



**Cornwall
Area of Outstanding
Natural Beauty**

Environmental Land Management Scheme

Landscape Recovery Framework

The Cornwall AONB Section 08, South Coast Western

1. Introduction and landscape profiles

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1 Introduction

The Cornwall AONB, Environmental Land Management Scheme Landscape Recovery Framework, covers the geographic area of Section 08 of the Cornwall AONB, 'South Coast Western,' which covers the Helford Estuary, The Lizard Peninsula, and the coast to Marazion. It is intended to bridge the gap between national level agri-environment priorities and land management prescriptions carried out on-farm and identified in an individual farm plan. The framework is set within the protected landscape context and the aims, objectives, and actions that are set out in the Cornwall AONB Management Plan. It considers natural capital assets within the landscape character context and identifies locally specific opportunities to deliver on Defra's national priorities for the new Environmental Land Management Scheme.

This landscape framework is the result of a detailed collaboration between the Cornwall AONB Partnership, Natural England, other environmental organisations, and, crucially, the farmers and landowners who directly manage the land. The framework is a jointly owned document that sets out clearly how the Environmental Land Management Scheme can be delivered locally and seeks to get the best value from Defra's investment by targeting work clearly to achieve the most effective results.

The landscape recovery framework sets out co-designed landscape objectives to be delivered by farmers working together in discussion and collaboration. These objectives have been prioritised because they are aligned to the types of landscapes on the Lizard and the opportunities



Photo credit: Rona Amis, Tregullas Farm

offered by those landscapes. Importantly, the farmers consider that all the priority objectives can be delivered while maintaining sustainable farm businesses.

The landscape recovery framework provides a locally targeted structure that farmers, land managers, and advisers can use to develop individual and collaborative scheme applications that will successfully deliver Defra's objectives. The framework provides advice and guidance on delivery to farmers while not being over-prescriptive and sets out clear success measures.

2 Defra's priorities

The landscape recovery framework will set out the character and natural capital of the landscapes of Section 08 of the Cornwall AONB. It will set out management and pressures, condition information, and opportunities. Critically, it will set out farmers and land managers' objectives in the project area and show what a collaborative Environmental Land Management Scheme might achieve.

The content of the landscape framework relates to Defra's six priorities for the Environmental Land Management Scheme. A colour code will show where Defra's priorities are relevant in different parts of the framework.

Fig 1. Colour code for Defra's priorities

Environmental Land Management Scheme Priorities	
• Clean and plentiful water	
• Clean air	
• Protection from and mitigation of environmental hazards	
• Mitigation of and adaptation to climate change	
• Thriving plants and wildlife	
• Beauty, heritage, and engagement	

3 Landscape character

This South Coast Western section of the AONB is large, wide-ranging, and diverse, extending from Marazion in the west to Falmouth's outskirts in the east and includes the entire Lizard Peninsula and the Helford Estuary. This is the second-largest section of the Cornwall AONB, comprising 192 square kilometres (19,300 hectares). While this section of the Cornwall AONB is extensive, it falls into four distinct landscape areas – the coastal strip which runs from St Michael's Mount to Halzeophon Cliff, the Lizard Peninsula, north and south, and the Helford Estuary. The area is covered by four-character areas which are mapped and described by the Cornwall and Isles of Scilly Landscape Character Assessment 2005-2007. These are CA04 Mount's Bay; CA06 Mount's Bay East; CA09 Helford Ria; CA07 South Lizard Peninsula; CA08 North East Lizard Peninsula; CA09 Helford Ria; CA10 Carmenellis. These areas are described in more detail in section 4.

Map 1. Landscape Character Areas within the Cornwall AONB Section 08

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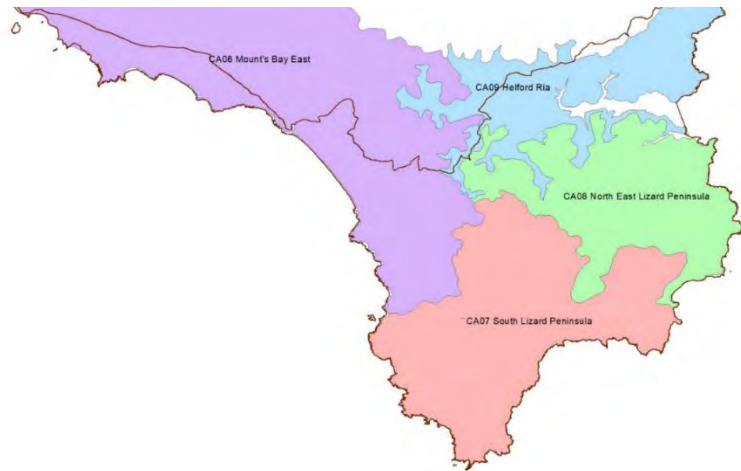


Photo credit: Cornwall AONB

Landform and geology

The iconic rocky granite intrusion of St Michael's Mount dominates Mount's Bay with its cobbled granite causeway leading out to the Mount at low tide. The coastline stretching east is low-lying with earthy cliffs of 'head' (periglacial debris); the coastal strip provides evidence of previous, much higher sea levels with a much eroded and softened cliff line inland of the coastal fields. Further east, the land rises and forms steep cliffs of metamorphosed Devonian slate, veined with quartz. Cudden Point is a significant coastal landmark, while Trewavas Head and Rinsey Head are distinctive for outcroppings of granite, with the derelict mine engine houses forming eerie silhouettes perched on the clifftop as the sea mist rolls in. The Lizard Peninsula's elevated southeast plateau is underlain with serpentine, as can be seen from the outcrops at Kynance Cove. The landform to the west falls gently on the gabbro and hornblende schists toward the coast and is permeated with small streams, which have formed sheltered valleys along weaknesses in the rock. The Helford River forms a ria (drowned river valley), which resulted from the rise in sea level following the last Ice Age. The network of small creeks extends the river system for several kilometres inland.

Farmland

Farmland in this area is of medium-sized fields with sinuous boundaries, typical of early enclosure, and larger, more recently enclosed rectilinear fields that exaggerate a sense of openness, as seen on the larger arable fields close to Porthleven. The coast to Halzephron Cliff is a soft, undulating landscape spread over Devonian rocks with farmsteads and small hamlets interspersed with streams that reach the coast at Church Cove and Poldhu Cove. Fertile cultivated farmland surrounds valley slopes, inland of Gunwalloe and Mullion Cove. The rich soils around Marazion and Perranuthnoe support a wide range of arable crops in medium and large fields with many tamarisk hedges.

A mosaic of enclosed pasture where rough grazing fringes the central plateau of open, unenclosed rough ground. The more productive land is dominated by pasture, with some arable. The Peninsula's agricultural land is mainly improved grassland with some horticulture within small irregular enclosures of medieval origin, bounded by Cornish hedges. Larger, more regular fields, indicate more recently enclosed land as the upland rough ground has been taken in. The landscape on the southern side of the river tends to be more remote and has seen less development in recent years, around the intact parkland landscape of the Trelowarren Estate.

Woodland and tree cover

Stunted patches of broadleaved woodland and wet willow carr are found in the steep valleys which lead from the plateau to the coast. Small woodlands and copses occur in discrete pockets on farms. Recent conifer plantations disrupt the generally treeless plateau.

Woodland cover increases within the more sheltered valleys to the north-east. At the Helford Estuary, rounded landforms slope to deep, narrow valleys with dense woodland of predominately sessile oak, and it is one of the few places in England where ancient woodland meets the sea.

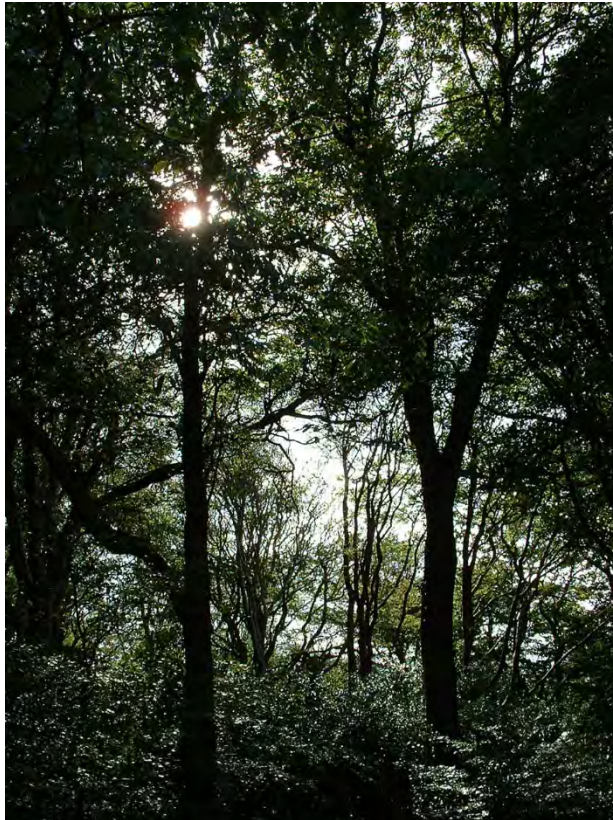


Photo credit: Cornwall AONB

Biodiversity

The combination of geology, mild oceanic climate conditions, and its southerly location has led to the development of a unique range of habitats with many rare species of local and national importance. To the southeast of Porthleven, there is an extensive shingle beach forming the unique Loe Bar, which is backed by the waters of Loe Pool, a freshwater lake fed by the waters of the River Cober. Loe Pool is an important freshwater coastal habitat with reed beds and sheltered woodlands stretching inland.

There are significant areas of heathland/upland rough ground across Goonhilly Downs, and the west coast is significant from both historic and biodiversity perspectives. The Lizard National Nature Reserve stretches over 2,000 hectares of the Peninsula. Heathland, coastal cliff vegetation, and Mediterranean temporary ponds are of international importance and accommodate a broad diversity of wildlife, including scarce and unusual plants. Over 250 species of national or international conservation importance are found here, many restricted to the Lizard or Cornwall. These include plants such as Cornish heath and invertebrates such as the rare mason wasp. The Helford Estuary is a haven for wildlife. At high tide, the water reaches up to the very edges of the oak woodland, while at low tide, the exposed mudflats provide a haven for wading birds and wildlife.

Heritage

The Lizard has a strong sense of human history, and evidence of long-term human habitation in this area dates to the Bronze Age. The upland rough ground at the coast and on Goonhilly Downs has a large concentration of ritual monuments, cairns, barrows, and standing stones.

Neolithic chambered tombs, ritual monuments, barrows and standing stones from the Bronze Age scatter the downs, across which run ancient trackways to surrounding settlements. Inland there is a scattering of prehistoric defended farming hamlets (rounds). Traditional buildings are simple, constructed of local stone and thatch.

Around Trewarvas and Rinsey Head, engine houses and many shafts indicate the use of the area for hard rock tin mining during the 19th century.



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Aesthetic and sensory

The area's wild and rugged character, stunning heathland, tranquil woodland, and spectacular coastal landscapes make this area a significant tourist destination. The AONB section provides a wealth of outdoor recreational opportunities facilitated by 240 km of rights of way, including the South West Coast Path and 2,450 ha of open access and common land.

This is an open and exposed landscape with long panoramic views and dramatic rough and rugged scenery, and panoramic views along the rocky coast. On the flat inland plateau, the sense is of a very large scale, wild and windswept moorland. However, tranquility is interrupted in places by man-made features like the wind turbines at Bonython and the large satellite dishes at Goonhilly.

A marked contrast to the landscape of the Lizard Peninsula, the Helford River is enclosed, leafy and tranquil, an area of great individual character and beauty.

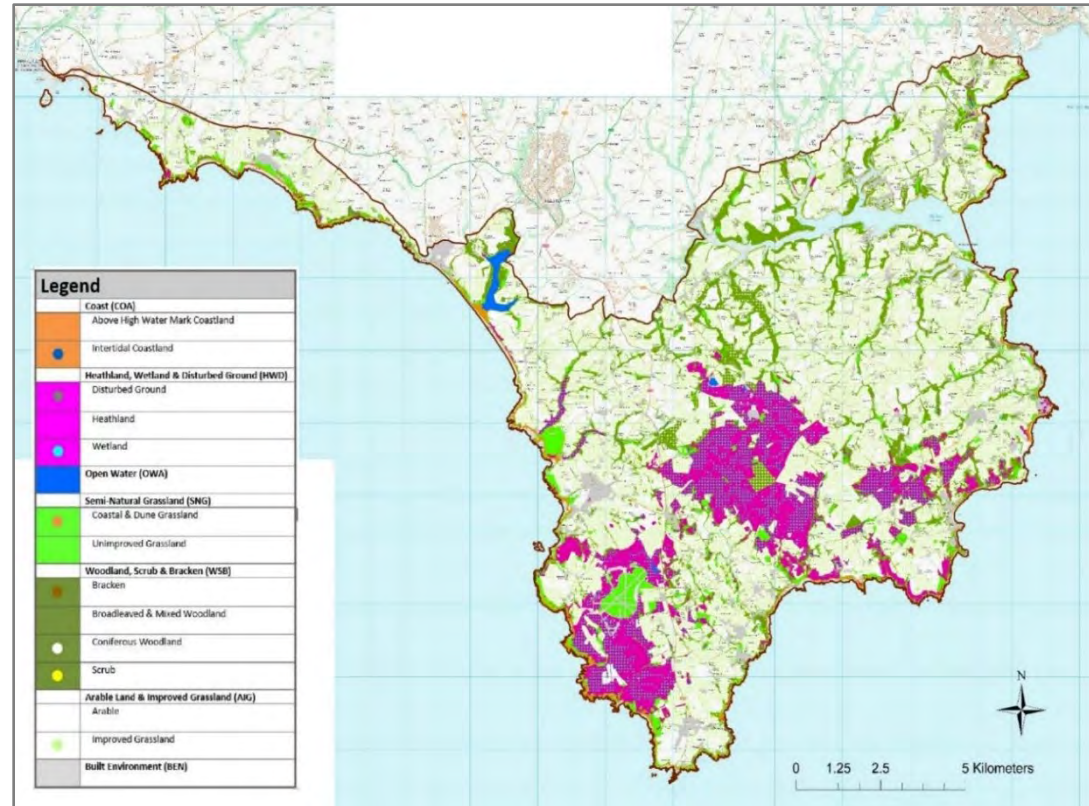
4 Natural capital

Consultants carried out a Natural Capital Assessment of the Cornwall AONB in 2016. This study mapped six key natural capital types for the Cornwall AONB

- Coast;
- Heathland;
- Wetland and Disturbed Ground;
- Semi-natural Grassland;
- Woodland, Scrub, and Bracken;
- Arable and Improved grassland and
- Built environment

The natural capital map shows the extent of the heathland/ wetland mosaic on the Lizard and the drainage patterns of the central plateau to the coast and the Helford estuary. The woodland cover contained within stream valleys is strongly evident.

All around the coast is 'coastland' - maritime cliff and slope and intertidal habitats. Associated with this coastland is an intricate mosaic of other semi-natural habitats such as scrub, heathland, and unimproved grassland. The natural capital mapping highlights the size and connectivity of semi-natural habitats, which sets the area apart in terms of its landscape quality and biodiversity. However, the overriding land cover is arable and improved grassland, highlighting the farmed landscape's large extent that presents the most significant opportunity to secure public goods benefits.

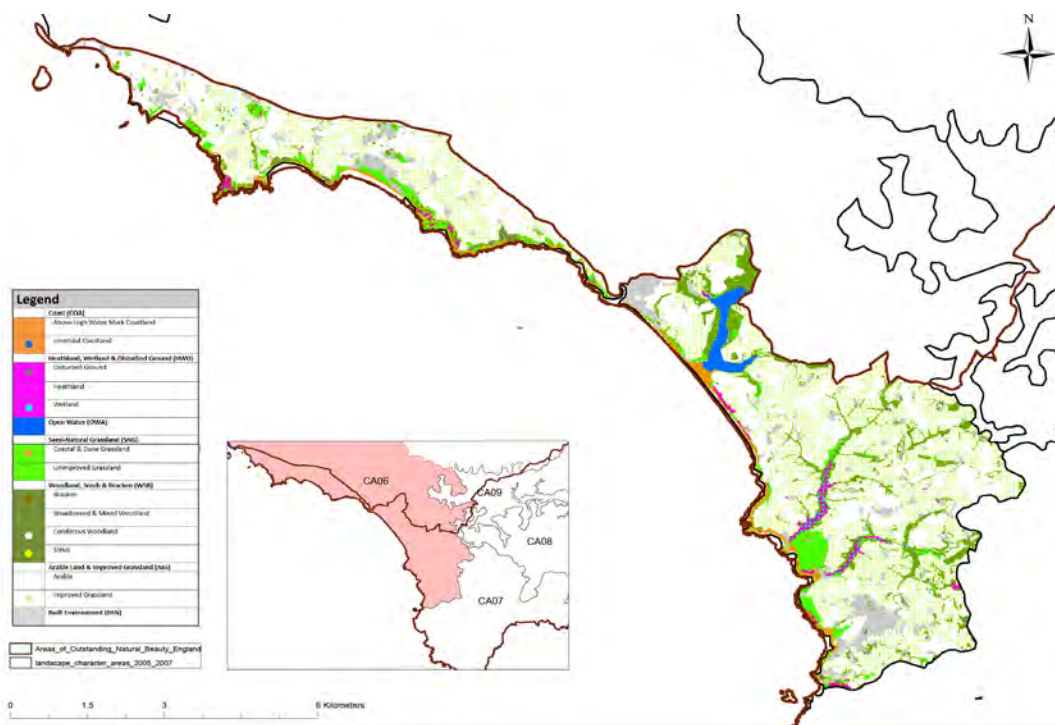


Map 2. The Cornwall AONB Section 08 Natural Capital Types

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CA06 Mounts Bay East

The coastal strip consists of extensive, exposed cliffs - ungrazed and 'wild' on the slopes, contrasting with sandy bays and a natural lake at Loe Pool. There are few trees and dwellings along the coast, and the area is used for recreation and farming. Small stream valleys are enclosed by woodland and undulating farmland on the valley sides. Much of this landscape is medieval in origin, but there are also substantial areas of former rough ground, enclosed in the post-medieval period by straight-sided field boundaries. There are many trees and Cornish hedges, awash with wildflowers. Out of the stream valleys, views are framed by high Cornish hedges rather than landform. The evidence of former mining activity is evident throughout much of the Landscape Character Area's northern and western portion, with mine remains, mining settlements, and miners' smallholdings absent from the Lizard area to the south. Small areas of lowland heathland survive on and around the former mine sites.



Map 3. CA06 Natural Capital Types

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Natural Capital Profile: CA06 Mounts Bay East

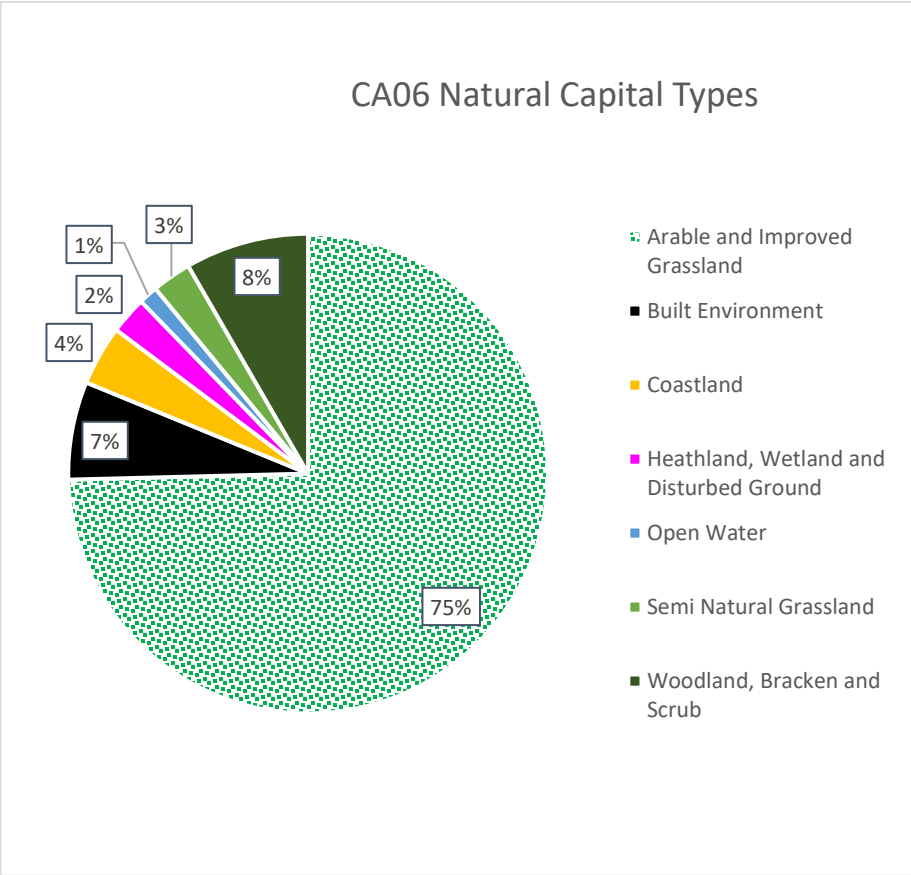


Fig 2. CA 06 Natural Capital Type Proportion

Natural Capital Type	Area Ha
Arable and Improved Grassland	3410.59
Built Environment	302.00
Coastland	184.34
Heathland, Wetland and Disturbed Ground	114.61
Open Water	58.58
Semi Natural Grassland	121.13
Woodland, Bracken and Scrub	380.81
Grand Total	4572.07



Photo Credit: Lesley Trelor for the Cornwall AONB

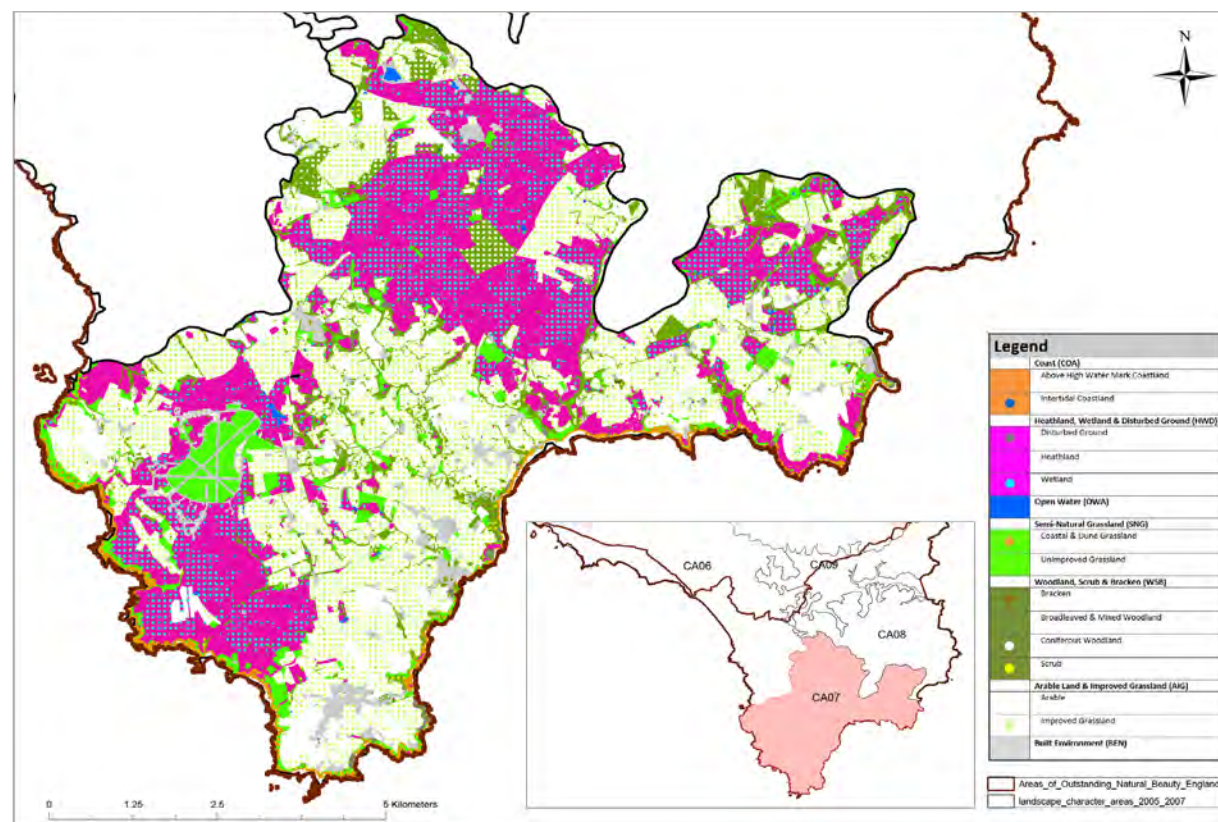
CA07 The South Lizard Peninsula

This Landscape Character Area is an open, flat to gently sloping plateau with a strong sense of exposure and isolation. The coastal strip is extensively covered in coastal heath and wildflowers where incised, narrow stream valleys tumble to rocky, boulder-strewn coves, giving rise to fine coastal scenery. The more sheltered eastern side of the plateau has more expansive valleys and more tree cover, particularly in the valley bottoms.

This area is an agricultural landscape of mainly pastoral improved fields bounded by Cornish hedges with some wind pruned trees and scrubby margins. Semi-natural habitats exist with lowland heath, wetland, and gorse scrub contributing to the rough upland character.

Goonhilly Downs to the north is the largest remaining area of unenclosed rough ground and is a prominent feature, consisting of open heath and wet rush pasture with many pools.

Other significant areas of unenclosed ground exist around Predennack Airfield to the west and north of Coverack. Numerous trackways of medieval origin cross the downs, although many are now overgrown.



Map 4. CA07 Natural Capital Types

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Natural Capital Profile: CA07 South Lizard Peninsula

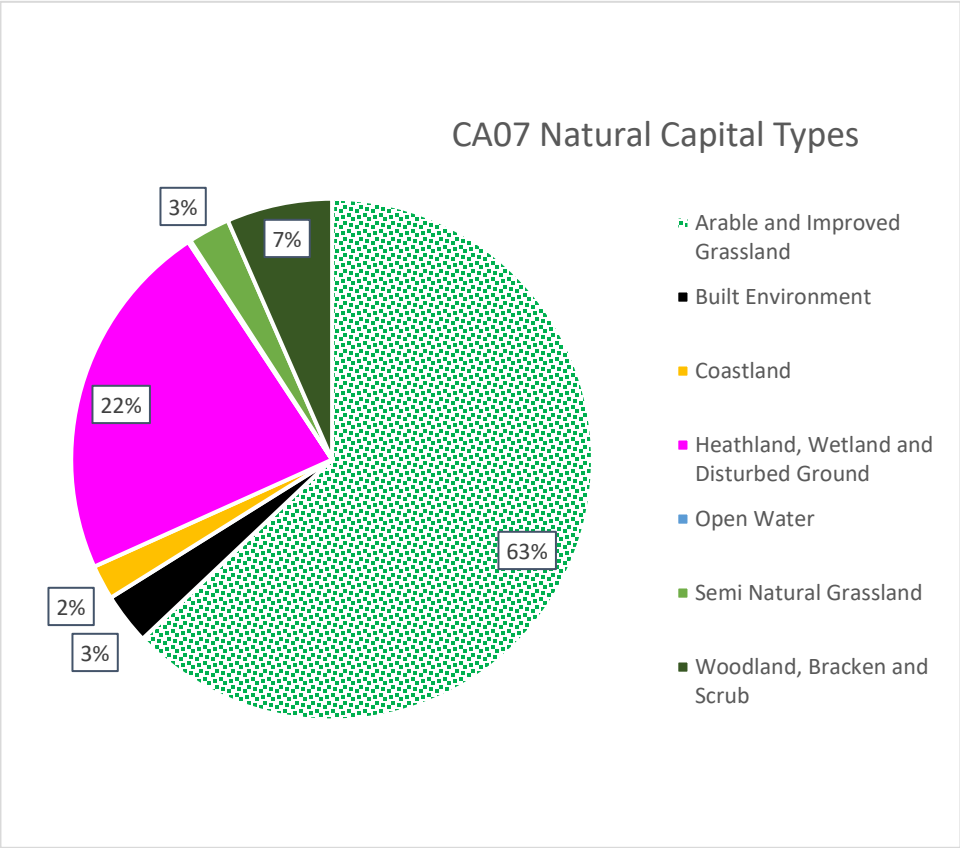


Fig 7. CA07 Natural Capital Type Proportion

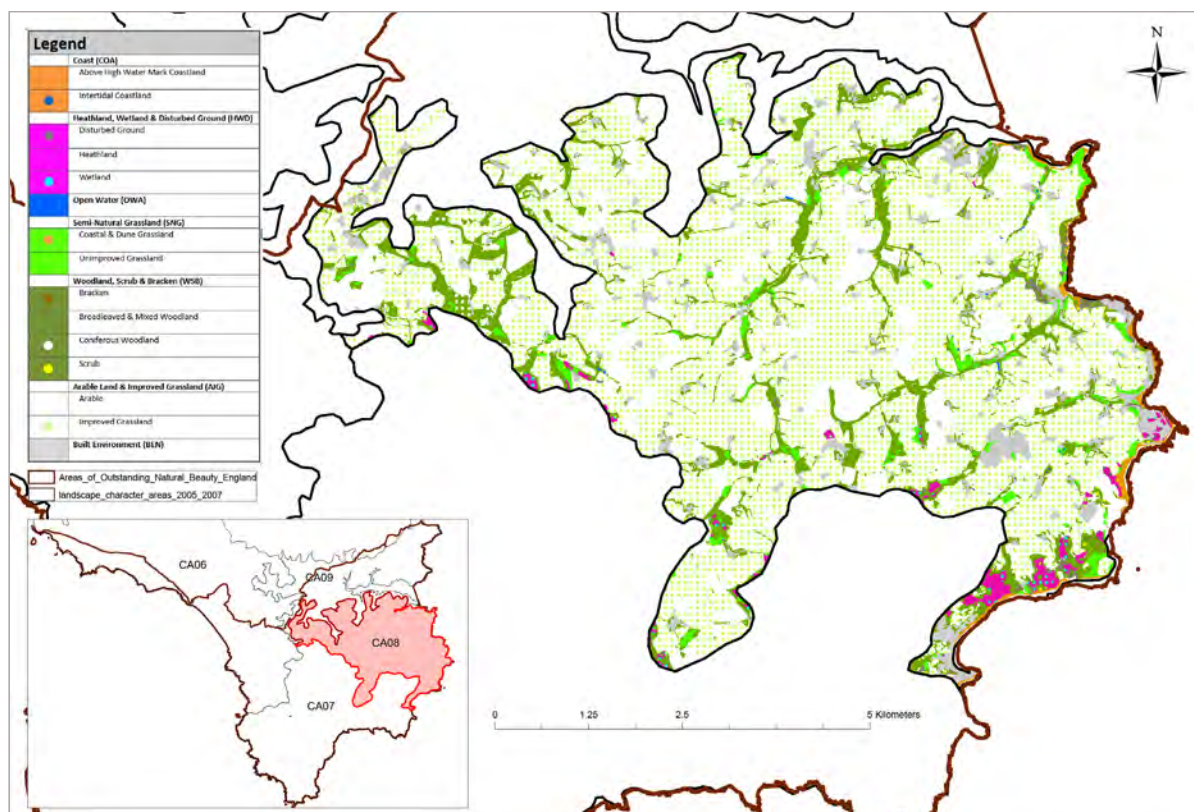
Natural Capital Types	Area Ha
Arable and Improved Grassland	6330.34
Built Environment	319.43
Coastland	216.27
Heathland, Wetland and Disturbed Ground	2255.97
Open Water	16.22
Semi Natural Grassland	260.52
Woodland, Bracken and Scrub	658.42
Grand Total	10057.18



Photo credit: Cornwall AONB

CA08 North East Lizard Peninsula

This area is a high plateau cut by several valleys, influenced by its proximity to the coast in the east, the Helford River to the north, and the downland to the south. Farming is mixed with pasture, much arable, and some remnant areas of rough grazing. There is a strong field pattern of medium to large irregular fields on the plateau bounded by tall stone-faced Cornish hedges with trees. In the valleys, fields become smaller with more sinuous boundaries. The coast is wild and rugged with low indented cliffs that descend into the sea, forming rocky reefs with a few sandy beaches. Some smaller coastal valleys are very narrow and well wooded.



Above the cliffs are pasture fields, remnant coastal heath, and rough coastal ground. The valleys that drain from the plateau to the coast and the Helford River are variable in size with larger, shallower valleys having rounded sides and convex slopes, supporting pasture and horticulture with woodland in the valley floor.

To the northwest is the designed parkland landscape around Trelowarren Estate, with its ornamental gardens and woodland planting.

Map 5. CA08 Natural Capital Types

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Natural Capital Profile: CA08 North East Lizard Peninsula

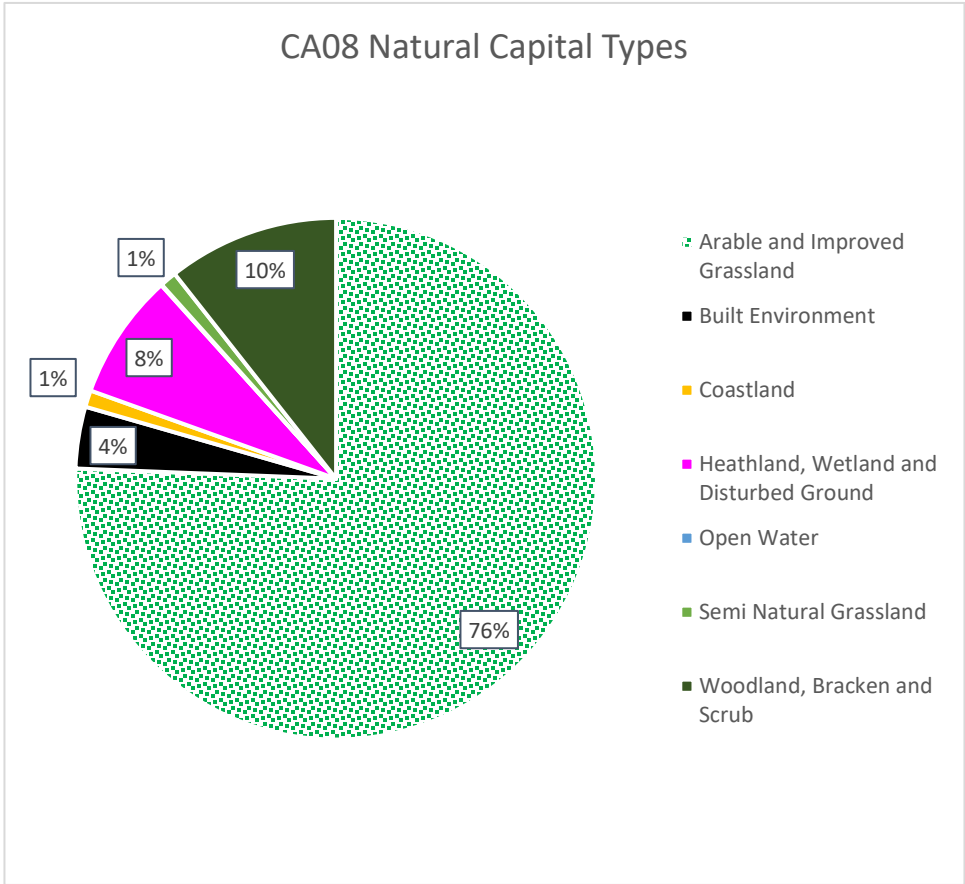


Fig 4. CA08 Natural Capital Type Proportion

Natural Capital Types	Area Ha
Arable and Improved Grassland	5593.70
Built Environment	282.93
Coastland	76.69
Heathland, Wetland and Disturbed Ground	578.37
Open Water	3.41
Semi Natural Grassland	75.70
Woodland, Bracken and Scrub	785.73
Grand Total	7396.52



Photo credit: Cornwall AONB

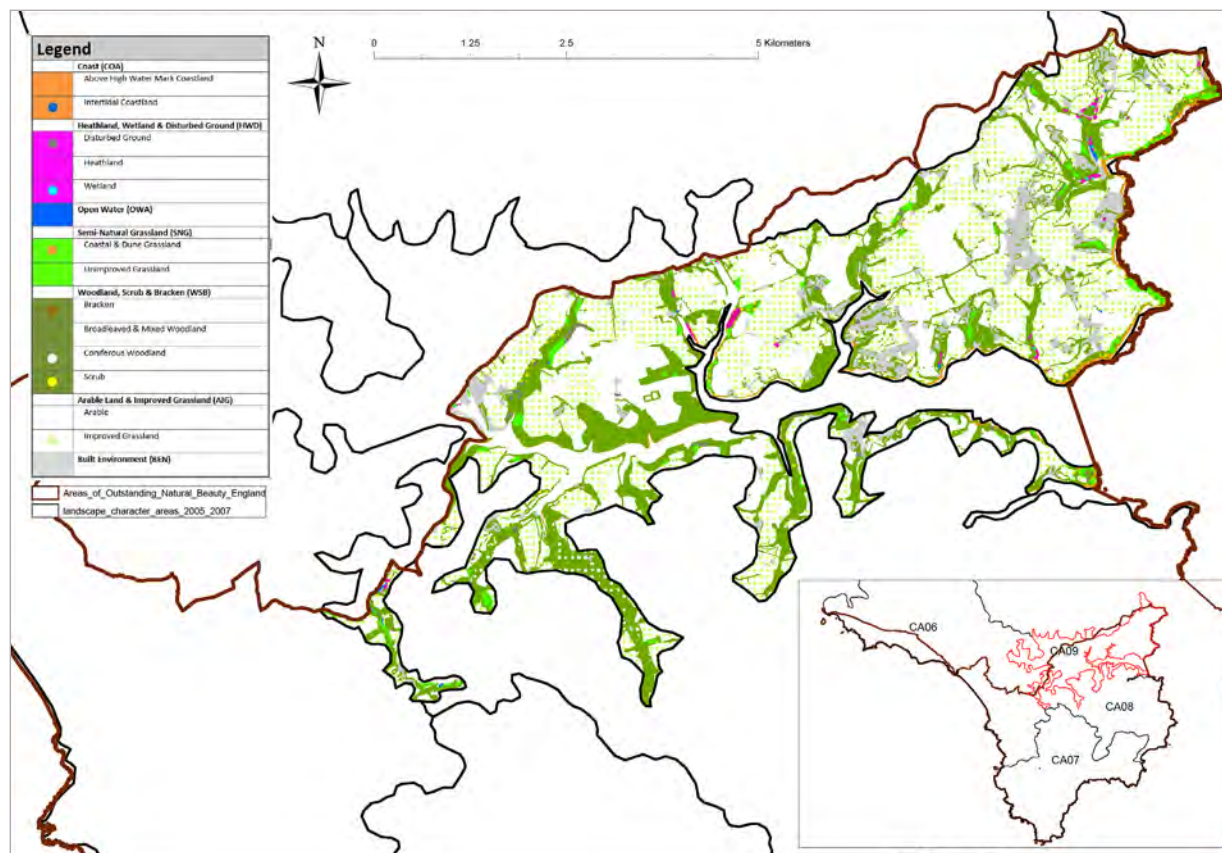
CA09 Helford Ria

The Helford Estuary is a sheltered deep-water ria on the western side of Falmouth Bay on the south Cornish coast. Steep slopes enclose the broad riverscape with extensive mature broadleaved woodland.

The numerous small creeks around the river are enclosed by their steep, well-wooded slopes but have wide views out over the Helford River from vantage points on the valley sides.

Much of the woodland is classified as ancient, being upland oakwood with some upland mixed ashwoods. Each side of the mouth of the Helford has a narrow rough coastal strip backed by pastures.

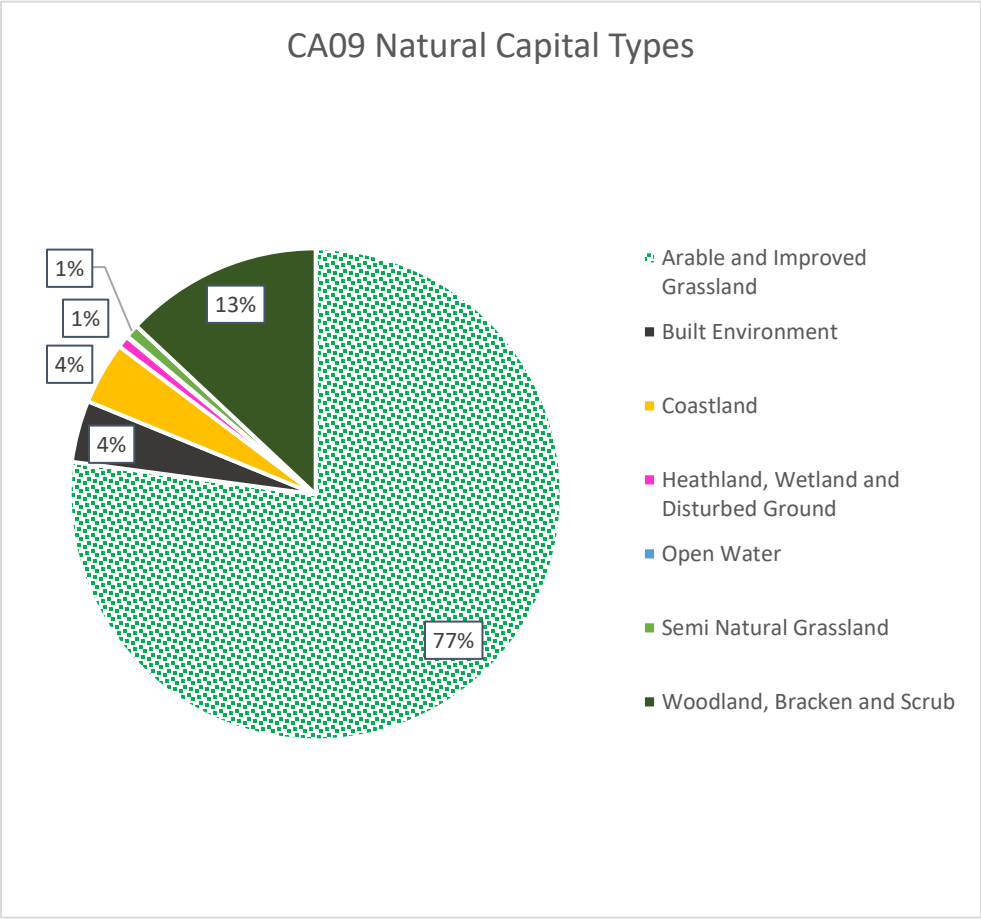
The small ridges between the creeks support a mix of pastoral and arable farmland bounded by a network of Cornish hedges with tall trees that takes advantage of the sheltered slopes and fertile loamy soils. The river changes constantly, heavily influenced by the tides that peel back to reveal ecologically important intertidal mudflats.



Map 6 CA09 Natural Capital Types

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Natural Capital Profile: CA09 The Helford Ria



Natural Capital Type	Area Ha
Arable and Improved Grassland	4043.49
Built Environment	212.78
Coastland	214.99
Heathland, Wetland and Disturbed Ground	40.80
Open Water	3.49
Semi Natural Grassland	46.18
Woodland, Bracken and Scrub	681.53
Grand Total	5243.28



Photo credit: Colette Beckham, Gain Consulting

Fig 5. CA09 Natural Capital Types Proportion

5 Natural capital and ecosystem services

The different natural capital types in Section 08 of the Cornwall AONB contribute to the target ecosystem services or public goods benefits that deliver on Defra's Environmental Land Management Scheme priorities. The following table shows how much each natural capital type can provide a range of services. The green boxes indicate the natural capital type's relative significance in delivering each service, the darkest green, showing the highest importance.

			South Coast Western: Natural capital types ¹									
Service group	Defra's ELM priorities	Ecosystem service	Arable and Improved Grassland	Coastland	Heathland, Wetland and Disturbed Ground	Open Water	Semi Natural Grassland	Woodland, Bracken and Scrub	Linear features (Cornish Hedges) ²			
Regulating	Clean and plentiful water	Water quality										
	Clean air	Air quality										
	Protection from and mitigation of environmental hazards	Hazard resilience (flooding and coastal erosion)										
	Mitigation of and adaptation to climate change	Climate regulation										
		Soil quality										
Provisioning/ cultural	Thriving plants and wildlife	Wild species diversity										
		Pollination services (linked to wild species diversity)										
Cultural	Beauty, heritage, and engagement	Environmental settings landscape and seascape										
		Recreation - heath										
		Cultural heritage										
Importance of natural capital type in delivering the service					High		Medium-High		Medium Low		Low	

Fig 6. Relative ecosystem services provision per natural capital type in the scheme area

¹ As described by the Cornwall AONB Natural Capital Assessment 2016 Hoelzinger et al

² https://devonhedges.org/wp-content/uploads/2015/11/3_Ecosystem-Services.pdf



**Cornwall
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Environmental Land Management Scheme

Landscape Recovery Framework

The Cornwall AONB Section 08, South Coast Western

2. Pressures, condition and management

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1 Landscape pressures and condition

The Cornwall AONB Section 08, South Coast Western is under pressure from many different forces for change. These forces act on the landscape and natural capital of the AONB and impact upon the delivery of ecosystem service and Defra's six main scheme priorities. The table below summarises the main condition factors and pressures for change which could be influenced by the new Environmental Land Management Scheme.

Environmental Land Management Scheme Priorities	
• Clean and plentiful water	
• Clean air	
• Protection from and mitigation of environmental hazards	
• Mitigation of and adaptation to climate change	
• Thriving plants and wildlife	
• Beauty, heritage, and engagement	



Photo credit: Clare Lemon

Pressures and condition



Farmland

Cornish hedges have been removed to create larger fields and the widening of gateways to facilitate larger farm machinery. This has resulted in landscape change and facilitated more intensive management. Inappropriate management of Cornish hedges, such as over flailing and overstocking, has resulted in structural damage to Cornish hedges in places and reductions in species diversity.						
Changes in agricultural practice have led to the further conversion of pasture to arable, larger-scale horticulture and novel crops like biofuels resulting in landscape change and pressure on soils.						
Tourism and recreation demand has resulted in the conversion of farmland to amenity land and has resulted in erosion and landscape impact from land cover change. Many farms have diversified to tourism accommodation.						
Increased storminess and winter rainfall have resulted in major runoff and resultant soil erosion and water quality issues, particularly where bare soil is exposed, for example after maize and potato cropping.						

Woodland

Conifer plantation woodland for forestry Goonhilly Downs has impacted upon heathland condition and resulted in adverse landscape and visual impact.						
Ancient sessile oak woodlands around the Helford have fallen out of management resulting in less diverse structure and sycamore becoming more dominant.						
There has been significant loss through the disease of hedgerow elm trees impacting on habitat connectivity and landscape character. Similarly, ash within the landscape is now at risk from Ash Die Back. Some stream valley woodlands are impacted by invasive species such as Japanese Knotweeds						

Heathland and wetland

There has been a lack of grazing management of marginal land and neglect of important habitats such as heathland, that has resulted in overgrowth of scrub such as gorse and willow. There has been a lack of financial incentives to maintain stock on heath, resulting in under grazing.						
There has been a lack of low intensity, controlled burning of the heathland to facilitate grazing animals. Overgrown areas of heath with woody scrub pose a summer fire risk.						
A changing climate with increased carbon dioxide and nitrogen levels could result in changes to species composition on the heathland, favouring swards with are grass-dominated, over heather stands. Drier summers pose a significant risk to wet heath and wetland habitats on the Lizard and the continued survival of the distinctive Mediterranean temporary pools and associated niche species (which are also linked to the decline in historic trackways crossling the downs).						
20% of dwarf shrub heath (lowland heath) SSSIs contain units which are classified as 'unfavourable recovering' with 80% classed as in 'favourable' condition.						

Estuary, rivers and coast

Access points to the Helford river have increased and become enlarged over time, and there has been over-use of the river for boating recreation, which has impacted on water quality and biodiversity.						
Future climate change effects such as rising sea levels and increased storminess elevate flood risk at Porthleven, Gweek, Cadgwith and Coverack, as demonstrated by the 2017 flash flood in Coverack which swept away the road and damaged a number of properties. Increased storminess also increases the risk of damage to harbours, such as at Mullion, which has seen numerous repairs in recent years due to storm damage.						
Loe Pool is affected by 'runoff' from surrounding farmland as well as seasonal water level changes from the Helston flood alleviation scheme resulting in significant eutrophication and algal blooms, impacting on water quality, biodiversity and amenity.						
Hottentot Fig is a significant problem at the coast, invading coastal slopes, smothering native coastal vegetation and changing soil composition.						
Coastal grasslands have suffered from both intensive management and extensification. Many areas have been improved and overgrazed in places with managed grazing extending to the cliff edge. Whilst under grazing has resulted in blackthorn scrub dominance. Climate change may compound this by encouraging an increase in tree and scrub growth at the coast.						
Sea level rise may impact on intertidal habitats such as the important mudflats and eelgrass beds on the Helford Estuary.						
The Helford River is designated as a shellfish waters because of the oysters that are commercially farmed there. In addition, Natural England has identified much of the Lizard plateau as headwater areas for priority rivers. The AONB						

section contains 13 designated bathing waters, Marazion; Perranuthnoe; Praa Sands West; Praa Sands East; Porthleven Sands; Church Cove; Poldhu Cove; Pollurian Cove; Kennack Sands; Coverack; Porthoustock; Pothallow and Maenporth. Currently, all of the bathing waters are of 'excellent' quality, apart from Porthleven Sands and Maenporth, which are classified as 'good'.						
Historic features						
116 Scheduled Monuments are located in Section 08 of the AONB - of these, 5 (excluding two 'at risk' churches) are on the 2019 Heritage at Risk register. The main reason for the poor condition of scheduled monuments is an overgrowth of scrub.						
The distinctive historic trackways which criss-cross Goonhilly Downs, connecting ancient settlement have become overgrown, and some have been lost.						
Removal of Cornish hedges to facilitate modern agriculture has erased the historic medieval field pattern. Unenclosed rough ground is culturally important, and some of this was enclosed in the 20 th century.						
Inappropriate conversion and alteration of historic buildings and the overdevelopment of historic farmsteads have resulted in impacts on heritage and character.						
Many non-designated heritage assets which contribute significantly to local distinctiveness such as stone stiles, Cornish hedges, traditional paving and fingerposts are in poor condition or have been lost.						
Access						
The South West Coast Path extends the full length of the Cornwall AONB section, crossing the Helford Estuary by ferry between Helford and Helford Passage. Some good circular routes extend from the coastal path. However, walking routes inland are more fragmented, and there is little footpath access around the upper reaches of the Helford Estuary.						

2 The state of agriculture

The other major factor affecting landscape and land cover and the condition of ecosystem services is the current state of the farming sector. The Defra June Agricultural census can provide clues to the health and wealth of the farming sector on the Lizard, with results being available for the Lizard National Character Area. While this is not strictly contiguous with the area covered by the Cornwall AONB Section 08, it is a reasonably accurate proxy.

The prosperity of farms and the state of natural capital and ecosystem services have not historically gone hand in hand. As farms have intensified in response to increasing economic pressures and driven by the low price of food, there have been negative impacts on semi-natural habitats and natural resources on farm ¹. Farming overall has become a large emitter of greenhouse gasses and has lost carbon from soils. In general, small farms are seen as good custodians of the countryside, better able to manage natural resources and not so driven by yield.



Photo credit: Lawrence Sampson, FWAGSW

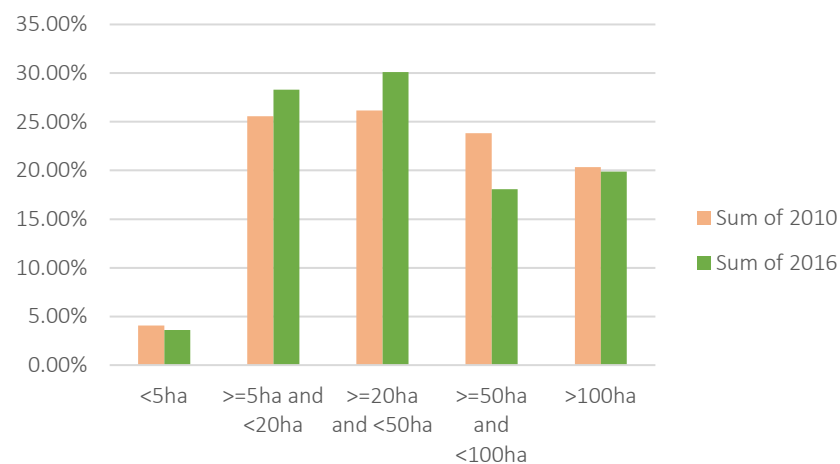
¹ National Ecosystem Assessment 2011 Chapter 7, Enclosed farmland

Farm size

Farms on the Lizard are small, with only 1/5th of farms being over 100Ha and 62% of holdings being less than 50ha. This reflects the relatively high quality of the environment in the area. However, the graphs show a reduction in farms of 50 to 100 ha and corresponding increases in farms of between 5 and 20 ha and 20 and 50 ha. The reason for this is not completely clear although land sales for purposes other than farming and land rentals to large horticultural contractors could be factors. This potentially shows that small farms are struggling to such an extent that they are coming out of farming or renting land to supplement income.

If the data does suggest that farm incomes are marginal, then it presents both a risk and an opportunity for natural capital and ecosystem services. If payments are at a level that is attractive, there is an opportunity for smaller farms to work with the scheme to maintain and enhance public goods.

Fig 1. Percent Farm Size, 2010 and 2016



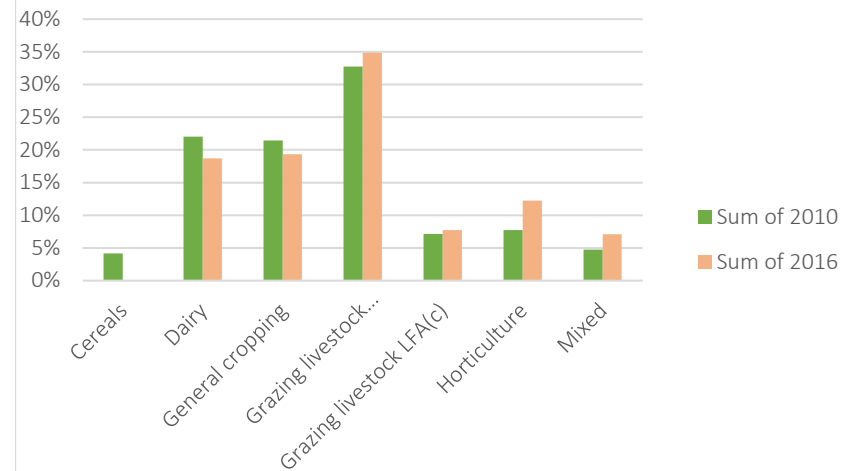
Farm type

It is a mixed picture for farm type on the Lizard although grazing livestock, which would primarily be beef with some sheep is the overriding farm activity. The grazing livestock LFA shows the livestock numbers grazing the less favoured area on the national nature reserve and demonstrates the relative lack of grazing animals here compared with the rest of the Lizard. General cropping such as maize and potatoes and dairy, taken together, make up more of the total farm activity than grazing livestock. However, both have reduced slightly since 2010, whilst livestock farming has somewhat increased. There has been a relatively sharp increase between 2010 and 2016 in horticulture, although still relatively low level. Interestingly, cereals seem to have declined to practically zero in 2016, which could have serious implications for farmland birds.



Photo credit: The Cornwall AONB

Fig 2. Percent Farm Type 2010 and 2016



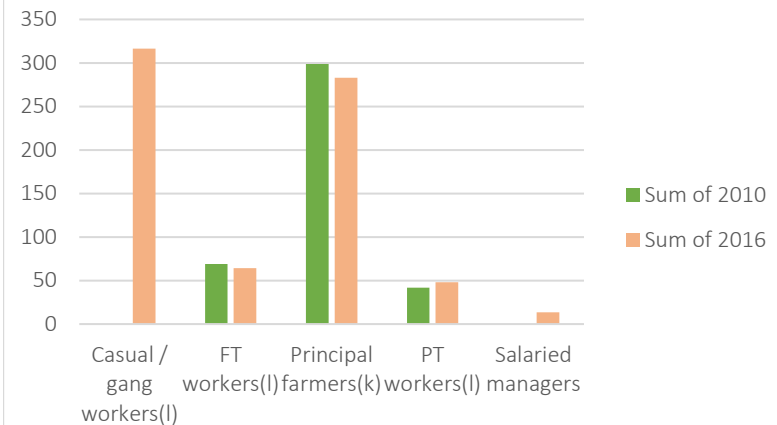
Tenure and labour

Nearly three-quarters of the farms on the Lizard are owned directly by the farmer, with just over a quarter being tenanted, perhaps reflecting the high number of family, multi-generational farms. This is reflected in the labour type, with most farms being managed by the principle farmer, supported by casual or gang workers. The marginality of farming is starkly demonstrated by the fact that only 15% of farmworkers are in secure part- or full-time employment, and only 2% employ of farms employ any kind of salaried management. This is reflective of the seasonality of the work and economic uncertainty.

Fig 3. Land Tenure



Fig 4 Farm Labour



Crops and livestock

Pastureland forms the primary land cover on the Lizard and with a small mix of several others associated with arable, horticulture and mixed farming. Livestock numbers show the majority of this pasture is grazed by cows, with a reasonably significant number of sheep and some chickens.

The number of cattle and pigs fell slightly between 2010 and 2016, whilst sheep and poultry numbers rose, potentially reflecting the trend towards smaller, mixed farms, potentially directed at local markets.

Fig 6. Crop type

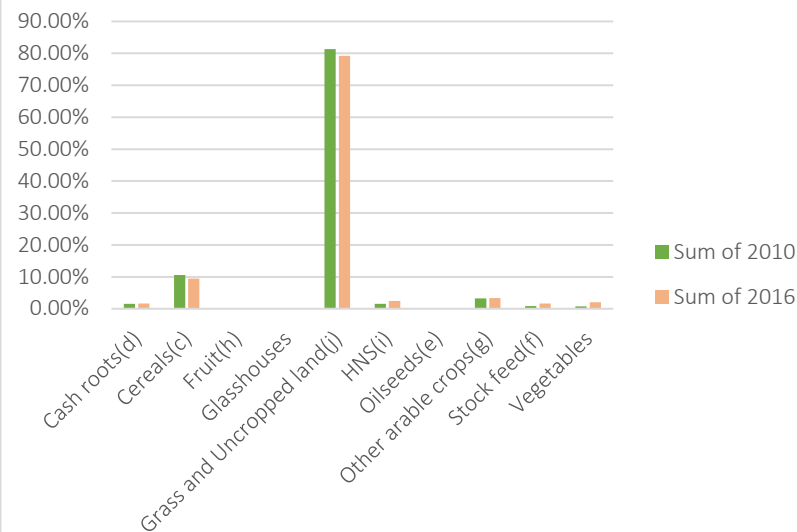


Fig 5. Livestock Numbers

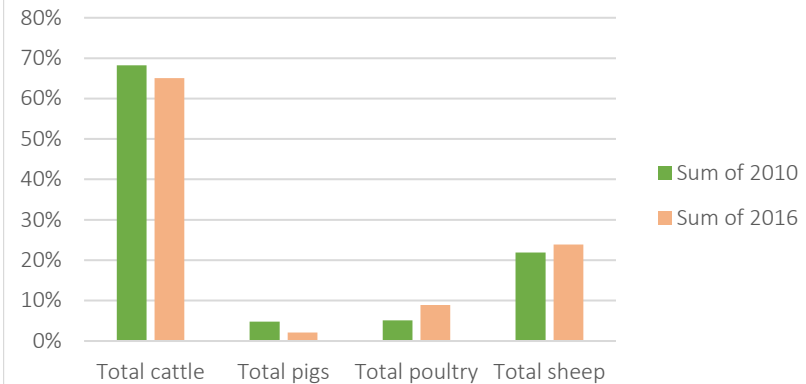


Photo credit: The Cornwall AONB

3 The state of nature

The Cornwall and Isles of Scilly Environmental Records Centre (ERCCIS) have provided the Cornwall AONB trial with species density mapping for a range of species assemblages based on the number of records for each 1km square. The different species sets will indicate quality and extent for different habitats on the Lizard which support different species. The location of different species records will show where habitats are currently performing well. In addition, separate species density maps showing the JNCC species of conservation concern (SOCC) (see Appendix 1) will give us more of an indication about the state of rare and threatened species on the Lizard.

Species density mapping

Birds

The species density mapping for all birds shows a weak correlation between coastal and heathland habitats; however, this is more strongly correlated within the farmland birds ² subset. The land around Lizard Point seems particularly crucial for Species of Conservation Concern although this is likely to be reasonably skewed by recorder effort to spot the Chough.

Amphibians and Reptiles

The amphibian (SOCC) density maps show a correlation between the wet heath habitats in Character Area 07 and a slightly weaker correlation with the tributary valleys of CA09 Helford Ria. The reptile mapping shows a robust correlation with warm, open grassland and heathland habitats around the coastal strip, particularly to the east of Lizard Point and to a slightly lesser extent with the open heathland habitats of CA07.

Insects

There is a notable absence of insects on agricultural land to the north of Goonhilly Downs, centrally in Character Area 08 and in agrarian habitats around the Helford. Whilst this could be slightly skewed due to recorder effort, it is considered that these areas are likely to be in poor condition for biodiversity, particularly pollinators.

² <https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/near-you/farmland-bird-indicator/>

Mammals

There is a much stronger relationship with areas of stream valley woodland in Character Areas 09 and 06 and the Helford Estuary woodlands particularly for mammals of conservation concern associated with woodland or woodland edges, such as deer, all species of bat, and hedgehog.

Vascular Plants

The coastal hinterland is particularly important for vascular plants. The SOCC map for vascular plants shows a reduction in vascular plant density in the agricultural areas to the North of Goonhilly Downs and agricultural land in CA08 and CA09.



Photo credit: Clare Lemon

4 Landscape management

Current management



Farmland

Farmland is influenced by the current Countryside Stewardship Scheme for which Natural England has produced a [Lizard Targeting Statement](#) for the National Character Area.



Heathland and wetland

Natural England manages the Lizard National Nature Reserve which includes much of Goonhilly Downs, and they work with a number of different graziers on the NNR.



The National Trust have a pony grazing scheme to tackle scrub encroachment on coastal heathland.



Estuary, rivers, coast and sea

The Loe Pool Forum (LPF) is an environmental partnership working to improve water quality and reduce flood risk in the River Cober catchment. Recent work with South West Water on upstream thinking within the Cober catchment have had a good influence and are improving water quality at Loe Pool.



The Helford and Fal Estuaries are a recently designated Special Area of Conservation for their shallow inlets and bays; the designation also covers salt marshes, intertidal mudflats and subtidal sandbanks.



The Manacles Marine Conservation Zone was designated in 2013 with two new MCZ's, The Western Channel, a large offshore area south-east of the Lizard Peninsula and Mounts Bay both designated in 2016. The Helford Estuary is the most recent area to be designated an MCZ.



The Helford Voluntary Marine Conservation Area was designated in 1987. The Helford Marine Conservation Group is a voluntary organisation working to safeguard the marine life of the beautiful Helford River, to increase its biological diversity and raise awareness of its marine interest and importance.



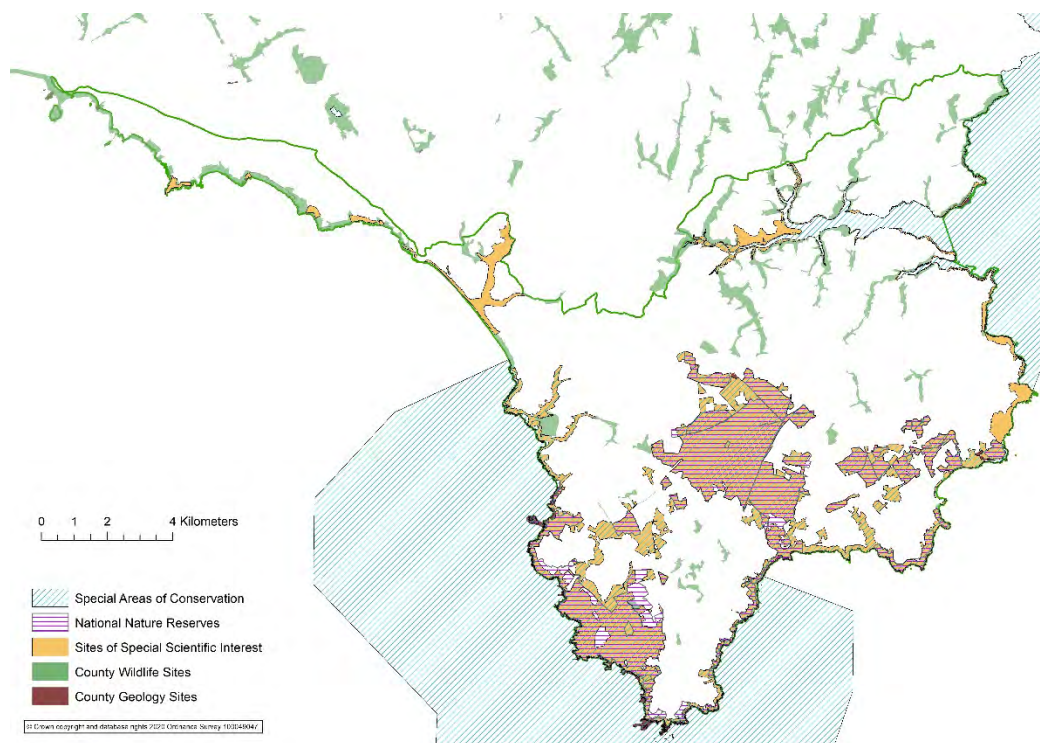
The Lizard coast from Gunwalloe Fishing Cove around Lizard Point to Carrick Luz near Kennack Cove is a proposed candidate for Special Area of Conservation status in respect of the submerged reefs.							
Historic features							
The Lizard Peninsula Heritage Trust has surveyed roadside heritage assets (milestones, fingerposts etc).							
The Cornwall AONB Monumental Improvements Project is seeking to work with landowners to restore the condition of Scheduled Monuments.							
Access							
The South West Coast Path team, funded by Natural England manage the national trail. The South West Coast path Association exists to represent users.							
Biodiversity							
The Linking the Lizard partnership seeks to establish a landscape scale and co-ordinated approach to landscape and habitat management between the relevant partnership agencies. The Partnership has worked successfully to extend the National Nature Reserve to include Cornwall Wildlife Trust and National Trust land, making it one of the largest nature reserves in the South West. Linking the Lizard supports the website the-lizard.org which is a comprehensive information website for the area's biodiversity.							
The RSPB works with the National Trust and Natural England to promote the conservation of habitats that support Cornwall's choughs and to monitor the growing population and protect their nests.							
The National Trust runs a wildlife watchpoint at Lizard Point and data feeds into the local records centre and the British Trust for Ornithology.							
The Welcome to 'Wild Lizard' tourism group champions sustainable tourism that promotes nature as a key USP for the Lizard.							
The National Trust are one of the largest landowners in the area and manage a range of different sites such as Lizard Point, Mullion Harbour and Pottesco as well as a large area of land, some of which is managed in-house whilst some farms are tenanted. The 'Land, Outdoors and Nature Strategy' of the National Trust is a current driving force behind management.							
Cornwall Wildlife Trust owns and manages Windmill Farm Local Nature Reserve and has recently restored the historic stone windmill structure to include a small interpretation centre and viewing platform. The Trust also manages North Preddannack Downs, alongside some parts of Preddannack Airfield.							
The Cornwall Biodiversity Initiative aims to include support for the Linking the Lizard Partnership and 'All of the Coast' habitat enhancements for birds.							

Nature designations

The Lizard peninsula is one of the best locations in the country for wildlife, with a wealth of rare plants, invertebrates and habitats that make visiting the area a must for nature lovers and this is reflected in the considerable extent of nature-based designations.

The Cornwall AONB Section 08 contains 20 Site of Special Scientific Interest covering 3294 ha of land, and this is augmented by a locally designated County Wildlife Sites and County Geology Sites. Cornwall AONB Section 08 also contains the contains three Special Areas of Conservation, Lizard Point, The Lizard and The Fal and Helford.

The Lizard National Nature Reserve was extended in 2016 from 1960 to 2426 ha to include land under the stewardship of the National Trust and Cornwall Wildlife Trust, making it one of the largest nature reserves in the South West. The enlarged reserve now stretches from Mullion Cove in the west, across Goonhilly Downs in the centre of the peninsula, to Lowland Point, near Coverack in the east.



Map 1 Nature designations in Cornwall AONB Section 08, South Coast Western

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5 Cornwall AONB Policy

Relevant policies from CAONB Management Plan 2016-2021

The strategic policies within the Cornwall AONB Management are all applicable to the trial area and can be accessed by clicking the link below. [The Cornwall AONB Management Plan 2016-2021: Policy](#)

The following policies in the current Cornwall AONB Management Plan are taken from the [set of local policies](#) and are directly relevant in terms of guiding land management in the trial area.

- Support appropriate improvements to footpath access around the Helford River and its creeks with respect to the Marine and Coastal Access Act 2009, provided that this does not encourage an increase in traffic levels or the provision of further car parks and that this conserves and enhances natural beauty.
- Support appropriate improvements to coastal footpath access between Godrevy Cove and Porthallow provided that this respects local landscape character and conserves and enhances natural beauty.
- Support the Linking the Lizard Partnership in its initiatives to integrate land management, farming and the conservation of biodiversity and historic environment together with the promotion of a vibrant local rural economy and community and support the complementary work of the 'Welcome to Wild Lizard' group who promote sustainable nature-based tourism on the Lizard.
- Help to support coastal management which promotes natural processes wherever possible and support initiatives with communities which consider the long term future and value of coastal areas, e.g. Marazion, Mounts Bay, Porthleven, Loe Bar, Praa Sands, Gweek, Cadgwith, Coverack, and Maenporth in respect to predicted effects of sea-level rise and increased storminess. Manage realignment as identified in the Shoreline Management Plan, where they conserve or enhance the landscape character and natural beauty of the AONB. Conserve the undeveloped nature of the coast in this section.
- Encourage the conservation and positive management of mining features that are outside of the World Heritage Site, south of the A394 around Perranuthnoe, Rosudgeon, Kenneggy, Praa Sands and Porthleven.

- Support the work of the Loe Pool Forum and encourage measures to improve water and habitat quality at Loe Pool by improved management of nutrients from diffuse pollution sources in the Cober catchment and the improved management of effluent from Helston and RNAS Culdrose sewage treatment works.
- Support measures to improve water and habitat quality in the Helford by encouraging measures to reduce runoff and nitrate input and improve the management of sewage.
- Support conservation and enhancement of the character of the open heathland plateau. Where possible, this should be achieved by felling with restoration to open habitats balanced with equal or greater productive woodland creation using appropriate sites and species selected with regard to landscape character.
- Support measures to extend the Lizard National Nature Reserve to incorporate County Wildlife Sites and National Trust and Cornwall Wildlife Trust holdings to increase the protection of the important habitats, species and geology across the Lizard.
- Support the Helford Marine Conservation Group and the continuation of the Helford Voluntary Marine Conservation Area to encourage engagement and involvement in enjoyment and sensitive use of the Helford Estuary Special Area of Conservation.



**Cornwall
Area of Outstanding
Natural Beauty**

Environmental Land Management Scheme

Landscape Recovery Framework

The Cornwall AONB Section 08, South Coast Western

3. Opportunities

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Opportunities for public goods

The Cornwall AONB, Environmental Land Management Scheme Trial, has examined mapped data from several sources to explore the opportunities afforded by the landscapes of Section 08 of the Cornwall AONB to deliver Defra's stated public goods priorities for the scheme. Clear and well-defined opportunities have emerged from the evidence base and discussions with the trial farmers group.

1 Water

- Delivering clean water to coastal bathing areas and the Helford Estuary
- Protecting vulnerable coastal communities through natural flood management

2 Climate

- Sequestering carbon and locking it away in soils and vegetation

3 Nature

- Expanding key habitats and improving connectivity to restore nature

4 Farmland and field boundaries

- Managing the most extensive land cover and key landscape feature to maximise public goods benefits

5 Heritage, Beauty, and Engagement

- Improving historic fabric, providing access, and utilising farms for environmental education

1 Water

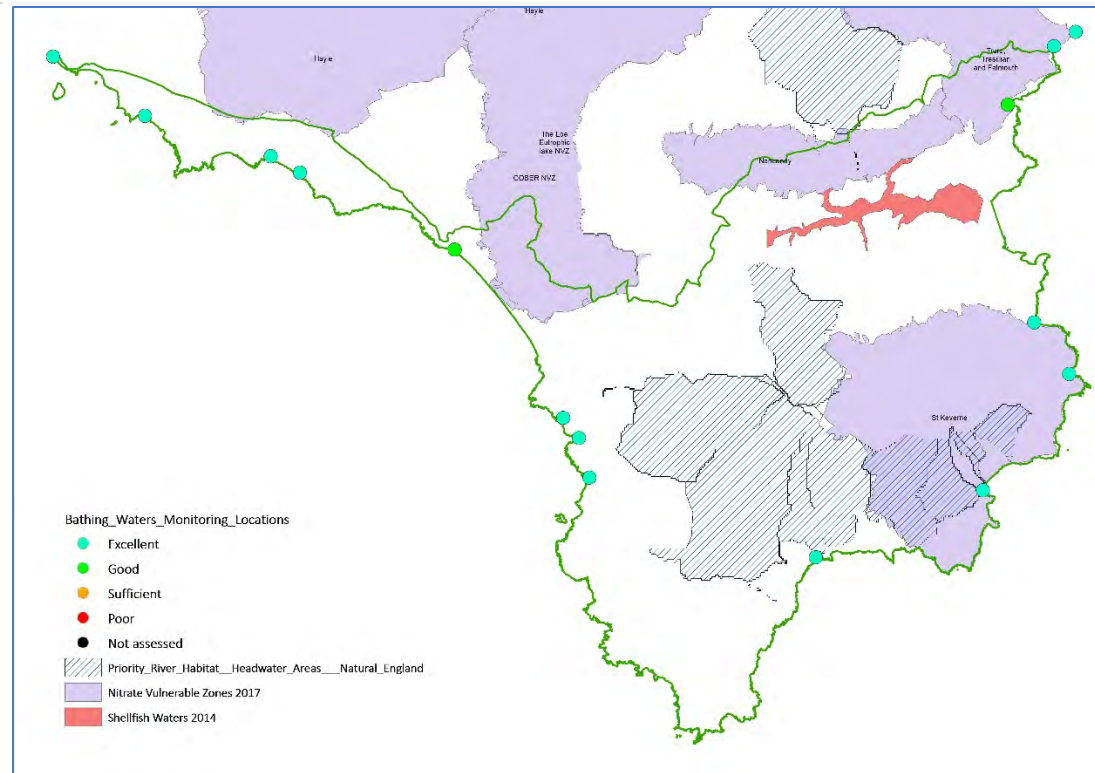
Water quality

A series of short stream catchments flow directly into the sea in a series of steep coastal valleys at coves and beaches, thirteen of which are designated bathing waters, The catchment streams of the River Helford flow into the estuary to the northeast.

Whilst not a priority catchment for drinking water, three Nitrate Vulnerable Zones are within the AONB section, The Cober NVZ, St Keverne NVZ, and Nanceloy NVZ north of the Helford. Natural England has also identified much of the Lizard plateau as 'headwater areas for priority rivers'.

Beneath the Lizard Peninsula is a natural aquifer. Although not abstracted by South West Water, it does supply local residents through the use of boreholes. The aquifer is fed by groundwater and is itself important in maintaining stream and river flows.

The Helford River is a designated shellfish water because of the oysters that are commercially farmed there. Good water quality is vital for its successful continuation.



Map 1. Water quality designations

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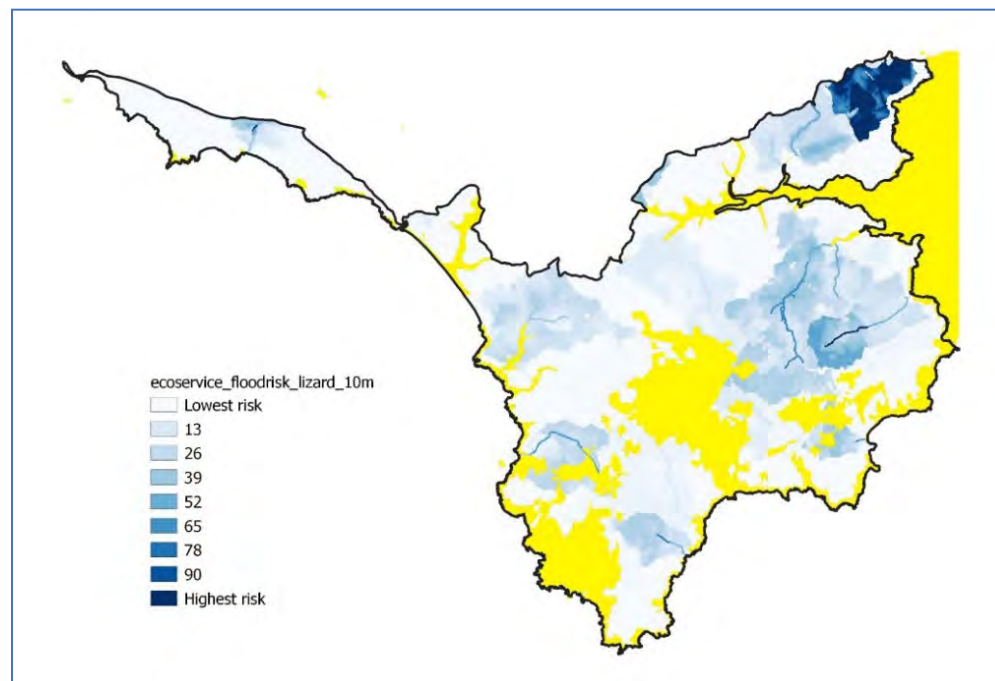
Flooding

Mapping carried out in 2019 by the University of Exeter in Cornwall for the Cornwall AONB Unit highlights the areas subject to the most significant flood risk. Flood risk has been calculated by examining the following,

- buildings at risk of flooding downstream;
- contribution to downstream flood risk via (i) surface water overland flow, (ii) peak river flow, (iii) identifying flood zone and riparian zones in the catchment;
- the flood mitigation contribution and potential of the landcover across the landscape.

The map shows the contribution of land to flood risk to settlements on the east coast of the Lizard such as Cadgwith, Coverack, and Porthallow and to the west at Mullion and Poldhu. These settlements are associated with the short coastal stream catchments characteristic of the project area. The very high-risk area to the northeast is associated with flood risk to Falmouth and outlying conurbations.

There is growing evidence supporting the role of land cover in the mitigation of downstream flood risk. Key mechanisms by which land cover can influence flood risk include the interception of rainfall and evapotranspiration, improved soil infiltration, reduced surface water runoff, and the slowing and interception of overland surface flow. Each of these mechanisms can slow and reduce the magnitude of downstream peak flows. Soil erosion is also highly influenced by land cover. It can magnify the risk and/or cost of surface water flooding by reducing the effectiveness of flood mitigation measures such as drainage ditches.



Map 2. Contribution to Flood Risk, 2019, University of Exeter
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2 Climate

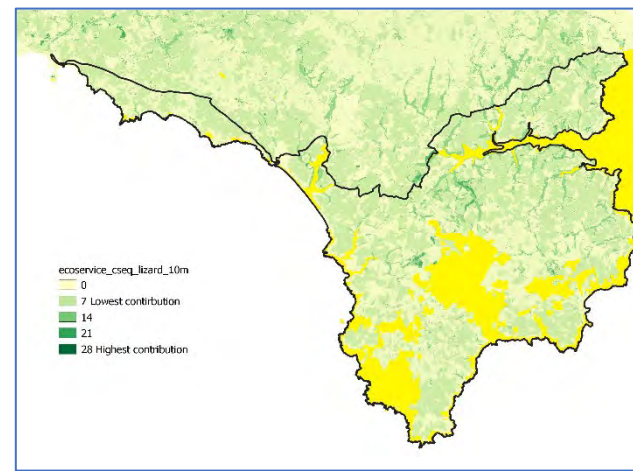
Carbon sequestration and storage

For most terrestrial habitats and wetlands, the majority of stored carbon is found within the soil. Woodland and scrub are the only main habitats for which the vegetative, above-ground carbon stock is of a similar magnitude to the below-ground stock.

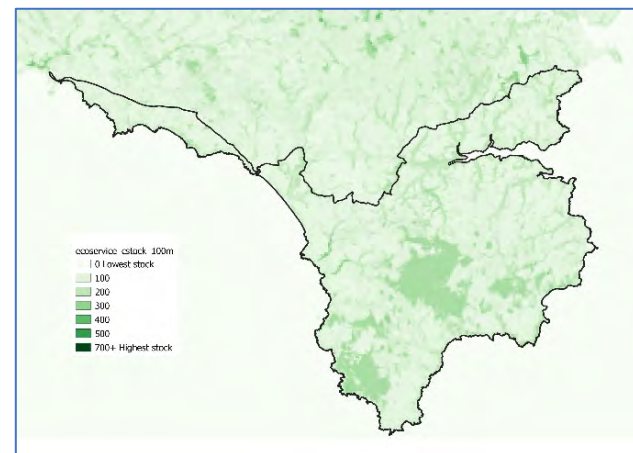
Sequestration rates are habitat-dependent but also highly dependent on land management and use. For example, land-use practices that reduce soil disturbance, erosion, and oxidation are likely to increase carbon stores. Net sequestration rates of agricultural land are highly dependent on agricultural inputs and management regimes.

Important areas for carbon stocks are within heathland areas and the broadleaved woodland in stream valleys, particularly the northeast section of the peninsula and tributaries on both sides of the Helford Estuary. Unfortunately, due to the study not covering designated sites, the heathland's carbon sequestration potential is not mapped, although it is likely substantial.

Opportunities for carbon sequestration and storage exists most strongly in the creation of woodland, wetland, and heathland habitats, management of farmland that minimises ploughing, and in the use of deep-rooted ley species.



Map 3. Carbon sequestration contribution 2019, University of Exeter
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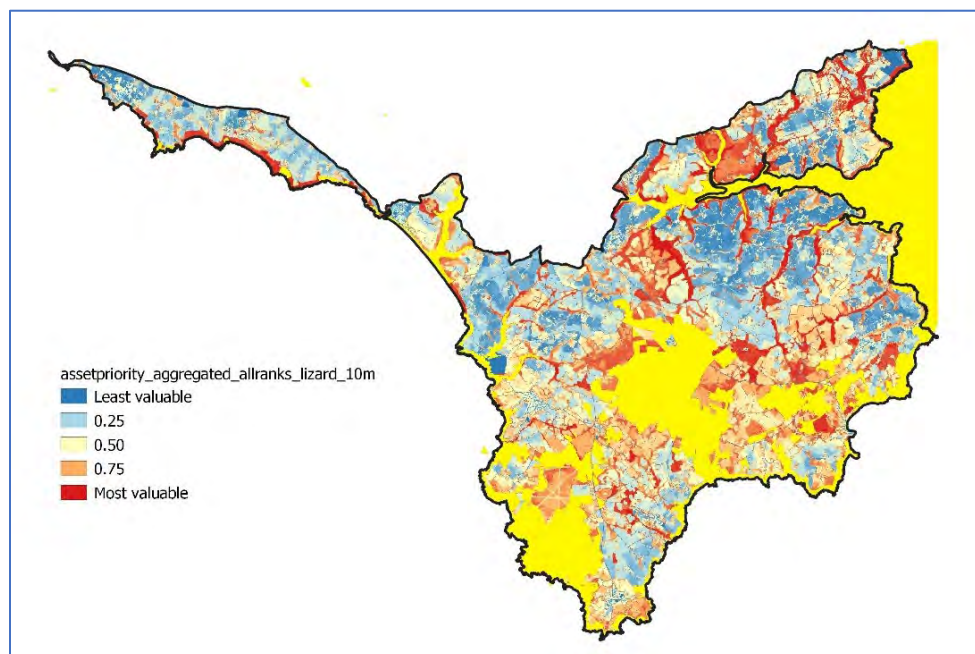
Map 4. Carbon stock contribution 2019, University of Exeter
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3 Nature

Habitat creation to benefit ecosystem services and nature

The future sustainability of habitats requires that existing habitat patches be protected, expanded, and connected across landscapes. The University of Exeter research has integrated the multiple potential benefits of habitat creation, such as reduced habitat fragmentation, enhanced flood mitigation, and carbon sequestration services. Map 5 presents a single strategic map to identify key opportunity areas for the delivery of the Environmental Land Management Scheme objectives.

Opportunity maps have also been created for the Cornwall AONB by the University of Exeter to identify opportunities for creating woodland and wetland habitat to enhance biodiversity. The opportunity maps identify areas within the AONB that would deliver the greatest public goods benefits through woodland and wetland creation. The maps show the optimal locations to increase wetland and woodland cover under the new land management scheme that reinforce the Lizard landscape's characteristics and deliver multiple ecosystem services.



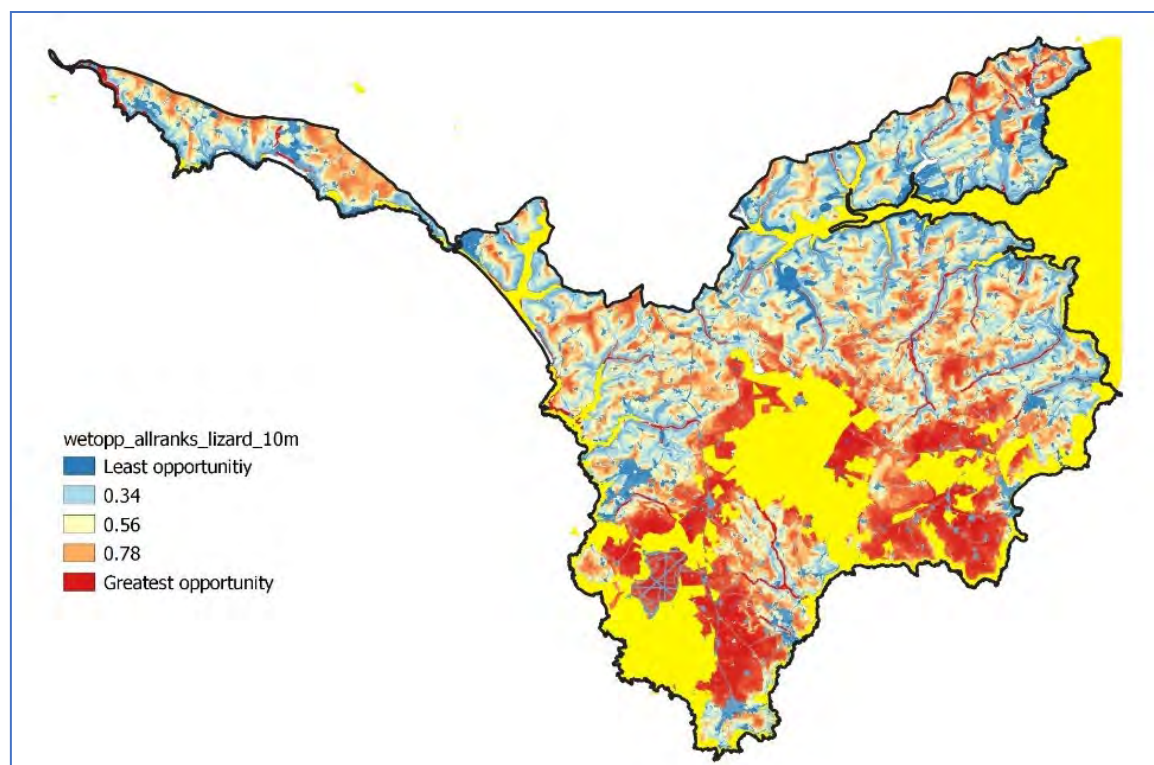
Map 5. The combined value of natural capital assets for biodiversity, carbon and flood risk 2019, University of Exeter

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Wetland creation

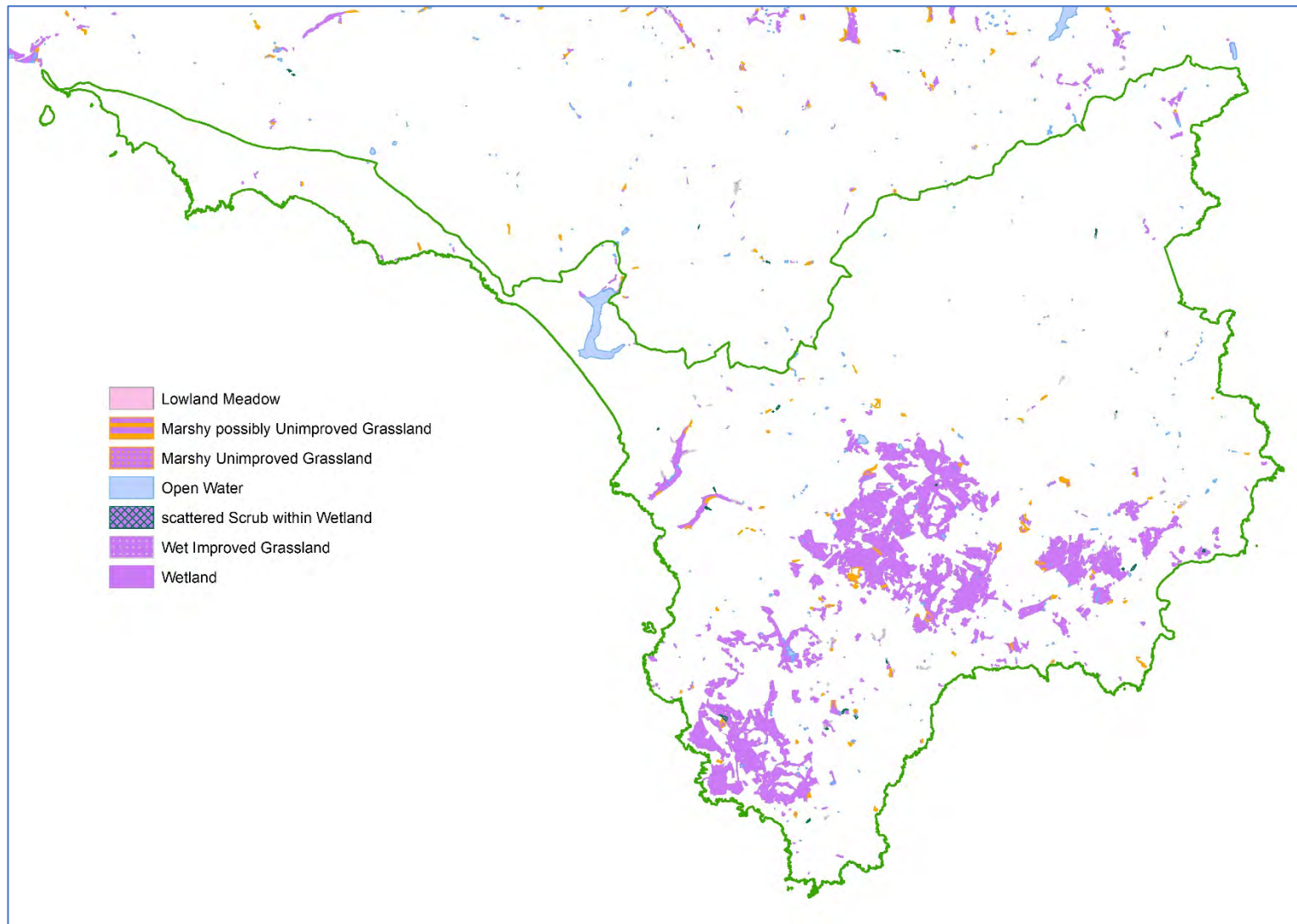
The mapping identifies very strongly the plateau land in Landscape Character Area 07 as the key opportunity for the creation of wetland and wet heath habitat, linked to the existing wet heath/ wetland mosaic, much of which is already designated as SSSI and forms part of the National Nature Reserve.

There are significant opportunities on the higher ground between the tributary valleys of the Helford in the northeast and in the estuarine and coastal valley floors. Wetland creation along these linear features offers clear potential for habitat connectivity across the trial area.



Map 6. Opportunity for wetland creation to maximise public goods benefits

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Map 7. Freshwater and wetland habitats

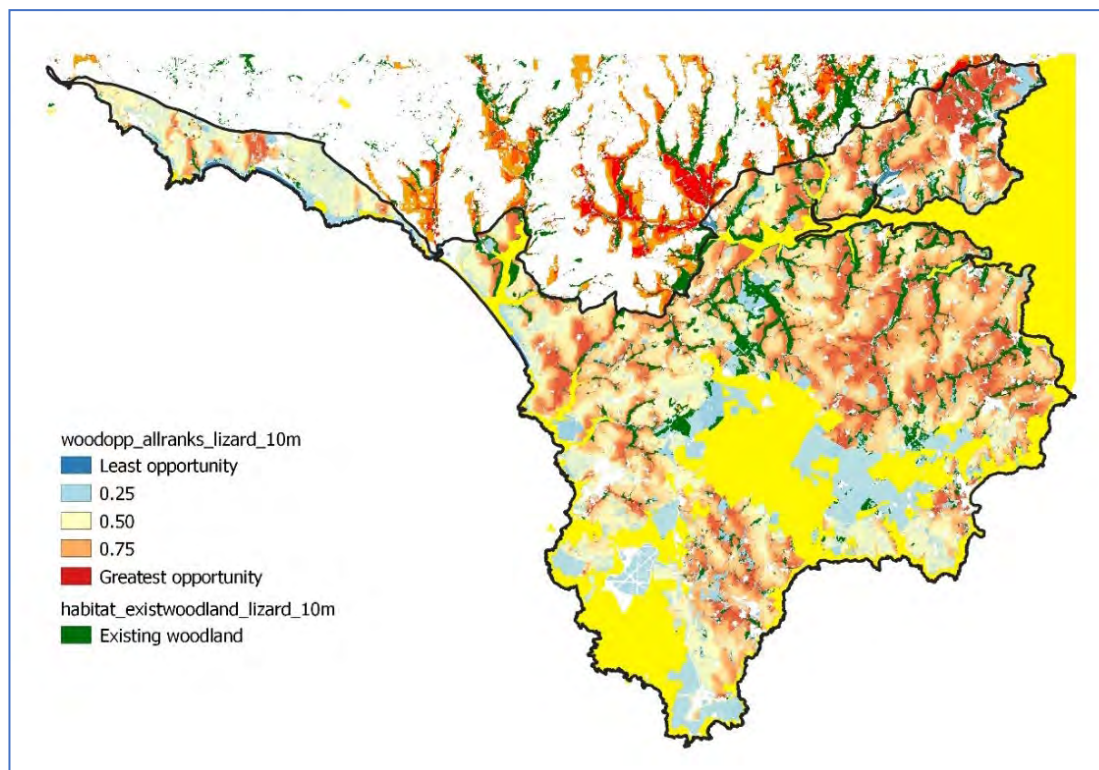
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Woodland creation

Unlike wetlands, opportunities for the creation of broadleaved woodland exist away from the central plateau.

Existing woodland occurs in depressions in the landscape, associated with the topography and drainage patterns of the short coastal stream catchments and the Helford Estuary. The map shows the current extent of broadleaved woodland, currently quite limited to the valley bottoms.

Woodland is more scarce in the coastal valleys. The map demonstrates a significant opportunity to extend woodland in the valleys and improve its connectivity.



Map 8. Opportunities for woodland creation to maximise public goods benefits

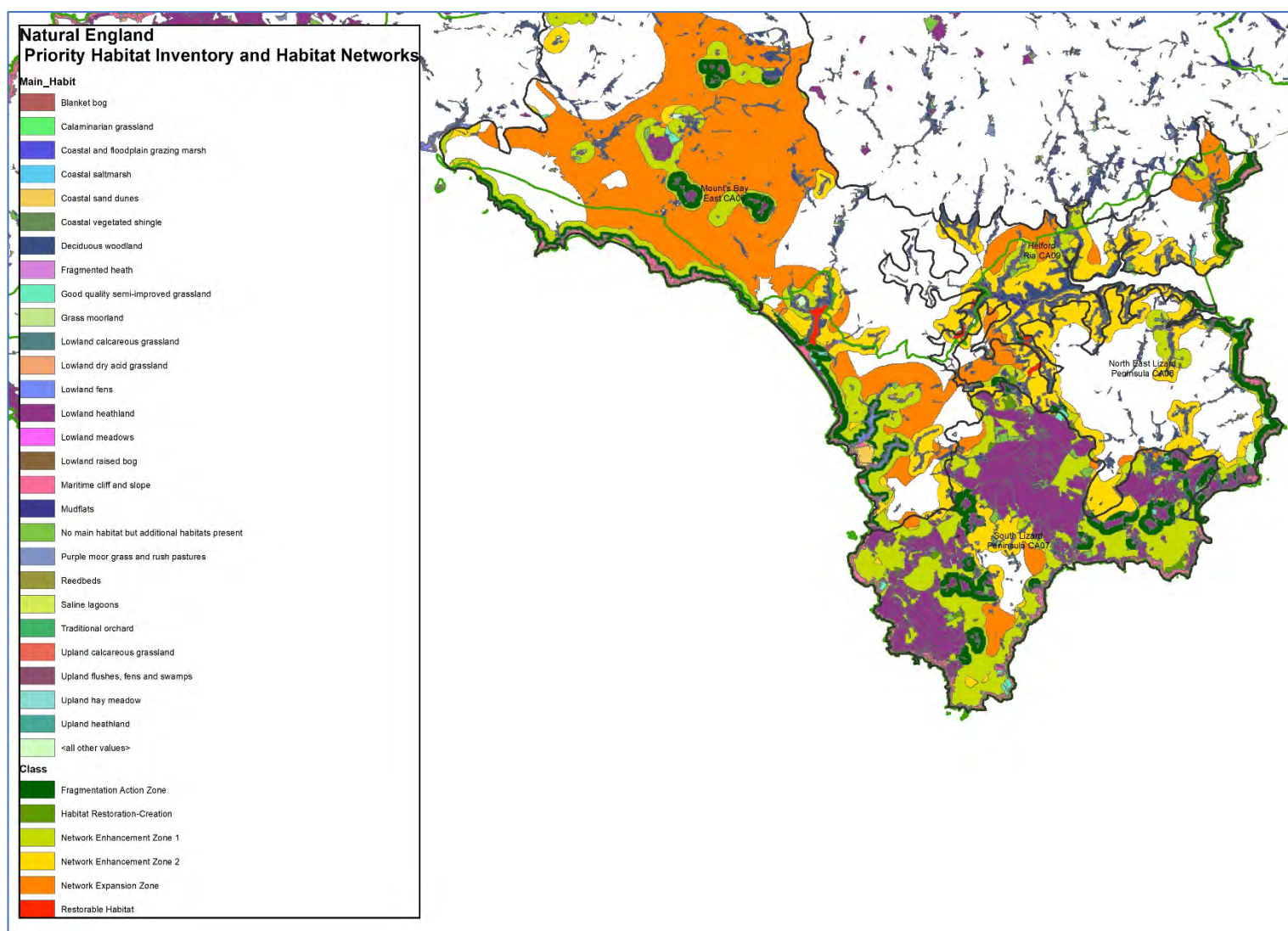
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Priority habitats and networks

Another useful spatial dataset to identify habitat creation opportunities is the Natural England Habitat Networks map, linked to the UK Priority Habitat Inventory.

This map shows restoration/ creation, enhancement, and expansion zones surrounding areas of existing priority semi-natural habitat. It indicates an opportunity to restore and create semi-natural habitat around the coastal strip, buffer zones around the short coastal stream catchments and the tributary streams of the Helford, and the extension and linkage of heathland and wetland across the Lizard Peninsula.

- 'Network Enhancement Zone 1- Land close to the existing habitat, likely to be suitable for its re-creation.
- 'Network Enhancement Zone 2'. - Land in close to existing habitat, where other habitats may be created or land management enhanced.
- 'Fragmentation Action Zone' - habitat creation is likely to help reduce the effects of habitat fragmentation.
- Network Expansion Zone' - Land close to Network Enhancement Zones 1 & 2 that are more likely to be suitable for habitat creation for the particular habitat and for connecting networks across a landscape.



Map 9. Habitat Networks and Priority Habitats, Natural England

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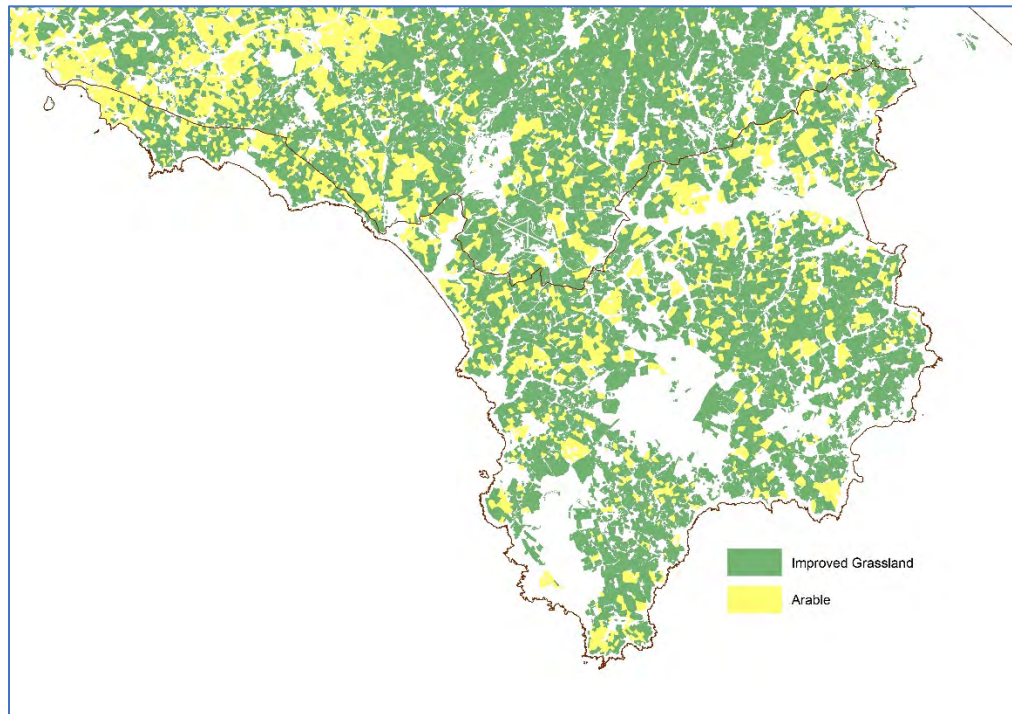
4 Farmland and Field Boundaries

Land in the farm rotation

The primary land use in Cornwall AONB Section 08 is farming. Arable and improved pasture is, therefore, the most extensive natural capital type by a significant margin. The total area of arable and improved grassland is 11757 hectares or 64% of land cover.

Farmland management has a significant influence over air and water quality, flood risk and mitigation, carbon store and release, and access and recreation. It has a vast potential to deliver more for wild species diversity.

The management of arable and improved grassland has a significant impact (positive or negative) upon ecosystem services. There is a significant opportunity to change the management of land in the farm rotation to drive positive outcomes for ecosystem services while maintaining a working farm that focuses on food production. There will also be opportunities on every farm to change land-cover and create new areas of semi-natural habitat.



Map 10. The extent of arable and improved grassland in Cornwall AONB Section 08

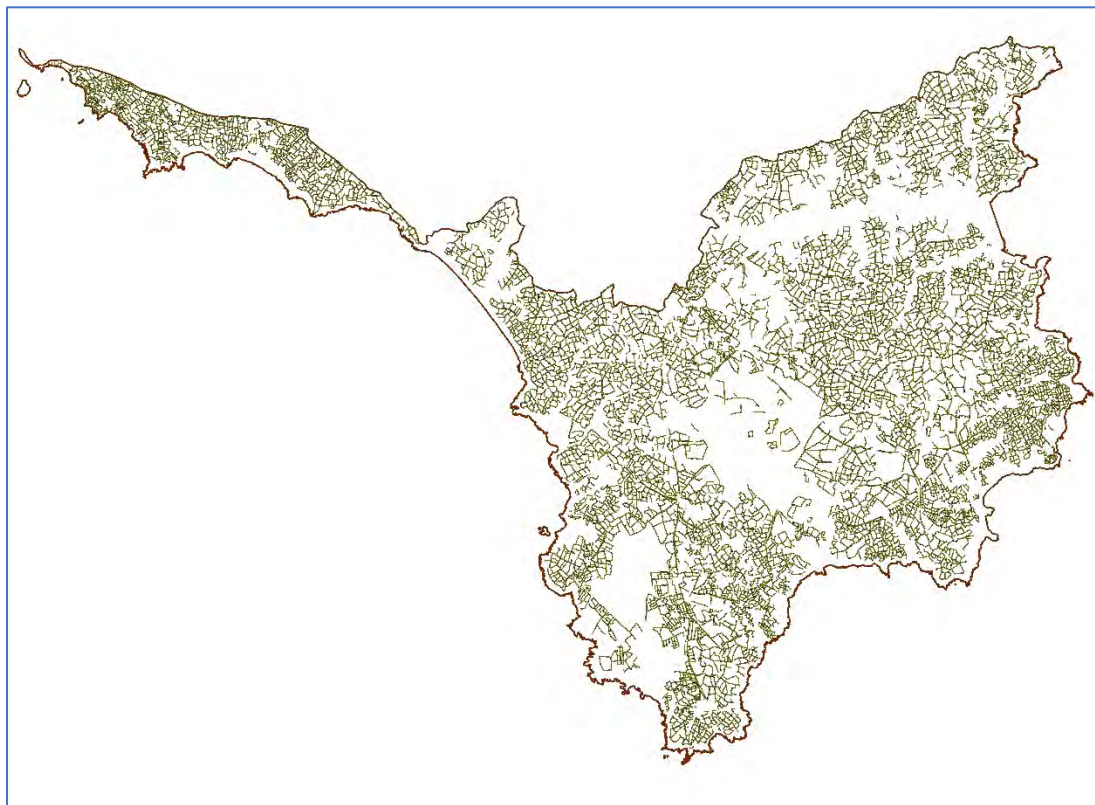
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Cornish hedges

A Cornish hedge is a stone-faced hedge-bank, filled with earth, usually with bushes or trees growing on the top. Cornish hedges on the Lizard reflect its diverse geology and, there is a wide variation, depending on location and exposure. In places, they are the bare stone encrusted with lichens and mosses or shrouded in vegetation and woody overgrowth. Between these extremes are many variations, depending on the type of stone used, the local climate, and the style of farming.

In Cornwall AONB Section 08, there are 1802Km of Cornish hedge, which would stretch from London to Helsinki! They form an intricate network of tiny, irregular fields, consistent with medieval and prehistoric field patterns, with many of the hedges, built in ancient times. The earliest Cornish hedges enclosed land for cereal crops during the Neolithic Age (4000-6000 years ago). Others date from the Bronze and Iron Ages, 2000-4000 years ago, when Cornwall's traditional landscape pattern became widely established.

Some Cornish hedges are some of the oldest structures in the world, in use for their original function, many predating the Egyptian pyramids. Some have stone artifacts such as querns, cupstones, granite troughs, or early Christian crosses built into their structure.



Map 11. The Cornish hedge network

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The Cornish hedge is unique in providing a significant number of critical ecosystem functions. They are man-made wildlife refuges, home to a wide array of plant and animal life. Woody thorns and flowering perennials, and important endemic annuals like Western Rampion Fumitory are relics of the pre-farmed landscape and provide a year-round buffet of nectar and pollen. The myriad of insects that they shelter have essential roles in on-farm pest control and pollination. The hedges provide nest sites for all kinds of small mammals and reptiles and nesting sites for many birds. They are the lifeblood

of Cornwall's ecological network, linking important areas of semi-natural habitat and providing key corridors along which species such as hedgehog and bats will navigate. In other places, where semi-natural habitat has declined, they are the last refuges for wildlife.

Aside from supporting biodiversity, the Cornish hedge performs a key role in water management, buffering flows, filtering soil particles, slowing flows of water down valley sides, and alleviating flooding. They provide a windbreak to keep soil on the ground in winter storms. The woody top on most Cornish hedges has as much, if not more, potential to sequester and store carbon than any ordinary shrub hedge. The Cornish hedge is the Cornish landscape's key attraction, providing a breath-taking aesthetic, much loved by tourists, and cherished by Cornwall's communities. The Cornish hedge is unique in the scale and breadth of public goods and services it provides, although they remain unassessed and unquantified.

This natural system of the Cornish hedge relies on maintaining the moisture of the earth core. The hedge needs to be correctly built, using subsoil or similar clay-shale "rab" for its core. The correct laying of the stone and proper curve or "batter" shed rainfall, allowing just the right amount to seep into the hedge. The low fertility of the subsoil core and the tightness of the well-built stones resist invasion by rank weeds, which would otherwise destroy the hedge's balanced ecology. Building and maintaining a Cornish hedge so it will keep itself in this healthy condition is an incredibly skilled craft and one which has very much been in decline among farmers and land managers.

Despite their obvious importance, much damage has been done to structure and biodiversity by over-zealous trimming with flails, with an estimated two-thirds of associated species being lost. Cornish hedges have been removed from the landscape under agricultural intensification. Many have fallen simply due to not being adequately maintained. Mending hedges is an expensive business, and many farmers have not had the resources necessary to maintain the network.

Despite many requests locally for the importance of the Cornish hedge to be recognised, this message has not been heard nationally, and the needs of Cornish hedges have not been met by the Hedgerow Regulations, successive agri-environment schemes, and other policies. One exception to this was the successful Environmentally Sensitive Areas scheme in West Penwith, which made payments to farmers to retain and appropriately manage the Cornish hedges.

The Cornwall AONB trial farmers group feels that it is necessary to make a special case for investment in Cornish hedges through the new Environmental Land Management Scheme. Cornish hedges provide a significant contribution to Defra's scheme objectives and immeasurable public benefit. There is a clear case for the new scheme to recognise this and make provision for Cornish hedges within the new scheme.



Photo credit: Clare Lemon

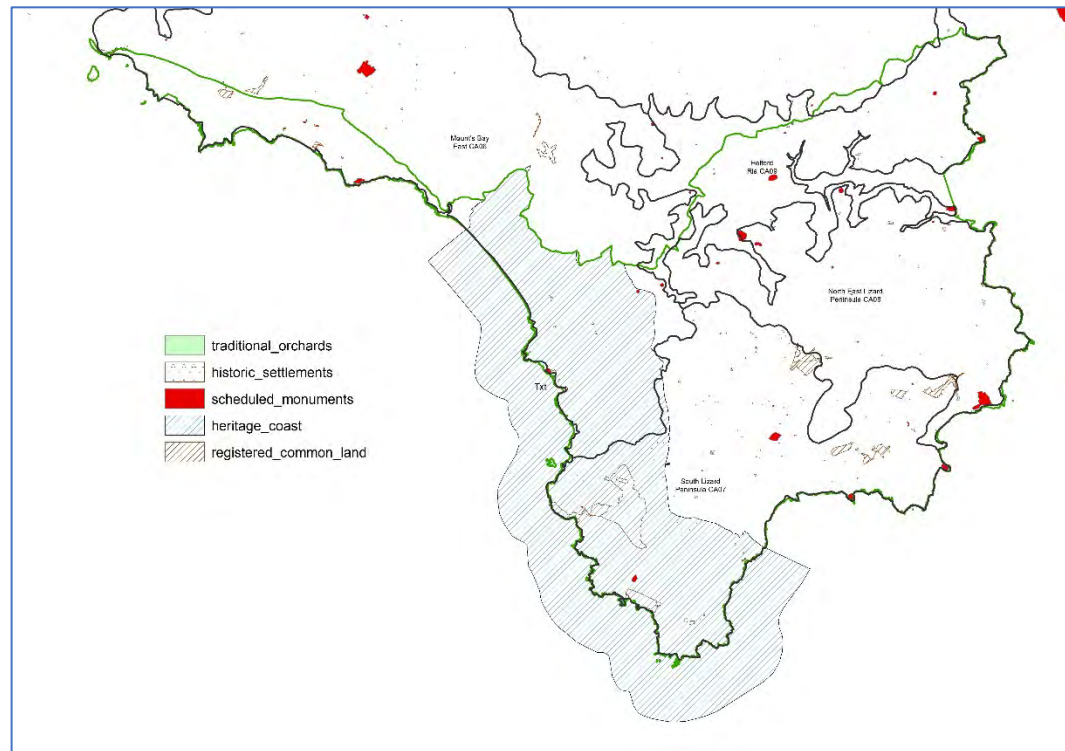
5 Heritage, beauty, and engagement

The Historic Environment

This map shows the national heritage designations for the trial area. Scheduled Monuments comprise many small monuments such as barrows and hut circles and several substantial cliff castles and settlements at intervals along the coast. Some of these monuments are currently in a poor or declining condition, mainly due to scrub overgrowth, and require active intervention.

While not shown on the map, the trial area also is home to a wealth of non-designated historic features

Many of the cultural benefits associated with heritage are realised when people can access and interact with it. Therefore, an opportunity exists in the provision of high-quality access and interpretation of historic sites.



Map

Map 12. Heritage designations

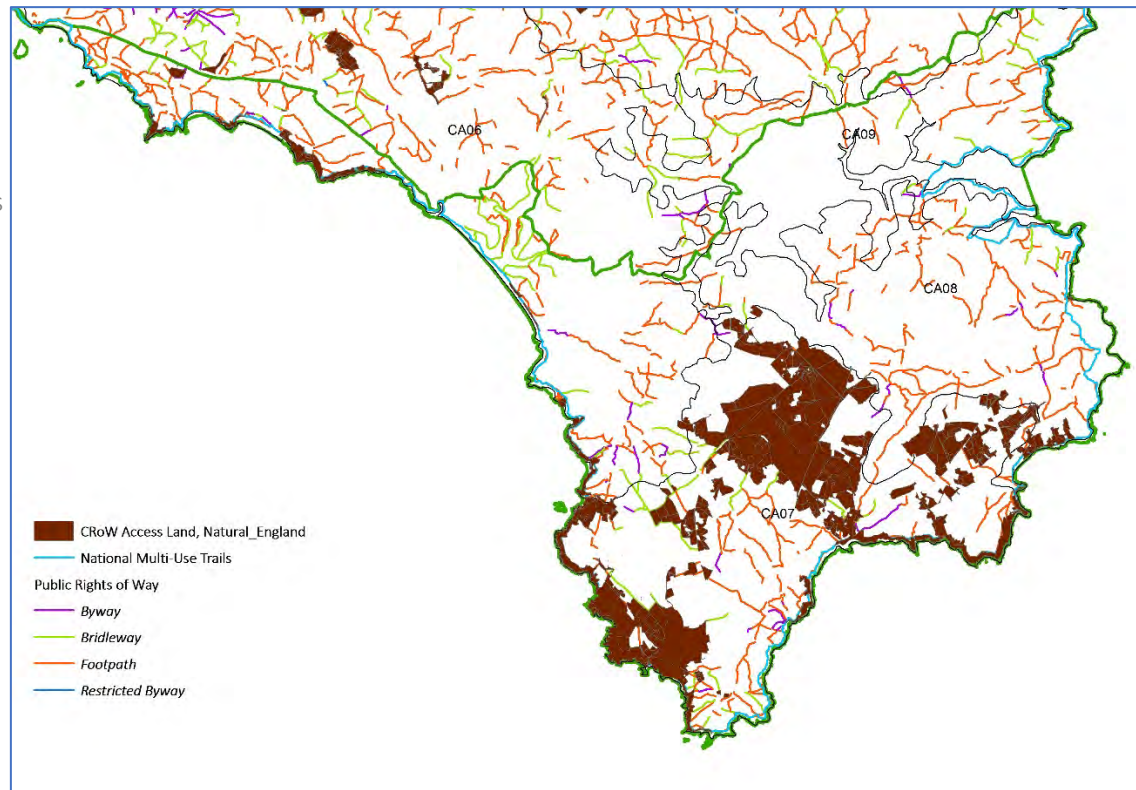
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Access and recreation

The access map shows byways, bridleways, footpaths, and restricted byways.

In comparison to other areas, the study area is relatively limited in its footpath network. Footpaths are generally linear and tend to be disconnected. For example, there is a noticeable lack of paths around the Helford Estuary with no current walking route all around the estuary.

There is an opportunity to improve access connectivity, enhancing and increasing circular routes from the coast path. There is also the opportunity to increase the number of permissive paths to connect isolated rights of way back into the wider network.



Map 13. The access network

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On-farm education

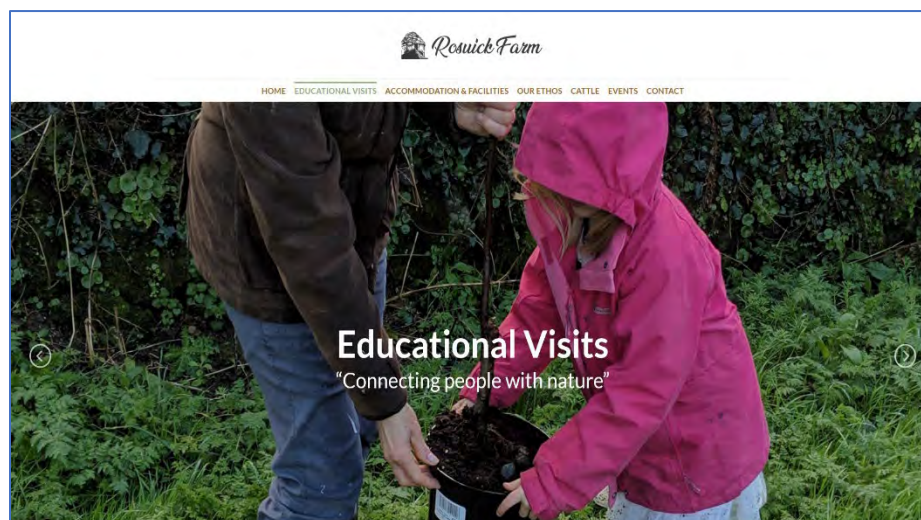


Photo credit: David Oates, Rosuick Farm

The Lizard area has a long history and tradition of providing environmental education. It is very popular with visiting school and university groups due to its complex geology and biodiversity. The University of Exeter in Penryn is very active in the area, using the peninsula to focus on many research projects and studies. Local schools make as much use as possible of the local landscapes to enrich the curriculum. The National Trust has a long history of environmental education, through its centre at Poltesco.

For many years, the Trust hosted the annual 'Poltesco Memories' visits where each primary school in the area was hosted for a whole week to learn about the local history of milling, serpentine working, fishing, and farming in the valley through role-play, story-telling and dressing up. Over the years, every Lizard child has had the opportunity to visit Poltesco on numerous school visits, Christmas and Halloween workshops, bushcraft clubs, forest schools, camping trips, and plays. The tradition continues today. The Wild Lizard Education Ranger is employed through the Linking the Lizard partnership to deliver education and events, not just at Poltesco, but across the whole Lizard, including Kennack Sands, Windmill Farm, Bochym, Predannack, and the Helford River.

Rosuick Farm, near St Martin on the Lizard, is already leading the way in demonstrating what is possible to provide on-farm environmental education for the benefit of people, hosting school visits since 2009, and has increased its facilities over time. Rosuick strives to connect people with nature and learn about the links between sustainable farming and the environment. They also offer provision for children with complex needs and are currently developing adult provision.

The trial farmers group felt very strongly that there is an enormous opportunity to increase environmental education provision in the area for the benefit of local communities and the wealth of visitors that flock to the Lizard annually.



**Cornwall
Area of Outstanding
Natural Beauty**

Environmental Land Management Scheme

Landscape Recovery Framework

Cornwall AONB Section 08, South Coast Western

4. Delivery

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1 Our vision

This landscape framework results from a detailed collaboration between the Cornwall AONB Partnership, Natural England, and other environmental organisations and, crucially, the farmers and landowners who manage the project area on the ground. This framework is a jointly owned document that sets out clearly how the environmental land management scheme can be delivered locally and seeks to get optimal value from Defra's investment by targeting work clearly to achieve the best results. The group has co-designed a clear vision for farming on the Lizard under the first ten years of a scheme.

The AONB is a beautiful, mixed farming landscape. Our family farms produce high-quality food in innovative ways that build back nature, create resilience to climate change, and deliver clean water into our estuary and sea. Our restored network of Cornish hedges is boosted by a range of connected, newly created habitats such as woodland, wetland, ponds, and heathland.

We manage our farmland, not as green deserts but as flower-rich refuges for wildlife with carbon-rich, healthy soils. Our historic sites and heritage features that strengthen local distinctiveness are cared for, providing a strong sense of place. We use our farms as places of education, promoting a better understanding of farmers as custodians of a world-beating landscape, promoting stewardship for future generations.



Photo credit: Rona Amis, Tregullas Farm

2 Our priorities

The landscape framework will set out the character and natural capital of the landscapes of Section 08 of the Cornwall AONB. It will set out management and pressures, condition information, and opportunities. Critically, it will set out farmers and land managers' objectives in the project area and show what a collaborative environmental land management scheme might achieve.

It would be helpful to show how the landscape framework's content relates to Defra's six priorities for the new scheme. To achieve this easily and in a visual way, the landscape framework will colour code the key elements of the framework for each of Defra's priorities.

Environmental Land Management Scheme Priorities	
• Clean and plentiful water	
• Clean air	
• Protection from and mitigation of environmental hazards	
• Mitigation of and adaptation to climate change	
• Thriving plants and wildlife	
• Beauty, heritage, and engagement	

3 Priority objectives

Objective 1 – Cornish hedges

Repair and restore Cornish hedges within the landscape, and enhance their management, buffering the hedge network with high-quality semi-natural habitat.

Targets

1km per year of newly constructed hedges resulting in 10km of new Cornish hedge.

Increase uncultivated/ unmanaged margins around the hedge network/ field corners by 3% of cultivated land or 353 ha over ten years to provide cover for birds, mammals and overwintering invertebrates/ invertebrate nest sites.

Repair gaps in the physical structure of Cornish hedges where they have fallen into disrepair. This would result in a significant uplift in the total length of Cornish hedges delivered. It is estimated that currently, between 5 and 10% of the length of Cornish hedge on any one farm is a gap. The two sides of a Cornish hedge should be considered separately.

Indicators of success

- Length of new Cornish hedge created
- Conformity of style, type, pattern, geology, and size of hedge constructed
- Wildflower species colonising the new hedge
- Type and extent of new tree and shrub planting on top of the hedge
- The extent of semi-natural habitat created alongside the hedge
- Landscape connectivity restored between areas of semi-natural habitat
- Good condition of the existing Cornish hedge network
- Collaboration by neighbours on both sides of a Cornish hedge

Benefits



The Cornish hedge is unique in providing a significant number of critical ecosystem functions. They are man-made wildlife refuges, home to a huge variety of plant and animal life. Blackthorn on the top of the hedge provides a critical early source of nectar for pollinators. Relic flowering perennials, once common in the pre-farmed landscape, provide an all-year-round supply of nectar and pollen. The myriad of insects that they shelter have an important role in on-farm pest control. The hedges provide nest sites for all kinds of small mammals and reptiles, as well as nesting sites for many birds. Cornish hedges are the lifeblood of Cornwall's ecological network, linking important areas of semi-natural habitat and providing key corridors along which species such as hedgehogs and bats will navigate. In other places, where semi-natural habitat has declined, they are the last refuges for wildlife.

Aside from supporting biodiversity, the Cornish hedge performs a key role in water management, buffering flows, filtering soil particles, slowing down water flows in catchments, and alleviating flooding. They provide a windbreak to keep soil on the ground in winter storms. The woody top on most Cornish hedges has as much, if not more, potential to sequester and store carbon than an ordinary shrub hedge. The Cornish hedge is the Cornish landscape's keystone, providing a breath-taking aesthetic, much loved by tourists from home and abroad, and cherished by Cornwall's communities. The Cornish hedge is unique in the scale and breadth of public goods and services it provides, although most remain unassessed and unquantified.

Objective 2 – Freshwater and wetland

Increase the number and size of on-farm ponds and wetlands and decrease fragmentation of freshwater habitats in the landscape, creating input buffer zones.

Targets

20% increase in the total area of ponds. Across the whole of the AONB section, this would equate to 1.6ha of new ponds

The minimum area of the pond should be 50m², which would mean creating 300 ponds to achieve the area target, undertaking creation in a planned way at a landscape scale

Low or **no input zones around ponds to a buffer of 50m**

Indicators of success

- Type and size of habitat created e.g., pond or wetland
- Method of construction
- Species introduced to enhance the habitat
- Type and size of any associated semi-natural buffer
- Change in management around the input buffer zone
- Proximity to other areas of semi-natural wetland and freshwater and impact on connectivity
- A plan to improve stepping stone connectivity with neighbours at a landscape scale
- Measures to exclude stock if causing damage
- Measure to reduce chemical inputs in the vicinity
- Annual maintenance tasks e.g., winter clearance
- Pond/ wetland management plan

Benefits



Flood reduction relies on available water. Permanently saturated habitats with no storage may generate or augment floods, whereas new wetland and freshwater habitats in the Environmental Land Management Scheme area will significantly increase capacity. Freshwater systems can dilute, store and detoxify waste products and pollutants, significantly improving water quality.

Carbon is sequestered and stored in ponds and wetlands where plant litter production exceeds decomposition and generally under waterlogged, predominantly anaerobic conditions. The deposition of organic sediments within lakes, ponds, and reservoirs is an essential carbon budget component.

Ponds are a linchpin habitat – supporting the most freshwater species and most rare species of all freshwater habitats in the project area. Rather than being a minor part of the freshwater system, they are a critical part. Ponds may also act as stepping-stones, helping species move through the landscape. Pools within the wet heath and more recent scrapes to create water bodies within the heathland areas, such as at Windmill Farm nature reserve, are vital refuges for wildlife. There are widespread examples of the serpentine variant of Mediterranean temporary ponds on the Lizard heaths. A number of rare species, including dwarf rush *Juncus capitatus* and land quillwort *Isoetes histrix*, occur in this habitat type. The acid pool type is the main locality on the Lizard for an important assemblage of rare species, including pigmy rush *Juncus pygmaeus*, three-lobed crowfoot *Ranunculus tripartitus*, and yellow centaury *Cicendia filiformis*. A number of these pools support important invertebrate populations, including the water beetles *Graptodytes flavipes* and *Dryops striatellus*.

Objective 3 - Farmland

Diversify land in rotation away from monocultures to species-rich swards and diversify species-poor permanent pasture, increasing the area and diversity of nesting habitat and forage for birds, insects, and mammals across a full season and improving carbon capture.

Targets

80% of rotational land, comprised of 50% of improved grassland and 30% of arable land **in species-rich options**

This equates to 7039ha of improved grassland and 888ha of arable land, **totaling 7927ha**

Indicators of success

- Area of change in management from ryegrass pasture to long term, multi-species leys (min 8 species) or permanent species-rich pasture
- Area of arable land in positive management, i.e., undersown with cover crop
- The range and type of measures, species lists, and expected species beneficiaries
- Connectivity with semi-natural habitats e.g., to provide bat corridors
- Diversification of areas where multiple benefits can be delivered e.g., areas of steeper land at higher risk of soil erosion
- Promotion of genetic diversity through the use of locally collected wildflower seed and plugs
- The identification and remediation of areas of species-poor and compacted permanent pastures

Benefits



Delivery of this objective will increase the area and diversity of nesting habitat and forage for farmland birds and passerines and increase the variety of continuously available forage for pollinating insects. The measures will seek to widen these benefits over as much of the year as possible.

Farmed grasslands are currently positively delivering food, landscape aesthetics, and in certain places, recreation, where access is available. Whether the ecosystem impacts negatively or positively on other ecosystem services is mostly down to management. For example, water quality can be negatively affected by excessive application of organic and inorganic fertilisers. Semi-permanent pastures managed for hay are usually more species diverse than improved grassland managed for silage.

In all types of agricultural systems, multi-species ley pastures have been shown to improve water quality by covering the soil during risk periods of high rainfall (such as in winter), reducing nitrogen leaching through plant uptake of nitrogen. Little literature is available that describes the effects of ley pastures on soil carbon. However, it is thought that deeper rooted species on much longer (7 years plus) rotations will result in a net uptake of carbon that locks carbon more deeply.

Herbal leys and semi-natural permanent pastures could play a role in maintaining remnant populations of biodiversity within agricultural ecosystems, providing food, overwintering sites, and refuges. There is increasing evidence that species-rich ley pastures may support many arthropod species, birds, small mammals, and vascular plants, invertebrates such as butterflies, and rare plants such as orchids (in permanent swards). Birds such as starling, which rely on permanent pastures for food and have decline hugely due to their loss, would likely benefit from a return to permanent and semi-permanent grasslands.

Some permanent grasslands are species-poor and compacted, with high runoff and erosion levels. The farmer group felt that careful improvement of these pastures to increase species richness, soil carbon uptake, and water storage should be possible under this scheme objective.

Objective 4 - Woodlands

Increase the extent of broadleaved and wet woodland in stream valleys and bring into positive management.

Targets

5% of new stream valley woodlands over ten years

Re-introduce coppice management to newly created and existing willow woodland

Eradicate all invasive species from stream valley woodlands e.g., rhododendron, skunk cabbage, and laurel

Indicators of success

- The extent of the created area
- Method of establishment e.g., tree planting or natural regeneration
- Species planted
- Species adjacent to the new area
- Structure of planting
- Supplementary features created e.g. log piles, ponds
- Presence of invasive species
- Area of invasive species removed
- Plans for management e.g., coppice/ pruning
- Adjacent areas of woodland and impact on connectivity

Benefits



Woodlands provide many public goods benefits. Their soils and standing wood are essential reserves of terrestrial carbon. While growing rapidly, trees can sequester significant amounts of carbon. Trees also play an important role in reducing climate change effects. Woodland cover can protect soils, animals, and humans from extreme temperatures, increased rainfall, strong winds, and UV light. Woodlands facilitate soil formation and other biogeochemical processes necessary to life

Tree cover can play a large role in water quality, particularly important for bathing water quality and quality in the Helford estuary, a critical shellfishery and fishing area. Woodland does this by offering protection from soil erosion and slope failure, so the choice to focus this objective on stream valleys is essential. Woodlands will also filter chemicals and pesticides and reduce the likelihood of soil compaction compared to agricultural land use. Woodlands moderate rainfall events and river and stream hydrographs, delaying and reducing flood events, such as at Coverack in 2014 that devastated the village.

Woodlands provide habitat for a wide range of species. The Helford woodlands include distinctive 'Atlantic' elements such as the abundance of bluebells, rich bryophyte communities in western oak woods, ash and hazel dominated woods (beyond the range of beech), an abundance of veteran trees with associated lichen and saproxylic associated species. They contain distinctive assemblages due to some species living at the edge of their range in Britain and the unique maritime climate. They are essential habitats for protected species such as bats and declining ones such as hedgehog.

Objective 5 – Orchards, agroforestry, and wood pasture

Increase land managed for orchards, agroforestry, and wood pasture, restoring degraded orchards.

Targets

Restore 100% of traditional orchards into a positive condition

Increase the extent of new orchards by 30% either by the creation of new orchards or extension to existing orchards

1% of existing arable and improved grassland will be put into agroforestry or wood pasture, equating to 118 ha

Indicators of success

- Restoration activity e.g., new planting or pruning
- Previous management of the new area
- The extent of new fruit tree/ tree planting
- Species and structure of tree planting
- Supplementary species (e.g., forest garden species)
- Ground-level management e.g., grazing with sheep/ crop type
- Management of trees/ pruning regime
- Links to other areas of semi-natural habitat, particularly woodland and impacts on connectivity
- Establishment success and browsing damage

Benefits



Introducing trees into farmland increases the biodiversity in food production systems, including soil microbial diversity. Trees provide habitat for multiple species and act as corridors and stepping-stones, allowing species to migrate across landscapes, particularly between semi-natural woodland areas. Fruit production relies on pollination and supports it by providing nectar and pollen resources for species such as butterflies, bumblebees, and solitary bees.

Increase several ecosystem services related to water, including flood alleviation and buffering of flow in streams. Orchards and wood pasture can improve soil fertility and water use efficiency, for example, by integrating trees that fix nitrogen and provide shade.

Agroforestry increase resilience to shocks and disturbances caused by the increasingly unstable climate, contributing to soil erosion and flood control. Trees improve the microclimate on farms as trees shade and shelter crops and cool the air. They reduce vulnerability to heavy rainfall, heatwaves, pest infestations, and diseases.

Agroforestry systems can mitigate climate change by lowering the emissions of greenhouse gases. Tree fruit is a significant carbon sink, and in commercial orchards, flowers and developing fruit are often removed to reduce carbon competition. In addition, carbon is sequestered into the soils through leaf fall and into the standing wood.

Objective 6 - Heathland

Improve the condition and coherence of the heathland and wetland habitat mosaic.

Targets

Enhance the heathland to **100% favourable condition**

Create 20 new hectares of heathland in 10 years

Indicators of success

- Extent and type of management to improve condition
 - SSSI condition, target attributes and monitoring
 - Extent of new heathland created
 - Method of heathland creation and expected results
 - Work to restore hydrology e.g. blocking drains
 - Adjacent areas and links to other areas of heathland and wetland. Impact on corridors and provision of stepping-stones
 - Management of new areas to achieve successful restoration e.g., deer fencing and scrub/ invasive control
-

Benefits



The ecosystem services value of the Lizard heathlands is likely to be significant for water quality, flood control, biodiversity, and recreation.

The Lizard heathlands provide vital habitat for many important species and are home to over 250 species of national or international importance. All of the heaths are designated as SSSI and part of the Lizard National Nature Reserve. The heathlands cover much of the Lizard National Nature Reserve's 2400 hectares. The extraordinary flora found on the heathlands is attributed to the mild climate and the rocks on which they grow. There are four native species of heather that grow on the Lizard. These are ling, bell heather, cross-leaved heath, and the nationally rare Cornish heath associated with the magnesium-rich serpentine rocks on which it grows in abundance.

The value of carbon sequestration on the heathlands prior to the Environmental Land Management Scheme is uncertain. More research is required to determine whether the Lizard heathlands are currently performing as a carbon source or a carbon sink. Burning of the Lizard heathland to promote a mixed-aged heather and control scrub structure still takes place, which may significantly reduce carbon stocks and actively emit carbon. However, grazing seems to be the preferred management option in recent times. Under the new scheme, heathland will be managed optimally to enable positive carbon capture and storage while maintaining biodiversity value. Most of the carbon stored on the heathland is within the acidic and nutrient-poor peaty soils. Heathland creation on adjacent farmland is expected to result in a significant uplift in carbon sequestration.

The wet heath/ wetland mosaic on the Lizard provides a buffer to climate change, reducing flood risk during heavy rainfall and maintaining stream flows in dry weather. This is essential for the water quality of the Helford Estuary, the short coastal catchment streams, and bathing waters since most rivers and streams have their source on, or at the edge, of the heathland. There are two Special Areas of Conservation in the policy area, the Lizard Point marine SAC and the Fal and Helford SAC, plus the Manacles Marine Conservation Zone. Coastal water quality has a direct effect on the marine and estuary biodiversity within these designations. Unpolluted beaches and high-quality bathing waters are primary drivers of the important tourist economy.

Most of the heathland on the NNR is designated as open access land, and several paths and trackways crisscross the heathland. The heath, therefore, provides essential opportunities for recreation, with associated benefits for the physical and mental health of visitors and residents.

Objective 7 - Organic

Convert and manage the land organically.

Targets

Certify 3% of the total area of agricultural land as organic, with a further 10% being managed organically

Indicators of success

- The extent of new land certified organic
- The extent of land managed 'organically'
- Tillage information
- Evidence of reduced input of fertilisers and pesticides
- Cropping patterns
- Area of land managed with a Nitrate Vulnerable Zone and Priority River Headwater Area
- Types of manures used and total nitrogen application
- Production of Soil, Nutrient, Manure and Crop Protection Plans
- Soil protection measures
- Stock type and density
- Habitat structures for biodiversity

Benefits



The main benefits of an organic approach include the improvement of soil condition and soil formation with an increase in nutrient and energy cycling and a decrease in water runoff.

Water quality is significantly improved due to a lack of inorganic fertilizer input and chemical control agents. The lack of use of artificial inputs requires less fossil fuel inputs, and the improved soils with less tillage increase carbon sequestration of rotational land.

The provision of structures providing food and shelter, such as habitat piles, bees and beetle banks, and bat and bird boxes, together with a halt in the use of pesticides, attract new or re-colonising species, including wild flora and fauna (e.g., birds) and organisms beneficial to the organic system such as pollinators and pest predators.

Objective 8 - Heritage

Manage and maintain both designated and non-designated heritage features in positive condition.

Targets

100% of Scheduled Monuments in positive condition

100% of on-farm heritage assets and features which contribute to landscape character and local distinctiveness identified and in positive management

Specific requirements of individual monuments to be identified in individual farm plans.

Indicators of success

-
- Historic England advice and consents
 - Scrub control measures
 - Ongoing maintenance
 - On-farm heritage survey and management plan
 - Restoration and repair of non-designated heritage features e.g., stone stiles
 - Restoration of historic field pattern via the reconstruction of removed Cornish hedges
-

Benefits



Heritage is often undervalued and poorly understood in terms of the ecosystem services it provides. All thriving places have a unique and distinctive history at their core. Heritage is part of the fabric of our everyday lives, providing opportunities for unique experiences both physically and digitally, engaging people all year round. Heritage shapes the perception and quality of place. A majority of adults across England visit heritage regularly, and their support demonstrates the need for regular maintenance to protect its future.

The quality of our historic built environment directly impacts our levels of satisfaction – as quality increases, so does the feeling of safety, walkability, and aesthetic quality. Heritage fosters a strong sense of belonging and attachment to place. People identify with heritage, and this increases pride, sense of belonging, and community cohesion. Historic assets serve as meeting places and enable everyday activities that improve bonding and tackle loneliness and isolation.

The heritage sector has a tradition of working with and supporting volunteers. 5.5% of the adult population that volunteer in England have undertaken some volunteering activity in heritage, from formal roles in heritage trusts and boards to informal support promoting and sharing local history and heritage. The Environmental Land Management Scheme area has a specific organisation, the Lizard Peninsula Heritage Trust, which was established to promote and conserve the Lizard's heritage and educate about its importance. In addition, the Lizard Ancient Sites network has an army of volunteers who regularly undertake tasks to restore heritage features.

Visiting and engaging with heritage enhances people's mental health and wellbeing, reducing anxiety and increasing happiness. Visiting historic sites and the volunteer management of heritage can improve physical health. Heritage has the power to engage old and young, helping with the impacts of dementia. Heritage engagement at a young age can shape wider educational horizons, develop skills and opportunities for professional development, enhance self-esteem, and build confidence.

Historical management and human interaction with our natural ecosystems directly influence their current complexity. A perfect example is a Cornish hedge, built by people, embedded in culture, and probably the single largest biodiversity resource in Cornwall. Restoring long interrupted historic field patterns would also reap significant gains for biodiversity.

Objective 9 - Education

Provide inclusive education for schools, colleges, universities, and other groups and improving engagement with the natural environment.

Targets

Ten education farm trails across the AONB section with enhanced access and interpretation

A locally managed facilitation fund to enable co-operative joint working and outreach, and to help with barriers to access e.g., school transport costs

500 visits/ sessions per year across the AONB area from a range of groups, including visitors to the Lizard

Indicators of success

- Trails created and access enhancement works undertaken
- Measures for disabled access
- Trail interpretation on-site
- Accessible, educational materials published
- Off-site interpretation, e.g., website
- Number of events held
- Number of groups and individuals engaged
- Experience surveys and feedback
- Engagement with local advisers and experts
- Off-farm education e.g., school talks

Benefits



Using outdoor settings such as rural farms and wildlife reserves infuses a sense of richness and relevance into a traditional school curriculum. In addition to gaining valuable skills and environmental knowledge, students often experience advances in other academic areas.

In a world where it is increasingly challenging to get students interested in classroom lessons, environmental education offers an enriching way for both students and teachers to connect their appreciation of the natural world to academia. Outdoor learning develops the confidence to investigate and solve local problems. It also raises awareness of environmental issues and opportunities associated with agricultural management and how food can be produced in sustainable ways, compatible with a high-quality environment.

As well as the direct benefits of making complex science, technology, engineering, and maths (STEM) topics accessible and engaging, outdoor education provides many other long-term benefits that have a lasting legacy. Increasing awareness of the natural world develops skills for effectively addressing ecological issues and increases knowledge, skill, and desire to act for nature and climate into the future. Outdoor education promotes the value of local environments. It motivates people to "think globally by acting locally," encouraging behaviour change that positively impacts a range of aspects from fossil fuel use to waste responsibility. When stewardship education is place-based and takes place in one's local community, it can develop young people's sense of the public realm more broadly and their stake in the natural environment and their communities.

Learning about and connecting with nature supports happiness and more purposeful, fulfilling, and meaningful lives with a wealth of physical and mental health benefits.

4 Secondary objectives

To establish priority objectives for the new scheme in the project area, the farming group began by using the evidence bases set out in part 1 of the landscape framework to compile a long list of possible objectives. The group used this list to develop the nine priorities outlined above. However, while some did not achieve priority status, the farmer group felt that the remaining objectives were still valid and included within the framework. While they might not form part of the collaborative offer, they can be incorporated into individual environmental land management scheme applications, where opportunities exist for their delivery on individual farms.

Secondary Objective	Scheme Priority					
						
Reduce runoff and soil erosion, to improve water quality, and improve flood attenuation by avoiding bare soil in high-risk areas, taking high-risk land out of cultivation.						
Benchmark and improve habitat for locally rare and farm-specific species.						
Increase the provision of services delivered by our coastland, focusing on wild species diversity and pollination services by extending and linking areas of semi-natural habitat on the coast on improved and arable farmland via conversion to semi-natural habitats.						
Maintain scarce remnant areas of species-rich unimproved, and semi-natural grassland in good condition.						

Restore species-poor, semi-natural grassland through active intervention e.g., green hay.						
Take opportunities to improve walking routes around the Helford River; from the urban centres of Helston, Porthleven, Gweek and Mawnan Smith; plus the coastal villages of Lizard, Mullion, Coverack, Cadgwith, and Praa Sands.						
Extend and link access from the coast path, developing more circular routes. Manage and maintain existing access routes in good condition.						
Manage and promote access to coastal cliff castles and settlements site, providing access and interpretation.						
Convert recently enclosed land to 'upland rough ground' historic character type to restore valued cultural landscapes.						
Remove landscape detractors/ intrusive buildings/ tall structures/ wires/ artificial boundaries and hard standings.						
Conserve and enhance the unique character of the Lizard as a traditional mixed farming landscape.						

5 Measuring success

Monitoring measures outlined for the priority objectives measure the activity carried out to achieve the goals and can be quickly recorded by farmers, potentially as part of self-assessment. However, measuring successful outcomes and positive impacts on public goods is less straightforward. High quality and current data is required to assess our scheme against the six key Environmental Land Management Scheme priorities.

The following table details the established indicators for Defra's 25 Year Environment Plan that are most relevant to Environmental Land Management Scheme priorities within the trial area, and could be used to measure the success of a new scheme. It shows what data is available nationally and appraises if this data is available locally or able to be disaggregated from national data at a spatial scale that would apply to Section 08 of the Cornwall AONB.

		Defra Priorities for Environmental Land Management Scheme							
		Relevance to 25-year plan indicators							
	25 Year Environment Plan indicators relevant to Section 08 Environmental Land Management Scheme Priority Objectives							Available data nationally	Data available locally
A1	Emissions for five key air pollutants		Y					https://naei.beis.gov.uk/reports/reports?report_id=970	N
A2	Emissions of greenhouse gases from natural resources		Y	Y	Y			https://naei.beis.gov.uk/reports/reports?section_id=4	N

A6	Exceedance of damaging levels of nutrient nitrogen deposition on ecosystems	Y		Y		Y		https://uk-air.defra.gov.uk/library/reports?report_id=955	Y EA Water sampling
A7	Area of sensitive habitats exposed to damaging levels of ammonia NH3 in the atmosphere			Y	Y	Y	Y	https://uk-air.defra.gov.uk/library/reports?report_id=955	
B1	Pollution loads entering waters	Y		Y		Y	Y	https://oap.ospar.org/en/ospar/-assessments/intermediate-assessment-2017/pressures-human-activities/contaminants/and EA emissions inventory	Y EA water sampling
B3	State of the water environment	Y		Y		Y	Y	https://data.gov.uk/dataset/92659478-0d30-4484-bfef-6abfbe72b4a5/wfd-cycle-2-site-classifications-2016 https://assets.publishing.service	Y EA water sampling

								.gov.uk/government/uploads/system/uploads/attachment_data/file/514944/National_evidence_and_data_report.pdf	
B4	Condition of bathing waters			Y		Y	Y	https://www.gov.uk/government/publications/state-of-the-environment	Y Condition data for individual bathing waters
B6	Natural functions of water and wetland ecosystems	Y	Y	Y	Y	Y	Y	not available	N
B7	Health of freshwaters assessed through fish stocks	Y		Y	Y	Y	Y	https://www.gov.uk/government/publications/almonid-and-freshwater-fisheries-statistics	N
D 1	Quantity, quality and connectivity of habitats	Y	Y	Y	Y	Y	Y	https://www.gov.uk/government/statistics/english-and-	? Potentially available through

							biodiversity-indicators	an update of ERCCIS Landcover and assessment of change in habitat extent and connectivity Cornish hedge layer could be used to determine historic hedge loss and gains
D 2	Extent and condition of protected sites – land, water and sea	Y	Y	Y	Y	Y	https://www.gov.uk/government/statistics/english-land-and-biodiversity-indicators	Y SSSI condition data
D 3	Area of woodland in England	Y	Y	Y	Y	Y	https://www.forestryresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/	Y Ancient woodland data FC Land cover (see above)
D 4	Relative abundance and/or distribution of widespread species	Y	Y		Y	Y	https://www.gov.uk/government/statistics/english-land-and-biodiversity-indicators	N

								biodiversity-indicators	
D 6	Abundance and distribution of priority species	y	y		y	y	y	https://www.gov.uk/government/statistics/england-biodiversity-indicators	Y ERCCIS species records
D 7	Species supporting ecosystem functions	Y	Y	Y	Y	Y	Y	https://www.gov.uk/government/statistics/england-biodiversity-indicators (interim pollinator indicator)	? May be able to be obtained from ERCCIS species records
E3	Volume of inputs used in agricultural production	Y	Y	Y	Y	Y		https://www.gov.uk/government/statistics/total-factor-productivity-of-the-agricultural-industry	N
E7	Healthy soils	y	y	y	y	y	y	https://country.sidesurvey.org.uk/content/soils-report-2007	N

F1	Disruption or unwanted impacts from flooding or coastal erosion	Y		Y	Y			https://www.gov.uk/government/publications/flood-and-coastal-risk-management-national-report	N
F2	Communities resilient to flooding and coastal erosion							-	N
F3	Disruption or unwanted impacts caused by drought	Y		Y	Y			https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/724027/Water_company_performance_report_2017.pdf	N
G1	Changes in landscape and waterscape character	Y		Y	Y	Y	Y	N/A	Y
G2	Condition of heritage features including designated geological sites and scheduled monuments				y	y	y	SSSI and Heritage at Risk Condition	Y Geological SSSI condition and Heritage at Risk Register (lack of information on non-designated features)

G 3	Enhancement of green/blue infrastructure	Y	Y	Y	Y	Y	Y	N/A	N
G 4	Engagement with the natural environment						y	https://www.gov.uk/government/collections/monitor-of-engagement-with-the-natural-environment-survey-purpose-and-results	? MENE data is disaggregated per AONB by Natural England but not down to AONB section for the Cornwall AONB
G 6	Environmental attitudes and behaviours						y	https://www.gov.uk/government/collections/monitor-of-engagement-with-the-natural-environment-survey-purpose-and-results	N (see above)
G 7	Health and wellbeing benefits						y	ONS Natural Capital accounts and MENE	N (See above)
H 2	Distribution of invasive and non-native species and plant pests and diseases	y				y	y	https://www.gov.uk/government/statistics/forestry-commission-england-fce-	N

								corporate-plan-performance-indicators-2018	
H 4	Exposure and adverse effects of chemicals on wildlife in the environment	y	y	y	y	y	y	https://pbms.ceh.ac.uk/content/chemicals-monitored	N



**Cornwall
Area of Outstanding
Natural Beauty**

Environmental Land Management Scheme

Landscape Recovery Framework

Cornwall AONB Section 08, South Coast Western

5. Land management guidance

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1 Land management guidance

Objective 1 – Cornish hedges

Repair and restore Cornish hedges within the landscape, and enhance their management, buffering the hedge network with high-quality semi-natural habitat.



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Land management

- Cornish hedge management/ maintenance
- Flower-rich margin
- Field corner woodland planting
- Unmanaged scrub margin
- Coppice management (woody tops)
- Cornish Hedge management plan

Capital works

- New Cornish hedge construction
- Cornish hedge repair/ mending gaps
- Stock fencing for hedge protection

Management principles

Use local stone in hedge construction and repair, matching adjacent sections of hedge and constructing sections of new hedge in the distinctive local pattern, characteristic of the area. If possible, follow the routes of old boundaries where they have been previously removed, thus restoring the traditional field pattern. The tops of new Cornish hedges can be planted with native shrubs such as blackthorn and hawthorn that provided nectar and berries for wildlife and good nesting habitat. New planting or newly coppiced hedges should be lightly trimmed for up to 5-years to thicken the hedge. Cornish hedges in sheltered situations, such as those towards the Helford Estuary, can be planted with broadleaved trees such as oak and hazel. Coppicing is a potential management option for woody growth on a Cornish hedge, enabling a crop to be harvested off the hedge in a rotation while retaining woody growth elsewhere for wildlife ([see also Objective 4](#)).

It is important to understand the condition of a Cornish hedge. The Hedge (& Wall) Importance Test (HIT) was devised by the 'Guild of Cornish Hedgers' in response to the need for a simple, economical, accurate, safe, and non-invasive method of surveying and assessing hedges, hedgerows, hedgebanks, and walls on a national basis. Its innovative scoring concept provides data compatible with the Hedgerows Regulations criteria and covers every type of hedge or wall while also taking into account regional, county, and local distinctiveness. See the links below to access the HIT test. The HIT test can be used to inform a hedge management plan that details hedge condition, and proposed management over the life of the scheme and can include proposals for new hedge and contribution of any proposed works to habitat connectivity.

Due to the large size and width of many Cornish hedges, in most cases, each side of the hedge can and should be treated as a separate length within the new scheme. It is likely to be the case that one side of the stone construction can be in poor repair, whilst the other can be in good repair. Where Cornish hedges have clear gaps, where the hedge is completely missing, both sides will need to be repaired. If this is a hedge within the farm, then the farmer should repair both lengths, constructing two walls and infilling with an earth core. If the hedge is on a farm boundary and shared with a neighbour, co-operation may be necessary on the repair of significant gaps or the construction of a new hedge.

Cornish hedges are at their best for nature when they are not overly managed, and the woody vegetation provides suitable habitat for nesting birds and forage corridors for bats. Avoid the over flailing of hedges, particularly when berries are still available as an essential winter food source for birds. Blossom on flowering shrubs such as blackthorn only occurs on second-year growth, so annual flailing significantly reduces benefits to birds and pollinators. Ensuring that in-field management does not extend close to the hedge base, so rough grassland and scrubby habitats such as bramble thickets can grow at the bottom of Cornish hedges, is essential for mammals such as

voles and hedgehogs. Brambles are very good for wildlife, providing important pollen and nectar resources and autumn berries.

Unmanaged vegetation alongside a Cornish hedge can be managed in rotation to prevent woody overgrowth.

Cornish hedges are often the last refuges for wildflowers in an improved pasture or arable landscape. They can provide important sources of local provenance seed for the diversification of pastureland and are a vital nectar and pollen source for pollinating insects. Some grazing up to the hedge line is beneficial to maintain florific open swards with a diversity of wildflowers.

It is an offence under the 1981 Wildlife and Countryside Act to disturb Schedule 1 wild birds and their dependent young or to destroy the nests of any wild bird. So, any works to Cornish hedges, such as trimming, require a thorough inspection for nesting birds before works are carried out. This is particularly important within the bird breeding season, which in the UK is defined as being between 1st March and 31st August.

Case study: Yellowhammers



Photo credit: Lawrence Sampson, FWAGSW

Yellowhammers are birds in severe decline which need consideration when managing a Cornish hedge. They nest on, or close to the ground, at the hedge base, in scrub and rough grassland. Yellowhammers will seek out Cornish hedges with relatively short woody tops, often close to ditch-type features ([see also Objective 2](#)). Adult birds feed on seed sources through the year, which means that allowing unmanaged habitat for Yellowhammer is a particular consideration for Cornish hedges adjacent to spring cereals or winter bird seed plots (delivering [Objective 3](#) for the framework). Yellowhammer chicks are also dependent on insects in the nest, which can be provided for by including a flower-rich (and unsprayed) margin along a field boundary. In addition, Yellowhammers tend to nest late in the season, meaning that a flail cut in September can disturb or destroy nests and chicks. Yellowhammers are an excellent example of the complex, 'whole life-cycle' needs of species within the farmed landscape. Integrating the management of Cornish hedges with rotational land and semi-natural habitats is critical to restoring Yellowhammer populations.

Further Guidance

[Cornish hedge construction](#)

[Cornish hedges 1](#)

[Cornish hedges 2](#)

[Hedges and the law](#)

[The Hedge Importance Test \(HIT\)](#)

Objective 2 – Freshwater and wetland

Increase the number and size of on-farm ponds and wetland and decrease fragmentation of freshwater habitats in the landscape, creating input buffer zones.



Photo credit: Lawrence Sampson, FWAGSW

Management principles

Standing open water is one of the most valuable habitats for all wildlife and particularly good for insects and amphibians. The pond should be as large as possible with shallow, gently sloping sides and a deeper area in the middle. Deeper areas in ponds do not freeze in the winter, providing a refuge for aquatic creatures. Provided the pond does not slope more steeply than 30 degrees in any place, the pond can be lined

Land management

- Annual pond maintenance
- Flower-rich margin
- Unmanaged scrub margin
- Tree planting (wet woodland)
- Diversification through plug planting
- Buffer management for water quality

Capital works

- Pond creation
- Scrape creation
- Stock fencing
- Ditch blocking
- Swale creation

with puddle clay, or a butyl liner can be used. A scrape is a shallow depression meant to seasonally hold water after heavy rainfall or inundation by a watercourse. These are beneficial to amphibians and a wide variety of insects. The scrape should be over 10m² in area and no deeper than 40 cm with shallow margins. The relatively small scrape can be created by hand to avoid disturbance of adjacent semi-natural vegetation. Naturally wet areas within fields can be restored to wetland by merely impeding drainage and blocking drainage channels.

Swales are drainage channels that are set level, along contours and can be used in conjunction with the Cornish hedge network. If properly oriented against a slope, a swale can significantly help control water flows, reduce soil erosion, and assist in flood alleviation downstream. An "on contour" approach works by keeping the path of the swale level along the contour, or elevation curve, of a slope. This means that the water absorbs evenly into the land below instead of flowing to the swale's lower end. The soil that is removed to create a swale, the 'berm', sits on the downhill side of the swale and is the perfect place to grow trees and deep rooting plants that will keep the berm stable, as well as suck up the moisture from below so that newly hydrated soil isn't overly saturated.

Pond and wetland creation schemes should include plans for management once the pond is finished. Grazing is important for creating bare patches in the pond margin, which plants need to germinate and grow. Different species of marginal pond plants set seed and germinate at different times of the year, which means that there is no optimum time to graze a pond. Spring growth at low stocking density can lead to under grazing and scrub invasion. However, In the winter, overgrazing may cause erosion and reduce vegetation diversity, so stocking densities will need to be adjusted within and between years to maintain the correct grazing density.

Further Guidance

[Pond creation](#)

[Woodlands](#)

[Grasslands](#)

[Heathland](#)

[Wetlands and reedbeds](#)

[River floodplains](#)

[Rural Sustainable Drainage Systems \(RSuDs\)](#)

[Wildlife ponds in areas with public access](#)

[Wildlife ponds to avoid the risk of birdstrike](#)

[Planning permission advice](#)

[Project costing advice](#)

[Choosing a pond liner](#)

Objective 3 - Farmland

Diversify land in rotation away from monocultures to species-rich swards and diversify species-poor permanent pasture, increasing the area and diversity of nesting habitat and forage for birds, insects, and mammals across a full season and improving carbon capture.



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Land management

- Conversion of improved pasture to species-rich herbal leys or permanent pasture (non-rotation)
 - Arable cover crop
 - Flower-rich arable buffer strips
 - Wild bird seed and wild bee mixtures
 - A rotational land management plan
 - Overwinter stubble
 - Beetle and bee banks
 - Bare ground for solitary bees
 - Farmland bird plots
 - Conservation headlands
 - Rough grass margins
 - Flower-rich hay meadow creation
 - Pasture diversification through plug planting
 - Use of local provenance seeds, seedballs, plugs, and plants
 - Restoration of species-poor and compacted permanent grassland
 - Diversification of permanent grassland/ hay meadow
 - Permanent grassland management
 - Unsprayed arable margins
-

Management principles

The diversification of pasture land has the potential to achieve a great deal for nature, in particular, for farmland birds and invertebrate populations. That can be achieved by diversifying land within the rotation or taking land out of rotation, which then becomes a 'permanent' pasture. Land in rotation can be reseeded or oversown with nectar-rich and herbal ley mixes. All pastures can be diversified through the spreading of flower-rich green hay, sourced if possible, locally. Permanent pastures can also be direct sown and planted with plug plants (preferably grown from seeds of local provenance).

Case study: Herbal Leys

The management objective for farmland is all about significantly increasing opportunities for wildlife and building these extensively into the farm rotation. A herbal ley is a much more diverse sward than a ryegrass pasture field. Some species-rich herbal leys can have 15 or more species of different grasses and flowering herbs within them, providing vital nectar resources for pollinating insects.

Different species within herbal leys have a variation in root depths. In order to increase carbon sequestration by a herbal ley, deep-rooted species within the sward such as chicory would be desirable. Deep rooting species will also help with resilience during periods of drought and assist with drainage during heavy rainfall periods. Nitrogen fixers such as clovers will improve soil's nitrogen content and sequester carbon. Including nitrogen-fixing species at a rate of 30% or more should minimise the requirement for fertiliser inputs ([see Objective 7](#)).

Drilling should be shallow, less than 1cm and the soil should be rolled after sowing for good seed-to-soil contact. Herbal leys are slow to emerge, so an annual nurse crop such as barley can be used to aid establishment. Herbal leys can also be established by sowing into existing grass swards, which is relevant when diversifying species-poor permanent pastures. Sowing without ploughing will minimise the loss of soil carbon during establishment, although some bare ground will need to be created first, for example, with a chain harrow.

Once established, herbal leys can be grazed by livestock (lightly in the first year) and have been shown to have significantly higher nutritional value than a ryegrass field. However, livestock can overgraze more palatable species within a ley. This can reduce species diversity over time as these species are grazed out. Rotational grazing rather than set stocking is required as this will increase the carbon sequestration performance of the swards and reduce bloat in the animals. It is important to move animals on from the paddock while there is still a good cover (+/- 10cm) because the plants will recover quicker during the rest period. This has an additional benefit in that animals may not need to be wormed since they do not graze right down to the ground, where they will consume worm larvae. Allow approximately four weeks to thirty days for sward recovery.

As well as the large-scale conversion of pasture to herbal leys, other measures can be included alongside diversified rotational land that supports the natural life cycles of specific species. Examples include retaining areas of rough grassland to provide nest sites for bumblebees; areas of bare open ground, providing sightlines for predatory spiders and beetles; and constructing sunny banks of bare earth to provide nest sites for solitary bees. (See the links below for further help and guidance).

Case study: Bumblebees

Bumblebees are an iconic and much-loved bee group and highly effective pollinators. Many bumblebees species are long-tongued and therefore specialists at pollinating crops such as beans. Cornwall has nationally significant populations of rare bumblebees, such as the Brown-banded Carder Bumblebee (*Bombus humilis*) and the Moss Carder Bumblebee (*Bombus muscorum*). Bumblebees in Cornwall have declined significantly since the 1950s, the Cornwall Bumblebee Atlas estimating that Cornwall has lost a quarter of the Cornish bumblebee fauna over that time. Bumblebees require a lot of nectar forage, with red clover being of particular importance. Some bumblebee species, such as the early bumblebee, *Bombus pratorum*, are active from early spring, so early flowering species such as blackthorn, flowering on two-year-old growth is



essential. As well as requiring enough forage, bumblebees need nest sites. Bumblebees nest underground in old mammal burrows or deep within grassy tussocks. Nesting habitat must be available in early spring for foraging queens. Leaving rough grassland and scrubby margins or flower-rich margins attracts small mammals and provides places to establish a nest, drawing a much higher number of queens and resulting in an increased population, which floral diversity would not deliver in isolation. Consideration of the whole life cycle of a bumblebee requires the combination of nesting habitat, early flowering resources such as those in sensitively managed hedges, as well as nectar and pollen sources that can be enhanced from farmland options such as herbal leys and nectar and pollen plots.

Table 1. Herbal ley species

Name/ Type and Yield	Root structure	Soil type	Benefits	Persistence	Grazing/cutting suitability
Cocksfoot Grass Yield good	Deep-rooting	Offers continued growing in dry weather when grown on dry and free-draining soil	Early and extended grazing, quick recovery. Larval host plant for Skipper butterfly species.	Very persistent	Good, provided it is grazed hard Not good for long-term pasture, as it can become clumpy and unpalatable Varietal choice important
Timothy Grass Yield good	Fine, shallow, fibrous roots	Will grow well on heavy or light soil. Not tolerant of waterlogging	Disease free. Larval host plant for Marbled white butterfly	Very persistent	Can be made into silage, hay or grazed
Meadow fescue Grass	Medium to deep	Will grow on nearly all soils, from brash to clay. Not	Long duration and drought-tolerant alternative to perennial ryegrass	More persistent, but similar growth habit as	Often sown with Timothy for hay or grazing when grown as a stand alone crop.

Yield fair		tolerant of waterlogging	Larval host plant for Gatekeeper and Small heath butterflies	perennial ryegrass	
White clover Legume Increases overall forage yield	Deep taproot during establishment, replaced by shallower, fibrous roots and stoloniferous growth when mature	Grows on nearly all soils although not tolerant of waterlogging	Drought-resistant Fixes nitrogen Palatable High protein content Spreads and increases in the sward due to stolons over time Good ground cover	Very persistent	Best grown with grasses Can be cut or grazed Ideal for grazing – extra protein increases live weight gain Very palatable
Red clover Legume Produces one third more yield than white clover	Deep taproot	Grows on nearly all soil types, apart from very acidic soil, where alsike clover should be used	High-yielding. Good for long-tongued bumblebees and a range of invertebrates	Less persistent than white clover, lasting between two and four years	Normally used in silage, but it can be grazed with careful management Best sown with aggressive ryegrasses Contains oestrogen, so move breeding

					animals off red clover around conception
Alsike clover Legume Slightly lower yielding than red clover	Medium	Good for acidic or heavy soils	Works in some soils that red clover might struggle in	Three years	Slower to grow than red clover
Lucerne Legume 14tonnes Dry Matter/ha without nitrogen on dry land High enough yield to be grown on its own	Deep-rooting	Dry, calcareous soils, free-draining, not acidic	Protein-rich Drought-resistant Useful complement to maize silage Fixes nitrogen. Good for bumblebees.	Perennial, varies according to soil suitability May require research with respect to suitability for the Lizard area	Usually sown with a companion grass such as Timothy or meadow fescue Cut three times a year Can cause bloat if grazed
Sainfoin Legume	Deep roots leave soil in great condition	Grows on thin, alkaline soils	High in protein Efficiently used by stock	Perennial, varies according to soil suitability	Can be cut Contains tannins, which help protein

Good yields when well established, equal to that of lucerne	Never stops growing – even in dry spells	such as dry chalk or limestone	Very drought-resistant Pollinators love it Great for grazing and cutting Anti-bloat Natural anthelmintic (anti-parasitic) Fixes nitrogen	May require research with respect to suitability for the Lizard area	absorption, leading to higher liveweight gains Doesn't cause bloat May reduce methane emissions Acts as an anthelmintic
Yellow trefoil Legume Adds diversity	Shallow	Establishes well when undersown	Sheds seeds freely, so is regenerative	Hardy annual (will survive a winter or heavy grazing)	Gives early spring growth, which is unusual, as legumes are normally late to grow
Birdsfoot trefoil Legume Works well as part of legume mix	Shallow	Suited to poor and dry soils. Not tolerant of waterlogging	Anthelmintic. Great summer forage for pollinators and larval host plant for a range of butterfly species	Four to five years	Cut and graze Contains tannins and may have other medicinal benefits

			such as the Common blue. Good all-rounder for invertebrates.		
Chicory Legume High-yielding	Deep-rooting	Can grow very well on dry soil	Can penetrate plough pans Good source of minerals Has anthelmintic effects. Great late season forage source for pollinators.	Perennial	Mainly for grazing, but can be cut occasionally – watch out for wrapped bales with chicory stalks
Ribgrass (plantain) Herb Low-yielding	Deep-rooting	Grows well in compacted or dry ground. Not tolerant of waterlogging	Reliable Grown for vitamin and mineral content – calcium, copper and selenium. Ribwort plantain is the larval host plant for Heath	Perennial	Cut and graze

			and Glanville Fritillary (butterfly species)		
Yarrow Herb Low-yielding	Deep-rooting	Works well in certain mixes	Rich source of vitamin A. Good for solitary bees and hoverfly pollinators, and a range of other invertebrates	Perennial	Mainly grazing
Burnet Herb Low-yielding		Good for dry soils	Extremely drought- resistant	Perennial	Very palatable Mainly grazing
Sheep's parsley Herb Low-yielding	Medium	Light soils	Works well in mixes	Perennial	Mainly grazing

Adapted from source: Cotswolds Seeds

Further guidance

[Herbal leys](#)

[Cover crops](#)

[Undersowing of leys in arable crops](#)

[Farmland bird conservation](#)

[Pollinators](#)

[Mammals](#)

[Hay meadow/ silage meadow management and pasture diversification](#)

[Invertebrates](#)

[Skylark plots](#)

[Beetle banks](#)

[Bare Ground](#)

[Case study: Bare ground for butterflies and moths](#)

[Case study: Herbal leys for forage, silage, and hay](#)

Objective 4 - Woodlands

Increase the extent of broadleaved and wet woodland in stream valleys and bring into positive management.



Photo credit: Colette Beckham, Gain Consulting

Management principles

Tree planting will extend the woodland along the stream valley bottoms and valley sides. Fast-growing willow in wet areas can be allowed to regenerate naturally without planting. The success of tree planting will be dependent on keeping deer at bay with suitable fencing until the trees are above browsing height. Woodland planting can be augmented with other forms of agroforestry, such as wood pasture to extend tree cover and link areas of woodland across the landscape ([See also Objective 5](#)).

Land Management

- Tree planting
- Natural regeneration of wet Willow carr
- Coppice management of oak, willow, and hazel
- Restoration of overstood coppice
- Replacement planting of diseased ash trees
- Management of permanent open space and access e.g., Rides and glades

Capital works

- Stock fencing
 - Infrastructure to enable management or timber extraction e.g., surfacing of tracks
 - Removal of invasive species
-

Suitable species native to Cornwall for tree planting in the scheme area

- Common Oak – *Quercus robur*
- Sessile oak – *Quercus petraea* (in the Helford tributary valleys and estuary slopes)
- Silver birch – *Betula pendula*
- Downy birch – *Betula pubescens* (better for damp ground than *B. pendula*)
- Hazel – *Coryllus avellana*
- Grey willow, *Salix cinerea* spp. *Oleifolia* (for damp waterside locations/ stream valley bottoms)
- Elder – *Sambucus nigra* (understorey)
- Holly – *Ilex aquifolium* (understorey)
- Rowan – *Sorbus acuparia*

Climate change effects, coupled with diseases such as ash dieback, are increasingly being considered with respect to suitable species and woodland planting. As the climate warms and the weather becomes more unstable, it may be necessary for the future to consider planting a proportion of non-native species such as beech (*Fagus sylvatica*), which is thought to be more suited to hot, drier climes.

Nature abhors a straight line. When planting new woodland, aim to mimic natural patterns where possible and practical within any planned forestry operation. Trees of similar species, such as birch, can be planted in groups. Ensure wavy edges along any block of woodland planting and place canopy species at random/ irregular intervals. Allow space for sunny glades and rides to provide corridors for butterflies, moths, and hunting bats.

Wet woodland/ willow carr should require little active intervention apart from monitoring to ensure that natural regeneration continues within the understorey. Manage any invasive stands of laurel and rhododendron, skunk cabbage, Japanese knotweed, and Himalayan balsam as they appear. Planning for ash dieback disease will be necessary, planting replacements for ash likely to die within 10-15 years, with alternative species.

Coppice management

Coppicing is a woodland management technique used to produce a plentiful and manageable supply of young wood, timber, or poles. Trees are felled quite close to the ground, leaving stumps, called 'coppice stools.' These quickly regenerate with multiple stems, which can be harvested again in the future. The time between harvests is species-dependent, with quick-growing species such as hazel, willow, and ash, harvestable in 4-7 years (Short-rotation coppice), while slower growing species such as oak might take up to 25 years. Consider spacing

when planting for a coppice. Fast growing species on short-rotation such as hazel can be planted closer together e.g., 2.5m, while larger, slower-growing species like oak will need more room, up to 7m.

Coppice stands can be single species or mixed depending on the range of desired products. Standards can also be grown within a coppice, although this requires careful spacing to avoid excessive shade over the coppice and stunting growth.

Suitable species for coppicing

- Hazel
- Oak
- Willow
- Lime
- Hornbeam
- Beech
- Sweet chestnut
- Ash (although this is not likely to be a suitable species longer term due to ash dieback disease)
- Alder
- Birch
- Sycamore

Cutting should be carried out in winter. After the first cut or a late winter/ early spring cut, the stumps (or stools) can go dormant for a year. Stands of coppice are harvested on rotation so that there is always a crop ready for harvest each year. These distinct sections of woodland, each with growth at different ages, are called 'coups.' A low cut is made, which is slanting to allow the stool to shed rainwater. It is important not to split the bark when the cut is made.

The most critical aspect of coppice management is protection from grazing by deer, rabbits, and livestock.

Managed coppice woodland provides the perfect environment for all manner of woodland plants, birds, and animals, notably the shy dormouse, which uses coppiced hazel foliage and bramble shrub layer to move around unseen. Hazel dormouse records occur in the project area before 2006, although there are no recent records. Recently cut stands of coppice are usually highly floristic, and restored areas of former coppice can reveal rare relics.

Further guidance

[The creation of small woods on farms](#)

[Rhododendron control](#)

[Japanese knotweed](#)

[Woodland creation case studies](#)

[Coppice management](#)

Objective 5 – Orchards, agroforestry, and wood pasture

Increase land managed for orchards, agroforestry and wood pasture, restoring degraded orchards.



Photo credit: Andy Tylor, Boscarnon Farm

Land management

- Fruit tree planting
- Nectar tree planting
- Restoration works – old trees in poor condition
- Standing and fallen deadwood retention
- Management and maintenance of ancient and veteran trees
- Field corner tree planting ([see also Objective 4](#))
- Other supportive tree plantings e.g., nitrogen-fixing trees, living fences, shelterbelts, and riparian strips
- Shrub and ground layer planting
- Pruning
- Understorey management ([see Objective 3](#))

Capital works

- Stock fencing

Management principles

Agroforestry of all types involves the introduction of trees into land within the farm rotation.

Orchards

An ideal site for a new orchard is in a sunny, sheltered, south-west facing location, away from frost pockets such as valley bottoms. Orchards are traditionally areas planted with individual fruit trees, commonly apple, pear, plum, or cherry. There are a vast number of varieties suited to the product, e.g., pear cider or cooking apple. Some of the varieties are now rare and culturally important. Cornwall has several rare Cornish varieties that could be well suited to the local environment, such as Mannaccan Primrose, a cooking apple originating on the Lizard, or Ben's Red, an eating apple, hailing from Penzance. Orchards can be established from 1-year maiden trees or nursery grown standards. If the orchard is to be grazed, rootstocks should be vigorous enough to put the tree out of reach of grazing animals, M25 for full standard apple trees or M106 for half standard. Dwarfing rootstocks are not productive enough for commercial orchards.

Where a traditional orchard needs restoration, each tree should be surveyed, and its condition assessed. The causes of any poor condition need to be fully understood, such as stock damage, pests and disease, overshadowing, or a lack of proper pruning. Restorative measures should then be put in place to address the causes of poor condition. Generally, older, mature orchard trees are more valuable for wildlife. Dead and decaying wood is not necessarily a sign of poor health. Fallen and standing deadwood is an essential habitat for wildlife and should be retained wherever possible.

Wood pasture/ Silvopasture

Wood pasture is generally associated with estates, old parkland, and deer parks with ancient and veteran trees. However, in its broadest sense, wood pasture can be described as trees growing within pastureland and can include fruit orchards and other types of trees. Trees planted for new wood pasture should be widely spaced enough to develop an open crown and allow light to the ground layer. At a minimum, this should be 1.5 times the final space requirement of the tree.

Wood pasture systems can have significant benefits for grazing animals, including lower parasite burden because of tannins in the browse and scratching opportunities on trees, particularly in self-shedding sheep. There are much-reduced energy requirements for livestock in wood pasture situations because they can better regulate their temperature. There is also less 'camping' behavior in cattle, so dung is deposited more evenly. Trees bring up minerals from deep in the soil, so they are available to browsing livestock, and less methane is produced when foliage is included in the diet. Grazing among trees can even improve social interactions between animals and reduce stress.

Flowering trees should be included within new wood pasture, such as hawthorn and crab apple, which provides a nectar source for insects and autumn fruit for birds. Both wood pasture and orchards are at their best for biodiversity when associated with other areas of semi-natural habitat such as ponds, swales, scrub, and rough grassland. Therefore, wood pasture can be integrated with the delivery of other objectives within the framework. There is potential to diversify grasslands in the wood pasture system by undersowing with species-rich herbal leys. ([See also Objective 3](#)). Equally, wood pasture landscapes could be created alongside areas of semi-natural woodland, where the woodland becomes part of the grazing system. ([See also Objective 4](#)).

Other types of agroforestry

There are other ways of introducing trees within the farmed landscape outside of a woodland, orchard, or wood pasture setting, including

- Growing annual crops between rows of trees or shrubs (alley cropping)
- Trees planted along boundaries ([see also Objective 1](#))
- Shelterbelts and riparian buffer strips
- Individual trees or groups of trees, planted in otherwise treeless areas of the farm e.g., in field corners ([see also Objective 1](#))
- Erosion control or earthworks, for example, on top of a bund retaining a swale against the contour or along the edge of a terrace, created to make better use of sloping land
- Living fences in which the posts are living trees or the entire fence consists of closely-spaced trees or shrubs

Further guidance

[Agroforestry 1](#)

[Agroforestry 2](#)

[Agroforestry3](#)

[Traditional orchards: site and tree selection](#)

[Traditional orchards: an introduction to pruning](#)

[Traditional orchards: formative pruning of young trees](#)

[Traditional orchards: maintenance pruning](#)

[Traditional orchards: restoring and managing mature and neglected orchards](#)

[Traditional orchards: fruit tree health](#)

[Traditional orchards: orchards and wildlife](#)

[Traditional orchards: glossary \(TIN021\)](#)

Objective 6 - Heathland

Improve the condition and coherence of the heathland and wetland habitat mosaic.



Photo credit: Colette Beckham, Gain Consulting

Land Management

- Conversion of land in rotation to heathland
- Conversion of conifer plantation into heathland
- Traditional breeds grazing
- Native breeds of regional heritage
- Scrub control for willow, bracken, and gorse
- Wetland creation in the heathland mosaic ([see Objective 2](#))
- Fire breaks
- Controlled burning
- Management by cutting
- Condition survey

Capital work

- Stock fencing
- Cattle grid

Management principles

Management of existing heath

A series of broad habitat attributes have been defined by Natural England that should typically be part of the conservation objectives or the management plan for all SSSI sites where lowland heathland is an interest feature. There should normally be at least one target specified for each of the attributes.

For lowland heathlands, the attributes are:

- Habitat extent
- Bare ground
- Vegetation structure: cover of characteristic woody species and the cover of ericaceous species in different growth stages
- Stages of heather growth; 1 Pioneer, 2 Building phase, 3 Mature phase, and 4 Degenerating phase (layering). Depending on climatic conditions, heather will take between 30 and 40 years to complete the cycle
- Vegetation composition: frequency of characteristic species (dwarf shrubs, graminoids, forbs), and the cover of bryophytes and lichens
- Indicators of negative trends (percentage of alien or invasive species which may reduce the diversity of the habitat and affect its integrity; the presence of artificial drains, soil erosion, trampling; uncontrolled burning; eutrophication)

Grazing

Heathlands only need light grazing. Cattle are ideal for wet heath with purple moor grass (*Molinia caerulea*) tussocks. Traditional breeds such as North Devon (Red Ruby), Highland, Belted Galloway, or Welsh Black do very well on heathland sites. Lizard heathland graziers have found North Devon (Red Rubies) to be the most uncomplicated breed when grazing the Lizard heathlands. An approximate stocking rate of 1 cow for every 2-5 hectares is advisable to maintain wet heathland. Where the heath is in poor condition due to scrub and *Molinia* overgrowth, higher stocking rates would be used to increase pressure on existing or burnt heathland, in order to prevent overgrowth and provide better quality grazing for livestock, gradually decreasing grazing pressure as condition targets are met, and favorable condition is achieved.

Traditional breeds can be out on the heathland all year in all but the worst of weather, although mineral licks may need to be provided. Once the optimal condition is achieved, only light grazing during the summer months may be necessary. The SSSI condition assessment will act as a helpful guide to adjust stocking rates. Where suitable breeds are used, cattle can reach and maintain excellent condition by grazing heathland habitats. Woody species, including heather, are a good source of forage as well as grass.

Burning

The management of the Lizard heathland has traditionally involved limited, controlled burning. Controlled burns are sometimes necessary to reduce scrubby overgrowth and promote access into areas of overgrown heathland by grazing animals. Once this is achieved, as long as grazing pressure is maintained, continued burning is not then required. Controlled burning also reduces the risk of large-scale, uncontrolled, accidental fires and is more cost-effective than cutting firebreaks. Uncontrolled fires tend to burn hotter and for longer, releasing more carbon than a controlled burn and being more damaging to biodiversity. Controlled burns have additional benefits to the grazier of controlling parasite burdens and facilitating cattle checking.

Heathland re-creation

Heathland creation is notoriously difficult to achieve successfully. It is a habitat that is adapted to thrive in relatively nutrient-poor situations on peat soils, which are relatively shallow in the scheme area. Attempts to recreate heathland on former arable and grazing land are likely to be hampered by residual soil fertility, and alternatives to heathland creation, such as restoration of species-rich, permanent grassland, should be considered. Areas of pasture land with a clear physical connection to the existing heathland, or where the creation of pasture land can re-link two areas of heathland would be most suitable. Re-creation on areas of former conifer plantation may be more successful due to the residual acid condition of the leaf litter, where residual stumps can be mulched under heather litter.

It is essential to test soils for chemical fertility to ensure suitability. If soils are high in NPK, then topsoil stripping will likely result in a more successful establishment. Topsoil stripping can result in wetland creation rather than heathland, so slope, drainage, and topographical variations need to be considered. Heathland creation is, therefore, best carried out in conjunction with wetland creation ([see Objective 2](#)). Heather litter can be collected using a brush harvester from a suitable donor site of heathland in positive condition and free from invasive species. Sieved litter can be spread using a seeder. Alternatively, heather can be cut using a double chop forage harvester and spread as brash. Brush harvesting/ cutting should be



Photo credit Andy Tylor, Boscarnon Farm, Transplanted heath island in a topsoil scrape (which is inundated in the winter)

carried out in October and Nov/ Dec to ensure both *Calluna vulgaris* and *Erica sp.* seeds are collected.

A calculation of the yield of heather seed per weight of harvested material will be needed to determine the spreading density. Once heather litter has been spread, it would benefit from being rolled to increase contact between the litter and the substrate. The litter can be secured from erosion either by a sparse application of forestry brash thinnings, invasive free heather cuttings, and/or a grass nurse such as wavy-hair grass, *Deschampsia flexuosa*, at a low sowing rate. This will help to secure the litter and will fade away over the establishment phase. Transplanting of heather turves has been used with some success in the project area, although care must be taken that this does not result in a net loss of habitat overall.

Successful establishment will be dependent on the control of deer, and re-creation sites should be monitored regularly for invasive species such as rhododendron and European gorse, *Ulex europaeus*. While European gorse is a native species, it can take over if not managed. Western gorse, *Ulex gallii*, however, is an important component of wet heath, so it is critical to know the difference. Western gorse is a much more compact plant which is autumn flowering, whilst European gorse is more robust and flowers in spring.

Further guidance

[Harvesting and use of heather seed](#)

[Grazing management of lowland heathland](#)

[Impact of heathland recreation on soils and the historic environment](#)

[Lowland Heathland SSSIs: guidance on conservation objectives setting and condition monitoring](#)

Objective 7 - Organic

Convert and manage the land organically



Photo credit: Andy Tylor, Boscarnon Farm

Land management

- Zero or reduced use of chemical fertiliser, pesticide sprays, fungicides, or molluscicides
- Application of organic matter
- Soil conservation, minimum tillage, long rotations, and permanent pastures
- Cropping diversity ([also see Objective 3](#))
- No use of genetically modified seeds or plants
- High nature value farming as described under Objectives 1-7
- Soil management plan
- Nutrient management plan
- Manure and slurry management plan
- Organic certification

Management principles

Organic farming seeks to work with natural processes, limiting external inputs and chemicals to achieve more sustainable food production. Risks to ecosystem services such as pollution and soil erosion are mitigated in an organic system by avoiding artificial fertilisers and pesticides and adopting practices such as crop rotation and natural fertilisers like manure. Organic farming systems aim to maximise the soils' health and ability to support productive farming by ensuring nutrients are available to crop through effective nutrient cycling in the soils. This requires a healthy soil structure and diverse rotations, which contribute to carbon sequestration, flood mitigation, water quality, and biodiversity.

Organic farming is probably the most developed, understood, and widely recognised system of sustainable agriculture. However, some farms may wish not to go down the certification route, keeping some flexibility within their operation while not benefiting from product

premiums. There are several different ways of describing farms that operate 'organically,' such as 'high nature value farming,' 'regenerative/ integrated farming' or 'nature-friendly farming.' The term 'agroecology' encompasses other farming systems, including organic, which share common characteristics.

- A biological focus, rather than chemical, with reduced input
- A focus on nature restoration in the farm system
- Emphasis on diversity
- Improved soil management and crop diversity

"Regenerative agriculture is a system of farming principles and practices that seeks to rehabilitate and enhance the entire ecosystem of the farm by placing a heavy premium on soil health with attention also paid to water management, fertiliser use, and more. It is a method of farming that "improves the resources it uses, rather than destroying or depleting them."¹ Regenerative agriculture can be practiced without needed to certify as organic. Certification of organic standards covers the EU's organic regulations (EC 834/2007 & EC 889/2008.) Organic standards look at all aspects of organic food manufacturing and production, storage, and sales. To certify as organic, a farm should be registered with and supported by one of the UK organic control bodies. The farm should then complete the application, inspection, and certification steps to complete the process, demonstrating how the required standards are being met.

Further guidance

[Organic principles](#)

[Organic crop rotations](#)

[Organic fertilisers](#)

[Biological control](#)

[Soils and tillage](#)

[Soils and ecosystem services](#)

[Producing a soil management plan](#)

[Nutrient management guide](#)

[Approved UK Organic Control Bodies](#)

[Organic certification](#)

[Organic and Brexit](#)

¹ <https://rodaleinstitute.org/wp-content/uploads/rodale-white-paper.pdf>

Objective 8 - Heritage

Manage and maintain both designated and non-designated heritage features in positive condition



Photo credit: Colette Beckham, Gain Consulting

Management principles

The first step to positive management of on-farm heritage is understanding what is there, in terms of both designated features, like Scheduled Monuments and Listed Buildings, and non-designated 'heritage assets.' A heritage asset could be a cultural feature, such as a stone stile or gateway with granite gateposts, an ancient standing stone, a cast-iron fingerpost, a milestone, or a more recent WWII Pillbox. Heritage assets can also take the form of historic landscapes, described in the field pattern and the distribution of historic settlements.

Land Management Options

- Historic assets survey
- A historic assets management plan
- Scrub clearance
- Scrub management
- Grazing management on historic sites
- Heritage interpretation ([see also Objective 9](#))
- Access management to heritage sites

Capital Options

- Repair, restoration, and consolidation of historic buildings and structures
- Repair of on-farm heritage assets e.g., stone stiles, granite gateposts
- Restoration of historic field patterns through the creation of new Cornish hedges ([see also Objective 1](#))

Understanding heritage assets begins, in Cornwall, with a search of the Cornwall Historic Environment Record (HER), a database of both designated and non-designated features of interest. The Cornwall HER is available as a digital map on Cornwall Council's interactive mapping page. As well as historic features recorded in the HER, there may be other on-farm features that have not yet been recorded, and a field survey should be carried out to identify these. Several voluntary heritage groups exist in the Lizard area, which may be able to support field survey work. In addition, Cornwall Council's Historic Environment Service offers a comprehensive advice service and support to farmers wishing to undertake work on heritage.

Once all heritage features have been mapped and described, it is essential to understand their condition, threats, and pressures and to develop a comprehensive understanding of their management requirements. For example, a Scheduled Monument may be undermined by scrub, which would require careful removal. It is important to check if any proposed activity for a Scheduled Monument requires consent from the Department of Culture, Media and Sport.

Many of the ecosystem services benefits flowing from historic sites, features, and landscapes occur when people can interact, experience, and learn about the historic environment. Therefore, there is a strong link between access provision and management and historic sites and features and their sensitive interpretation ([See also Objective 9](#)).

Great interpretation should:

- Inspire emotions and promote engagement and involvement
 - Be relevant, providing the right narrative, and meets the interpretive goals
 - Be more than just providing information
 - Mentally connect people with place through learning and experience
 - Be Disability Discrimination Act compliant
 - Suit and respect the location
 - Target the right audience
-

Further guidance

[Preparing a heritage management plan](#)

[Guidance on caring for archaeological sites in grassland](#)

[Guidance on caring for archaeological sites on arable land](#)

[Guidance on caring for historic parkland](#)

[Guidance for caring for farm buildings](#)

[Scheduled monuments – advice for owner/ occupiers](#)

[Countryside Stewardship options for the historic environment](#)

[Guidance on metal detecting on land in agri-environment schemes](#)

[Historic England local offices](#)

[Cornwall Historic Environment Record](#)

[Cornwall Council Historic Environment Service – Countryside Advice Service](#)

[National Heritage List for England](#)

[Heritage at Risk Register](#)

[Cornwall Council Interactive Map \(tick the Historical layers\)](#)

Objective 9 - Education

Provide inclusive education for schools, colleges, universities, and other groups and improving engagement with the natural environment.

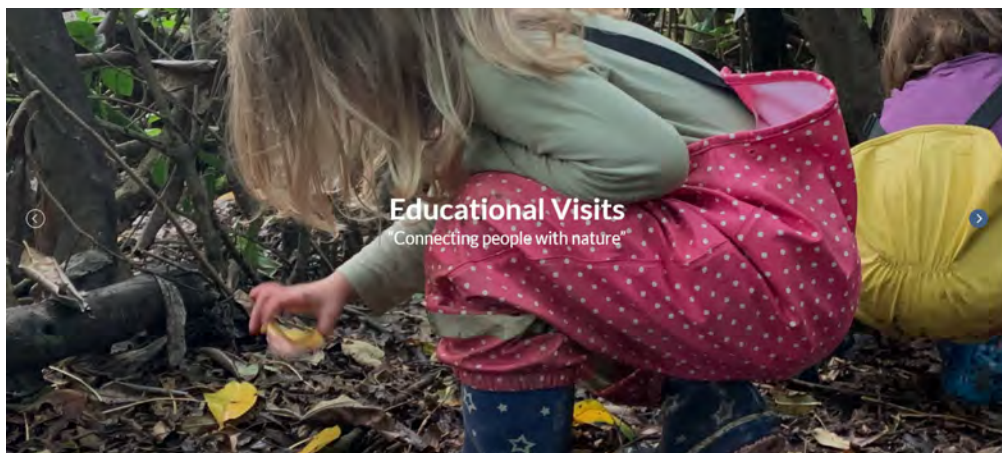


Photo credit: David Oates, Rosuick Farm

Land Management

- Maintenance of access routes used as educational trails
- Design and print of educational materials
- Production of digital educational materials e.g. website, apps, and QR codes
- A farm education facilitation fund to support off-site talks to schools and groups and assist with transportation costs
- Research and development of educational materials
- Publicity and promotion of farm education opportunities
- Production of risk assessments and implementation of health and safety measures
- Disclosure barring service and child protection training

Capital works

- Access route widening and surfacing for disabled access provision
- Installation of services to facilitate visits e.g., toilets and handwash

Management principles

The first thing in delivering on-farm education is to decide on 'the offer'. This will be individual to each farm, depending on the farm type, size, cropping, existing facilities, and the semi-natural habitat on site. The combination of these things will present opportunities and enable the creation of a unique educational experience that sets the farm apart from other providers. It is important to understand the audience for farm visits and tailor the visits to meet the target audience's needs. For example, if the target market is school visits, the program should address different aspects of the school curriculum. Primary schools find visits easier to organise than secondary schools as their classes usually have the same teacher for the whole day. The primary curriculum is divided into Foundation Stage (reception class) aged 4-5, Key Stage 1 (infants); Years 1 & 2, aged 5-7; and Key Stage 2 (juniors) Years 3,4,5 and 6; aged 7-11. Make early links with the local schools if schools are the target audience. Often there are practical and financial barriers to school trips to farms. Off-farm education where farmers go to schools to deliver workshops and talks is a great way of delivering benefits quickly and easily, and this is likely to appeal to the harder-to-reach secondary schools

Types of education activity may include

- General farm tours on foot, or in a suitable trailer
- Summer tours for visitors
- Visits based on food, telling the story of plot to plate
- Cooking workshops, using local food, and foraging
- Wildlife walks and plant identification
- Forest schools
- Therapy sessions e.g., nature meditation
- Exercise classes e.g., outdoor yoga
- Themed event centred on particular farm activities, for example, lambing days, soft fruit picking, apple days, harvest festival
- Visits aimed at specific age groups
- Off-farm visits to schools for talks and workshops

In the delivery of the new Environmental Land Management Scheme, there is an opportunity to share learning and experience with other farmers, landowners, and land managers using a peer to peer approach. The work being undertaken to achieve the objectives set out in this landscape recovery framework will deliver many public goods benefits. Farms on the Lizard, therefore, can be used as demonstration farms to educate the farming sector and other sectors such as the environmental sector, tools, and techniques to deliver ecosystem services and nature recovery.

The resources and facilities available will also influence the approach. It is essential to ensure proper facilities are available for visiting groups and to understand the human resources for delivery. Who will undertake the education activity? Do they have the time, are they good communicators, and do they have the proper training to deliver successful sessions?

There are risks associated with visiting a farm, which must be mitigated through thorough risk assessments, putting in place robust measures to minimize risk to visitors to the farm. Risks associated with farm visits include (but not limited to)

- Slips trips, and falls on uneven or muddy ground
- Injury from farm machinery
- Injury from farm animals
- Disease from farm animals
- Exposure to chemicals used on a farm
- Injury from vegetation
- Illness from poisonous plants

The risk assessment should identify each risk on the farm and describe how the risk will be addressed, e.g., by providing handwash facilities and ensuring hands are washed after touching animals. If the visits include children or vulnerable adults, a safeguarding policy is required that sets out how attendees will be protected. Farm visit leaders should be properly trained in first aid, health, and safety, safeguarding and child protection, and have the appropriate level of Disclosure Barring Service checks.

Further guidance

[National Education Union: Guidance on-farm visits](#)

[LEAF support for farm visits](#)

[LEAF resources for teachers](#)

[LEAF's 'Visit My Farm'](#)

[ROSPA Farm visits and risk](#)

2. Links and information

Mapping and environmental information

[Defra environmental mapping](#)

[Cornwall Council interactive mapping](#)

[Cornwall LAGAS: Natural Capital Information and Management Hub](#)

[Natural England's access to evidence](#)

[Defra science and research database](#)

[Centre for Ecology and Hydrology data and mapping](#)

Agri Environment Schemes

[The new Environmental Land Management Scheme](#)

[Countryside Stewardship](#)

[The Rural Payments Agency](#)

Sources of farm advice

[Defra Farm Advisory Service \(FAS\)](#)

[FWAG South West](#)

[Farm Cornwall](#)

[Cornwall Wildlife Trust](#)

[The Cornwall Area of Outstanding Natural Beauty](#)

3. Links references

Cornish hedges

<https://www.cornwall.gov.uk/hedges>

<http://www.cornishhedges.co.uk/>

<http://www.hedgelink.org.uk>

Freshwater and wetland

<https://freshwaterhabitats.org.uk>

<https://www.gov.uk/government/publications/rural-sustainable-drainage-systems>

Farmland

<https://www.agricology.co.uk/resources>

<https://www.buglife.org.uk/resources/farming-hub/>

<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice>

<http://publications.naturalengland.org.uk>

<https://farmwildlife.info/2017/12/15/bare-ground-butterflies-moths/>

<https://www.nffn.org.uk/herbal-ley-hay-case-study/>

<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/managing-habitats/hay-meadows/>

Woodland

<https://www.forestresearch.gov.uk/research>

<https://www.gov.uk/guidance/prevent-japanese-knotweed-from-spreading>

<https://www.gov.uk/guidance/create-woodland-overview#woodland-creation-quick-guides-and-case-studies>

[https://www.forestresearch.gov.uk/documents/2051/FR_BEC_Establishment and management of broadleaved coppice plantations for energy 2009.pdf](https://www.forestresearch.gov.uk/documents/2051/FR_BEC_Establishment_and_management_of_broadleaved_coppice_plantations_for_energy_2009.pdf)

Orchards, agroforestry and wood pasture

<https://www.soilassociation.org/media/19141/the-agroforestry-handbook.pdf>

<https://www.agricology.co.uk/resources>

<https://www.woodlandtrust.org.uk/plant-trees/agroforestry-benefits/>

<http://publications.naturalengland.org.uk/publication/>

Heathland

<https://cieem.net/wp-content/uploads/2019/07/Harvesting-and-using-heather-seed-FL-Technical-Note.pdf>

<http://publications.naturalengland.org.uk/publication/>

Organic

<https://www.agricology.co.uk/resources>

<http://adlib.everysite.co.uk/resources/>

<https://ahdb.org.uk/nutrient-management-guide-rb209>

<https://www.gov.uk/government/publications/organic-certification-list-of-uk-approved-organic-control-bodies/approved-uk-organic-control-bodies>

<https://www.gov.uk/guidance/organic-farming-how-to-get-certification-and-apply-for-funding>

<https://www.soilassociation.org/certification/>

Heritage

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/350304/NE63-preparing-a-heritage-management-plan.pdf

<https://www.myshinedata.org.uk/Data/>

<https://historicengland.org.uk/images-books/publications/>

https://www.gov.uk/countryside-stewardship-grants?land_use%5B%5D=historic-environment

<https://historicengland.org.uk/advice/caring-for-heritage/rural-heritage/>

<https://historicengland.org.uk/about/contact-us/local-offices/>

<https://www.heritagegateway.org.uk/gateway/chr/herdetail.aspx?crit=&ctid=98&id=4787>

<https://www.cornwall.gov.uk/environment-and-planning/strategic-historic-environment-service/countryside-advice/>

<https://historicengland.org.uk/listing/the-list/>

<https://historicengland.org.uk/advice/heritage-at-risk/search-register/>

Education

<https://neu.org.uk/advice/animals-education-and-guidance-farm-visits>

<https://leafuk.org/education/>

<https://visitmyfarm.org/>

<https://www.rospace.com/school-college-safety/teaching-safety/whole-school-approach/farm-visits>