages in these regions (using a combination of hand searching and flight interception trapping techniques). **Future survey should primarily focus on sites of UK significance to build on our current limited knowledge of the importance of these sites.** As part of this survey work, any sites that qualify for SSSI selection in accordance with the revised SSSI selection criteria should be notified to safeguard their resource and provide NRW an opportunity to improve their management through Section 16 agreements.

The abundance of the deadwood resource (and the myriad of ecological niches it supports) within a landscape cannot be created in the cycles of a typical agri-environmental scheme or

management agreement. It is therefore important that we begin to understand where the current deadwood resource of value lies and what species it supports. By identifying this, we can begin to build resilience through a) **recognising and retaining the deadwood resource of importance within the landscape b) planting tree species of relevance to the landscape based on the ecological niches required by the rarest saproxylic species in the vicinity** (e.g. a rare beetle specifically dependant on the heartwood decay of veteran oak trees would not stand to benefit in the long term from the planting of a grove of sweet chestnut trees).

Farm holdings located within the two key areas highlighted for 'future provision of deadwood' (Appendices 12 and 13) should be encouraged through appropriate agri-environment schemes to preserve and promote ancient and veteran trees (and their deadwood) within the farmed landscape along with the planting of copses of appropriate species to be excluded from stock that will provide the stepping-stones within the landscape in future centuries.

The preservation of any existing deadwood resource of 'genuine' value along with the provision of future deadwood resource should be a key priority for NRW when undertaking coupe planning across the WGWE in the 'Wye to Wentwood' and 'Central Monmouthshire' areas. Work to develop a GIS tool for staff responsible for coupe planning would be of value as an early indicator of considerations to be factored into coupe planning around both saproxylic invertebrates and lichens and bryophytes of the parkland setting.

The typical assemblages of fungi that are primarily responsible for the decay processes of wood and various mycorrhizal associations within woodland communities need to be better understood in order to build our understanding of what species constitute a resilient woodland ecosystem, starting from the soil up. There are a number of rare fungi within the Wye to Wentwood area including the only known record of the Goliath Webcap (*Cortinarius praestans*) in Wales and 7 species new to Wales were recently recorded in the Wye Valley including the nationally rare *Chlorencoelia versiformis*.

Through appropriately targeted survey and research, sites of importance for Lignicolous saprotrophic fungi on beech, globally threatened species or species of conservation concern in Europe can be identified and protected in compliance with the SSSI selection criteria.

Freshwater – Open waters, Wetlands & Floodplains

The area is dominated by the lowermost reach of the River Wye, where it forms the largest and longest river gorge in Wales and becomes confluent with the River Severn at Chepstow. The River Wye SAC is internationally important for its migratory and non-migratory fish including Atlantic Salmon, lamprey and shad, Otters and beds of River Water Crow-foot. Both the River, its tributaries and their geomorphology also form special qualities of the Wye Valley Area of Outstanding Natural Beauty.

Semi-Natural Grasslands

The semi-natural grasslands habitats across the South East Area (as with much of Wales) are heavily fragmented. Within the 'Wye to Wentwood' area there are approximately 71Ha of lowland neutral grassland, 7Ha of lowland calcareous grassland, 53Ha of lowland acid grassland and 20Ha of marshy grassland (collectively covering 0.66% of the 'Wye to Wentwood' area). It is important to note that data from the Gwent Grassland Initiative, SINC layer and potentially the Monmouth Meadows Group could potentially be included in this assessment in the future (depending on GDPR restrictions etc.).

These species-rich grasslands, including their small field pattern, often bounded by drystone walls or old hedges form another of special quality of the Wye Valley AONB.

All Sites of Special Scientific Interest (SSSI) with grassland features (and associated species) need a reviewed assessment of their condition. These condition assessments will be used to inform the implementation of suitable management to either a) maintain good condition or b) get failing sites into good condition.

Ecological connectivity and prioritisation mapping undertaken by CCW (Latham et al. 2013) has identified a number of priority grassland areas based on a combination of threats faced and/or potential for ecological benefits to be achieved. We have therefore highlighted what we perceive to be the most significant concentrations of unimproved grasslands where effort should be focussed to provide the greatest possible benefits for the grassland community types in the Wye to Wentwood area.

A key area for **grasslands of a calcareous nature** (typically MG5b) falls roughly within the settlements of Crick, Magor, Llanvaches and Shirenewton. This area includes a handful of protected grassland sites including Dinham Meadows SSSI (and wider Caerwent Military Base) and Brockwells Meadows SSSI, along with other significant grassland sites around Five Lanes, Woodcock Hill and Slade Wood. Other smaller parcels of calcareous grassland are present on shallow unimproved soils within this location and further north west following the route of the underlying limestone bedrock (see Appendix 2).
The main priorities for this calcareous belt are **to notify any existing grasslands sites that meet the SSSI selection criteria**. **The condition of all other sites should be assessed and where necessary their condition improved through appropriate landowner engagement and management practices**. The potential for **creation of additional calcareous grassland habitats** at sites with an appropriate soil profile and underlying geology (e.g. Caerwent Quarry, Ifton Quarry, Livox Quarry) should be identified and approached with appropriate incentives to encourage promotion of this rare habitat.
The unimproved grasslands within this area are also important for a number of rare insects including:-

- the hornet robber fly that requires cattle or pony grazed pastures with a diverse invertebrate dung fauna (see section 4).
- the scabious bee that forages primarily on field scabious plants found in unimproved grasslands
- The long-horned bee that forages on calcareous grasslands in this area.

Marshy grassland communities are sparsely scattered in the Wye to Wentwood area, typically limited to small field parcels around the fringes of the Trellech plateau and Whiteleye Common or else found in association with bog and fen communities. The two most apparent aggregations of marshy grasslands are further south around the villages of Langstone and Shirenewton. Within the vicinity of both of these villages, the **priority should be to assess the potential for improvement of existing marshy grasslands sites in the vicinity of Langstone-Llanmartin Meadows SSSI and Llwyn y Celyn SSSI** (see Appendices 3 and 4). In addition to this aspiration, efforts should also aim to:-

- **Increase the extent** and condition of marshy grassland habitats (outside of the SSSI series) through restoration of any existing fen meadows, rush pasture, acid flushes, Molinia mire communities where parameters permit (e.g. hydrology, current vegetation, soil type & pH).
- **Promote the resilience** of the marshy grassland resource (and its associates) by increasing the amounts of more natural habitats of an open nature (e.g. unimproved grassland, rough field margins, buffer strips, woodland rides, scrub, parkland, orchards etc.) around the key marshy grassland aggregations (Langstone and Shirenewton).

Lowland neutral grasslands make up the largest proportion of the unimproved grassland resource in the Wye-Wentwood area. There are two key strongholds that should be the focus of efforts to improve the condition, extent and resilience of the resource. These are:-

- Cwrt-y-Bela a Springdale SSSI (Central Monmouthshire), Plantation Farm and the Gethley SSSI and the wider Earlswood area (see Appendix 5).
- Penallt through Trellech and on to Tintern, taking in Pentwyn Farm Grasslands SSSI, Narth Fen, Pen-y-fan Marsh, Cleddon Bog SSSI and Barbadoes Hill Meadows SSSI – with potential to tie in with bog/fen/heathland connectivity (see Appendix 6).

As with other semi-natural grasslands communities the focus should be a) on **notifying any neutral grasslands types that meet the SSSI selection criteria** followed by b) **assessing and enhancing the condition of the existing neutral grassland resource**. This should be followed by c) **targeted efforts to increase the extent and resilience** of the neutral grassland resource either through promoting the creation/reversion of agriculturally improved grasslands to neutral grassland where environmental parameters permit followed by the promotion of other more natural habitats of an open nature.

The Wye to Wentwood area is not a known stronghold for lowland **acid grassland** in the wider SE Area setting. To better understand the quality of this resource local staff would need to revisit the target notes from the 1997 Phase I survey work or else undertake field survey to ground truth the remote sensed Phase I. The main areas of acid grassland are in the vicinity of Earlswood and around the margins of Wentwood at Gray Hill and Wentwood Reservoir. The acid grasslands at Gray Hill and Wentwood Reservoir would stand to be enhanced as part

of any lowland heathland connectivity work in the area, whilst the acid grasslands at Earlswood could stand to be enhanced through any neutral grassland connectivity aspirations between 'Cwrt-y-Bela a Springdale SSSI, Plantation Farm and the Gethley SSSI and the wider Earlswood Area' (Appendix 5).

Enclosed farmland and other habitats

Away from the woodlands, rivers and semi-natural grassland the undulating landscape consists primarily of regular and irregular fields containing improved permanent and temporary grassland and arable bounded by hedges, tree lines and smaller woodlands.

Ancient and veteran trees are scattered throughout this habitat in hedgerows, trees lines and remnant parkland with concentrations around Itton and Chepstow Race Course, Trelleck and Mitchel Troy.

For the purposes of this section we are following the UK National Ecosystem Assessment (UK NEA) definition of 'enclosed farmland' which includes 'arable and horticulture' and 'improved grassland' (including both short term lays and permanent pastures). Hedgerows and trees in the farmed environment have briefly been considered in section 3.

With the exception of urban areas and forestry plantations, it is typically enclosed farmland that intersects the rarer and more biodiverse habitats of the Wye to Wentwood area (e.g. semi-natural grasslands, bogs, fens, swamps, ancient semi-natural woodlands and lowland heathland). For this reason, the farmed landscape has a large part to play in improving the resilience and connectivity of these often diminishing and isolated habitats.

Accurate data is not readily available to illustrate the extent of various farming practices across
Wales or indeed in the SE Area. Data from the Habitat Survey of Wales (2010) identifies the SE Area to have 72,900 Ha of improved grassland (45% of the SE Area) which appears to coincide roughly with the estimates afforded by the Welsh Government Small Area Statistics for Agriculture (see Table 1 below) which should be interpreted with caution (see Annex C of https://gov.wales/sites/default/files/statistics-and-research/2019-05/agricultural-small-areastatistics-2002-to-2018-335.pdf).

Farming Practice and Associated Issues

The Wye to Wentwood Area measures 23,171Ha in total and has the greatest amount of 'excellent quality agricultural land' of the SE National Landscape Areas (at roughly 1,500Ha). This along with the extents of 'good quality' and 'good to moderate quality' agricultural land, represents roughly 43% of the landscape area (9,940.82Ha) see table 4.1. Less fertile (more unimproved farmland) farmland areas (Grades 3b, 4 & 5) which may have potential for reversion to more natural habitats represent just over 5,000Ha (20%) of the area. These areas could be taken into consideration alongside habitat connectivity priorities and future agri-

environmental options in order to deliver a more strategic approach. Further figures illustrating the nature of farming practice in the SE Area can be seen in Appendix 14.

Table 4.1 Figures of Predicative Agricultural Land Classification for the SE Area
https://libcat.naturalresources.wales/webview/?infile=details.glu&loid=119070&rs=882873&hitno=1

Grade of Agricultural Land Classification	Brecon Beacons and the Black Mountains		Central Monmouthshire		Gwent Levels		Newport, Cardiff and Barry		South Wales Valleys		Wye Valley and Wentwood		Grand Total
	(Ha)	(%)	(Ha)	(%)	(Ha)	(%)	(Ha)	(%)	(Ha)	(%)	(Ha)	(%)	
1 - Excellent quality agricultural land	0.00	0.00	1255.72	2.62	1364.39	11.11	176.69	1.47	0.00	0.00	1501.68	6.48	4298.48
2 - Good quality agricultural land	971.81	8.84	17744.36	37.09	276.28	2.25	579.36	4.82	290.83	0.60	6011.25	25.94	25873.89
3a - Good to moderate quality agricultural land	839.74	7.64	9891.08	20.68	369.90	3.01	528.09	4.39	337.85	0.69	2427.89	10.48	14394.55
3b - Moderate quality agricultural land	2010.94	18.30	9236.31	19.31	3465.07	28.23	3722.31	30.95	3531.96	7.24	3471.40	14.98	25438.00
4 - Poor quality agricultural land	3334.01	30.34	4128.18	8.63	4168.82	33.96	578.01	4.81	13116.66	26.89	1532.56	6.61	26858.24
5 - Very poor quality agricultural land	2084.69	18.97	97.09	0.20	94.59	0.77	14.14	0.12	15760.28	32.32	132.75	0.57	18183.54
Non-agricultural	1631.05	14.84	4653.17	9.73	835.08	6.80	1332.77	11.08	8628.88	17.69	7206.79	31.10	24287.73
Urban	117.17	1.07	834.05	1.74	1701.81	13.86	5094.68	42.36	7104.09	14.57	887.11	3.83	15738.91
Grand Total	**10989.43**	100.00	**47839.94**	100.00	**12275.95**	100.00	**12026.05**	100.00	**48770.55**	100.00	**23171.43**	100.00	**155073.34**

In the Wye to Wentwood area Single Farm Payments (SFP) are claimed across roughly 11,850ha of farmland (just over 50% of the South East area). This percentage of single farm payment appears relatively typical of the SE area with a higher percentage of SFP in Central Monmouthshire (see table 4.2).

Table 4.2 Single Farm Payment figures taken from WG LPIS dataset (check if we can share this externally).

National Landscape Character Area	No. of Farm holdings claiming SFP (based on no. of CRNs)	Area of land SFP claimed on(Ha)	Percentage cover of the NLCA that SFP is claimed on (%)
Brecon Beacons and the Black Mountains	160	5560.69	50.60
Central Monmouthshire	685	37108.38	77.46
Gwent Levels	131	6447.32	49.31
Newport, Cardiff and Barry	101	3340.01	27.47
South Wales Valleys	338	14673.54	30.09
Wye Valley and Wentwood	255	11851.69	51.00
TOTALS	**1670**	**78981.64**	

In order to successfully influence change in key areas we need a better understanding of the extent and breadth of farming practices across Wales throughout the course of the year. The development of Earth Observation techniques may well have a part to play at informing our understanding and decision making.

In addition, it may be of use to query the Glastir options taken up in the past 5 years across the SE area as part of Glastir Entry and Advanced schemes to understand the willingness of farmers to opt for the most environmentally beneficial Glastir options. The extent and longevity of these options will give an idea of the benefit that Glastir has created to date.
Need to consider the Glastir Monitoring and Evaluation Programme (GMEP) Report as part of this - www.gmep.wales/sites/default/files/GMEPFinal-Report-2017.pdf

The key environmental issues arising from current farming practise in the SE are:-

- Sedimentation in rivers, as a result of:-
    - poaching of river margins from high livestock densities

- inappropriate arable operations in close proximity to rivers e.g. maize and potato farming

- Nutrient loading both on land and in rivers, as a result of:-
  - Over application of N, P, K
  - Inappropriate spreading methods
  - Inadequate slurry storage on farm holdings
  - Phosphate loading in rivers (through adherence to sediments)
- Over grazing (especially sheep in upland areas)
- Inappropriate disposal of sheep dips in upland settings
- Application of pesticides in lowland settings.
- Airborne pollution from intensive poultry and beef units.

There are a number of additional benefits that could be achieved for the biodiversity of the environment through further incentivised changes to farming practice for example provision of buffer strips cut late in the season could provide the necessary opportunity for species like the shrill carder bee to expand its range from the Gwent Levels further inland (as has been evidenced in the past at Leechpool holdings). A number of pragmatic options can be found at:- https://www.ceh.ac.uk/book-habitat-creation-and-management-pollinators https://www.sussex.ac.uk/webteam/gateway/file.php?name=snh-conference-proceedingschapter-27-2009.pdf&site=411

Biodiversity on farmland

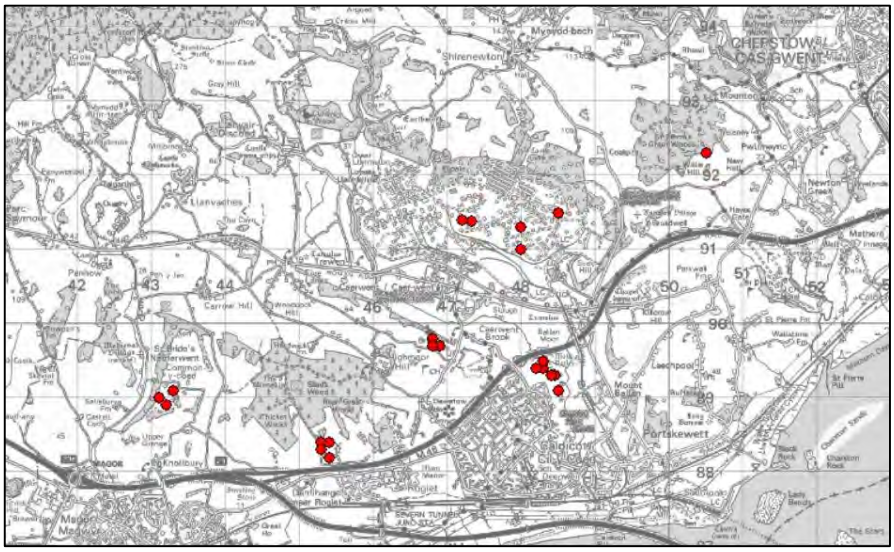
The farmed environment is also important for a number of rare species dependant on specific farming practices for their existence in this human modified landscape. The following rarities and appropriate farming practices that support them should be promoted through targeted agri-environment schemes:-

Hornet Robberfly – The adults of the fly are dependent on grasslands (that have not been significantly improved for agricultural purposes) grazed by cattle and horses/ponies. The adults hunt insect prey within the grassland and lay their eggs into the dung of the livestock. The larvae of the fly then predate other insect larvae within the dung and the soil beneath it.

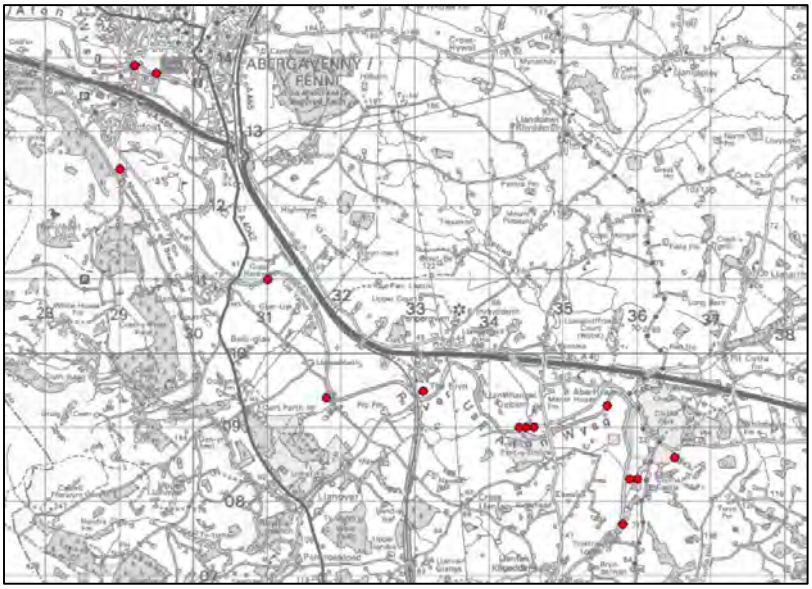
The hornet Robberfly therefore require sites lightly grazed by cattle or horses/ponies from June – September so that dung is available when the adults are active. Livestock also need to be treated with appropriate worming and insecticide compounds prior to being put on the site to avoid the deleterious impacts of insecticides on the composition and diversity of the invertebrate dung fauna.

The SE Area hosts 2 known populations:-

1) Magor to Mathern population existing along the route of the M48, possibly associated with the calcareous bedrock as well as alluvial conditions with cattle grazing at Nedern Brook Wetlands.



2) Abergavenny to Clytha Park associated with riparian meadows along the banks of the River Usk.



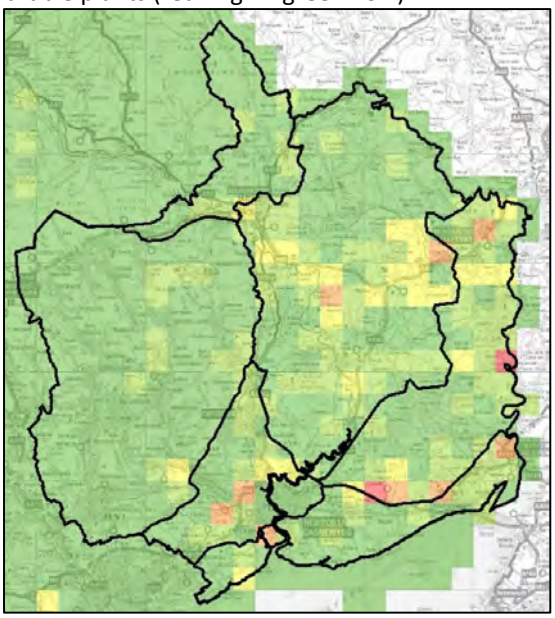
The potential to have an agri-environment scheme aimed at bolstering invertebrate dung fauna could be something worked up with Welsh Government and specialists such as Dr Beynon or Buglife and could have wider reaching benefits in areas frequented by greater horseshoe bats which also prey on dung beetles typical of cattle grazed pasture.

Arable plants – The coast and east of Monmouthshire, particularly along the A40 and A499, are recognised as hotspots for arable plants see Figure 4.1. Monmouthshire has many plants that are restricted elsewhere such as Lesser Quaking-grass, Cornflower, Stinking Chamomile and Grass-poly along with the rapidly declining Corn Mint.

Further surveys in Monmouthshire would be likely to identify additional populations of rare and threatened arable plants, in particular arable farms lying between Newport, Abergavenny, Monmouth and the northern county boundary as well as the River Wye

corridor. Once all rarities are identified appropriate agri-environment schemes could be designed and offered to relevant landowners to promote these rare components of Welsh biodiversity.

Figure 4.1 Important areas for arable plants (red: high – green: low)



The uptake of targeted arable agri-environment schemes/options would also stand to benefit declining farmland bird species (e.g. Yellowhammer). In addition, the provision of buffer strips has the potential to enable the expansion of species restricted in their distribution as a result of landscape character e.g. the availability of late forage resource available to the Shrill Carder Bee on the reen system of the Gwent Levels.

Arable bryophytes - The arable land in the area north of the A40 is likely to be good for arable bryophytes because of soil characteristics. The key species are the mosses *Acaulon muticum*, *Didymodon tomaculosus*, *Weissia rostellata* and *Weissia sterilis*, the liverwort *Fossombronia caespitiformis* and the hornworts *Anthoceros agrestis* and *Phaeoceros carolinianus*. Any fields holding one or more of these species is likely to hold a rich arable bryophyte assemblage. Further survey is required to ascertain the distribution of these rare bryophytes and to enable targeted beneficial management. Appropriate management would typically require:-

- retention of stubbles over winter (in some years at least),
- ensuring that arable management continues at least once every 5 years, and
- **not** spreading slurry, sewage sludge etc. on the fields.

Following a nationwide survey, fields at the Dingestow Estate are currently the only ones known in Wales that may pass the SSSI selection criteria and should therefore be considered for notification.

Mountain Moorlands & Heaths

Bog, fen, swamp and lowland heath are some of the scarcest habitats in the Wye-Wentwood area. The existing extent of lowland heathland is limited to the common land at **Mynydd Alltirfach** and **Gray Hill** either side of the Wentwood Reservoir, some small outlying fragments

around Penallt and the heathland restoration areas at **Broad Meend** and **Beacon Hill** on the Trellech Plateau. Within these restoration areas lies **Cleddon Bog Site of Special Scientific Interest**, this common land is the most important area for bog, fen and wet heath in the Wye to Wentwood area. The other remaining fragments of these types of habitats can be found at the Narth and at **Whitelye Common** the latter supporting wet heath, flush, rush pasture and marshy grassland (see Appendix 1).

These habitats collectively equate to approximately 36ha (0.16% of the Wye to Wentwood area). Efforts should initially be focussed on **assessing and improving the condition** of existing sites through appropriate landowner engagement and management practices. Further efforts should aim to:-

- **increase the extent** of lowland heathland and wetland habitats with more of the same habitat where environmental parameters (hydrology, soil pH, bedrock) permit, for example on the Trellech Plateau and at the Hendre a little over 20Ha of WGWE currently exists on areas historically mapped as open habitats which may (or may not) have potential for heathland restoration.
- **promote resilience** of these restricted habitats (and their inhabitants) by increasing the amounts of **more natural habitats of an open nature** (e.g. unimproved grasslands, rough field margins, scrub, woodland rides, parkland etc.). These types of habitats should be promoted in the immediate surrounds of existing sites and in key areas which have potential to provide corridors across the limited heathland and wetland resource.

3. How priority habitats connect across South East Area landscapes and the importance of this for resilience?

- **diversity between and within ecosystems;**
- **the connections between and within ecosystems;**
- **the scale of ecosystems;**
- **the condition of ecosystems (including their structure and functioning);**
- **the adaptability of ecosystems**

Woodland	Despite the relatively high woodland cover within the area, connectivity of broadleaf woodland is lower than would otherwise be expected due to the presence of conifer woodlands which act as barrier to woodland species movement.
Semi-natural grasslands	The semi-natural grassland habitats across the South East Area (as with much of Wales) are heavily fragmented.
Enclosed Farmland	Condition of hedgerows within the area is variable, with hedgerows often under or over-managed, limiting their ability to connect other priority habitats. The extent of hedgerow loss is an evidence gap.
Mountain & Moorlands Heaths	Lowland heathland is very heavily fragmented, being limited to common land at Mynydd Alltir-fach and Gray Hill either side of the Wentwood Reservoir, some small outlying fragments around Penallt and the heathland restoration areas at Broad Meend and Beacon Hill on the Trellech Plateau. The other remaining fragments of these types of habitats can be found at the Narth and at Whitelye Common the latter supporting wet heath, flush, rush pasture and marshy grassland (see Appendix 1).
Bats	

4. What is driving the current management of each ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape? Where we want to build resilience within each ecosystem and why?

Woodlands

Efforts should focus on significantly increasing the extent of broadleaf woodland under active management to improve condition, including reinstatement of coppicing and thinning, deer management and control of invasive species, especially Himalayan Balsam. Opportunities exist to explore how markets for broadleaf woodland timber products could be developed to help drive this management and to develop an approach to the threat of significant ash die back.

Efforts should also focus on reversion of coniferous blocks and new broadleaf woodland planting, which could be accelerated where statutory plant health notices are issued, to further improve connectivity between broadleaf woodland for a range of woodland species including bats, butterflies and dormice for example and to improve resilience to climate change.

Opportunities exist to connect Wentwood to the woodlands within the Wye Valley through creation (and restoration) of a mosaic of habitats, including hedgerows, woodlands and parklands for example. Opportunities also exist connect and reinforce linkages between woodlands elsewhere in the area.

In addition, impacts to address poor air quality on designated woodlands sites, including their bryophyte interest, around Chepstow and Monmouth need to be considered.

Freshwater – Open waters, Wetlands & Floodplains

Efforts should focus on maintenance of permanent pasture and woodland along the River's lower reaches, but significant effort is also required to control point, sediment and other diffuse pollution and non-native invasive species upstream and in the Wye's tributaries.

The water quality of the River Wye in this area is significantly influenced by discharges from the City of Hereford and intensive agricultural land use upstream and in the tributaries.

Semi-natural Grasslands

All Sites of Special Scientific Interest (SSSI) with grassland features (and associated species) need a reviewed assessment of their condition. These condition assessments will be used to inform the implementation of suitable management to either a) maintain good condition or b) get failing sites into good condition.

Ecological connectivity and prioritisation mapping undertaken by CCW (Latham et al. 2013) has identified a number of priority grassland areas based on a combination of threats faced and/or potential for ecological benefits to be achieved. We have therefore highlighted what we perceive to be the most significant concentrations of unimproved grasslands where effort should be focussed to provide the greatest possible benefits for the grassland community types in the Wye Valley and Wentwood area.

There are two key strongholds for Lowland Neutral grassland that should be the focus of efforts to improve the condition, extent and resilience of the resource. These are:-

- Cwrt-y-Bela a Springdale SSSI (Central Monmouthshire), Plantation Farm and the Gethley SSSI & the wider Earlswood area (see Appendix 5).
- Penallt through Trellech and on to Tintern, taking in Pentwyn Farm Grasslands SSSI, Narth Fen, Pen-y-fan Marsh, Cleddon Bog SSSI & Barbadoes Hill Meadows SSSI – with potential to tie in with bog/fen/heathland connectivity (see Appendix 6).

A key area for **grasslands of a calcareous nature** falls roughly within the settlements of Crick, Magor, Llanvaches and Shirenewton. This area includes a handful of protected grassland sites including Dinham Meadows SSSI (and wider Caerwent Military Base) & Brockwells Meadows SSSI, along with other significant grassland sites around Five Lanes, Woodcock Hill and Slade Wood. Other smaller parcels of calcareous grassland are present on shallow unimproved soils within this location and further north west following the route of the underlying limestone bedrock (see Appendix 2).

The two most apparent aggregations of marshy grasslands are further south around the villages of Langstone and Shirenewton. Within the vicinity of both of these villages, the priority should be to **assess the potential for** improvement of existing marshy grasslands sites in the vicinity of Langstone-Llanmartin Meadows SSSI & Llwyn y Celyn SSSI (see Appendices 3 & 4). In addition to this aspiration, efforts should also aim to:-

- Increase the extent and condition of marshy grassland habitats (outside of the SSSI series) through restoration of any existing fen meadows, rush pasture, acid flushes, Molinia mire communities where parameters permit (e.g. hydrology, current vegetation, soil type & pH).
- Promote the resilience of the marshy grassland resource (and its associates) by increasing the amounts of more natural habitats of an open nature (e.g. unimproved grassland, rough field margins, buffer strips, woodland rides, scrub, parkland, orchards etc.) around the key marshy grassland aggregations (Langstone & Shirenweton).

The main priorities for calcareous grassland is to notify any existing grasslands sites that meet the SSSI selection criteria. The condition of all other sites should be assessed and where necessary their condition improved through appropriate landowner engagement and management practices. The potential for creation of additional calcareous grassland habitats at sites with an appropriate soil profile and underlying geology (e.g. Caerwent Quarry, Ifton Quarry, Livox Quarry) should be identified and approached with appropriate incentives to encourage promotion of this rare habitat.

To better understand the quality of this resource of acid grassland local staff would need to revisit the target notes from the 1997 Phase I survey work or else undertake field survey to ground truth the remote sensed Phase I. The main areas of acid grassland are in the vicinity of Earlswood and around

the margins of Wentwood at Gray Hill and Wentwood Reservoir. The acid grasslands at Gray Hill and Wentwood Reservoir would stand to be enhanced as part of any lowland heathland connectivity work in the area, whilst the acid grasslands at Earlswood could stand to be enhanced through any neutral grassland connectivity aspirations between 'Cwrt-y-Bela a Springdale SSSI, Plantation Farm and the Gethley SSSI and the wider Earlswood' (Appendix 5).

As with other semi-natural grasslands communities the focus should be a) on notifying any neutral grasslands types that meet the SSSI selection criteria followed by b) assessing and enhancing the condition of the existing neutral grassland resource. This should be followed by c) targeted efforts to increase the extent and resilience of the neutral grassland resource, either through promoting the creation/reversion of agriculturally improved grasslands to neutral grassland where environmental parameters permit followed by the promotion of other more natural habitats of an open nature.

There are opportunities to support the activities of existing and new initiatives including the development of machinery rings and markets for grassland products including wildflower seed, hay and organic meat as well as training.

Enclosed Farmland

Efforts should focus on the retention of veteran/ancient trees and maintaining and improving habitat connectivity through the maintenance and creation of linear habitats including field margins and hedgerows.

Opportunities exist to build our knowledge both of ancient/veteran tree distribution within the area and its value for saproxylic invertebrates, lichens and bryophytes

Mountain Moorlands & Heaths

Efforts should initially be focussed on assessing and improving the condition of existing sites through appropriate landowner engagement and management practices. Further efforts should aim to:-

- Increase the extent of lowland heathland and wetland habitats with more of the same habitat where environmental parameters (hydrology, soil pH, bedrock) permit, for example on the Trellech Plateau and at the Hendre WGWE currently includes areas historically mapped as open habitats which may (or may not) have potential for heathland restoration.
- Promote resilience of these restricted habitats (and their inhabitants) by increasing the amounts of more natural habitats of an open nature (e.g. unimproved grasslands, rough field margins, scrub, woodland rides, parkland etc.). These types of habitats should be promoted in the immediate surrounds of existing sites and in key areas which have potential to provide corridors across the limited heathland and wetland resource.

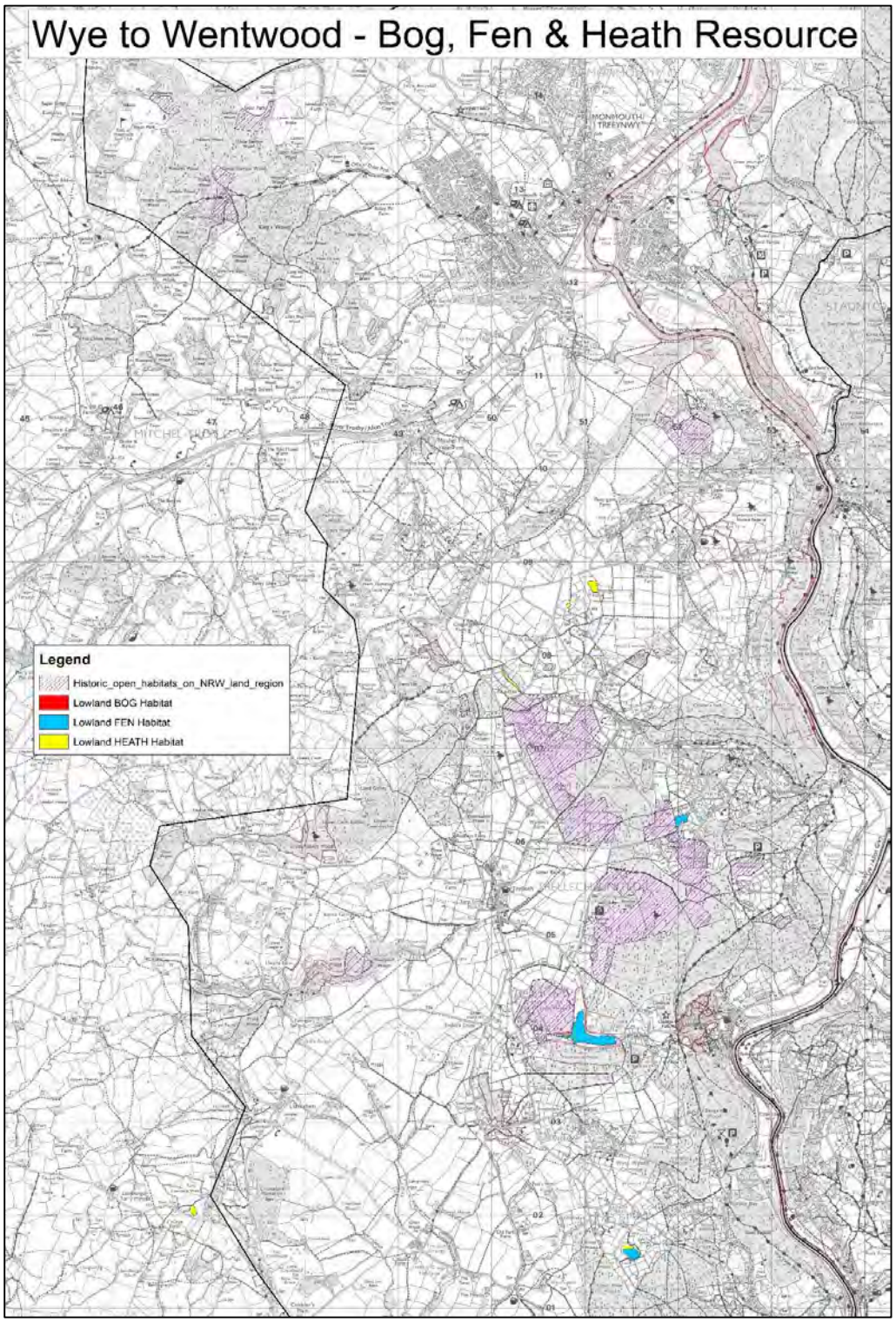
Bats

Efforts should focus on the maintenance and creation of cattle grazed pasture, minimising Ivermectin use and hedgerows and retention of rides and woodland edge for Greater Horseshoe Bats in the area surrounding Monmouth. Creation of additional roosts for Greater Horseshoe Bats would also improve

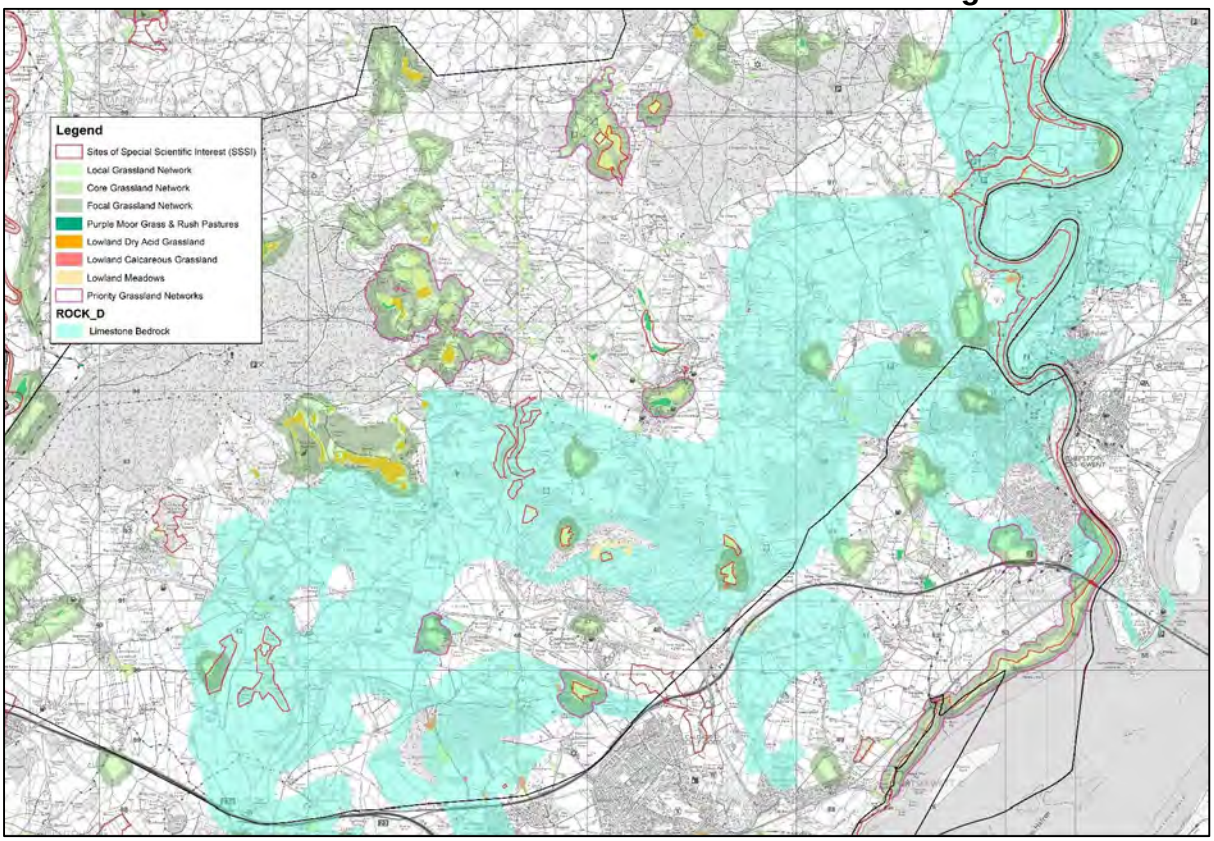
their resilience. Hedgerow retention and maintenance of broadleaf woodland for foraging and commuting across the area should also be a focus for Lesser Horseshoe Bats.
Opportunities exist to improve our knowledge of barbastelle and Bechstein's bat distribution in the area and land use change within the core sustenance zones of our lesser and greater horseshoe bats and to use this information to inform future agri-environment scheme design, the management of Welsh Government Estate and privately owned woodland and other interventions.

APPENDICES

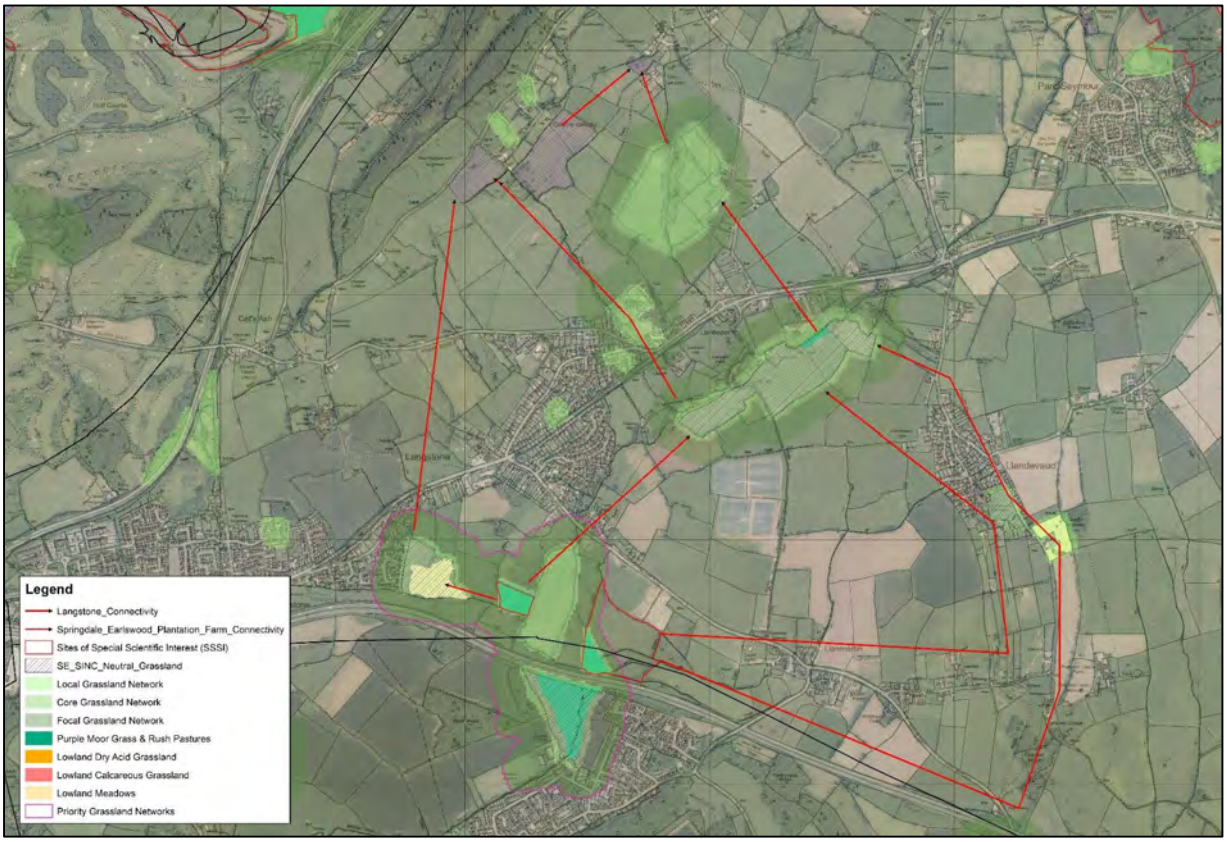
Appendix 1. Bog, fen, swamp and lowland heath communities



Appendix 2. Underlying limestone bedrock in the Wye Valley and Wentwood area – showing amongst other things the priority grassland sites at Brockwells Meadows SSSI and Woodcock Hill to the south west of the village of Caerwent.

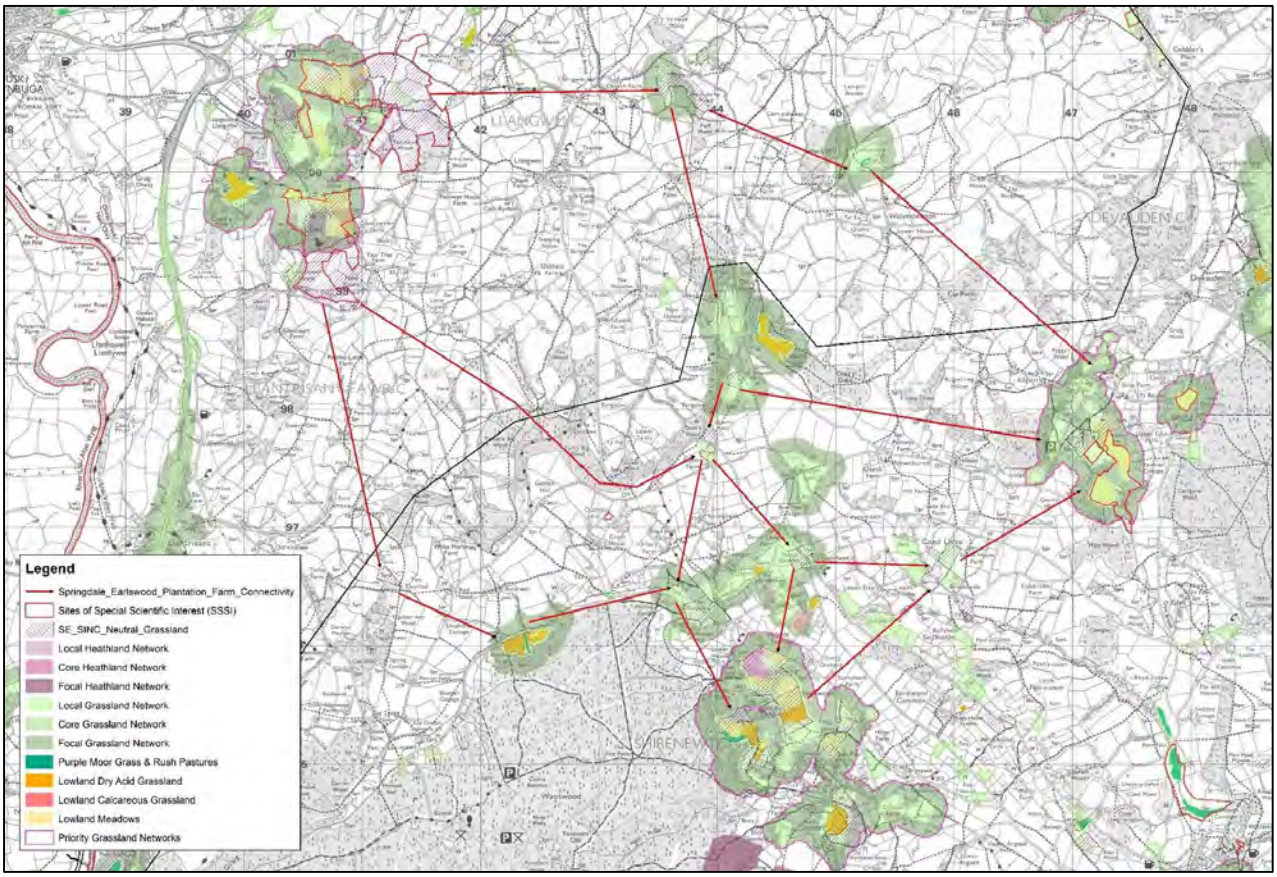


Appendix 3. Potential grassland connectivity around Langstone-Llanmartin SSSI.



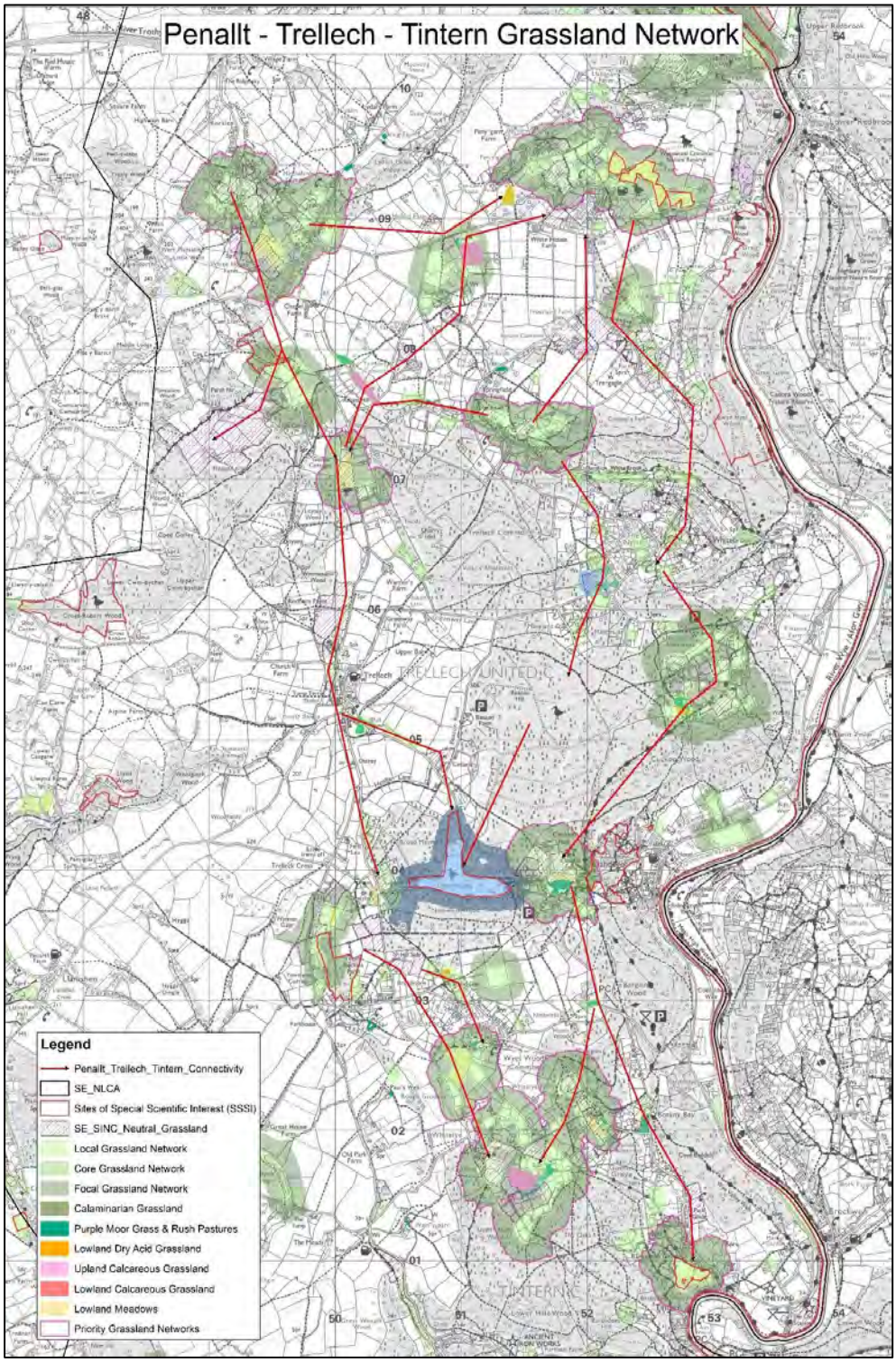
Appendix 4. Potential grassland connectivity around Llwyn-y-Celyn SSSI & Shirenewton Fields.

Appendix 5. Potential grassland connectivity around Cwrt-y-Bela a Springdale SSSI (Central Monmouthshire), Plantation Farm and the Gethley SSSI & the wider Earlswood area.



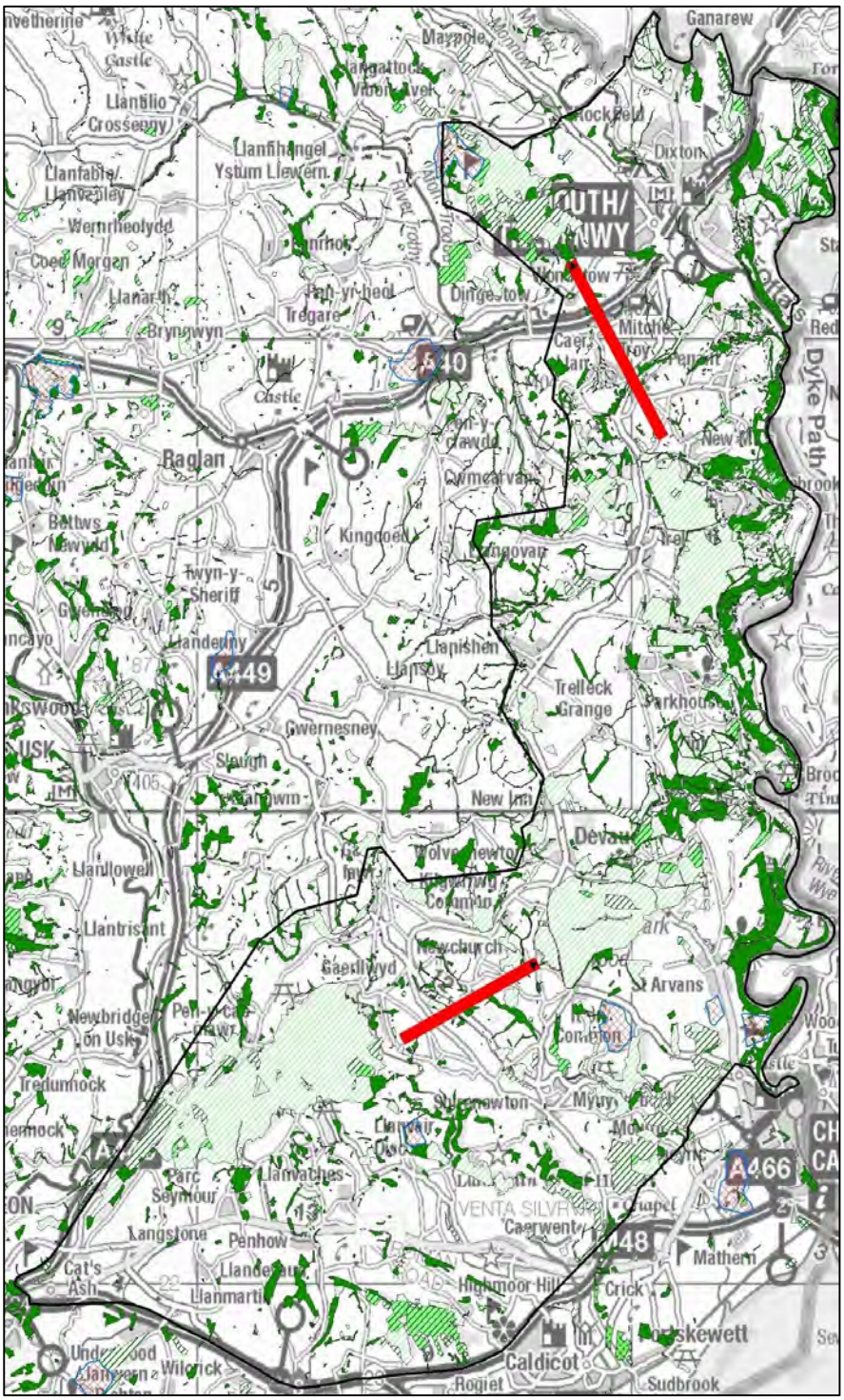
Appendix .

Appendix 7. Potential grassland connectivity from Penallt through Trellech and to Tintern.



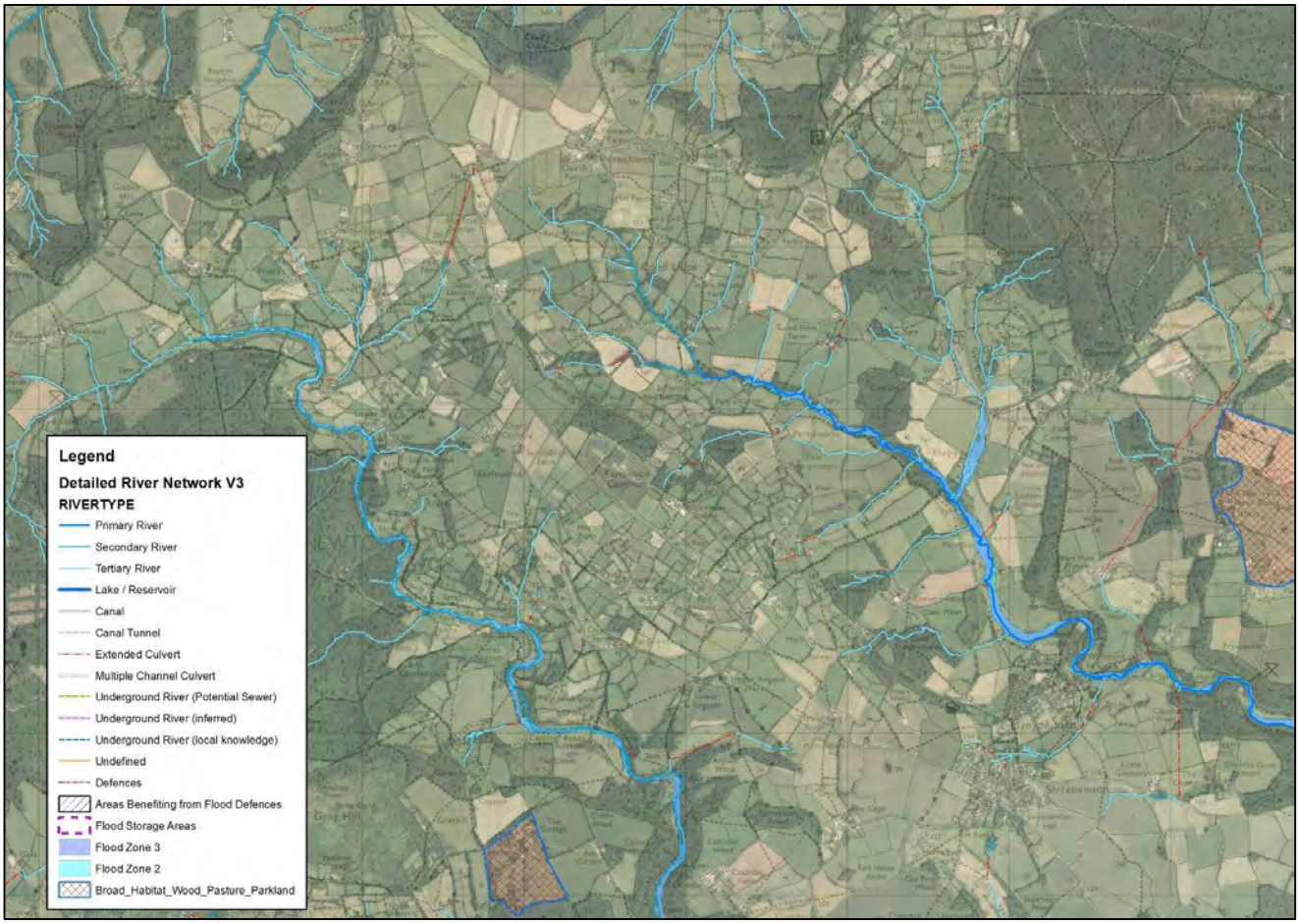
Appendix .

Appendix 8. Key areas to enhance landscape permeability for woodland species.



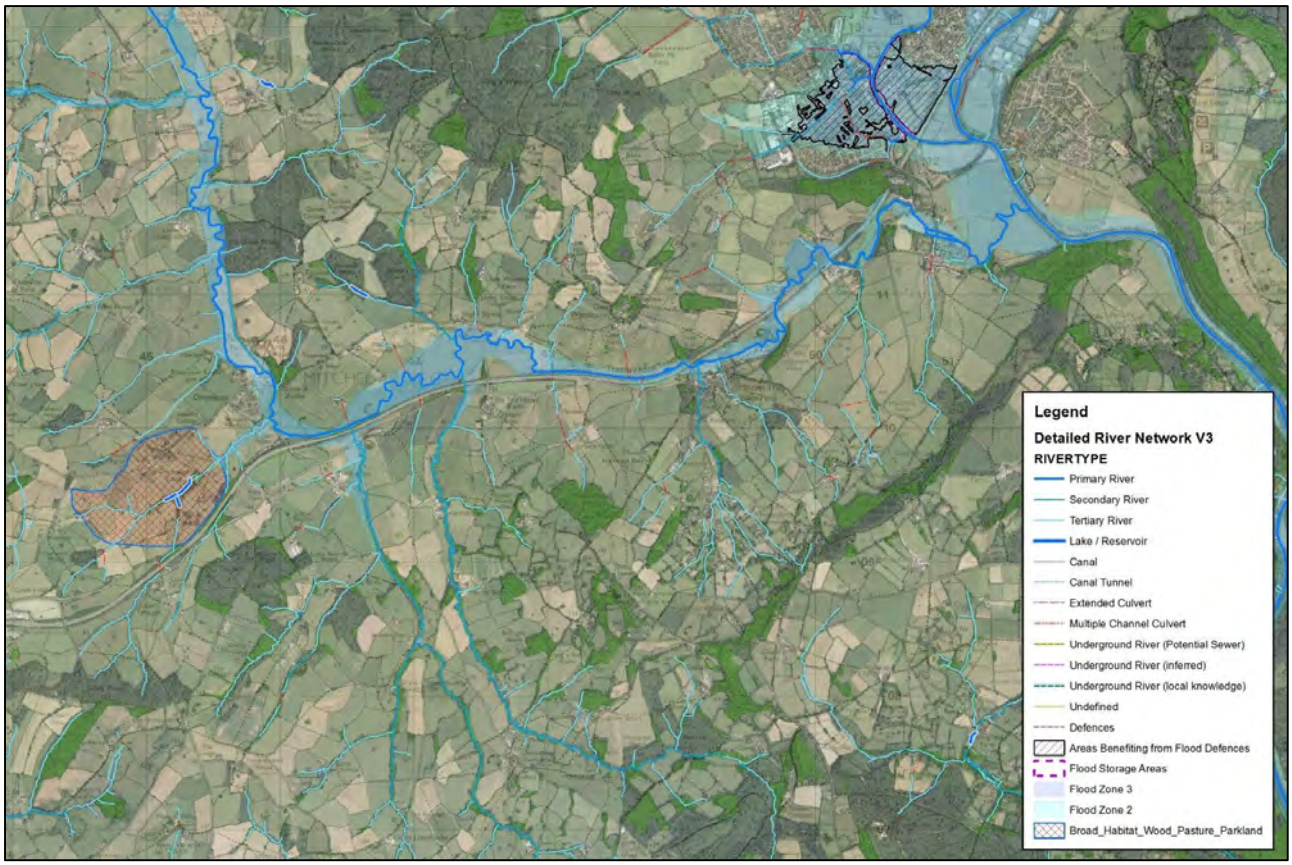
Appendix .

Appendix 9. Potential areas to promote natural regeneration of floodplain woodlands (within flood zones 2 & 3 of the Castrogi and Mounton Brooks) and riparian woodlands (along the) to improve woodland connectivity between Wentwood & Chepstow Park Wood. This farmed landscape would also benefit from widened hedgerows and more trees planted within fields.



Appendix .

10 Potential areas to promote natural regeneration of floodplain woodlands (within flood zones 2 & 3 of the River Trothy) and riparian woodlands (along the) to improve woodland connectivity between the Trellech Plateau and the Hendre. This farmed landscape would also benefit from widened hedgerows and more trees planted within fields.

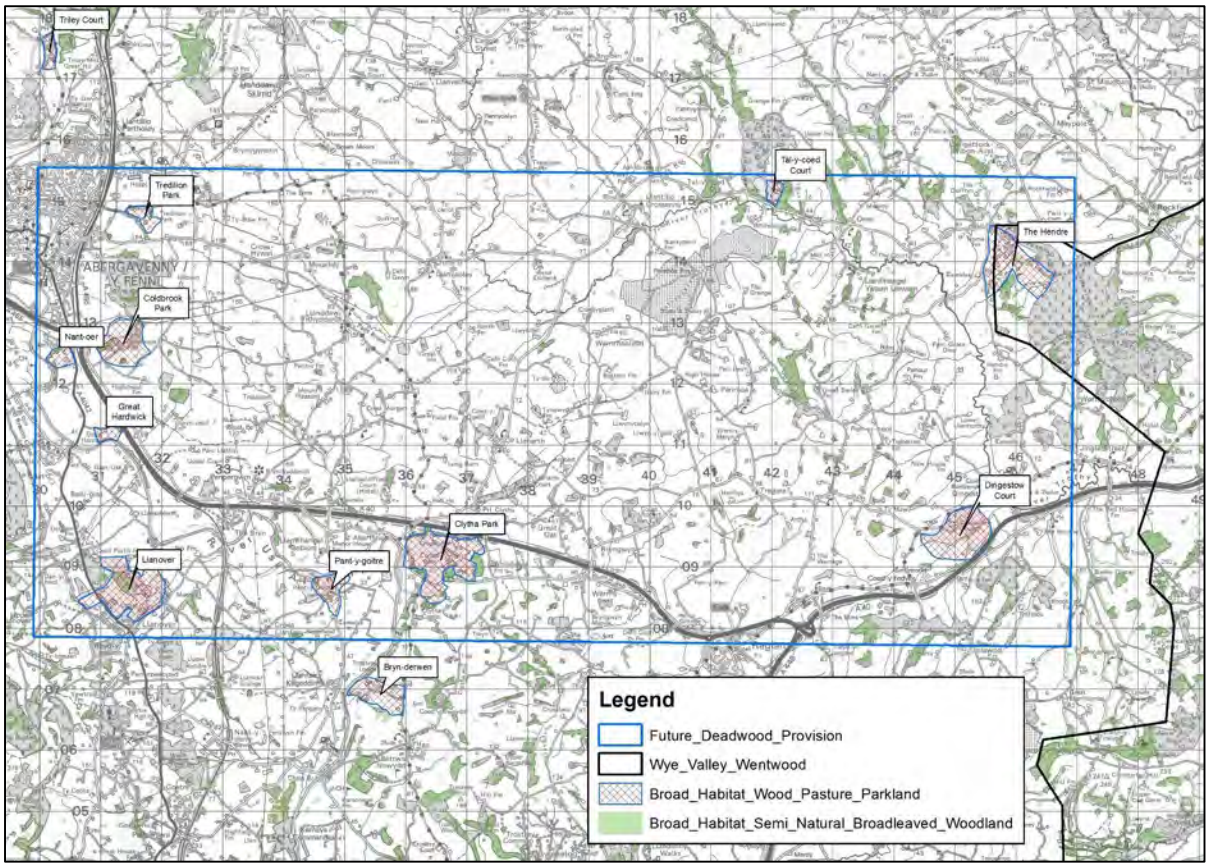


Appendix .

11 Map illustrating the most significant distribution of traditional orchard sites in the Wye to Wentwood area based on Phase I data (1979-97).

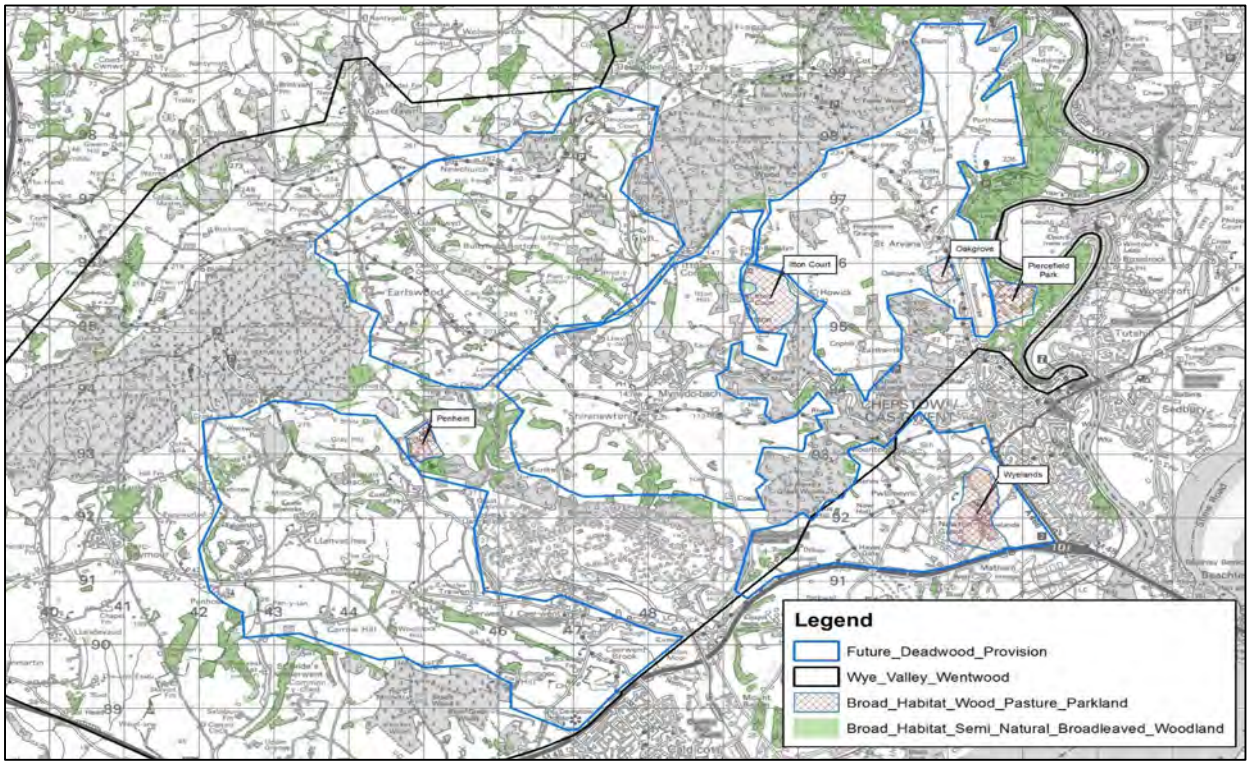
Appendix .

12 **'**Ysgrydd Fach to Hendre'– Key landscape area for 'future deadwood provision' illustrating locations of known parkland sites.



Appendix .

13 ‘Earlswood, Llanvaches, Shrienewton & St Arvans’– Key landscape area for ‘future deadwood provision’ illustrating locations of known parkland sites.



Appendix 14. Totalled WG Agricultural Statistics for the SE Area (including statistics from 'small areas' - 210, 211, 212, 213, 214, 222, 223, 224, 225, 226, 227,228, 229, 230, 231, 232, 233, 234 & 235).

VARIABLE

Grassland (Ha)	Over 5 Years	68,678
	Rough Grazing	4,508
	Under 5 Years	6,642
	TOTAL	**79,828**

Crops (Ha)	Barley	1,183
	Wheat	4,743
	Maize	1,818
	Stockfeed	970
	Other Cereals	659
	Potatoes	0
	Horticulture	324
	Other Crops	1,193
	TOTAL	**10,890**

Farm Woodland (Ha)	**6,654**
Other land (Ha)	**1,004**

Sheep (No.)	Breeding Ewes	218,239
	Rams	5,069
	Lambs	197,332
	Other sheep	4,661
	TOTAL	**425,301**

Cattle (No.)	Dairy Cows	12,811
	Non-dairy cows	13,648
	Calves	21,450
	Other cattle	20,485
	TOTAL	**68,394**

Pigs (No.)	**1,307**
Poultry (No.)	**209,732**
Horses (No.)	**4,852**
Goats (No.)	**829**