

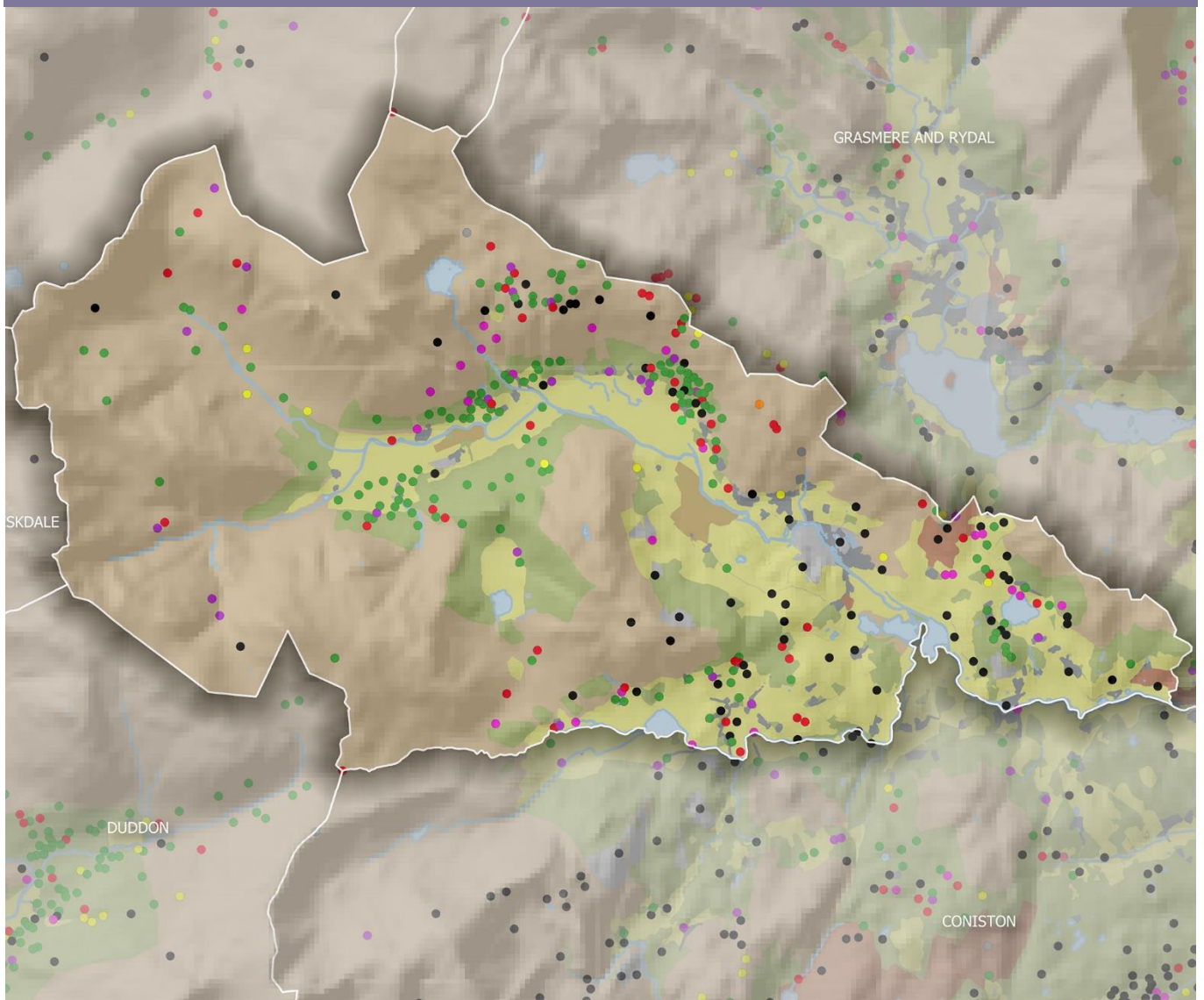


Historic England

Assessing SHINE features in the Lake District National Park using the NCA/Cultural Capital process

John Powell, Rob Berry, Ken Smith, Jeremy Lake, Peter Gaskell

Discovery, Innovation and Science in the Historic Environment



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Summary

S1 Background to the project

Increasing weight is being attached to the use of Natural Capital Accounting (NCA) to assess the flow of stocks relating to cultural and other services in order to underpin delivery of the 25 Year Environment Plan (25YEP, the goals for improving the environment) and performance against other environmental targets. NCA is also likely to be used to identify and prioritise the public goods that the new Environmental Land Management Scheme (ELMS) might deliver in England.

Currently, Historic Environment Farm Environment Records underpin Countryside Stewardship. They act as the link between farmers and land managers, local authority curators and Historic England. They ensure that the key heritage features on a holding are identified, that the issues affecting them are addressed through appropriate options, and that unintentional detrimental impacts are avoided. These key heritage features are included within the Selected Heritage Inventory for Natural England (SHINE) dataset. They have not been assessed before using the NCA approach.

The results of the project will be used to:

- Inform wider policy work nationally, specifically the development of ELMS, and the inclusion of non-designated heritage in future iterations of the 25YEP and subsequent Environmental Improvement Plans (EIPs).
- Help Historic England to understand whether Agri-Environment Schemes (AES) have contributed to the management of the Outstanding Universal Value (OUV) attributes of the World Heritage Site (WHS) in the Lake District National Park (LDNP).

Historic England, in partnership with the Lake District National Park Authority (LDNPA), has identified a need to explore and develop methodologies capable of capturing the values of the natural capital and ecosystem services flowing from the historic environment. The overarching focus of this project is to develop and implement a research methodology to improve the assessment of values arising from the historic environment in order to contribute to improved decision making. The project will inform guidance for the wider heritage sector on ways to incorporate the concepts of natural capital and ecosystem services.

The project objectives are to:

1. Assess the heritage assets in the SHINE dataset and portal within the area of the LDNP WHS area using the NCA approach.
2. Consider the feasibility of assessing which features in the SHINE dataset contribute to the OUV attributes of the WHS.

3. Conceptually map 'Cultural Capital' values that are not adequately captured by the NCA approach.
4. Provide a basic economic assessment of the value the assets bring to the local economy through their contribution they make to 'place'.
5. Identify the tourism value of SHINE features.
6. Determine the impact of AES and other spending on SHINE features.
7. Work with the Cumbria Pioneer ELMS Test and Trial (T&T) to explore how well the SHINE approach works to inform historic environment asset assessment.
8. Assess whether it is possible to attach a value to heritage assets which can be used to outline the benefits to partners, policy makers, farmers and land managers of including heritage features in ELMS.
9. Identify the cultural services/public goods that are derived from these assets and the valuation of these and the case for public payments for maintaining and enhancing these public goods through ELMS.

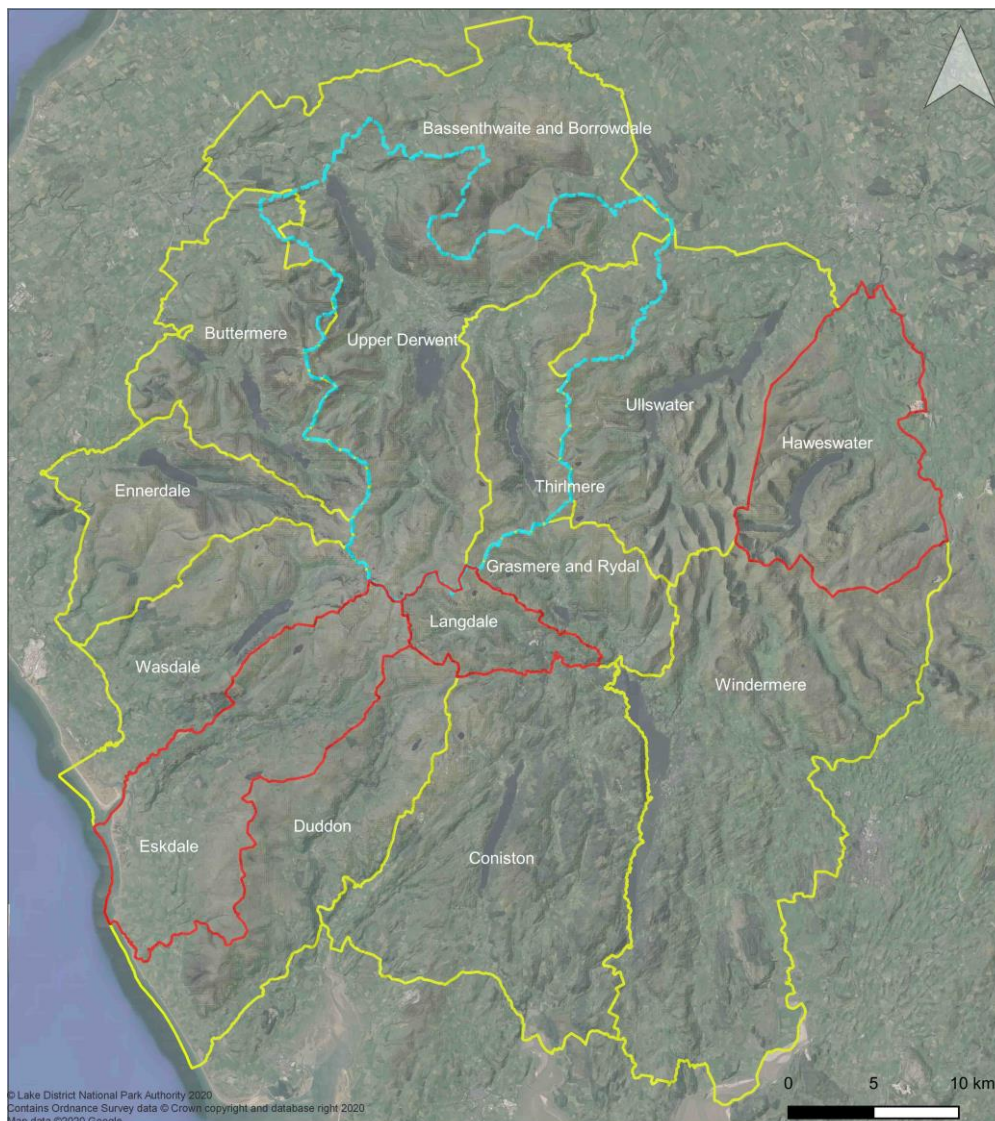
S2 Overview of the historic environment of the Lake District National Park

The LDNP is a landscape of farmed valleys, with lakes, rivers and woodland, dominated by its fells and mountains. It was inscribed as a WHS on 9 July 2017, the boundaries matching those of the National Park, and is thus one of a number of places around the world which are considered by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) to have OUV. The attributes and components that combine to give the Lake District its OUV, and which result from its distinct topography and history, fall 'under three intertwining and interdependent themes':

- Theme 1: A landscape of exceptional beauty, shaped by persistent and distinctive agro-pastoral traditions and local industry which give it special character.
- Theme 2: A landscape which has inspired artistic and literary movements and generated ideas about landscapes that have had global influence and left their physical mark.
- Theme 3: A landscape which has been the catalyst for key developments in the national and international protection of landscapes.

The SHINE records which are the focus of this project relate to structures, above-ground and below-ground features that fall within the context of the cultural landscape of the National Park and its 13 valleys (Figure S2.1). Farmsteads and other settlements are concentrated in the medieval inbye land of the valley bottoms and the later intakes and unenclosed land of the valley sides, which extend towards the communal grazing land of the open fells. Most of the intakes date from between the 16th and early 19th centuries and were mostly taken in to provide cow pastures close to a decreasing number of farmsteads, but some represent medieval

encroachment into the open wastes and commons. Routeways, known as 'outgangs', extend from the valleys to the fells which have since the prehistoric period been a vital source of stone, minerals, fuel, fodder and open grazing. On the fells are the earthworks of huts and enclosures dating from the prehistoric period and the remains of temporary shielings for communities grazing their livestock over the summer months, that date from the medieval period. The amalgamation of farms over the 18th and 19th centuries was accompanied by the rebuilding of farmsteads and, in some areas, by the removal and realignment of some field boundaries and regular enclosures of remaining common fields and fell sides. Within and bordering the inbye land are farmsteads dating from the medieval period with houses and barns dating from the 17th century.



Case study valleys
 Upper Derwent T&T case study area
 Other valleys

Figure S2.1: Map showing the 13 valleys of the LDNP WHS

S3 Methodology

S3.1 Assessing the heritage assets in the SHINE dataset using the NCA approach

The SHINE dataset was conceived in 2008 to achieve a single, nationally consistent dataset of non-designated heritage assets, derived from Historic Environment Records (HERs), that could benefit from management through the Environmental Stewardship AES and to provide ways in which those data could be taken into account through historic and other scheme options.

The first stage of the project comprised a comprehensive description and classification of the heritage features, in terms of number, type, date and spatial distribution, contained in the SHINE dataset. Of fundamental importance to this stage was ensuring that the methodology for analysis of the data could be used in other areas of the country, through consistency of approach to the assembly of HER/SHINE data by date and type prior to its analysis, processing and presentation. The data processing and analysis was performed using the open source statistical programming language 'R'. The full R code written for the project is available on the project's GitHub site.

S3.2 Using SHINE data to explore ways of integrating with the NCA approach

The SHINE features form part of the stock of cultural capital, contributing to the landscape and ecosystem service provision of the LDNP WHS area in multiple ways. The features will vary in their contribution to the services generated by natural capital and therefore it might seem appropriate to take a NCA approach to explore the value of the SHINE features in relation to the total stock of natural capital. The key contribution of SHINE features are in the form of cultural ecosystem services and the range of benefits flowing from those services. The focus of the approach taken in this study is not on valuing the capital itself, but on measuring the cultural ecosystem service benefits flowing from the features over time, as part of the wider stock of capital both existing in, and contributing to, the landscape.

Figure S3.1 illustrates the basic approach taken to valuing the SHINE assets in the LDNP WHS area whereby the SHINE assets represent the stock of natural capital, and the benefit flows and beneficiaries are identified and valued over specific periods of time. For the purposes of this study only cultural services are examined. Cultural services are the most relevant to capturing the role of heritage assets in the landscape but tend to be the least explored aspect of ecosystem service studies. Cultural services formed the focus of the study described here.

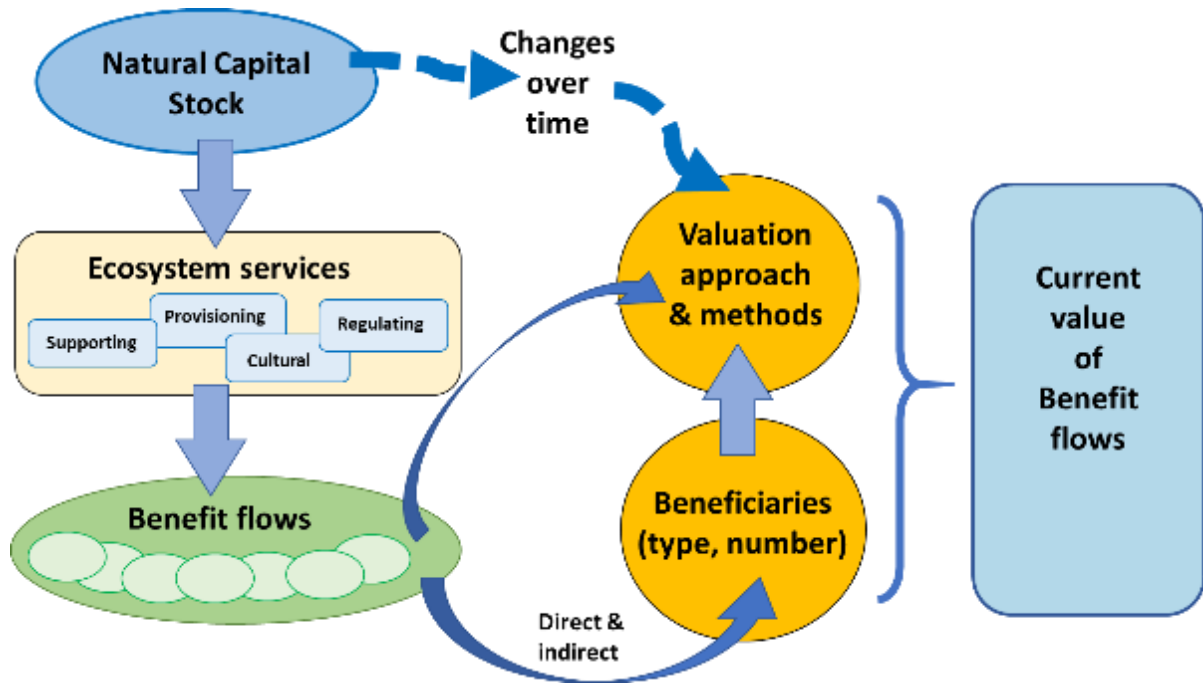


Figure S3.1: Conceptual overview: Natural capital accounting approach

Case study approach

An analysis of the full SHINE data set for the LDNP was too large of a task given time and resource constraints. The research is therefore based on a case study approach to try and capture some of the variability across the LDNP. Four case study areas were selected for model development and testing:

- Eskdale, which has 451 SHINE features within an area of 162.39 km² that extends from the border with Langdale towards the sea.
- Langdale, which has 325 SHINE features within a relatively small area of 42.20 km² and forms part of the hub of the ‘wheel’ of Lake District valleys.
- Haweswater, which has 754 SHINE features within an area of 145 km² that extends from the border with Windermere to the Lowther estate in the Eden Valley.
- Upper Derwent T&T area, which has 1,133 SHINE features within an area of 360.18 km² that comprises the majority of the valleys of Borrowdale and Bassenthwaite, together with Thirlmere and a small part of Ullswater.

The case study areas were also selected to reflect central and more remote sites, a range of residents living in each area, and variability in visitor numbers.

The basic methodology was the development of a return-on-investment (ROI) model building on previous work to assess the value of ecosystem services linked to linear landscape features, and buildings and structures. A conceptual diagram of the model is illustrated in Figure S3.2.

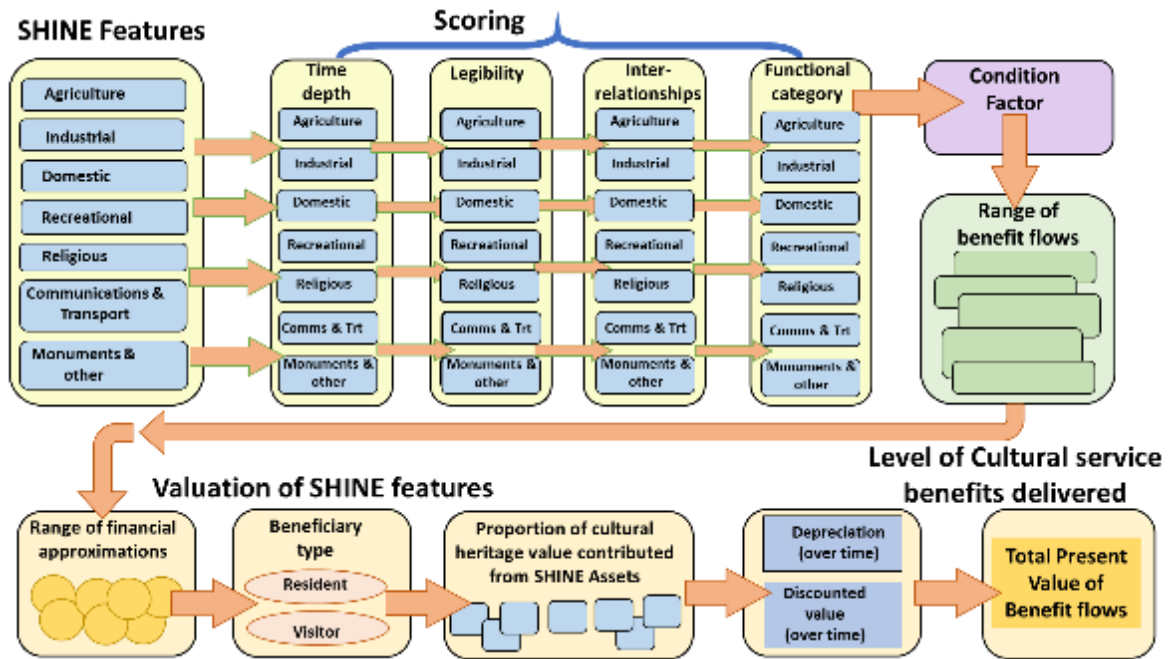


Figure S3.2: Assessing significance of cultural heritage

Scoring the condition of SHINE assets was based on two surveys of the condition of cultural heritage carried out in Haweswater and Eskdale. Condition for the ELM Upper Derwent T&T area assets were estimated based on the average condition from the other two areas. Financial approximations were derived from a range of sources, in particular other ROI studies that have utilised the same approximations for valuing similar types of benefit flow. Beneficiaries were limited to three categories: visitors, residents, and livestock farmers.

A key issue in developing the methodology was understanding the nature of the SHINE assets in relation to the total stock of heritage assets and the landscape in the area. Taken together, therefore, SHINE assets form part of what can be defined as the natural capital stock, which extends to walls and other features in the landscape and includes intangible heritage and viewpoints which contribute to OUV.

The approach taken was based on the assumption that residents and visitors are not differentiating between the services and benefits generated by SHINE and non-SHINE capital stock. They are experiencing a complete socio-ecological system of the LDNP landscape and thus the values generated by the model are for the total set of benefit flows created from all the natural capital in a specific area. In order to determine the contribution of SHINE features, assumptions had to be made about the proportion of total value contributed by these features alone. SHINE assets were compared at the county level with the full set of records in the Historic Environment Record (HER) and expert judgement was utilised to estimate that 40% of the cultural heritage services are delivered by the SHINE assets.

The model accounts for this proportion of total cultural services value by using a density function based on the average number of SHINE features per km² in each of the case study areas. The density function contains only the SHINE features which are then used to calculate the value of benefit flows from the cultural ecosystem services for each case study area. Indicators were developed to enable the SHINE assets to be scored in terms of their age (time depth), legibility (extent to which they are visible and contribute to ‘telling a story’ that connects communities and people to their past), condition, function and inter-relationships with the wider landscape (Figure S3.3).

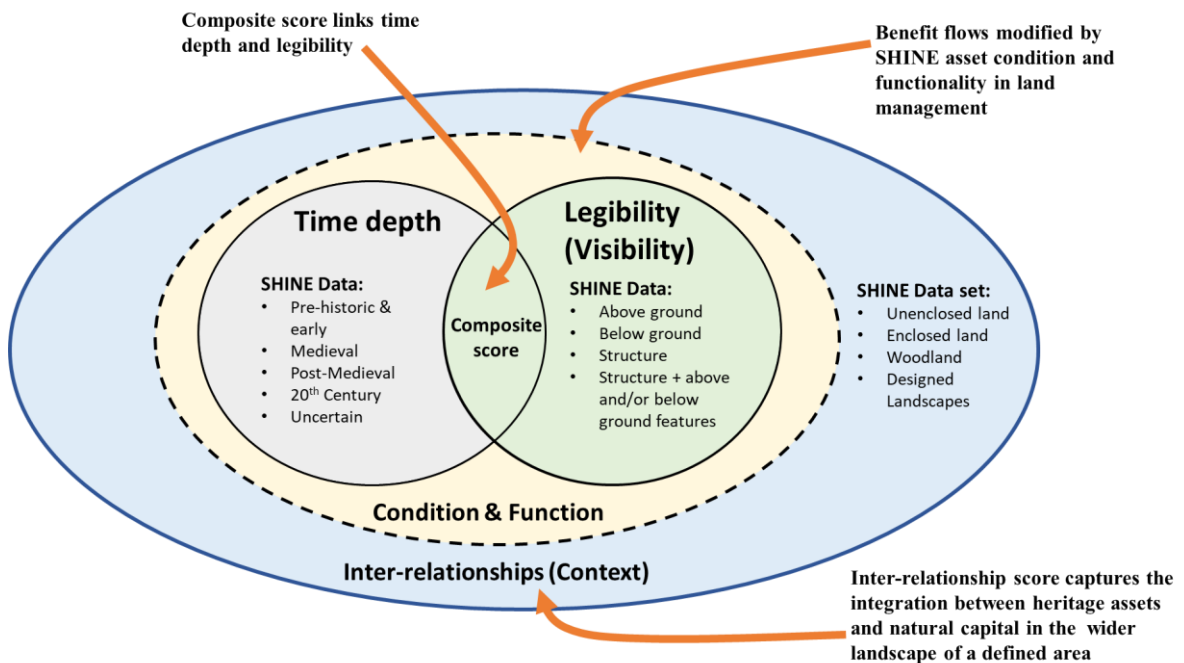


Figure S3.3: Scoring of cultural heritage assets

3.3 Assessing the effectiveness of the SHINE approach in informing the management of heritage assets and the historic environment in the Lake District

Where data sources were available a quantitative analysis of the spend on SHINE assets was undertaken. Following this analysis the impact of the spend on SHINE assets was investigated through:

- A review of secondary sources (reports, surveys, assessments) produced by Historic England, Defra, Natural England, LDNPA and Local Government.
- Telephone interviews with four heritage professionals with knowledge of the impact of AES and other spending on SHINE assets.
- A workshop held with stakeholders from the T&T team and organisations with experience of heritage asset management under AES.

This was followed by a closer look at how the SHINE approach could inform historic environment asset assessment as part of the Cumbria Pioneer ELMS T&T. A second workshop session was held with nine stakeholders from the T&T team and organisations with experience of heritage asset management under AES. To assess whether it is possible to attach a value to heritage assets which can be used to outline the benefits to partners, farmers and landowners of including heritage features in ELMS a workshop was held with 12 stakeholders from organisations with experience of heritage asset management under AES.

S4. Results

S4.1 Assess the heritage assets in the SHINE dataset and portal within the area of the LDNP WHS area using the NCA approach

Following analysis of SHINE data via the HER, 7,484 SHINE records were identified.

Analysis by Form

Analysis by Form provides a good indicator of the legibility of SHINE features. It demonstrates that above-ground features and structures dominate the SHINE record and, in general, that their respective categories are primarily the result of long or sudden redundancy:

- 4,483 (59.9%) are above-ground heritage features (excluding structures), which overwhelmingly comprise earthwork remains (former settlements, agricultural, religious and industrial features) and other remains dating from the prehistoric to the post-medieval periods, including quarries, mines and charcoal-burning platforms in woodland.
- 152 (2.0%) have known above- and below-ground elements, dating from the prehistoric period and including stone circles, Bronze Age cairnfields, a Roman road, medieval houses, shielings and abandoned farmsteads and mines, bloomeries and other industrial sites.
- 2,763 entries (36.9%) comprise structures. These include prehistoric standing stones and cairns, medieval boundary walls and the remains of medieval buildings, field systems and enclosures. Most are post-medieval in date and comprise agricultural buildings and structures, bridges, domestic and a smaller proportion of industrial sites from lime kilns to bobbin mills.
- 86 (1.2%) comprise below-ground remains, including cropmarks and other sites of uncertain date and the sites of demolished buildings including those of post-medieval date.

Analysis by Type

The following nine classes - making up 97.5% of all recorded types - are those considered to be the most relevant, being an integral part of the agro-pastoral landscape and how it has been perceived and valued: Agriculture and Subsistence

(2,272; 30.4%); Industrial (2,421; 32.3%); Domestic (496; 6.6%); Religious, Ritual and Funerary (716; 9.7%); Transport (427; 5.7%); Gardens, Parks and Urban Spaces (46, 0.6%); Recreational (14; 0.2%); Monument (821; 11.0%) and Unassigned (86; 1.2%).

Analysis by Period

Analysis by Period demonstrates that:

- 493 (6.6%) heritage assets can be dated to the Prehistoric period, including agricultural earthwork remains, Neolithic stone axe factories (Industrial), trackways in unenclosed land (Transport), cairnfields (Religious) and probable settlement and agricultural earthworks which have been assigned to the Monuments by Form category.
- 26 (0.3%) are Romano-British, including features associated with roads, forts and vicus settlements but excluding Scheduled Monuments.
- 15 (0.2%) are Early Medieval, including shielings, cairns, settlement and church sites.
- 669 (8.9%) are Medieval, displaying a wide typological range but dominated by those in the Agriculture and Subsistence category.
- 4,061 (54.3%) are Post-Medieval which includes a higher proportion of Industrial sites.
- 158 (2.1%) are 20th century, including many identified in their addresses as Post-medieval and a wide typological range including sheepfolds, building platforms and anti-invasion defences.
- 2,045 (27.3%) are categorised as 'Uncertain' because they cannot be dated with any certainty, although they include many sites identified in the titles for their individual entries (Unique Identifiers) as Post-medieval.

How SHINE contributes to the historic environment

SHINE records comprise a proportion of a varied heritage of features, sites, structures and buildings (collectively known as 'heritage assets') whose value is also enhanced and whose understanding is enriched by the historic landscapes in which they are seen and valued. The former is conditioned by their degree of survival (as earthworks or structures) and the latter conditioned by awareness of what lies beneath the ground, the enhanced understanding delivered by new discoveries and changing perceptions of significance. This calls for an integrative approach that takes account of changing functions, perceptions and the whole character of landscapes.

Relationship to non-designated and designated heritage assets

Within the LDNP there are 287 Scheduled Monuments, 1,793 List Entries covering around 2,000 listed buildings and structures, 23 Conservation Areas, 9 RPGs and part of the Hadrian's Wall WHS. Most Scheduled Monuments are found on the fells, and many comprise coherent assemblages of hut circles, traces of field systems

and ritual and burial sites and structures. Most listed buildings are concentrated in the enclosed landscapes of the valley bottoms and sides, with non-designated historic buildings being afforded a greater degree of protection if they exist within those settlement cores and groupings of buildings which have been designated as Conservation Areas.

SHINE records comprise 42% of the records shown in the Lake District HER, which includes listed and unlisted buildings, designated and non-designated archaeological features, chance finds and linear or enclosure structures (including some but not all dry stone walls of particular note, such as ring garth walls and walls to deer parks, and folds for the shelter, handling and washing of sheep). These show a marked variation between asset types.

Relationship of SHINE data to historic landscape

Over 90% of the landscapes in which SHINE data are located derive from the agropastoral tradition, comprising a wide variety of enclosed land, unenclosed land and ancient woodland including boundary features, veteran and historic trees that have the potential to be managed through a wide range of options in the AES.

Patterns of historic landscape character have been mapped as polygons by the Lake District Historic Landscape Characterisation (HLC), as completed in 2009, and have been brought together into a national database using grid cells by the National HLC. The function of SHINE data, to inform AES, explains a concentration away from areas of mapped historic settlements, with their historic buildings and other archaeological sites.

Unenclosed Land indicates the open fells and commons of the Lake District comprising 53% of the total area of the WHS. These landscapes have for centuries been utilised by surrounding communities for summer grazing, with peat, heather and bracken cut for fuel, bedding, roofing and fodder. The unenclosed land of the upland fells retains a high concentration of prehistoric settlement (Agriculture and Subsistence), settlement (Domestic) and ritual sites (Religious) with communication routes still visible over the upper passes.

Enclosed Land comprises farmland subdivided into fields by dry stone walls, banks and hedgerows. These take up just over 53% of the area as mapped by National HLC (in comparison to a national average of 72%), dominated by Ancient Fields (32.3%, these being mostly enclosed by the end of the 17th century) with substantial areas of Planned Fields (mostly late 18th and 19th century) and Post-War Fields (10.0%).

Parks and Gardens, 0.7% of the area as mapped by National HLC and termed as Designed Landscapes in the Lake District HLC and Cultural Landscape Maps, mostly date from the late 18th century and provide the settings to the villas which are such a significant and distinctive part of the Lake District landscape. They can have scatters of earlier features dating from the prehistoric period – sometimes purposefully included as part of their planning and design.

Woodland includes significant concentrations of Ancient Woodland (2.6% of the area as mapped by National HLC), which can have dense concentrations of industrial sites. Designed landscapes can also retain dense clusters of industrial and other sites which have been absorbed within the expansion of parks and gardens. Broadleaved woodland is clustered in the sheltered valleys, along rivers and lakeside margins. Where it survives, it has been strictly controlled and intensively managed from the medieval period onwards as enclosed woodland for growing timber and coppiced underwood, to supply building materials, domestic fuel and charcoal for smelting. Conifer Plantations, which date from the late 19th century takes up 7.6% of the area as mapped by National HLC: it can retain SHINE features that result from earlier patterns of land use and settlement. Water comprises bodies of freshwater and water sports areas and takes up 3.0% of the area as mapped by National HLC. It is associated with five Maritime entries, comprising quays, jetties and a warehouse, and mostly comprises lakes and reservoirs.

S4.2 Consider the feasibility of assessing which features in the SHINE dataset contribute to the OUV attributes of the WHS

SHINE features are a significant part of the attributes and components that combine to give the Lake District its OUV, as defined by ICOMOS in the justification for Inscription of the World Heritage Site. They enable appreciation and understanding of historic land use, through physical, visual and intellectual access to them. They complement the evidence offered by designated heritage assets and the historic landscape and provide the foundations for the living traditions of the Lake District, the development of the Picturesque movement and its distinctive legacy, and the development from the late 19th century of a landscape conservation movement of global importance.

SHINE features making the most significant contribution to OUV are those that provide evidence for and illustrate the development of its farmed landscape and the management of the fells as common land. In summary:

- Theme 1: A landscape of exceptional beauty, shaped by persistent and distinctive agro-pastoral and local industry:

All SHINE features are sited within landscapes that have been shaped by the Agro-pastoral Tradition, and enable appreciation and understanding of historic land use, through physical, visual and intellectual access to them. Of particular importance are those in the following categories which date from the prehistoric period:

- Agriculture and Subsistence: Archaeological features, structures and farm buildings make a very strong contribution to appreciation and understanding of historic land use – particularly of prehistoric to medieval land use in the grazed open commons and medieval to post-medieval land use in enclosed land.

- Domestic, Religion, Ritual and Funerary: sites and structures dating from the prehistoric period similarly enhance appreciation and understanding of historic land use and settlement, particularly in the unenclosed commons.
- Industrial: Archaeological features and structures enhance appreciation and understanding of how the mineral resources of the Lake District have been exploited and exported since the Neolithic period within enclosed and unenclosed land, and also how fuel has been generated as a result of charcoal burning in woodland.
- Transport: archaeological features, including the remains of trackways and Roman roads in unenclosed land, linking valleys and extending beyond the Lake District, trackways within and relating to field systems and settlements and bridges enabling communication within and beyond the Lake District across streams and rivers.
- Theme 2: A landscape which has inspired artistic and literary movements:
 - Only a very small number of Commemorative and Recreational SHINE asset types result from or directly reflect changing perceptions of cultural landscapes and scenic beauty that underpins this theme, which is otherwise vividly expressed through a cultural heritage of villas, designed landscapes and other features not eligible for inclusion in SHINE. Access to and appreciation of SHINE features in the landscape, however, benefits people through access to and appreciation of different archaeological features and sites dating from the prehistoric period, of individual structures such as sheep folds and biolds and of a variety of historic (mostly farm) buildings using distinctive local styles and materials. The Statement of OUV states – with reference to Criterion V for the selection of WHSs - that the spiritual and physical benefits provided to people by the landscape are founded on the inherited landscapes and traditions of agro-pastoralism and underpinned by the aims of the National Park ‘to maintain the scenic and harmonious beauty of the cultural landscape; to support and maintain traditional agro-pastoral farming; and to provide access and opportunities for people to enjoy the special qualities of the area and have developed in recent times to include enhancement and resilience of the natural environment.’
- Theme 3: A landscape which has been the catalyst for key developments in the national and international protection of landscapes:
 - This is again underpinned by the agro-pastoral landscape and traditions, which illustrate understanding of the Lake District landscape as the catalyst for key developments in the national and international protection of landscapes. Visitors and local businesses benefit from good stewardship of the historic environment and of individual heritage assets, evident through the care and maintenance of archaeological features and historic farm buildings.

S4.3 Conceptually map ‘Cultural Capital’ values that are not adequately captured by the NCA approach

The SHINE data consists of physical assets allocated to seven use categories. Although these assets form only around 42% of the total number of identified physical assets in Cumbria they do contribute in terms of influencing the collective character of an area, mainly related to landscape and settlement patterns, and to a much lesser extent they also contribute to Practice and process structures through reminders of the long history of livestock management on the fells.

Figure S4.1 indicates that the ecosystem services generated by the cultural capital in the SHINE assets comes from its contribution to the formation of assemblages and patterns (i.e. landscapes) valued by residents and visitors. However, some of the physical assets themselves also deliver CES that generate benefit flows as well as enhancing wellbeing. The research carried out for this project has focused only on the ecosystem services generated directly by the cultural capital, and not on other services generated by the material assets (the stock of capital), such as provisioning, which would capture, for example, the full range of economic benefits for the local area through tourism.

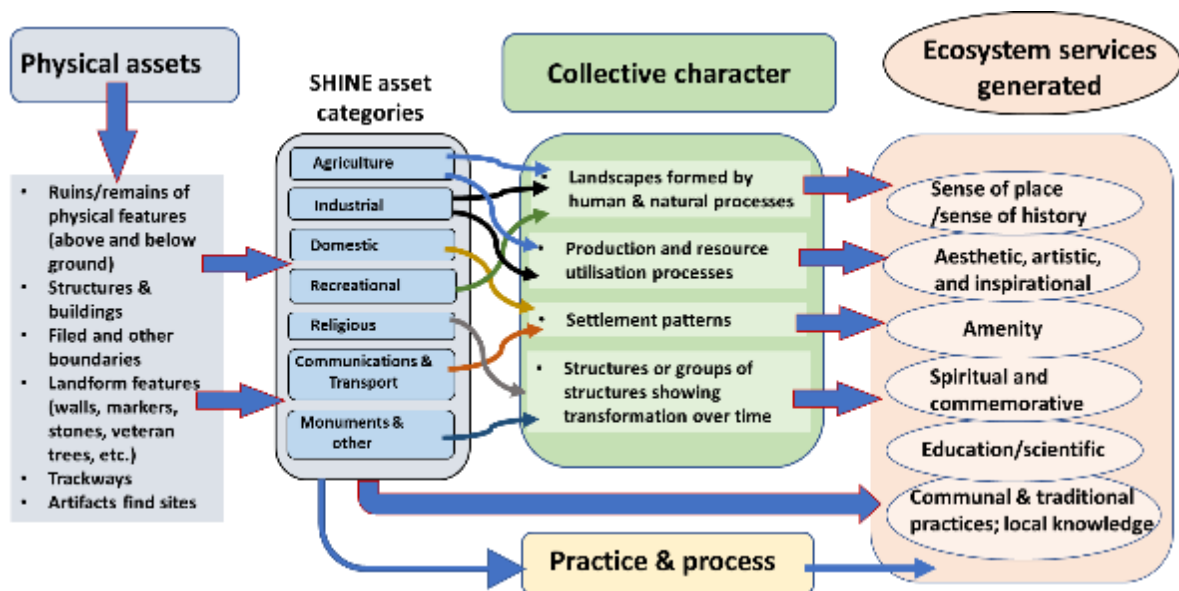


Figure S4.1: Mapping the ‘socio-ecological system service flows’ from the SHINE cultural capital assets

The SHINE assets only form part of the cultural heritage of an area, they are a partial selection of the physical assets with incomplete information - a significant proportion of the HER assets are not dated, and there is an almost complete absence of asset condition data, making valuation very difficult.

Determination of the value of benefits deriving from cultural capital is not possible by separating out some assets from their larger context, and their inter-relationships with the full range of heritage assets in an area, limiting the potential utility of the

SHINE data as a means to value cultural heritage across an area. Physical assets are reduced to features which a farmer may or may not be paid to manage, with only limited understanding of their level of significance in the local area. With limited understanding of the assets and their role in the landscape those utilising the functional structures may not appreciate their value in landscape character formation. The outcome potentially, is isolation of a set of physical assets, a decline in cultural capital, and a decline or loss of ecosystem services and the benefits that flow from them.

S4.4 Provide a basic economic assessment of the value the assets bring to the local economy through their contribution they make to 'place'

A social return-on-investment model was developed for the study to explore the value of cultural services generated in terms of benefit flows over time to identified sectors of the population. Each case study area was considered separately to enable application of local contextual data such as population size, farmer numbers, and visitor numbers. The model was limited to valuing the 'direct' non-market benefits arising from heritage assets in each case study area. The term 'direct' refers to benefits experienced directly by those living in and visiting the area. The model does not incorporate indirect non-market values (such as existence, bequest, and option values) related to the stock of cultural heritage capital, and neither does it include market values and employment creation arising from such activities as tourism, a portion of which could be attributed to cultural heritage of an area. The model outputs, therefore, can be considered as a conservative estimate of the value of benefits generated by the cultural heritage in each case study area.

The valuation model outputs are summarized in Tables S4.1-S4.4. The tables indicate the present value of cultural services from SHINE assets over a 10-year period, discounted at 3.5% annually. Model outputs reveal that the largest proportion of cultural service value is contributed from agricultural/subsistence assets, which is not surprising given the high proportion of this category of asset in the SHINE dataset. Agricultural/subsistence assets contribute slightly more than half of the value of benefit flows in each of the areas (ranging from 52 to 62%). There is more variability in benefits flowing from industrial heritage, the Upper Derwent T&T area has the largest proportion of industrial assets (25.8%) of the three areas, and Haweswater the lowest at 12.7%.

The majority of value in each case study comes from Agriculture and industry (ranging from 67% to 78% of the total value). Agricultural/subsistence assets comprise the largest category of assets in each case study area, and also contribute more significantly to generating flows of benefits. The lowest values come from recreation assets. This is not surprising given the small number of assets in this category in the SHINE dataset. It must be kept in mind that the values generated by the model represent the identified benefit flows to visitors and residents.

Values range from a low of £100.4 million to £363.8 million over a ten-year period. Total present values over the ten-year period are significantly higher in Langdale and the Upper Derwent T&T areas than for the other two case studies.

The higher value of the benefit flows from the Upper Derwent T&T area would be expected given its much larger area, the greater number of heritage assets, a larger resident population, and a much larger number of visitors than the other areas.

Table S4.1: Eskdale: Present value of cultural services generated by SHINE assets over a 10-year period

SHINE Asset Category	Total Present value (over 10 yrs)	% of total value (over 10 yrs)
Agricultural/subsistence	£52,969,131	52.74%
Industrial	£14,295,846	14.23%
Domestic	£10,007,092	9.96%
Recreation	£487,358	0.49%
Religious	£16,147,807	16.08%
Communication/transport	£2,761,697	2.75%
Monuments + other	£3,768,905	3.75%
Total	£100,437,836	100.00%

Table S4.2: Haweswater: Present value of cultural services generated by SHINE assets over a 10-year period

SHINE Asset Category	Total Present value (over 10 yrs)	% of total value (over 10 yrs)
Agricultural/subsistence	£124,058,838	55.44%
Industrial	£28,393,823	12.69%
Domestic	£16,948,251	7.57%
Recreation	£1,320,643	0.59%
Religious	£24,960,152	11.15%
Communication/transport	£18,489,001	8.26%
Monuments + other	£9,596,672	4.29%
Total	£223,767,380	100.00%

Table S4.3: Langdale: Present value of cultural services generated by SHINE assets over a 10-year period

SHINE Asset Category	Total Present value (over 10 yrs)	% of total value (over 10 yrs)
Agricultural/subsistence	£224,113,137	61.98%
Industrial	£59,907,398	16.57%
Domestic	£26,791,920	7.41%
Recreation	£832,047	0.23%
Religious	£10,483,795	2.90%
Communication/transport	£22,465,274	6.21%
Monuments + other	£16,973,763	4.69%
Total	£361,567,334	100.00%

Table S4.4: Upper Derwent T & T area: Present value of cultural services generated by SHINE assets over a 10-year period

SHINE Asset Category	Total Present value (over 10 yrs)	% of total value (over 10 yrs)
Agricultural/subsistence	£192,850,501	53.01%
Industrial	£94,058,163	25.85%
Domestic	£18,259,825	5.02%
Recreation	£2,508,218	0.69%
Religious	£24,229,383	6.66%
Communication/transport	£16,052,593	4.41%
Monuments + other	£15,851,936	4.36%
Total	£363,810,617	100.00%

The model also indicated that 80 – 90% of values are generated by visitors, the remainder by residents. Again, this is not unexpected given the huge numbers of visitors to the LDNP, which vastly outweigh the relatively small number of residents. It must be kept in mind that the valuation model is a conservative estimate of values generated by cultural heritage based solely on direct experience and does not include indirect values that might be attributed to the wider population.

S4.5 Identify the tourism value of SHINE features

The ‘tourism value’ of SHINE features is intimately tied up with their effect on the physical landscape. The model explored the generation of direct benefits flowing largely to residents and visitors, but it has not examined the economic services and benefits generated in the region through tourism. Identifying the tourism value of SHINE features is difficult in two ways:

- Assumptions about visitor numbers and benefits obtained from visits are made from limited tourism survey information.
- SHINE features are fully integrated with other heritage assets to create the cultural landscape; separating out one set of assets from the rest is an artificial exercise that cannot be undertaken with any level of accuracy.

In the model assumptions have been made for the number of tourists benefitting from different service flows. This varies from 25% who may benefit from improved knowledge and understanding from a visit to 67% who may benefit from improvement in wellbeing. One way to estimate the tourism value would be to assume that around two thirds of visitors benefit from an improvement in wellbeing and apply that to the economic benefits generated by tourism to arrive at a ‘tourism value’ of cultural heritage. Taking 42% of this value will then give an estimate of the ‘tourism value’ of SHINE assets. Tourism economic impact data for the Lake District National Park indicates a total economic impact from tourism of £1.480 billion for 2018. This is based on 28.55 million visitor days generated from 19.8 million visitors. Applying the suggested calculation outlined above, the economic impact of the cultural heritage is £962 million per annum and 42% of this, is £404 million per year, which could be potentially identified as the ‘tourism value’ of the SHINE features. A similar approach using slightly different data from 2018 based on average daily spend of visitors and average expenditure on

accommodation of staying visitors in Cumbria provides a slightly lower estimate of £359.6 million per year for the tourism value of SHINE assets. Both of these calculations assume that the cultural heritage is a key element attracting the visitors to travel to the Lake District, but it is important to keep in mind that a significant proportion of visitors undertake more than one activity in a single visit, so the cultural heritage itself is not always the sole, or even key reason, for visiting.

An alternative approach would be to explore the different areas of spending and allocate proportions of relevant spending to the proportion of visitors who derive some benefit from the cultural heritage of the area. The limited information on reasons for visiting, and on locations visited, would make this a difficult task. A more valid approach would be to expand the current ecosystem services model to incorporate provisioning services and calculate the value of economic service generated by cultural heritage, an activity that was not possible within the current project due to time and resource constraints.

S4.6 Determine the impact of AES and other spending on SHINE features

Funding streams associated with the management of SHINE features were identified. Quantitative data were identified for the Countryside Stewardship and Environmental Stewardship AES and analysis of the spend on heritage features was undertaken. It was not possible to link spending directly to SHINE features. The total spend on heritage options at the end of 2019 was £4,812,159 with 65.6% being spent on historic landscapes, 19.0% on boundaries and 15.4% on historic and archaeological features. It was concluded that Countryside Stewardship is helping to maintain and enhance the protective management of heritage features on farmland which contribute to the broader OUV of the Lake District, particularly field boundaries and traditional farm buildings rather than features with a high likelihood of being recorded in the SHINE dataset.

Although the Environmental Stewardship scheme closed to new applicants in 2014 and is being wound down, the spend on the HLS options within the remaining agreements has been almost twice that compared to Countryside Stewardship (£8.9 million), with 63.5% being spent on boundaries, 34.9% on historic landscapes, and 1.6% on historic and archaeological features. It was noted that within ELS agreements, which are based on an area payment, two options, ED5 and UD13, were particularly valuable for the protection of archaeological features and the maintenance of their visibility. As with Countryside Stewardship, it was concluded that Environmental Stewardship is helping to maintain and enhance the protective management of heritage features on farmland which contribute to the broader OUV of the Lake District to a greater extent than features with a high likelihood of being recorded in the SHINE dataset.

The literature review found that there is little secondary information available on the impact of AES spending on SHINE features. A qualitative exploration of the impact of AES spending on SHINE features was undertaken using telephone interviews and a workshop with heritage professionals. It was reported that both Environmental Stewardship and Countryside Stewardship were having a positive

impact on the management of SHINE features and the broader historic environment. However, it was considered that, from an historic environment perspective, input to and the outcomes delivered by Environmental Stewardship were superior to the subsequent Countryside Stewardship AES.

Knowledge exchange opportunities between farmers and land managers and heritage advisors was raised as an issue affecting heritage asset assessment and management. The ability to meet face-to-face was considered a very important part of the process. Such meetings facilitated greater understanding by applicants, agents and advisors of the benefits that can accrue from historic environment options, as well as those derived from other options, whose implementation can also benefit heritage features. Conversely, it also enabled the specialist advisors to understand better the issues being faced by applicants and how those issues influenced the options being applied for.

Overall, the SHINE approach is considered to have performed reasonably well and effectively in difficult circumstances that have become more difficult as time and schemes have progressed. It was recognised that there were some weaknesses in the SHINE dataset and the process by which SHINE data was used to inform the development of AES agreements. There were mixed views on whether the SHINE approach should be reformed or replaced by cost-effective direct analysis of HERs, thereby avoiding the costs of maintenance and enhancement of two databases. Such an approach could, for example, assist in identifying and (as far as possible) smoothing out cross-border anomalies. Other datasets such as the National Character Area Profiles (NCAP) and HLC should also be used, in tandem, in order to ensure that SHINE data are understood and properly managed in relationship to field boundaries and other features in their contextual landscape.

S4.7 Work with the Cumbria Pioneer ELMS Test and Trial (T&T) to explore how well the SHINE approach works to inform historic environment asset assessment

The project investigated how well the SHINE approach works to inform heritage asset assessment as part of the Area Plans (AP) and Land Management Plans (LMP) being developed as part of the Cumbria Pioneer ELMS T&T. A workshop was held with stakeholders from the T&T team and organisations with AES heritage experience and augmented with telephone interviews with heritage professionals with knowledge of AES implementation. It was reported that the SHINE dataset could provide some of the information required to generate baseline information on heritage assets for ELMS and inform ELMS public goods priorities. It was suggested that the SHINE approach required further development to be fully effective in informing ELMS in relation to the following issues:

- The SHINE dataset has variable coverage of heritage asset categories and needs to be understood in relationship to other aspects of the historic environment including the mapping of historic landscape character.

- SHINE omits Scheduled Monuments and highly-graded (I and II*) listed buildings but this is a limitation which can be easily overcome through the integration of Historic England data.
- SHINE does not contain data on the condition of assets needed to inform management practice.
- SHINE is a collection of individual heritage assets and does not consider these assets in the context of the broader historic landscape.

S4.8 Assess whether it is possible to attach a value to heritage assets which can be used to outline the benefits to partners, policy makers, farmers and land managers of including heritage features in ELMS.

The project explored whether it is possible to attach a value to heritage assets which can be used to outline the benefits to partners, farmers and land managers of heritage features in ELMS. Two sources of information fed into this, the valuation modelling of the SHINE data and a stakeholder workshop. It was clear from the workshop that the historic environment is not fully appreciated by many farmers and land managers, their agents, Natural England project officers and RPA staff. This is not necessarily the result of indifference, more the product of different specialisms, interests and understanding and lack of effective training. If the importance of the historic environment is to be fully acknowledged in the development and delivery of ELMS, then a significantly enhanced understanding of the nature, content, role and potential of the historic environment in the delivery of public goods needs to be established among land managers, advisers and delivery bodies. It would be more effective if SHINE or successor heritage consultations within ELMS were made at the same time as those covering other objectives.

S4.9 Identify the cultural services/public goods that are derived from these assets and the valuation of these and the case for public payments for maintaining and enhancing these public goods through ELMS

The project focused on exploring and valuing the benefits flowing from ecosystem services generated by the cultural capital embodied in the SHINE assets. In order to assess the benefits flowing from each ecosystem service it is necessary to identify the categories of beneficiary, the number of beneficiaries in each category, and the manner in which they benefit. In order to understand the magnitude of benefits some measure of value is required. The approach taken in this research is a return-on-investment model whereby the level of benefits generated annually are assessed for each identified service flow within a defined geographic area.

The public benefits from SHINE assets are created largely by private actions of landowners and managers on private and land with varying degrees of public rights of access. The impact of private land management, however, has implications far beyond the ownership boundaries, influencing public goods in the form of a valued cultural heritage landscape, and the aesthetic, spiritual, sense of place, amenity, and

wellbeing benefits that flow from it. Land managers do not necessarily recognise the significance of individual historic assets in contributing to wider landscape values and benefit flows, and managing historic assets can involve a cost, in terms of lost productive land, or particular management actions that require resource inputs. Given the scale of public benefits, and the reliance on private land managers to protect a relatively small number of historic assets from degradation and disappearance there is a case for public payments for maintaining and enhancing these assets through ELMS, in order to ensure the continued generation of the public benefits shared by residents, visitors, and even those who have never visited the area.

S5 Recommendations

1. There should be greater recognition of the value of SHINE as a dataset which reflects the attributes and components of locally-distinctive landscapes that can also be of regional and national importance.
2. There must also be recognition of the fundamental contribution of the historic environment as a whole, and that in recognising the heritage element of features such as field boundaries, a more-integrated approach to Natural Capital is required in order to maximise the range of public benefits and goods that can be delivered through agri-environment schemes. Related to this, there should also be acknowledgement of the interaction of Natural and Cultural Capital, and the contribution that the latter makes to sense of place, sense of history and other cultural ecosystem services.
3. Following on from the above, there should be a recognised and nationally-consistent framework (at national and NCAP level) to aid in the identification and assessment of non-designated heritage assets, distinguishing those which make a strong contribution to local character and those of national importance, of equivalent significance to designated assets but which remain undesignated.
4. Variations within and between HERs in the location, type and date of SHINE data (including those in the Monuments (by Form not Function) and Unassigned categories) need to be acknowledged within historic and natural landscape contexts, so that any omissions (for example of scattered earthworks in areas of dispersed settlement) can be identified. Options need to build on this understanding of local variation and have sufficient flexibility and simplicity for delivery within the context of individual farm plans.
5. Steps should be taken to ensure that traditional farm buildings are included comprehensively in HERs and thus within SHINE, which can be undertaken at an initial desk-based level through Farmstead Mapping.
6. Initial analysis of the SHINE dataset should be undertaken at a national level, using and refining the techniques outlined in this project, and in relationship to the NCAPs and National HLC, in order to better understand variations in the distribution, quantity and quality of data across and between HERs. The effectiveness of and improvements to SHINE, and better understanding of its

potential in a landscape context, could be effectively delivered through the selection of sample areas in contrasting landscape types.

7. Scaling up the work to a sub-national level – including National Parks and AONBs - should select contrasting historic and present land use areas and types within or across the NCAPs, which are characterised by different drivers for change and pressures on heritage assets.
8. As a first step, the valuation model should be applied to a selection of other protected areas in order to explore the variability in data availability and quality. The valuation model requires some refinement in two areas:
 - a. Expansion to incorporate the full range of ecosystem services (through building on previous work in valuing linear features buildings and structures)
 - b. Refinement of the methodology for assessing cultural ecosystem service values that incorporates a three-pronged approach accounting for values of physical assets, character, and practice and process in local areas.
9. Provide test cases in a range of different settings to improve the capacity of the model as a tool for providing reliable valuations and identify the relevant sources of empirical and secondary information required.
10. Address gaps in the evidence base on the impact of AES and other spending on SHINE features.
11. Natural England and RPA databases monitoring take-up, coverage and spend within Countryside Stewardship, and in future ELMS, agreements and options should include a 'tag/variable' for SHINE assets. This would enable spend and uptake statistics to be generated for options directly connected to SHINE assets.
12. Current databases on the Natural England Open Data Geoportal only include live agreements. Easier access to AES agreement and options data for all agreements would facilitate analysis of spend and option uptake over the duration of a scheme.
13. Use heritage asset valuation to outline the benefits to partners, farmers and land managers of including heritage features in ELMS.
14. Given the potential for providing some indication of monetary value for heritage assets in a defined area, and the evidence from the workshop, guidance should be developed that works at a national level and can then be linked to the NCAPs, demonstrating the value of and enabling users to see how farm buildings/other structures, and heritage assets relate to patterns and assemblages in the landscape and different ways that land is managed.
15. The valuation approach should also be used at character area level to indicate to land managers and other relevant stakeholders how changes in condition and existence of heritage assets could impact on local landscape character, the local economy, and wider social and cultural values.
16. This approach should be piloted in the Lake District and a small number of other areas. Development of a simple toolkit would be massively useful and also

take the strain off the (possibly diminishing number of) heritage advisers who cannot be expected to offer advice on every holding without a large increase in funding. Inter-disciplinary approaches would be required to make training effective for all other ELMS advisors.

17. Use the SHINE approach (or an alternative form of direct analysis of the HERs) to inform Land Management Plans and Area Plans. This could apply to future T&T initiatives and the ELMS National Pilot which is due to start in later 2021 and full ELMS delivery.
18. The SHINE approach should be developed and improved to provide baseline data for ELMS:
 - a. Include scheduled heritage assets.
 - b. Expand coverage to include all heritage assets that contribute to OUV, such as traditional buildings and field boundaries.
 - c. Integrate the SHINE dataset of tangible heritage assets with approaches that include intangible elements of cultural landscapes, e.g. livestock management practices.
19. Consideration should be given to the role of specialist advice in the management of heritage assets and how this is integrated into LMPs.
20. The role of independent advice should be considered. This should be seen not as a cost but as an essential investment to maximise the array of public goods delivered through options across a holding.
21. Consideration should be given to incorporating data on the condition of heritage assets in the SHINE dataset as information on the condition of assets is needed to inform management practice. Condition surveys of heritage assets could be undertaken as part of the LMP.
22. Consideration should be given to cost: benefit or return-on-investment analysis of further investment in the development of the SHINE dataset (derived from the HERs) against the development of an algorithm that enables direct analysis of the HERs and the NCAP and HLC datasets.

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Abbreviations used

25YEP	25 Year Environment Plan
AES	Agri-environment scheme
ALGAO	Association of Local Government Archaeological Officers
ALT	Agricultural Landscape Type
AONB	Area of Outstanding Natural Beauty
AP	Area Plan
CAP	Common Agricultural Policy
CES	Cultural Ecosystem Service
CLM	Cultural Landscape Map
DCMS	Department for Digital, Culture, Media and Sport
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
EIP	Environmental Improvement Plan
ELMS	Environmental Land Management Scheme
ELS	Entry Level Stewardship
ESA	Environmentally Sensitive Area
EU	European Union
FEP	Farm Environment Plan
HEFER	Historic Environment Farm Environment Record
HER	Historic Environment Record
HLC	Historic Landscape Characterisation
HLS	Higher Level Stewardship
ICOMOS	International Council on Monuments and Sites
LDNP	Lake District National Park
LDNPA	Lake District National Park Authority
LMP	Land Management Plan
NCA	Natural Capital Accounting
NCAP	National Character Area Profile
NEODG	Natural England Open Data Geoportal
NHLC	National Historic Landscape Characterisation
NP	National Park
NPPF	National Planning Policy Framework
OELS	Organic Entry Level Stewardship
ONS	Office of National Statistics
ORVal	Outdoor Recreation Valuation Tool
OUV	Outstanding Universal Value
PDNP	Peak District National Park
PSG	Project Steering Group
ROI	Return-On-Investment
RPA	Rural Payments Agency
RPG	Registered Park and Garden

SAC	Special Area of Conservation
SHINE	Selected Heritage Inventory for Natural England
SNHD	Selected National Heritage Database
SOUV	Statement of Outstanding Universal Value
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
T&T	Test and Trial
UELS	Uplands Entry Level Stewardship
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHS	World Heritage Site

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1 INTRODUCTION

1.1 Background to the project

Increasing weight is being attached to the use of Natural Capital Accounting (NCA) to assess the flow of stocks relating to cultural and other services in order to underpin delivery of the 25 Year Environment Plan (25YEP, the goals for improving the environment) and performance against other environmental targets. NCA is also likely to be used to identify and prioritise the public goods that the new Environmental Land Management Scheme (ELMS) might deliver in England.

Currently, Historic Environment Farm Environment Records (HEFERs) underpin Countryside Stewardship. They act as the link between farmers and land managers, local authority curators and Historic England. They ensure that the key heritage features on a holding are identified, that the issues affecting them are addressed through appropriate options, and that unintentional detrimental impacts are avoided. These key heritage features are included within the Selected Heritage Inventory for Natural England (SHINE) dataset. They have not been assessed before using the NCA approach.

The results of the project will be used to:

- Inform wider policy work nationally, specifically the development of ELMS, and the inclusion of non-designated heritage in future iterations of the 25YEP and subsequent Environmental Improvement Plans (EIPs).
- Help Historic England to understand whether Agri-Environment Schemes (AES) have contributed to the management of the Outstanding Universal Value (OUV) attributes of the World Heritage Site (WHS) in the Lake District National Park (LDNP).

1.2 Project Aims and Objectives

1.2.1 Aims

Historic England, in partnership with the Lake District National Park Authority (LDNPA), has identified a need to explore and develop methodologies capable of capturing the values of the natural capital and ecosystem services flowing from the historic environment. Historic England has the following aims:

1. Understanding the need for advice within the natural environment and heritage sector.
2. Understanding how the historic environment is valued at the present time.
3. Developing new approaches to improve the assessment of values arising from the historic environment in order to contribute to improved decision making.
4. Developing guidance on best practice and methodological approaches to valuing the historic environment.

The overarching focus of this project is to develop and implement a research methodology that explores the third aim in the list above, i.e. developing new approaches to improve the assessment of values arising from the historic environment in order to

contribute to improved decision making. The project will also inform guidance for the wider heritage sector on ways to incorporate the concepts of natural capital and ecosystem services.

1.2.2 Objectives

The project objectives are to:

1. Assess the heritage assets in the SHINE dataset and portal within the area of the LDNP WHS area using the NCA approach.
2. Consider the feasibility of assessing which features in the SHINE dataset contribute to the OUV attributes of the WHS.
3. Conceptually map 'Cultural Capital' values that are not adequately captured by the NCA approach.
4. Provide a basic economic assessment of the value the assets bring to the local economy through their contribution they make to 'place'.
5. Identify the tourism value of SHINE features.
6. Determine the impact of AES and other spending on SHINE features.
7. Work with the Cumbria Pioneer ELMS Test and Trial (T&T) to explore how well the SHINE approach works to inform historic environment asset assessment.
8. Assess whether it is possible to attach a value to heritage assets which can be used to outline the benefits to partners, policy makers, farmers and land managers of including heritage features in ELMS.
9. Identify the cultural services/public goods that are derived from these assets and the valuation of these and the case for public payments for maintaining and enhancing these public goods through ELMS.

Each of these objectives became a stage in the project.

1.3 Report structure

The remainder of the report is divided into four sections. Section 2 provides an overview of the historic environment of the LDNP as a context for understanding the SHINE dataset. Section 3 describes the project methodology and the methods used. Section 4 presents the analysis undertaken and the results and is divided into two parts. The first part uses the NCA approach to create an economic assessment of the wider goods and services generated by the heritage assets in the SHINE dataset. The second part considers the management of SHINE features through AES and the use of the NCA approach in informing the development of ELMS. The final section (5) draws out the conclusions and recommendations of the research.

2 OVERVIEW OF THE HISTORIC ENVIRONMENT OF THE LAKE DISTRICT NATIONAL PARK

2.1 Introduction

The Lake District National Park, now covering an area of 2,362km² (912 miles²) was designated in 1951 under the National Parks and Access to the Countryside Act 1949. In common with all English National Parks, under that Act (as amended by the Environment Act 1995) the National Park Authority has two statutory purposes – to conserve and enhance the natural beauty, wildlife and cultural heritage within its boundaries, and to promote opportunities for the understanding and enjoyment of the Park’s special qualities. It also has a duty to foster the social and economic well-being of its communities in discharging its functions. The boundary of the National Park was extended eastwards in 2016 and its area increased by c. 3%. Some of its eastern boundary now abuts the M6 motorway which is almost all that separates it from the western boundary of the Yorkshire Dales National Park which was itself extended westwards, also in 2016, increasing its area by c. 25%. In 2019, the Friends of the Lake District submitted a formal request to Natural England for a further extension of the Lake District National Park boundary to the south.

The LDNP is a landscape of farmed valleys, with lakes, rivers and woodland, dominated by its fells and mountains. It was inscribed as a WHS on 9 July 2017, the boundaries matching those of the National Park, and is thus one of a number of places around the world which are considered by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) to have OUV.

2.2 Outstanding Universal Value

The Statement of Outstanding Universal Value (SOUV) produced by the International Council on Monuments and Sites (ICOMOS) provides the justification for Inscription of the WHS (Appendix 1). The attributes and components that combine to give the Lake District its OUV, and which result from its distinct topography and history, fall ‘under three intertwining and interdependent themes’:

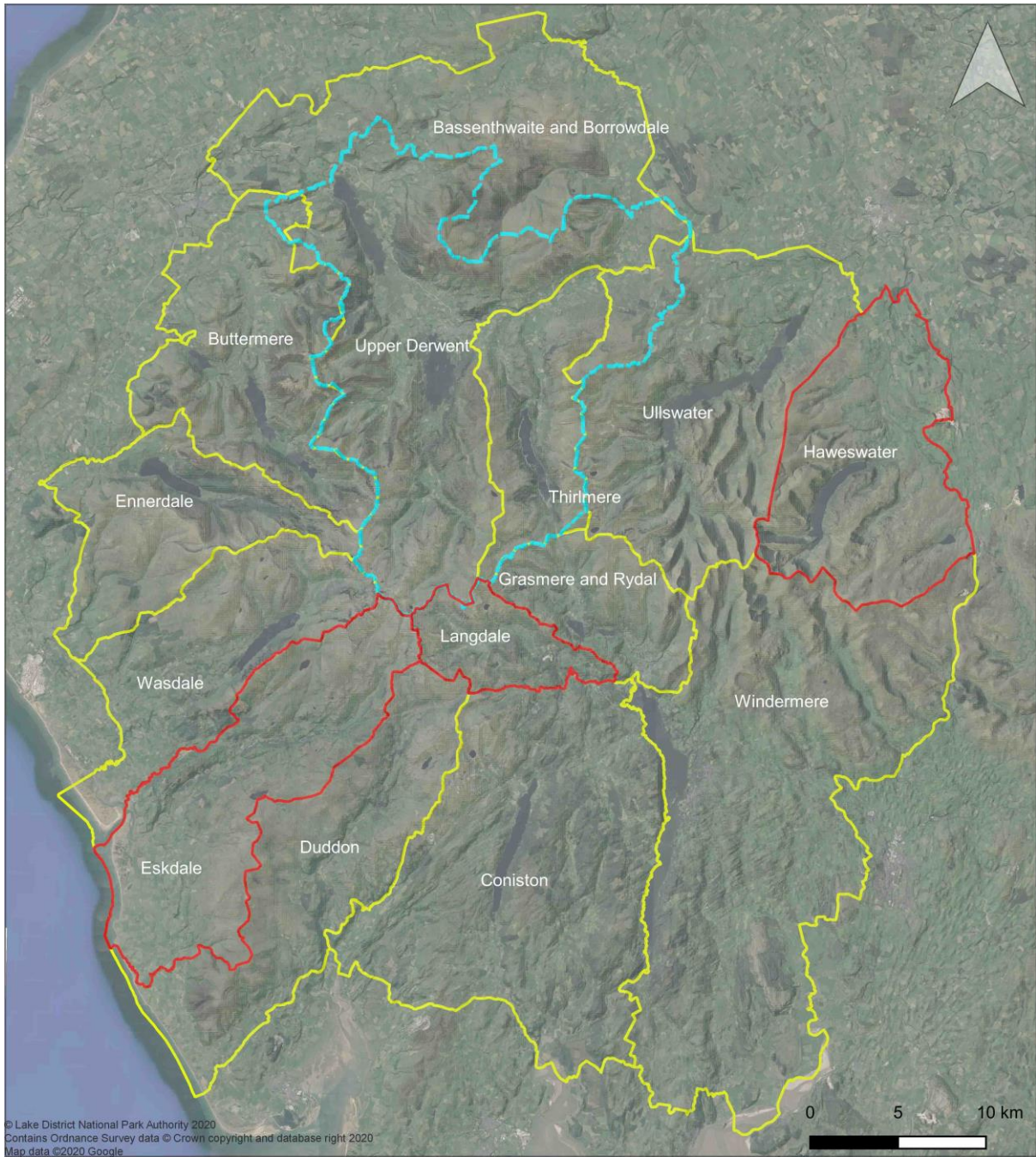
- Theme 1: *A landscape of exceptional beauty, shaped by persistent and distinctive agro-pastoral traditions and local industry which give it special character.* These are given social expression through local custom, patterns of farm tenure, dialect and traditions such as agricultural breeds, societies and meets, the hefting of local breeds of sheep on their own areas of fell, and physical expression through the farmed landscape with its distinctive upland heritage of farmsteads and vernacular architecture set within the inbye land on the valley floors, intakes on the valley sides, and open fells. Local industries, particularly mining and quarrying, have shaped the character and distribution of woodland, provided its distinctive building materials and – together with the market towns within and around the Lake District – are ‘integral and authentic elements of the cultural landscape’.
- Theme 2: *A landscape which has inspired artistic and literary movements and generated ideas about landscapes that have had global influence and left their physical mark.* From the late 17th century, and growing significantly against the backdrop of the Age of Improvement from the 1750s, the Lake District acted as a focus for the modern idea of the Picturesque, expressed in the form of viewing stations, villas, gardens and tree planting. The Lake District then attracted poets

and writers who played a leading role in developing the Romantic Movement and Enlightenment values across Europe and further afield, William Wordsworth and John Ruskin emphasising the importance of appreciating and understanding its landscape, and its traditional architecture, as the embodiment of its distinctive culture, natural environment and scenic beauty, for the spiritual and physical benefits that it affords people and thus the idea of trusteeship so that it could be conserved for future generations. This idea has, against the backdrop of the Industrial Revolution and its global impact, stimulated cultural tourism (and its related impact of hotels and other infrastructure) and the idea of social and environmental responsibility as promoted by Wordsworth and Ruskin, one that places landscape at the heart of citizenship and that transcends individual property rights. This has underpinned the conservation and outdoors recreational movement as it has developed from the 19th century.

- Theme 3: *A landscape which has been the catalyst for key developments in the national and international protection of landscapes.* Campaigns to protect these special qualities of the Lake District and other places developed from the late 18th century, leading to the creation in 1895 of the National Trust, its acquisition of significant farms and its role with others in making the Lake District ‘probably the single most influential place in developing thinking about the value of lived-in, working landscapes and their conservation.’

2.3 Cultural landscape

The SHINE records which are the focus of this project relate to structures, above-ground and below-ground features that fall within the context of the cultural landscape of the National Park and its 13 valleys (see Figure 2.1, published in the Nomination Document as Cultural Landscape Maps (CLM), which simplify the more detailed Historic Landscape Characterisation (HLC) which together with Cumbria was completed and published in 2007 and 2009).



▭ Case study valleys
▭ Upper Derwent T&T case study area
▭ Other valleys

Figure 2.1: Map showing the 13 valleys of the LDNP WHS

Farmsteads and other settlements are concentrated in the medieval inbye land of the valley bottoms and the later intakes and unenclosed land of the valley sides, which extend towards the communal grazing land of the open fells. Most of the intakes date from between the 16th and early 19th centuries and were mostly taken in to provide cow pastures close to a decreasing number of farmsteads, but some represent medieval encroachment into the open wastes and commons. Routeways, known as ‘outgangs’, extend from the valleys to the fells which have since the prehistoric period been a vital source of stone, minerals, fuel, fodder and open grazing. On the fells are the earthworks

of huts and enclosures dating from the prehistoric period and the remains of temporary shielings for communities grazing their livestock over the summer months, that date from the medieval period. The amalgamation of farms over the 18th and 19th centuries was accompanied by the rebuilding of farmsteads and, in some areas, by the removal and realignment of some field boundaries and regular enclosures of remaining common fields and fell sides. Within and bordering the inbye land are farmsteads dating from the medieval period with houses and barns dating from the 17th century – houses being typically the earliest, mostly from a phase of rebuilding in 1660-1750, and working buildings of pre-1750 date being very rare.

2.4 Historic development

The key phases in historic development, which have given rise to these patterns and features in the landscape, are set out below.

Prehistoric

Pollen and archaeological evidence show that the more permanent settlement and clearance of the Lake District, with managed woodland, agricultural settlements and fields, had been established by the end of the Iron Age and the arrival of the Roman army from 100 AD. It is probable that the Neolithic and early Bronze Age pattern of settlement and clearances, accompanied by evidence for ploughing, causewayed enclosures, stone circles and ritual sites, had been superseded by new patterns of settlement as in other parts of upland England by the latter part of the Bronze Age (around 1500 to 800 BC). The evidence for this is in the form of clearance cairns, field walls and hut circles on the lower fells. It is probable that a combination of factors – clearance resulting in deterioration of exposed soils, and a cooling of the climate – had led to the abandonment of the higher fells and their subsequent use for grazing animals, extracting fuel and minerals and also taking heather and bracken for thatch and bedding.

Romano-British period (43-410 AD)

Excavation of the forts in and around Carlisle shows that the Romans were established on the southern border of what is now Scotland by 72 AD, nearly 30 years after they had first landed in southern Britain. The evidence for the Roman army, notably in the form of forts, civilian settlements associated with them and roads, dates from early in the 2nd century AD, before and after the construction from 122 AD of Hadrian's Wall between the Solway and the Tyne estuaries. Whilst the evidence for the exploitation of minerals that attracted the Roman army and fleet elsewhere in Britain is elusive, there is strong evidence for the continuation of arable farming, in the form of field systems and their related settlements, on the lower fells and valleys through the Romano-British period.

The Early Medieval period (411-1066)

Pollen evidence shows that woodland was being cleared and land intensively used for agriculture by the early 7th century, and there is some evidence for the movement of livestock on a seasonal basis to temporary sites ('shielings') on the upland fells. Anglian and Norse place names, also accompanied by the evidence for monastic sites, crosses and grave slabs, indicate that the present pattern of scattered farmsteads and hamlets had been established in the 8th-10th centuries – many of which may overlie earlier settlement sites.

The Medieval period (1067-1550)

After the Norman conquest of the area in the late 11th century the influence of the great monastic houses and large landowners was felt in both agriculture and industry. Mining for iron, copper and tin, and the production of charcoal from woodland as the fuel for smelting, was especially important. Cattle ranches and dairy farms, known as ‘vaccaries’, and sheep farms (‘berceries’) supplying the wool industry were established at the heads of valleys and on lower fell sides, such as Gatesgarth at the head of Buttermere and Gillerthwaite at the head of Ennerdale, and Wasdalehead. Some fell pastures were granted to the monasteries, who then established stock-rearing granges at Grange in Borrowdale and Brothwick at the head of Eskdale, amongst others. Fulling mills for cleaning and beating out wool developed in most valleys. The use of the fells for grazing animals and for its resources became increasingly important as its use as hunting forest declined after the 13th century. Deer parks were widespread in their distribution. The basic framework of the agro-pastoral system had become firmly established by around 1300, accompanied by the growth of routeways and of some settlements into villages to service the surrounding farms and of market towns on the edge of the Lakes. This was based on mixed grazing, meadows and small-scale arable farming in the valleys, subdivided into strips and surrounded by a wall (a ‘ring garth’) to keep stock from trampling the hay and corn crops, semi-improved pasture and ‘intakes’ of more enclosed fields on the valley sides and seasonal grazing on the higher fells. Surviving ridge and furrow and lynchets and abandoned medieval settlement on the fringes of the upland fells, attest to the pre-14th century extent of arable cultivation.

The Post-Medieval period (1551-1900)

Between around 1550 and 1800 the number of farms declined as holdings were amalgamated, the strip fields in the in-bye land were enclosed, more land on the edges of commons were taken in (as intakes) for agriculture and flocks and herds increased in size. The area benefited from the rise of trade in Scottish cattle from the 17th century onwards, local farmers specialising in the rearing of stock – often over winter – before they were sold on for fattening. This period sees significant developments in a range of industries (mining, quarrying, iron smelting and other minerals industries, and with gunpowder and bobbin production in the south). Farming incomes were supplemented in the south of the area by spinning and weaving.

Farmhouses in the High Fells mostly date from a great rebuilding in the period from 1660 to 1750, reflecting the growing farm size, security of tenure (secured by law in 1625) and prosperity of this period. These replaced earlier generations of timber and stone rubble buildings with cruck frames. Farmhouses built or rebuilt from the late 18th century were more standardised in their plan and symmetrical in their external appearance. Working buildings, including the distinctive bank barns for storing the corn and hay crop above farm animals, date from the 17th century but mostly from the hundred or so years between the mid-18th and mid-19th centuries. These buildings, using newly-imported timber from the Baltic, quarried stone and the skills of professional stonemasons, relate to a more intensive phase of arable and root cultivation and of manure production from cattle, aided in low-lying areas by under-drainage and the further reorganisation of enclosed land. Most dry stone walls date from this period and include some of the extensive patterns of enclosures marching across the fell sides. The extraction of peat increased in tandem with the more intensive exploitation of coppiced woodland to provide fuel for industry, peat being stored on farmsteads or (notably in Eskdale) in peat houses on the fell side. Relatively few traditional farm

buildings were built after the 1880s, by which time the effects of the long agricultural depression that lasted until the Second World War had begun to be felt; areas of former upland common, enclosed in the 19th century, were the first to revert to scrub, bracken and gorse.

These developments were also accompanied, particularly from the 1750s, by a heightened awareness of the scenic beauty of the Lake District. Thus the agro-pastoral landscape which is a focus of this report helped to both practically and spiritually sustain the growing numbers of visitors to the area and also the infrastructure of viewing stations, villas and their landscapes which continued to find expression through the Vernacular Revival and Arts and Crafts styles of the late 19th and early 20th centuries and make another significant contribution to the OUV of the Lake District.

1901 to present (20th and 21st centuries)

This period sees a continuation of development in tourist infrastructure, including the development of redundant farm buildings to offer accommodation and facilities, against the backdrop of significant change in the form of the reservoirs at Thirlmere and Haweswater, their associated planting and forestry plantations. There are some pillboxes and other sites built as part of the anti-invasion measures put in place in 1940. Despite spikes in arable production in response to national need during the two World Wars, the period has witnessed the dominance of pastoral farming across the Lake District. The movement to enable better public access to and enjoyment of the Lake District, as in other parts of England and in parallel to a growing call for National Parks, gathered pace in the inter-war period. The Lake District was designated as a National Park in 1951, two years after the passing of the National Parks and Access to the Countryside Act, the second to be so-designated, after the Peak District.

3 METHODOLOGY

3.1 Introduction

This section sets out the methodology and methods used to assess of the wider goods and services generated by SHINE heritage assets, the impact of AES spending on the management of SHINE features and the potential of the SHINE approach in the development of ELMS.

3.2 Introducing SHINE¹

The SHINE dataset was conceived in 2008 as a replacement for the Selected National Heritage Database (SNHD). It was devised to achieve a single, nationally consistent dataset of non-designated heritage assets, derived from Historic Environment Records (HERs), that could benefit from management through the Environmental Stewardship agri-environment scheme (AES) and to provide ways in which those data could be taken into account through historic and other scheme options.

SHINE was initiated as a 'hands-off' dataset to inform Entry-Level Scheme (ELS) applications. Over time it evolved into a more-comprehensive dataset underpinning the provision of heritage asset management advice in Environmental Stewardship and the

¹ <https://www.myshinedata.org.uk/>

subsequent Countryside Stewardship. Resourcing from Natural England and Defra enabled the SHINE dataset to be developed between 2011 and 2013 through a succession of data capture and enhancement projects. From 2015 onwards, SHINE was used to inform the conservation management of heritage assets through the subsequent Countryside Stewardship AES. The latest SHINE handbook notes that it applies to any heritage asset that will *‘..either be able to benefit from, or be protected by, one of the management options or capital items available in Countryside Stewardship; or .. warrants retention and protecting from damage, whether or not in an option or capital item in Countryside Stewardship’* (ALGAO et al. 2018).

The SHINE dataset comprises a subset of data from each English local authority HER, designed specifically to service the needs of inputting historic environment data into AES. To be eligible for inclusion in the SHINE dataset, the selection criteria for SHINE entries for Countryside Stewardship require each entry to be substantive, verified, of known character, and closely mappable (ALGAO et al. 2018, 4). Buildings have to be already in the HER before they can be included in SHINE; they must be non-domestic, roofed, pre-1940 and not the subject of a planning application. Non-designated structures, for example, sheep folds, bridges, lime kilns, can be included, as can historic boundaries. Most designated sites of acknowledged national importance – Scheduled Monuments, Registered Parks and Gardens (RPG), Grade I and II* listed buildings – are not eligible for inclusion in SHINE, as they are handled by Historic England, but Grade II listed buildings can be included, as they are dealt with by local planning authorities’ historic environment services (ALGAO et al. 2018, 6).

It is important to note that there are considerable variations, between HERs, in the inclusion of archaeological data. This is subject not only to variations in judgement and approach, in determining how many heritage assets and of what type are included in HERs, but also variations in the character of the historic environment; as an example, the archaeology of settlement (the earthworks and other indicators of lost farmsteads and houses) is far more difficult to identify in landscapes of dispersed settlement (such as Devon and Suffolk) than in areas of nucleated settlement where the earthwork remains of shrunken and abandoned settlements are typically more prominent. Another important caveat to bear in mind is the inclusion of buildings in the SHINE dataset, the most relevant category in this respect being traditional farm buildings which can benefit from maintenance options and restoration options under Countryside Stewardship and Environmental Stewardship (see section 4.6). Very few traditional farm buildings – other than listed buildings – are included in HERs (and therefore, by definition and the terms of the Guidelines (ALGAO et al. 2018, 8), cannot be included in SHINE); the only exceptions in this respect are those parts of England where farmsteads, field barns and outfarms have been included in HERs as a result of mapping the historic character and survival of those present in around 1900, such as the mapping that underpins the Historic Farmsteads Guidance published by the Peak District National Park (PDNP) (Edwards and Lake 2015).

SHINE entries are further defined, sequentially, by Form and Significance. Permitted Form terms list 9 elements (ALGAO et al. 2018, 15):

- Structure(s).
- Above-ground feature(s).
- Below-ground feature(s).

- Well-preserved below-ground feature(s).
- Degraded below-ground feature(s).
- Structure(s) + above-ground feature(s).
- Structure(s) + below-ground feature(s).
- Above + below-ground feature(s).
- Structure(s) + above + below-ground feature(s).

Significance, assessed once Form has been defined, has 3 permitted terms (ALGAO et al. 2018, 16):

- High.
- Medium.
- Low.

However, significance is a measure of the degree to which it is considered protection of the heritage asset could be achieved through Countryside Stewardship, not necessarily the perceived significance of the asset itself although, as the guidance acknowledges, these two elements are likely to correspond. It is permitted to take into account archaeological, landscape and community significance when assessing Significance. Nevertheless, it does mean that, as the guidance also acknowledges, 'a very rare and significant feature that is not easily managed using the existing Countryside Stewardship options might not be rated highly ... due to the limitations of Countryside Stewardship rather than the relative lesser significance of the feature' (ALGAO et al. 2018, 17).

Appendix 2 of the 2018 guidance takes the form of a working document offering good practice advice, in the form of Do's and Don'ts, to inform the compilation of the 'Name' entries, to make the information consistent nationally and easily understood by all potential users. Examples of good practice are included, for example:

- 'Earthwork remains of medieval settlement at Lower Loxley'.
- 'Cropmarks of a circular enclosure and ditch, believed to be of prehistoric date, at Loxley Barrows'.
- 'Earthworks of medieval cultivation – fossilised field system at Mill Hill, Felpersham'.

These entries, entirely appropriate for the needs of servicing an AES application, have compressed a number of individual HER fields into a short heading, for consistency and ease of identification and understanding for all concerned. Unfortunately, it precludes direct analysis of the entries for the purpose of this project, because that text cannot be interrogated. It must be stressed that this is not the fault of the SHINE dataset, it is the consequence of submitting that dataset to an analysis for which it was not designed. As a result, it was necessary to revert to the LDNPA's HER in order to access the original fields of data from which the SHINE narratives have been derived. This was facilitated by the inclusion of the relevant HER number in each SHINE entry but did throw up some anomalies that required input from LDNPA staff to sort, for which the project is suitably grateful. These included entries for assets that had subsequently been designated as well as some unanticipated by-products of the compilation process, such as the inclusion of 74 heritage assets in the grounds of Lowther Castle, Haweswater, as part

of the RPG, rather than as stand-alone assets, making it initially appear in the analysis as if Haweswater had 75 RPGs rather than one.

3.3 Assessing the heritage assets in the SHINE dataset using the NCA approach

The first stage of the project comprised a comprehensive description and classification of the heritage features, in terms of number, type, date and spatial distribution, contained in the SHINE dataset. Of fundamental importance to this stage was ensuring that the methodology for analysis of the data could be used in other areas of the country, through consistency of approach to the assembly of HER/SHINE data by date and type prior to its analysis, processing and presentation. Consideration of HER data excluded from SHINE, and of other non-material elements such as place names which have a bearing on how rural areas are valued and perceived, is another critical factor of relevance to land within AES beyond the Lake District.

The data processing and analysis was performed using the open source statistical programming language ‘R’². The full R code written for the project is available on the project’s GitHub site³. The reason for adopting an open source coding-based approach was to document in detail the exact steps taken to process and analyse the data, and to provide an ongoing, freely accessible resource that others can potentially use to reproduce and/or modify the work.

The SHINE dataset contains a textual description of each record but lacks attributes containing explicit categorical data relating to the time depth/period, type of feature, and protected status of a SHINE feature – attributes which would be necessary for meeting the project objectives. In order to append this information to the SHINE records, the original SHINE dataset was merged with the HER database for the LDNP. This process is fully documented in an R code script⁴. The general steps taken were as follows:

- Merge the separate HER GIS layers (i.e. point, lines, and polygons) into a single, non-spatial (i.e. with geometry removed) data table.
- Clean and standardise SHINE and HER data (e.g. remove duplicates), through ensuring that the terminology used for the HER data aligns with the Thesaurus of Monument Types⁵. Merge the HER data with the Forum on Information Standards in Heritage (FISH) monument type thesaurus⁶ and extracting the top level monument class term for corresponding SHINE features. Note that there were numerous cases of a single SHINE feature linking to multiple HER records with the same SHINE unique identifier. In such cases, the most frequently occurring monument class term with the multiple HER records was extracted and appended to the relevant SHINE record.
- Using a similar method as above, data on time period and protected status were extracted from the HER database and appended to the SHINE dataset. Again, the

² <https://www.r-project.org/about.html>.

³ <https://github.com/robertberryuk/SHINE>

⁴ https://github.com/robertberryuk/SHINE/blob/master/Scripts/SHINE-HER_MonType_Aggregation.R

⁵ <http://www.heritage-standards.org.uk/fish-vocabularies/>

⁶ As published on <https://www.heritage.org/>

most frequently occurring values in one-to-many SHINE-HER relationships were selected to update the SHINE records.

The basic attribution of SHINE data by form conforms with that set out in the recently revised SHINE HER Workflow Guidelines revised for Countryside Stewardship in 2018 (ALGAO et al. 2018). As the SHINE data is obtained from the HER, a spreadsheet of HER data was compiled that enabled analysis of all data (including those records that form part of the SHINE subset) to be undertaken for this project. The categorisation by date and type complies with the standards for United Kingdom (UK) national heritage records as recommended by FISH. This enabled:

- An overview of the distribution of SHINE in relationship to HER features across the whole project area.
- Further understanding of their distribution across the 13 valleys and the CLMs, which are based on and have simplified the more detailed HLC, which have been compiled for the LDNP and the areas put forward in the Nomination Document for the WHS.
- Preparation of data and maps for sample areas, providing an analysis of the SHINE data in relationship to the overall HER data and the CLMs.
- Assessment of the contribution that the SHINE dataset makes to the OUV of the WHS.

Consultation with LDNPA staff and other key stakeholders (including representatives from Country Landowners Association, Historic England, Natural England, National Farmers Union, National Trust and other land managers) occurred through workshops at Brockhole, Windermere, on 3rd and 4th March 2020. Presentations were made on progress to date and questions posed to promote discussion on the wide range of issues that impinge in this project. SHINE data was presented against a suite of categories previously agreed with the Project Steering Group (PSG) (including Period, Form, Significance), subsequently arranged into Class groups based on the top level thesaurus terms (e.g. Agriculture and Subsistence; Industrial; Religion, Ritual and Funerary). These were then assessed for the Natural Capital Benefits that they are considered to provide, under the over-arching categories of Supporting, Provisioning, Regulating and Cultural Services (Appendix 2). A further assessment was then presented, linking these benefits to the key themes relating to the OUV of the WHS, such as aesthetic appreciation, cultural identity, quality of life, access, accessibility, social inclusion, community cohesion, knowledge, education, understanding, enjoyment, contribution to the local and wider economy, to recreation and employment, and to regeneration, tourism and sustainable development.

The outputs from these workshops also informed subsequent consideration of, for example, those attributes of OUV and other factors that fall outside the SHINE dataset and that are not listed under the Ecosystem Services heading in the National Character Area Profile (NCAP), and the NCA approach as summarised at a national level by the Office of National Statistics in its State of Natural Capital and other reports (Natural Capital Committee 2019).

3.4 Using SHINE data to explore ways of integrating with the NCA approach

The SHINE features form part of the stock of cultural capital, contributing to the landscape and ecosystem service provision of the LDNP WHS area in multiple ways.

The features will vary in their contribution to the services generated by natural capital and therefore it might seem appropriate to take a NCA approach to explore the value of the SHINE features in relation to the total stock of natural capital. The key contribution of SHINE features are in the form of cultural ecosystem services and the range of benefits flowing from those services. The focus of the approach taken in this study is not on valuing the capital itself, but on measuring the cultural ecosystem service benefits flowing from the features over time, as part of the wider stock of capital both existing in, and contributing to, the landscape.

The SHINE assets represent a significant proportion of the cultural capital that provides the unique landscape and cultural heritage of the areas contributing, for example, to sense of place and sense of history. Figure 3.1 illustrates that as a stock of capital the assets generate a range of ecosystem services (supporting, provisioning, regulating and cultural), which in turn create a range of benefits flowing through the socio-ecological system. In order to value the stock of capital it is essential to identify the ecosystem services generated, and how they benefit society and the wider ecosystem. Ecosystem services only generate benefits when there is some recognition of value of the service(s) to some person, or aspect of the ecosystem. Benefits can be either direct (e.g. having a direct impact through utilisation) and indirect (such as improving environmental quality and thus wellbeing). A methodology is required to capture the value of benefit flows, identify the number of beneficiaries of each different flow, and take into account changes in the stock of capital over time that might alter the level or value of the flows. Discounting is also required when calculating values over time, which will also be relevant to future evaluation of government policy in relation to the environment and heritage conservation, for example the government's 25YEP (Defra 2018).

It is important to recognise that valuing a stock of natural capital relies on identifying and valuing the benefits that flow from that stock over time. The stock itself (in this instance the set of SHINE assets), cannot be given a specific value. The stock of assets is unique, it cannot be replicated, and the loss of a specific asset is irreversible, they cannot be replaced, therefore their value cannot be calculated in terms of a fixed amount. Value of the stock of assets is thus based on valuing the benefits generated over time. As society changes, in terms of how a particular stock of assets are understood, recognised as having some significance, and utilised, their value will change. The value of a stock will also alter if it decreases in scale or size or depreciates in terms of quality which affects its ability to generate benefit flows. Maintaining a stock of capital implies a cost to ensure the value of the benefits flows do not decline.

Figure 3.1 illustrates the basic approach taken to valuing the SHINE assets in the LDNP WHS area whereby the SHINE assets represent the stock of natural capital, and the benefit flows and beneficiaries are identified and valued over specific periods of time. For the purposes of this study only cultural services are examined. Cultural services are the most relevant to capturing the role of heritage assets in the landscape but tend to be the least explored aspect of ecosystem service studies. Cultural services formed the focus of the study described here; time constraints, the desk-based nature of the research, and data limitations precluded any attempt to value the full range of ecosystem services generated by the SHINE assets. Given the characteristics of the capital stock, some of which are below ground, it was also felt the cultural services would generate the largest benefit flows.

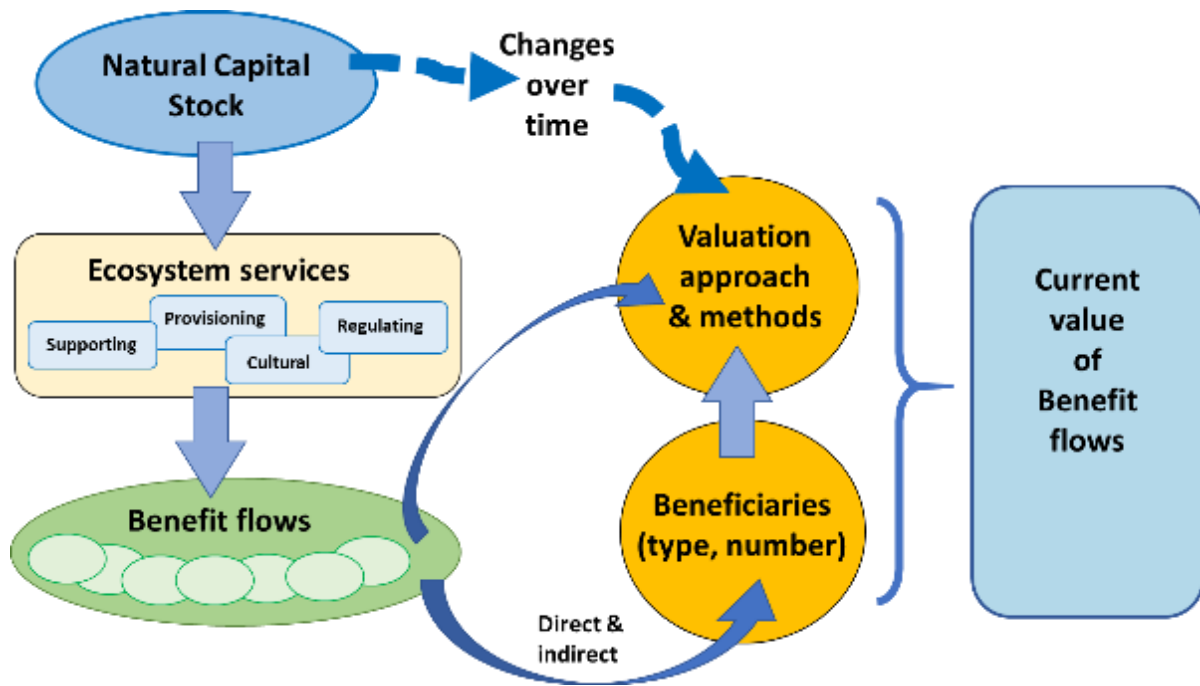


Figure 3.1: Conceptual overview: Natural capital accounting approach

Case study approach

It was decided early in the process that an analysis of the full SHINE data set for the LDNP was too large of a task given time and resource constraints. The research is therefore based on a case study approach to try and capture some of the variability across the LDNP. In consultation with the PSG four case study areas were selected for model development and testing:

- Eskdale, which has 451 SHINE features within an area of 162.39 km² that extends from the border with Langdale towards the sea.
- Langdale, which has 325 SHINE features within a relatively small area of 42.20 km² and forms part of the hub of the ‘wheel’ of Lake District valleys.
- Haweswater, which has 754 SHINE features within an area of 145 km² that extends from the border with Windermere to the Lowther estate in the Eden Valley.
- Upper Derwent T&T area, which has 1,133 SHINE features within an area of 360.18 km² that comprises the majority of the valleys of Borrowdale and Bassenthwaite, together with Thirlmere and a small part of Ullswater.

The case study areas were also selected to reflect central and more remote sites, a range of residents living in each area, and variability in visitor numbers. More information on each case study site can be found in Section 4.2.3.

The basic methodology was the development of a return-on-investment (ROI) model building on previous work to assess the value of ecosystem services linked to linear landscape features, and buildings and structures (see Powell et al. 2018, 2019a, 2019b). A conceptual diagram of the model is illustrated in Figure 3.2. The model is based on a simple social ROI approach based on the following steps:

- Identification of the system boundary (in terms of assets, spatial extent, and time period of interest).
- Categorisation of services delivered within the system.
- Scoring of the extent and quality of services delivered (through scoring time-depth, legibility, and inter-relationships).
- Scoring of condition of the assets providing the services.
- Identification of benefit flows.
- Identification of categories and numbers of beneficiaries.
- Selection of financial approximations that reflect the value of the benefit flow.
- Assessment of the value of benefit flows based on numbers of beneficiaries and service scores.
- Allowance for depreciation of assets over time and discounting of benefit flows to present value.

In the model the SHINE assets were assigned to seven categories:

- Agriculture.
- Industrial.
- Domestic.
- Recreational.
- Religious.
- Communications and transport.
- Monuments and other features.

Functional scores were assigned to each category based on the extent it contributes to the heritage of the area. Scoring of time-depth, legibility, and inter-relationships was based on the available data within the SHINE dataset.

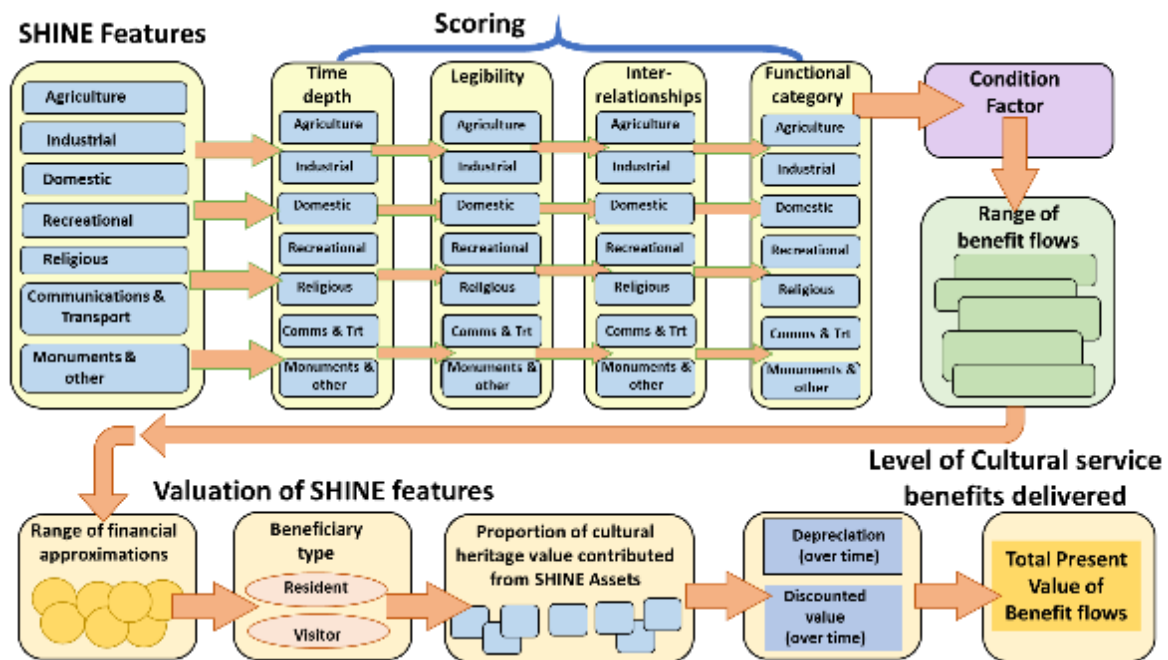


Figure 3.2: Assessing significance of cultural heritage

Scoring the condition of SHINE assets was based on two surveys of the condition of cultural heritage carried out in Haweswater and Eskdale. The surveys indicated the proportion of assets in one of five states (from very good to very poor). Condition for the ELM Upper Derwent T&T area assets were estimated based on the average condition from the other two areas. The approach is not ideal as the surveys are not recent, and there were a significant number of assets in both Haweswater and Eskdale surveys that were not given a condition score. This is one area where improvement in the quality of data would help to improve the valuation model.

Financial approximations were derived from a range of sources, in particular other ROI studies that have utilised the same approximations for valuing similar types of benefit flow. Beneficiaries were limited to three categories: visitors, residents, and livestock farmers. Visitors were not divided into overnight and day visitors (although it is well known that overnight visitors spend more in the local economy and are likely to benefit from a higher level of benefit resulting from a longer stay). The model uses visitor days based on recent surveys of visitor numbers to Cumbria and to the LDNP. Improvements could be made to the model by differentiating between the relative proportion of visitors staying multiple days, and by improved estimates of the number of visitors to each of the 13 valleys. Residents are assumed to receive a higher value of benefits from the cultural services due to living year-round in the area. Livestock farmers are identified as benefitting from specific benefit flows relating to utilisation of assets within the landscape and tacit knowledge accumulated and passed down through generations.

A key issue in developing the methodology was understanding the nature of the SHINE assets in relation to the total stock of heritage assets and the landscape in the area. Taken together, therefore, SHINE assets form part of what can be defined as the natural capital stock, which extends to walls and other features in the landscape and includes intangible heritage and viewpoints which contribute to OUV (see section 4.2) and which relate to the concept of cultural capital as explored in Section 4.3 of this report. SHINE features include approximately half of the total number of heritage assets listed in the HER for the

LDNP WHS area. In addition, all items in the SHINE dataset were selected on the basis that they can be managed by farmers. From the perspective of generating ecosystem services it was important to understand the characteristics of the assets in relation to the total stock of capital contributing to cultural services. In relation to identifying and valuing benefit flows it was necessary to understand the proportion contributed by the SHINE assets in relation to the total flows generated.

This presented some problems, firstly in relation to understanding how SHINE features and other heritage features recorded in the HER are related. Figure 3.3 below illustrates how SHINE features can be integrated to a greater or lesser extent with other HER features across the landscape. Where SHINE features are closely linked spatially it will be difficult to separate out benefit flows generated at specific sites. One approach would be to remove all non-SHINE features and focus on assessing the cultural heritage services generated only by what is left (the SHINE features). This is not the way residents and visitors experience the landscape, however, and proved impossible given the lack of relevant data on the co-location of assets.

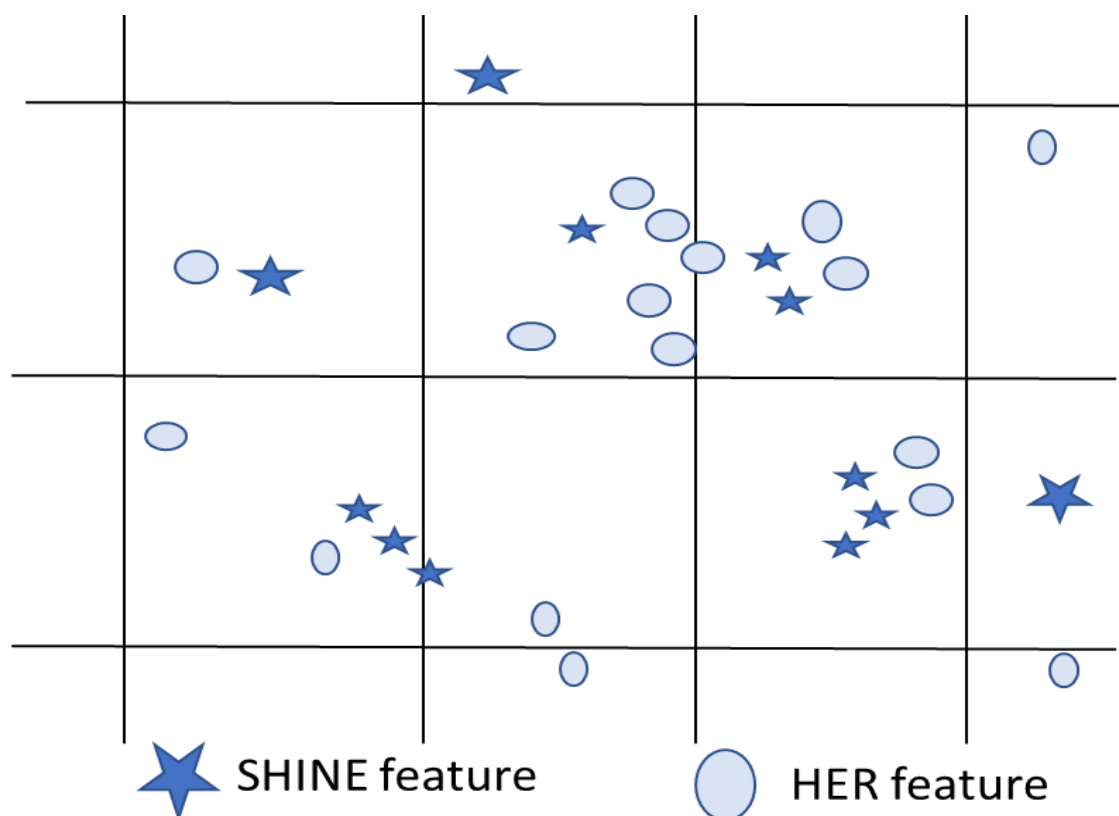


Figure 3.3: SHINE and HER features in the cultural landscape

The approach taken was based on the assumption that residents and visitors are not differentiating between the services and benefits generated by SHINE and non-SHINE capital stock. They are experiencing a complete socio-ecological system of the LDNP landscape and thus the values generated by the model are for the total set of benefit flows created from all the natural capital in a specific area. In order to determine the contribution of SHINE features, assumptions had to be made about the proportion of total value contributed by these features alone. The assumption was based on the proportion of SHINE assets to the total assets in the HER and assessment of the relative

significance of SHINE and non-SHINE assets. SHINE assets were compared at the county level with the full set of records in the HER and expert judgement was utilised to estimate that 40% of the cultural heritage services are delivered by the SHINE assets.

The model accounts for this proportion of total cultural services value by using a density function based on the average number of SHINE features per km² in each of the case study areas. The density function contains only the SHINE features which are then used to calculate the value of benefit flows from the cultural ecosystem services for each case study area. If data were available for all HER records at the same scale as the case study data, those features could be added into the model, which would produce higher benefit flow values as a result of the increased number of assets incorporated into the model. This would be a consideration for future work in this area.

Indicators were developed to enable the SHINE assets to be scored in terms of their age (time depth), legibility (extent to which they are visible and contribute to ‘telling a story’ that connects communities and people to their past), condition, function and inter-relationships with the wider landscape (Figure 3.4).

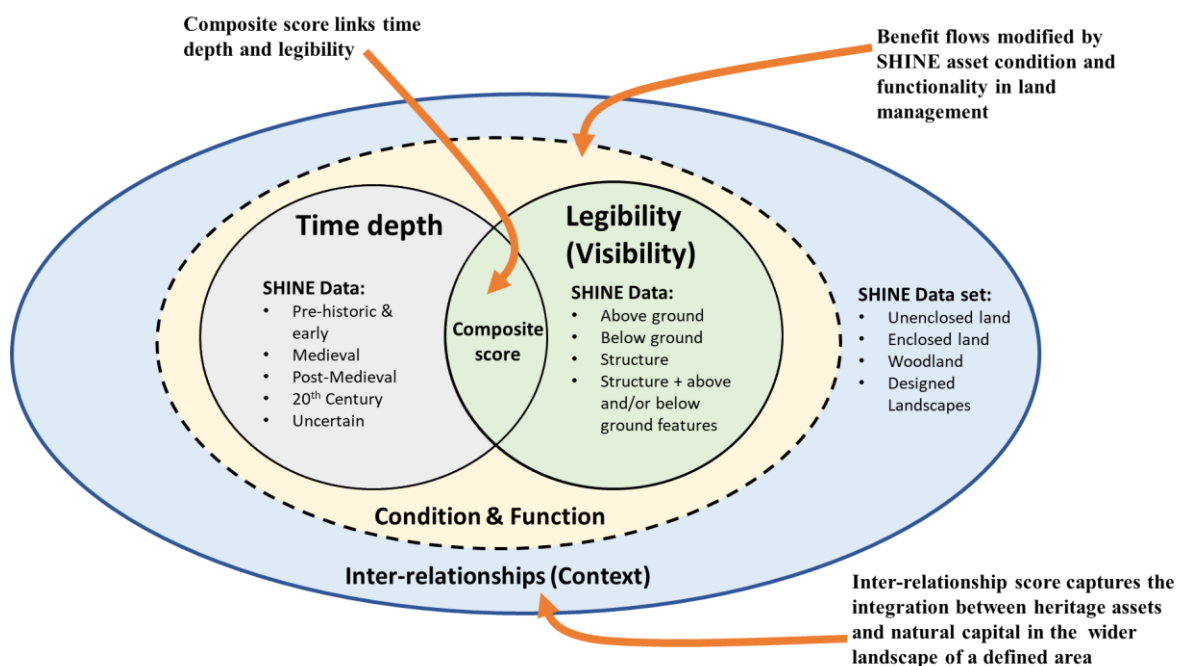


Figure 3.4: Scoring of cultural heritage assets

The project team examined the proportion of SHINE assets in terms of age (historical period), location in the landscape (unenclosed, enclosed land, woodland, etc.) and legibility, i.e. the extent to which above and below ground features and structures can be seen to contribute to the cultural heritage. The approach modifies the scoring approach used in earlier work on linear landscape features (Powell et al. 2019a). The main difference in the scoring methodology is to create a multi-step procedure whereby the assets in the SHINE data set are scored first in terms of their ‘time-depth’ and ‘legibility’ and a composite score created for utilisation in the model. Then the condition and function of assets are scored, taking into account assumptions about the reduction in benefit flows arising from assets in poorer condition. The final step involves assessing and scoring the inter-relationship of assets within the wider landscape. This process gives greater weight to the recognised level of integration between the natural capital

assets (including the heritage assets in the SHINE dataset) and the wider landscape in which it is set at the case study level. A more detailed explanation of the heritage asset scoring and valuation process can be found in Sections 4.4.1 to 4.4.3 of this report.

3.5 Assessing the effectiveness of the SHINE approach in informing the management of heritage assets and the historic environment in the Lake District

Following assessment of the heritage assets in the SHINE dataset within the LDNP WHS using the NCA approach, the next step was to assess the effectiveness SHINE approach in informing the management of heritage assets and the historic environment. To begin with funding streams associated with the management of SHINE assets were identified. Where data sources were available a quantitative analysis of the spend on SHINE assets was undertaken. Following this analysis the impact of the spend on SHINE assets was investigated through:

- A review of secondary sources (reports, surveys, assessments) produced by Historic England, Defra, Natural England, LDNPA and Local Government.
- Telephone interviews with four heritage professionals with knowledge of the impact of AES and other spending on SHINE assets.
- A workshop session held on 3rd March 2020 with stakeholders from the T&T team and organisations with experience of heritage asset management under AES.

This was followed by a closer look at how the SHINE approach could inform historic environment asset assessment as part of the Cumbria Pioneer ELMS T&T. To achieve this aim a second workshop session was held with nine stakeholders from the T&T team and organisations with experience of heritage asset management under AES:

- Environment Agency.
- Environmental Consultancy.
- Historic England.
- LDNP.
- Natural England.
- National Trust.

To assess whether it is possible to attach a value to heritage assets which can be used to outline the benefits to partners, farmers and landowners of including heritage features in ELMS a workshop was held on 4th March 2020 with 12 stakeholders from organisations with experience of heritage asset management under AES:

- Country Landowners Association.
- Environment Agency.
- Environmental Consultancy.
- Forestry Commission.
- Historic England.
- LDNP.
- Natural England.

- National Farmers Union.
- National Trust.

4 ANALYSIS AND RESULTS

Section 4 presents the analysis undertaken and the results derived and is divided into two parts. The first part uses the NCA approach to create an economic assessment of the wider goods and services that the heritage assets within the SHINE dataset generate. The second part considers the management of SHINE features through AES and the use of the NCA approach in informing the development of ELMS.

4.1 Stage 1: Assess the heritage assets in the SHINE dataset and portal within the area of the Lake District World Heritage Site area using the Natural Capital Accounting approach

4.1.1 Introduction

This section of the report sets out the results of the analysis undertaken for the project, with respect to:

- How SHINE records were extracted from the database.
- Analysis of the records by the SHINE categories of Significance, Form, Type and Period.
- How SHINE records contribute to the historic environment, through consideration of their relationship to HER records and historic and local patterns in its landscape.
- Assessment of which SHINE features contribute to the OUV of the Lake District WHS.
- How SHINE features, in the context of the historic and natural landscape, contribute to the natural capital stock.

4.1.2 Number of SHINE records

Following analysis of SHINE data via the HER, 7,484 SHINE records were identified. The total number of records in the original SHINE shapefile supplied by the LDNPA was 7,576, from which 74 SHINE features that fall outside the supplied 13 Valleys WHS shapefile area were subtracted. The total number of 7,484 linked SHINE-HER records result from the splitting of records by the boundaries of the 13 valleys into which the LDNP has been subdivided; SHINE features are thus counted as multiple features in instances where they cross valley boundaries (e.g. SHINE feature '37678' which straddles the boundary between Windermere and Grasmere). The number of *unique* linked SHINE-HER records within the 13 Valleys WHS area – i.e. where SHINE features straddling boundaries are not split into multiple features - is 7,349. The number of 'additional' features generated from a per-valley analysis within the WHS boundary area is therefore $7,484 - 7,349 = 135$. While this does not affect a case study approach for individual valleys, this should be kept in mind when interpreting the tabular summary of SHINE features by valley for the whole of the LDNP. For consistency in

providing numerical analyses across the Lake District, the thirteen valleys and the case-study areas, the figure of 7,484 has been used throughout this project report.

4.1.3 Analysis of SHINE data

Once access to the HER data had been achieved, the SHINE data were analysed against the categories of Form, Period, Protected Status, Significance and Class Name; the first three derived from the HER data, the fourth from the SHINE assessment and the fifth reflecting both the classification implemented in the thesauri developed by FISH and the criteria used to establish the OUV of the Lake District WHS.

Analysis by Significance

Analysis of Significance has retained the three categories used in the 2018 SHINE HER Workflow Guidelines:

- High.
- Medium.
- Low.

Analysis by Significance shows that:

- 176 (2.4%) SHINE entries are considered to be of High significance;
- 1,825 (24.4%) are of Low significance; and
- 5,483 (73.3%) are of Medium significance.

The very high proportion of Medium significance results from the fact that Medium is the default setting for Significance (ALGAO et al. 2018, 16). Those of Low Significance display a tendency to be either post-medieval or later in date or of uncertain date. Whilst most of those in the High Significance category are prehistoric, Romano-British and medieval above-ground features, the rationale for inclusion in this category is not always clear with some being classified as Degraded. Low sites display a tendency to be quarries and other industrial sites of uncertain date, but again the rationale for inclusion of some prehistoric sites in this category is not clear.

Significance does not display any strong correlation with designated heritage assets, although there is a small number included in the dataset in error (Figure 4.1).

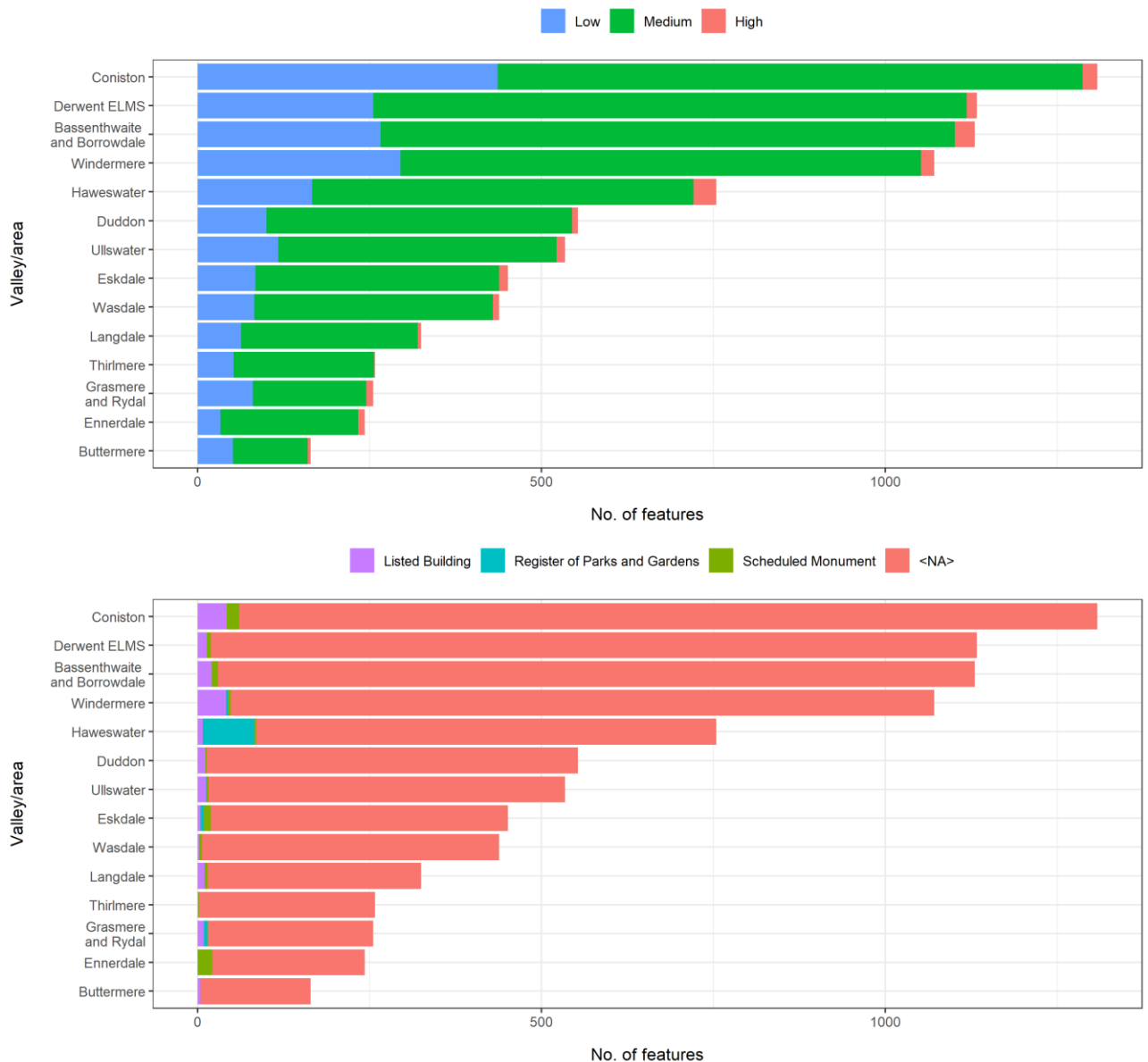


Figure 4.1: Significance of SHINE features by area, and correlation with designated heritage assets

Analysis by Form

Analysis by Form provides a good indicator of the legibility of SHINE features, which is more reliable than Significance which has not been pursued hereafter. It demonstrates that above-ground features and structures dominate the 7,484 SHINE records and, in general, that their respective categories are primarily the result of long or sudden redundancy - with the exception of features that have always functioned as earthworks (predominantly lynchets and other Agriculture and Subsistence banks, ridges and boundaries):

- 4,483 (59.9%) are above-ground heritage features (excluding structures), which overwhelmingly comprise earthwork remains (former settlements, agricultural, religious and industrial features) and other remains dating from the prehistoric to the post-medieval periods, including quarries, mines and charcoal-burning platforms in woodland.

- 152 (2.0%) have known above- and below-ground elements, dating from the prehistoric period and including stone circles, Bronze Age cairnfields, a Roman road, medieval houses, shielings and abandoned farmsteads and mines, bloomeries and other industrial sites.
- 2,763 entries (36.9%) comprise structures (including stand-alone structures (2,283), these being the standing and structural remains individual features and buildings. These include prehistoric standing stones and cairns, medieval boundary walls and the remains of medieval buildings, field systems and enclosures. Most are post-medieval in date, including those whose date is recorded as Uncertain, and comprise agricultural buildings and structures (mostly fields, washfolds and sheepfolds), bridges, domestic (medieval and later houses) and a smaller proportion of industrial sites from lime kilns to bobbin mills. Under 18% of structures include additional above-ground features (430), above- and below-ground features (41) and below-ground (9) features.
- 86 (1.2%) comprise below-ground remains, including cropmarks and other sites of uncertain date and the sites of demolished buildings including those of post-medieval date, and sites noted as both well-preserved (5) and in degraded (5) states of preservation.

Analysis by Type

Class Name was used to brigade the site types into classes that, usefully, included the categories that had been recognised in the WHS designation as forming the principal components of the Lake District WHS landscape, such as Agriculture and Subsistence, Industry, and Recreation. In order to achieve this, the 665 entries (at the time of analysis) in the HER Monument types list was condensed into these 18 categories, each of which are shown followed by their associated numbers. The following nine classes - making up 97.5% of all recorded types - are those considered to be the most relevant for the purposes of this project, being an integral part of the agro-pastoral landscape and how it has been perceived and valued:

- Agriculture and Subsistence (2,272; 30.4%).
- Industrial (2,421; 32.3%).
- Domestic (496; 6.6%).
- Religious, Ritual and Funerary (716; 9.7%).
- Transport (427; 5.7%).
- Gardens, Parks and Urban Spaces (46, 0.6%).
- Recreational (14; 0.2%).
- Monument (by Form not Function) (821; 11.0%).
- Unassigned (86; 1.2%).

Of these:

- Industrial SHINE features are the most numerous, and comprise sites, buildings, structures and features related to the extraction of raw materials, their processing and manufacture into finished goods. They include Neolithic sites for making stone axes, medieval and later sites for the iron and other mineral industries and a

large number of quarries and charcoal-burning platforms sited in woodland. The 2,421 SHINE records are 48.4% of 5,002 HER records.

- Agriculture and Subsistence SHINE features are those critical elements of the agro-pastoral landscape which comprise sites, buildings, structures and features associated with cultivation, the rearing and fattening of livestock, gathering food and livestock, hunting and fishing. They include farmsteads and farm buildings for the processing of foodstuffs and the storage of agricultural produce. The 2,272 SHINE records are 49.5% of 4,889 HER records, those excluded from SHINE including farmsteads and buildings no longer in agricultural use.
- Religion, Ritual and Funerary SHINE features comprise sites, remains of buildings, structures and features related to the practice of rituals and religious beliefs, including funerary rites. The 716 SHINE records are 43.7% of 1,635 HER records, the disparity resulting from the exclusion of chapels, churches and many designated cairnfields.
- Domestic SHINE features comprise sites, structures and features used for permanent, seasonal or temporary accommodation/habitation and related ancillary buildings. They include the remains of prehistoric to medieval huts and other dwellings which are closely linked to agricultural, commercial, military and religious sites or structure, and also parts of sites used for residential purposes as well as industrial workplaces that combine both a domestic and industrial function. The 496 SHINE records are 25.4% of 1,949 HER records, houses remaining in domestic use forming a large proportion of this disparity.
- Transport SHINE features comprise sites, buildings, structures and features related to the conveyance of goods and/or passengers and, in the Lake District, include Roman roads, hollow ways, trackways, bridges and packhorse stables primarily associated with agricultural, industrial and commercial use. The 427 SHINE records are 35.4% of 1,203 HER records.
- Gardens, Parks and Urban Spaces SHINE features comprise planned and/or landscaped areas designed for aesthetic or recreational purposes - including parkland, drives, waterbodies, boundaries and all related archaeological sites, buildings, structures and features (e.g. lodges, dovecotes, follies). The 46 SHINE records are 14.1% of 326 HER records.
- Recreational SHINE features mostly comprise, in the Lake District, viewing platforms, sports grounds and shooting butts for grouse shooting. The 14 SHINE records are 17.5% of 80 HER records, a high proportion of those excluded being viewing stations of 18th and 19th century date.
- Monument (by Form not Function) and Unassigned SHINE features are essentially monuments – overwhelmingly Above-ground Features and Structures - that have not been assigned readily to other Classes in terms of function, although their addresses indicate that some have clear functions (e.g. sheepfolds, animal troughs, boundary walls and boundary stones) and many of them have been assigned dates. The 821 Monument by Form and 86 Unassigned SHINE records are 40.2% and 43.2% of 2,038 and 199 HER records respectively.

The remainder comprise only 2.6% of all entries and play a significantly subordinate or minor role in the assessment of the Lake District landscape:

- Civil (23).

- Commemorative (9).
- Commercial (17).
- Communications (1).
- Defence (30).
- Education (10).
- Health and Welfare (0).
- Maritime (10).
- Water Supply & Drainage (85).

These entries in (together accounting for under 3% of the total) also represent a much smaller proportion of those in the HER. Water Supply and Drainage is the largest in number but are mostly wells, privies and drainage features of 19th century date. Commercial (17 of 28 in the HER) mostly comprise inns (e.g. UID 35483) and storehouses), Defence includes Roman forts, medieval castles and Second World War anti-invasion defences, Education (out of 29 in the HER) is mostly 19th century schools, Maritime (out of 27 in the HER) mostly comprises quays. There are some errors in the data (e.g. Above-ground and structural remains of a sheepfold and charcoal burning platform at Duddon, Ulpha (UID 39103) categorised as Religious) and sites for Civil administration also include features that are wrongly attributed and that are related to the past management of the agro-pastoral landscape (pinfolds or stock pounds, e.g. UID 46317).

Analysis by Period

Period was simplified to 8 from the original 37 categories used in HERs and which conform with FISH thesaurus the key periods at a national level being:

- Prehistoric.
- Romano-British 43AD – 410.
- Early Medieval 411 – 1066.
- Medieval 1067 – 1550.
- Post-Medieval 1551 – 1900.
- 20th century.
- Uncertain.

Analysis by Period (Figure 4.2) demonstrates that:

- 493 (6.6%) heritage assets can be dated to the Prehistoric period, including agricultural earthwork remains, Neolithic stone axe factories (Industrial), trackways in unenclosed land (Transport), cairnfields (Religious) and probable settlement and agricultural earthworks which have been assigned to the Monuments by Form category; some sites, for example at Linewath in Caldbeck and the enclosure and ditch at Brougham, Thrimby, include Romano-British above-ground remains but have been assigned to the Prehistoric period.
- 26 (0.3%) are Romano-British, including features associated with roads, forts and vicus settlements but excluding Scheduled Monuments.

- 15 (0.2%) are Early Medieval, including shielings, cairns, settlement and church sites.
- 669 (8.9%) are Medieval, displaying a wide typological range but dominated by those in the Agriculture and Subsistence category.
- 4,061 (54.3%) are Post-Medieval which includes a higher proportion of Industrial sites.
- 158 (2.1%) are 20th century, including many identified in their addresses as Post-medieval and a wide typological range including sheepfolds, building platforms and anti-invasion defences.
- 2,045 (27.3%) are categorised as ‘Uncertain’ because they cannot be dated with any certainty, although they include many sites identified in the titles for their individual entries (Unique Identifiers) as Post-medieval.

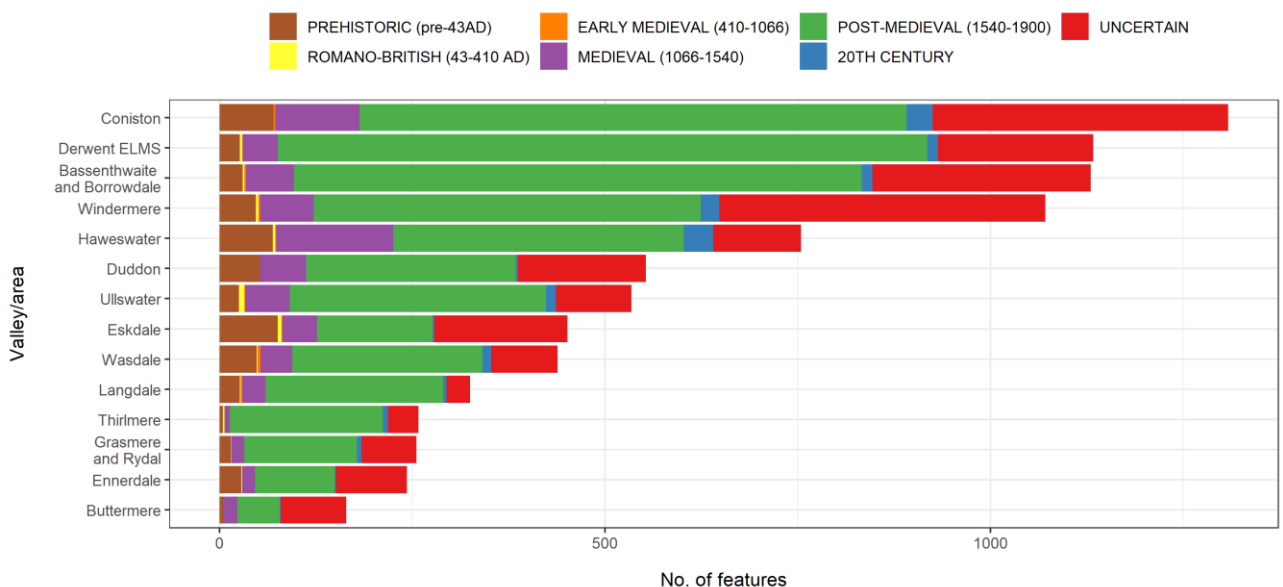


Figure 4.2: Period of SHINE features by area

4.1.4 How SHINE contributes to the historic environment

SHINE records comprise a proportion of a varied heritage of features, sites, structures and buildings (collectively known as ‘heritage assets’) whose value is also enhanced and whose understanding is enriched by the historic landscapes in which they are seen and valued. The former is conditioned by their degree of survival (as earthworks or structures) and the latter conditioned by awareness of what lies beneath the ground, the enhanced understanding delivered by new discoveries and changing perceptions of significance. This calls for an integrative approach that takes account of changing functions, perceptions and the whole character of landscapes.

Relationship to non-designated and designated heritage assets

The National Planning Policy Framework (NPPF, Glossary, page 67) defines a heritage asset as a ‘*building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest*’, and which should be conserved in a manner appropriate to that

significance (paragraph 184, NPPF 2019). As the NPPF states (paragraph 184), *'Heritage assets range from sites and buildings of local historic value to those of the highest significance, such as World Heritage Sites which are internationally recognised to be of Outstanding Universal Value. These assets are an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations.'*

As noted in section 2.1, the LDNPA has a statutory duty to conserve and enhance the cultural heritage within its boundaries, (which are the same as those of the WHS). In addition, where an irreconcilable conflict occurs between this statutory purpose and the second one (to promote opportunities for understanding and enjoyment – the recreation statutory purpose) then the UK Government Vision and Circular for English National Parks and the Broads (paragraph 18, 2010) notes that greater weight should be given to the *'conserving and enhancing'* purpose.

Within the LDNP there are 287 Scheduled Monuments, 1,793 List Entries covering around 2,000 listed buildings and structures (mostly 17th to 19th century), 23 Conservation Areas, 9 RPGs and part of the Hadrian's Wall WHS. There is not a straightforward relationship between the 16,702 Lake District HER entries and the numbers of designated heritage assets, as single designated heritage assets (particularly Scheduled Monuments, RPGs and Conservation Areas) can have multiple HER entries. Most Scheduled Monuments are found on the fells, and many comprise coherent assemblages of hut circles, traces of field systems and ritual and burial sites and structures. Most listed buildings are concentrated in the enclosed landscapes of the valley bottoms and sides, with non-designated historic buildings being afforded a greater degree of protection if they exist within those settlement cores and groupings of buildings which have been designated as Conservation Areas.

Because scheduling and listing operate under different statutes, the definition of significance is couched in rather different terms. The *Principles of Selection for Listing Buildings* (DCMS 2018) draw attention to the age, rarity and aesthetic merits of historic buildings, and the need to be mindful of selecting the most representative examples of their type and using an understanding of national interest in order to ensure *'consistency in selection'* including of *'the most significant or distinctive regional buildings that together make a major contribution to the national historic stock'*. Of particular relevance for SHINE is the fact that, whilst most farmhouses dating up to the early 19th century are listed the proportion of farm buildings considered to meet national listing criteria is far lower; the vast majority of farm buildings, which mostly date from the 19th century, are unlisted, and there is uncertainty over which unlisted buildings may be protected through curtilage listing.⁷ Over 90% of buildings on the statutory list result from the parish-by-parish resurveys of the 1980s rather than thematic survey, and there are many pre-19th century and cruck-framed buildings (the group of field barns extending into Patterdale for example) that are not listed.

The *Principles of Selection of Scheduled Monuments* (DCMS 2013) states that archaeological sites and structures selected for scheduling are those of national importance which are considered to be best-managed as monuments *'to help preserve them, so far as possible, in the state in which they have come down to us today'*, rather

⁷ There is no statutory definition of curtilage, and its extent has been much litigated. Historic England has published guidance on this: Historic Environment Good Practice Advice (GPA) in Planning Note 10 (Listed Buildings and Curtilage, 2018)

than through the planning system, AES or nature designations, meaning that many sites of national importance are not scheduled. The majority of schedulings resulted from thematic surveys of sites undertaken (until halted as part of the Heritage Protection Review) by the Monuments Protection Review, resulting in an enhanced understanding of the degree to which individual sites and structures meet the established criteria assessed by period; rarity; documentation/finds; group value; survival/condition; fragility/ vulnerability; diversity and potential.

The picture is further complicated by the different ways in which different heritage assets are managed:

- Grade II Listed Buildings are the responsibility of local Conservation Officers with Historic England involved in applications for grade I and II* buildings.
- Nationally-important archaeological sites and features which have been designated as Scheduled Monuments whose management is based on advice from regionally-based Historic England inspectors.
- Non-designated nationally-important archaeological sites and features, and local and regionally-important archaeological sites and features, are listed in the HER and are managed locally by the LDNPA.
- Many other heritage assets are not listed in the HER, either because they await discovery, await transfer to the HER or comprise historic buildings, including those in the curtilage of listed farmhouses and other buildings, which – whilst the importance of local styles, materials and other characteristics may be acknowledged in planning and landscape character assessments - are rarely included on an individual basis in HERs.

SHINE records comprise 42% of the records shown in the Lake District HER, which includes listed and unlisted buildings, designated and non-designated archaeological features, chance finds and linear or enclosure structures (including some but not all dry stone walls of particular note, such as ring garth walls and walls to deer parks, and folds for the shelter, handling and washing of sheep). These show a marked variation between asset types, as listed below in order from the smallest percentage proportion of HER entries overall:

- The 46 Gardens, Parks and Urban Spaces SHINE features are 14.1% of 326 HER records, the high disparity resulting from the amalgamation of multiple HER entries into single records and other parks and gardens being excluded from SHINE.
- The 14 Recreational SHINE records are 17.5% of 80 HER records, a high proportion of those excluded being the viewing stations which illustrate new ways of valuing landscape in the 18th and 19th centuries.
- The 30 SHINE Defence features are 22.3% of 134 HER records, those excluded comprising Roman forts and fortlets, medieval castles and sites and Second World War anti-invasion defences as designated sites are excluded from SHINE.
- The 496 Domestic SHINE features are 25.4% of 1,949 HER records, houses remaining in domestic use being a large proportion of this disparity as these are excluded from SHINE.
- The 427 SHINE Transport features are 35.4% of 1,203 HER records, those excluded mostly comprising bridges and industrial-era features that are not sited

in farmland, not manageable through an agri-environment scheme and not therefore included in SHINE.

- The 716 Religious, Ritual and Funerary SHINE features are 43.7% of 1,635 HER records, the disparity resulting from the exclusion of chapels, churches and many designated cairnfields in unenclosed land which are therefore not eligible for inclusion in SHINE.
- The 2,421 Industrial SHINE features are 48.4 % of 5,002 HER records, those excluded from SHINE being individual historic buildings and also features within extensive industrial sites.
- The 2,272 Agriculture and Subsistence SHINE features are 49.5% of 4,889 HER records, those excluding from SHINE including farmsteads and buildings no longer in agricultural use.
- The 821 Monument by Form and 86 Unassigned SHINE records are 40.2% and 43.2% of 2038 and 199 HER records respectively.

Industrial, Agriculture and Subsistence features are thus dominant in number, contributing to the Agro-Pastoral landscape that underpins the inscription of the Lake District as a cultural WHS. Moreover, those placed in the Monuments (by Form not Function) and Unassigned SHINE categories are overwhelmingly Above-ground Features and Structures that fall into the Agriculture and Subsistence category, such as sheepfolds, animal troughs, boundary walls and boundary stones; and many of them have also been assigned dates or could be attributed to specific date ranges. The 821 Monuments by Form and 86 Unassigned SHINE records are 40.2% and 43.2% of 2,038 and 199 HER records respectively.

Relationship of SHINE data to historic landscape

Over 90% of the landscapes in which SHINE data are located derive from the agro-pastoral tradition, comprising a wide variety of enclosed land, unenclosed land and ancient woodland including boundary features, veteran and historic trees that have the potential to be managed through a wide range of options in the AES.

Patterns of historic landscape character have been mapped as polygons by the Lake District HLC, as completed in 2009, and have been brought together into a national database using grid cells by the National HLC. The function of SHINE data, to inform AES, explains a concentration away from areas of mapped historic settlements, with their historic buildings and other archaeological sites. These mostly comprise nucleated settlement in the form of towns, villages and larger hamlets, including villages with their surrounding open fields on the coastal plain, and a small number of villages on the principal valley routes (notably Keswick and Ambleside, and Hawkshead) developed as wool markets and places to serve these scattered communities and later expanded and gentrified in response to the popularity and accessibility of the Lakes, especially from the second half of the 19th century. Reference to both datasets shows that area of land taken up by rural settlement cores – which have the bulk of Conservation Area designations - is rarely more than 0.2 km²; unsurprisingly, 18th to 19th century settlement growth around Windermere has resulted in settlements there taking up by far the largest extent – nearly 2-5 km², but still only 0.7% of the area; more recent residential extensions are typically larger in extent, although with the exception of Bassenthwaite and Windermere no more than one square kilometre in extent.

Unenclosed Land indicates the open fells and commons of the Lake District, which has 'one of the largest areas of unenclosed land (organized as a number of commons) of any farming landscape in Western Europe', comprising 53% of the total area of the WHS⁸ and – using the National HLC for the valley areas – 34.5%, a significant reason for this disparity being the amount of land enclosed by walls (some intake, mostly Planned Enclosure) and thus included within Enclosure types of landscape. These landscapes have for centuries been utilised by surrounding communities for summer grazing, with peat, heather and bracken cut for fuel, bedding, roofing and fodder. The unenclosed land of the upland fells retains a high concentration of prehistoric settlement (Agriculture and Subsistence), settlement (Domestic) and ritual sites (Religious) with communication routes still visible over the upper passes. Most commonly found in unenclosed land are cairns dating from the prehistoric period, those of medieval and later date being clearance rather than burial cairns (Agriculture and Subsistence), post-medieval boundary markers and boundary cairns (Monuments by Form), post-medieval walled enclosures for sheep (sheep folds, biolds and wash folds) and medieval shieling sites (Agriculture and Subsistence). Also found are some medieval and post-medieval deer park walls and park boundaries (categorised as Monuments by Form), and the remains of farmsteads and cultivation earthworks (lynchets and ridge and furrow, and others within the Agriculture and Subsistence class) which typically pre-date the retreat from the high-water mark of medieval settlement and land use in the 14th century.

Enclosed Land comprises farmland subdivided into fields by dry stone walls, banks and hedgerows. These take up just over 53% of the area as mapped by National HLC (in comparison to a national average of 72%), dominated by Ancient Fields (32.3%, these being mostly enclosed by the end of the 17th century) with substantial areas of Planned Fields (mostly late 18th and 19th century) and Post-War Fields (10.0%):

- Ancient fields subdivide into and show a strong and significant contrast in the relationship of SHINE features to areas of *inbye enclosure* and *intake enclosure*. Relatively few SHINE features are found in inbye land. This was the most intensively-farmed and manured agricultural land, with easy access to farmsteads and often surrounded in the Lake District by a wall (a 'ring garth') to keep the stock away from the hay and corn crop as it grew over the spring and summer months; the majority of boundaries within inbye land appear to date from the 17th century and relate to the enclosure and reorganisation of the internal strips of arable and meadow that date from the medieval and early medieval (pre-1100) periods. Most intake enclosure dates from between the 16th and 19th centuries and was intended to enable improved stock management, in combination with intermittent cultivation, in areas of land that had mostly been unenclosed up to that point. The earthworks of medieval and earlier land use and settlement and abandoned farmsteads (Agriculture and Subsistence) within intake land are a testament to the ebb and flow of settlement within intake land and its fell side edges, and Industrial sites including many quarries and lime kilns. The predominance of pastoral land use in the post-medieval period has also provided the context for the survival of Romano-British and earlier land use and settlement, which was both conserved through its location in extensive areas of cow pastures and grazing land before its enclosure and then the predominance of grazing land.
- Planned fields, termed as areas of *recent enclosure* in the Lake District HLC and CLMs, are mostly of late 18th and 19th century date. They can – as a result of

⁸ Lake District National Park Partnership (2017, p.111)

having been unenclosed land or farmland that had long reverted to unenclosed land – have a similar scatter of sites dating from the prehistoric period to that of unenclosed land.

Parks and Gardens, 0.7% of the area as mapped by National HLC and termed as Designed Landscapes in the Lake District HLC and CLMs, mostly date from the late 18th century and provide the settings to the villas which are such a significant and distinctive part of the Lake District landscape. They can have scatters of earlier features dating from the prehistoric period – sometimes purposefully included as part of their planning and design.

Woodland includes significant concentrations of Ancient Woodland (2.6% of the area as mapped by National HLC), which can have dense concentrations of industrial sites, such as individual charcoal-burning platforms, bark peelers' huts and the evidence for earlier land use and settlement. Charcoal burning platforms account for some of the densest clusters of SHINE records, such as the 28 around Claife on the western side of Windermere in Coniston. Designed landscapes can also retain dense clusters of industrial and other sites, as again at Claife, which have been absorbed within the expansion of parks and gardens. Broadleaved woodland is clustered in the sheltered valleys, along rivers and lakeside margins. Where it survives, it has been strictly controlled and intensively managed from the medieval period onwards as enclosed woodland for growing timber and coppiced underwood, to supply building materials, domestic fuel and charcoal for smelting. *Conifer Plantations*, which date from the late 19th century and after the establishment of the Forestry Commission in 1918, takes up 7.6% of the area as mapped by National HLC: it can retain SHINE features that result from earlier patterns of land use and settlement. Further expansion was successfully resisted in the 1930s.

Water comprises bodies of freshwater and water sports areas and takes up 3.0% of the area as mapped by National HLC. It is associated with five Maritime entries, comprising quays, jetties and a warehouse, and mostly comprises lakes and reservoirs (notably Thirlmere and Haweswater) in the Lake District. A small number of other Industrial and Transport features, such as the boat house at Hill Top Farm in Hawkshead (UID 43867), are associated with bodies of water.

The four case studies shall explore the relationship of SHINE features to these different types of historic landscape in further depth.

4.1.5 Area variations

These relate to variations across the 13 valleys of the Lake District, as summarised below and in Tables 4.1 - 4.3, which shall be further explored at the end of the following section and in the introduction to the case studies:

- Density: There is a median density of 3.6 SHINE features per square kilometre: significant variations can be attributed to the scale of the area (the smallest area, Langdale, has the highest density, at 7.7 km²), and the number of recorded Industrial features (Coniston).
- Type: there are very high densities of Industrial SHINE features in parts of Coniston, Borrowdale and Windermere; the much lower proportion of Agriculture features in Coniston merits consideration against the high number of Monuments (by Form) that are probably agricultural in origin; Garden and Water Supply

features take up the majority of the higher figures for Other noted in Bassenthwaite/Borrowdale and Coniston.

- Period: Significant variations in the intensity of Prehistoric to Medieval features can be attributed to variations in the extent of unenclosed land in areas with the same density of features; variations in Post-Medieval features can be attributed to the number of stock enclosures in unenclosed land and intake, which can take up a substantial proportion of those in the Agriculture and Subsistence category, and the numbers of individual recorded Industrial features as in the woodlands of Coniston (10% as against a Lake District average of 2.6%).
- Form: Above-ground features are clustered in industrial areas (e.g. in Borrowdale and Coniston) and appear to reflect the results of systematic survey. Strong variations in the density of Structures in Unenclosed Land reflect variations in the development and survival of post-medieval features (especially stock enclosures), some areas having very low densities (e.g. Thirlmere, Buttermere, Ullswater), but the very low densities of Structures in Enclosed Land in many areas cannot be attributed to the presence of designated heritage assets and appears to result from the less-systematic approach to the recording of historic buildings into the HER.

Table 4.1: Type of SHINE feature by area

	Density per km ²	Agri	Dom	Ind	Rel	Trans	Mon & Unass	Other	Total
Bassenthwaite and Borrowdale	2.68	349	45	462	66	58	108	42	1130
Buttermere	1.13	32	12	78	11	4	22	5	164
Coniston	4.84	203	58	683	112	79	118	56	1308
Duddon	3.63	220	39	87	77	25	94	11	553
Ennerdale	2.28	100	12	57	38	3	27	6	243
Eskdale	2.77	170	44	88	71	16	52	10	451
Grasmere and Rydal	3.97	55	26	69	21	21	52	11	255
Haweswater	5.2	290	55	129	81	83	97	19	754
Langdale	7.7	142	23	72	9	27	50	2	325
Thirlmere	3.18	103	27	24	30	13	51	10	258
Ullswater	2.49	151	39	181	69	22	56	16	534
Wasdale	3.57	221	36	50	57	17	43	14	438
Windermere	3.57	236	80	441	74	59	138	43	1071
Total	3.61 median	2272	496	2421	716	427	1007	245	7484
Total %		30.4%	6.6%	32.4%	9.6%	5.7%	12.1%	3.3%	100%

Table 4.2: Date of SHINE feature by area

Period	Prehistoric	R-B	Early Medieval	Medieval	Post-Medieval	20 th century	Uncertain date	Total
Bassenthwaite and Borrowdale	30	2	2	62	737	14	283	1130
Buttermere	5	0	0	18	55	1	85	164
Coniston	70	0	2	109	710	34	383	1308
Duddon	52	0	0	60	272	3	166	553
Ennerdale	28	1	0	17	103	2	92	243
Eskdale	75	5	1	45	150	2	173	451
Grasmere and Rydal	14	1	0	17	146	6	71	255
Haweswater	69	3	1	152	377	38	114	754
Langdale	26	1	2	30	231	4	31	325
Thirlmere	4	2	0	7	199	6	40	258
Ullswater	25	7	1	58	332	13	98	534
Wasdale	48	1	4	41	247	11	86	438
Windermere	47	3	2	70	502	24	423	1071
Total	493 6.6%	26 0.3%	15 0.2%	686 8.9%	4061 54.3%	158 2.1%	2045 27.3%	7484

Table 4.3: Form of SHINE feature by area

	AG	AG & BG	Struc	Struc & AG	Struc & AG/ BG	Struc & BG	Below Ground	Total
Bassenthwaite and Borrowdale	648	39	326	85	12	5	14	1130
Buttermere	102	16	35	8	1	0	2	164
Coniston	923	16	294	55	6	1	13	1308
Duddon	254	4	247	38	2	1	7	553
Ennerdale	138	7	78	18	2	0	0	243
Eskdale	238	25	143	35	0	0	10	451
Grasmere and Rydal	165	0	81	5	0	0	4	255
Haweswater	472	4	217	54	4	0	3	754
Langdale	185	1	117	19	3	0	0	325
Thirlmere	109	2	132	12	0	1	2	258
Ullswater	346	16	139	19	5	0	9	534
Wasdale	213	7	187	22	3	1	5	438
Windermere	690	15	287	60	3	0	16	1071
Total	4483	152	2283	430	41	9	86	7484
Total (%)	59.1%	2.0%	36.9%			1.2%		

4.2 Stage 2: Assessing which features in the SHINE dataset contribute to the Outstanding Universal Value attributes of the World Heritage Site

4.2.1 Introduction

The nomination of the Lake District as a WHS took place in 2016 and, on the advice of ICOMOS, it was inscribed as a cultural WHS Site in 2017. SHINE features contribute to three of the ten criteria used by UNESCO as a basis for the inscription of WHSs:

- Criterion ii) to ‘*Exhibit an important interchange of human values, over a span of time or within a cultural area of the world*’ which the Statement of Outstanding

Universal Value notes for the Lake District *'is rooted in the vital interaction between an agro-pastoral land use system and the spectacular natural landscape of mountains, valleys and lakes.'*

- Criterion v) to *'Be an outstanding example of a traditional human settlement, land use, or sea use which is representative of a culture (cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change'*, which for the Lake District again *'derives from a long history of agro-pastoralism'*, was changed as a result of *'a new land use ... designed to augment its beauty through the addition of villas and designed landscapes ... (and inspired) ... the practical application of the powerful ideas about the value of landscape which originated here and which directly stimulated a landscape conservation movement of global importance.'*
- Criterion vi) to *'Be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance, which for the Lake District 'all emerged from a human response to the English Lake District landscape. Many have left their physical mark contributing to the harmonious beauty of a natural landscape modified by a persisting agro-pastoral system (and supported in many cases by conservation initiatives); villas and Picturesque and later landscape improvements; the extent of, and quality of land management within, the National Trust property in the Lake District; the absence of railways and other modern industrial developments as a result of the success of the conservation movement.'*

SHINE records are an integral part of the 'intertwined and inter-related' attributes and their components that underpin the inscription of the WHS and that are grouped under the key *'intertwining themes'*, as introduced in Section 2, which express the OUV of the WHS:

- Theme 1: A landscape of exceptional beauty, shaped by persistent and distinctive agro pastoral and local industry which gives it special character
- Theme 2: A landscape which has inspired artistic and literary movements and generated ideas about landscapes that have had global influence and left their physical mark
- Theme 3: A landscape which has been the catalyst for key developments in the national and international protection of landscapes

The WHS Group has defined these attributes and their components, as set out in the Nomination Document and the inscription by UNESCO of the Lake District as a cultural WHS, in order to ensure, through monitoring, that their authenticity and integrity is sustained (adopted by the LDNP, December 2019, see Appendix 3). Integrity rests upon *'the extent to which the layered historic evidence, meanings and relationships between elements remains intact and can be interpreted in the landscape. It is also the integrity of the relationship with nature that matters, not the integrity of nature itself.'*

The agro-pastoral tradition is manifest most obviously – as set out in Table 4.4 - in SHINE data through those in the Agricultural and Subsistence category, underpins all three of these themes, through its rich archaeology, its distinctive built heritage of farmsteads, traditional buildings using local stone and sheep folds, biolds and shielings. The high numbers of industrial sites and features reflect the exploitation of its distinct

geology, the use of water courses and in terms of numbers of records dominate its rich archaeological heritage.

Table 4.4: Level of contribution of SHINE features to OUV

Attribute	Level of contribution of SHINE features to OUV
<i>Agro-pastoral system</i>	
Evidence, intactness, and legibility of settlements and the agro-pastoral character and function of the field systems and their waterways.	Agriculture and Subsistence (Early Medieval, Romano-British and Prehistoric) and associated records of the same date in the Domestic and Religious categories features concentrated in unenclosed land and, to a lesser extent, intakes.
Farmsteads and farmhouses	Farm buildings and some structural remains of abandoned farmhouses in the Agriculture and Subsistence and Domestic categories
Shepherds meets/shows and traditional sports	No SHINE records are documented as having an historical association with these attributes, although they are visible expression of past agricultural society and practice.
The unique practices of the agro-pastoral farming system	
Local management and governance of Lake District farming systems, e.g. activities of breeders' associations and commons committees	
Common land and the long standing and continuing traditions of Common land management	Sheep folds, bields, shielings, hogg houses for yearling sheep and traditional farmsteads for the backdrop of annual shearings and salving of sheep
Local techniques of landscape maintenance (stonewalling, hedging, pollarding)	A small number of dry stone walls are recorded as SHINE features, otherwise these and hedges (and pollarded trees within field boundaries) are an integral part of the historic character of landscape.
Semi-natural habitats created and sustained as a result of a continuing agro-pastoral systems, for example hay meadows, pollards, wood pasture, and coppiced woodland. The mosaic of semi natural habitats above the fell wall within an actively grazed landscape.	These are an integral part of the historic character of landscape, as captured by Historic Landscape Characterisation
<i>Local industries</i>	
Ancient Semi-Natural Woodlands	Industrial features, which are concentrated in woodland. Industrial features, which are concentrated in unenclosed land and. to a lesser extent, intakes, and any related records for Transport. Industrial features, and some Water Supply, which are concentrated on fast-flowing streams and rivers extending from the settlements
Traditional local woodland industries, people and skills	
The physical remains of past woodland industries, buildings, structures (i.e. Bark Barns, Charcoal Sheds)	

Attribute	Level of contribution of SHINE features to OUV
The physical remains of historic mines and quarries which have shaped the landscape	and inbye land to intakes, some sites within woodland and some areas of unenclosed land.
<i>Towns and Settlements</i>	
The English Lake District's settlement pattern of individual farms, small hamlets, large villages and market towns, historically derived and functionally.	HER records within farmsteads
Medieval buildings	Some medieval structures, concentrated in unenclosed land and, to a lesser extent, intakes, in the Agriculture and Subsistence, Domestic and Religious categories.
Vernacular buildings	Farm buildings and some structural remains of abandoned farmhouses in the Agriculture and Subsistence and Domestic categories

The agro-pastoral tradition, fundamental to the 'action and interaction' of human and natural factors over millennia', is also integral to those aspects of how the landscape has been perceived and valued under Themes 2 and 3, those of specific relevance being:

- *Early tourism*, including viewing stations from West's Guide of 1778 and Crosthwaite's maps of around 1780, there being one SHINE record at Claife (Recreation, UID 42588)
- Villas, gardens and formal landscapes in the Gardens and Parks category and a diversity of SHINE features found within Designed Landscapes
- *Sites and collections associated with the Picturesque and Romanticism, and specifically as a component* surviving landscapes which inspired early climbing, outdoors recreation and the early outdoor holiday movement. These are recorded in SHINE as Commemorative, including several of unknown date and post-medieval memorial stones (e.g. UID 36258), and also memorial seat in Borrowdale (UID 38767) and modern memorial stone at Helvellyn (UID 40474).

Also set out below in Table 4.5 is the analysis in the Nomination Document, of relevance to this report but not repeated in the inscription by UNESCO, of the distribution across the valleys of agricultural and industrial heritage (based on designated and recorded heritage assets). This scored their level of contribution to OUV between three and zero. The aggregate total score for each valley is shown in the left-hand column.

*Table 4.5: Key attributes contributing to OUV in the World Heritage Nomination Document
(the strength of contribution being marked by the number of asterisks in each column: * Low, ** Medium, *** High)*

Valley	Pre-medieval settlement and agriculture	Early field systems	Woodland industries	Mining and Quarrying	Water-powered industry	Designed landscapes	Medieval buildings	16 th /17 th century farmhouses	Villas
Langdale 13	**	***	**	***	**	*	-	***	*
Windermere 17	***	***	***	**	***	***	***	***	***
Coniston 16	***	***	***	***	**	**	***	***	***
Duddon 15	***	***	***	***	**	*	*	**	*
Eskdale 14	***	***	**	**	***	*	**	**	*
Wasdale 8	**	**	**	*	-	*	**	*	**
Ennerdale 7	***	*	*	*	-	*	*	-	-
Buttermere 11	**	***	*	***	*	*	*	**	*
Borrowdale & Bassenthwaite 18	***	***	***	***	***	***	***	***	**
Thirlmere 7	**	**	-	**	-	*	**	*	-
Ullswater 14	***	**	**	***	*	***	***	***	**
Haweswater 8	***	**	*	*	-	*	**	***	-
Grasmere & Ambleside 13	*	***	*	**	***	***	**	***	***

The scoring demonstrates the contribution that nationally-important archaeological sites and listed buildings make to OUV. The weighting of industrial components matches some of the highest percentage shares for SHINE Industrial features shown in Table 4.8, for example in Coniston and Borrowdale (41% and 52%, the average being 32.4%). Reference to Tables 4.1-3 and 4.8, however, shows that the weighting in Table 4.5 towards the identified archaeological remains of medieval and earlier field systems underplays the importance of non-designated heritage assets in illustrating the development of the agro-pastoral land use system across the Lake District – a high percentage of Agriculture and Subsistence features (30.4%) being set within the context of the dominance and close inter-relationship of Ancient Enclosure and Unenclosed Land.

Medieval buildings, farmhouses and villas are shown in the three right-hand columns. Most medieval buildings and all 16th-17th century farmhouses are in active domestic use and thus ineligible for inclusion in agri-environment schemes. Similarly, villas in use as dwellings or for other purposes do not qualify. SHINE features within Designed Landscapes are not explicitly quantified, as it is Designed Landscapes as a whole that are considered to contribute to OUV, but they are included by being within them.

4.2.2 Conclusion: SHINE features making the most significant contribution to OUV

SHINE features making the most significant contribution to OUV are, therefore, those that provide evidence for and illustrate the development of its farmed landscape and the management of the fells as common land. In summary:

- Theme 1: A landscape of exceptional beauty, shaped by persistent and distinctive agro-pastoral and local industry:

All SHINE features are sited within landscapes that have been shaped by the Agro-pastoral Tradition, and enable appreciation and understanding of historic land use, through physical, visual and intellectual access to them. Of particular importance are those in the following categories which date from the prehistoric period:

- Agriculture and Subsistence: Archaeological features, structures and farm buildings make a very strong contribution to appreciation and understanding of historic land use – particularly of prehistoric to medieval land use in the grazed open commons and medieval to post-medieval land use in enclosed land.
- Domestic, Religion, Ritual and Funerary: sites and structures dating from the prehistoric period similarly enhance appreciation and understanding of historic land use and settlement, particularly in the unenclosed commons.
- Industrial: Archaeological features and structures enhance appreciation and understanding of how the mineral resources of the Lake District have been exploited and exported since the Neolithic period within enclosed and unenclosed land, and also how fuel has been generated as a result of charcoal burning in woodland.
- Transport: archaeological features, including the remains of trackways and Roman roads in unenclosed land, linking valleys and extending beyond the Lake District, trackways within and relating to field systems and settlements and bridges enabling communication within and beyond the Lake District across streams and rivers.

- Theme 2: A landscape which has inspired artistic and literary movements:
 - Only a very small number of Commemorative and Recreational SHINE asset types result from or directly reflect changing perceptions of cultural landscapes and scenic beauty that underpins this theme, which is otherwise vividly expressed through a cultural heritage of villas, designed landscapes and other features not eligible for inclusion in SHINE. Access to and appreciation of SHINE features in the landscape, however, benefits people through access to and appreciation of different archaeological features and sites dating from the prehistoric period, of individual structures such as sheep folds and fields and of a variety of historic (mostly farm) buildings using distinctive local styles and materials. The Statement of Outstanding Universal Value states – with reference to Criterion V for the selection of WHSs - that the spiritual and physical benefits provided to people by the landscape are founded on the inherited landscapes and traditions of agro-pastoralism and underpinned by the aims of the National Park ‘to maintain the scenic and harmonious beauty of the cultural landscape; to support and maintain traditional agro-pastoral farming; and to provide access and opportunities for people to enjoy the special qualities of the area and have developed in recent times to include enhancement and resilience of the natural environment.’
- Theme 3: A landscape which has been the catalyst for key developments in the national and international protection of landscapes:
 - This is again underpinned by the agro-pastoral landscape and traditions, which illustrate understanding of the Lake District landscape as the catalyst for key developments in the national and international protection of landscapes. Visitors and local businesses benefit from good stewardship of the historic environment and of individual heritage assets, evident through the care and maintenance of archaeological features and historic farm buildings.

The SHINE features, as a subset of the HER, that have particular relevance and significance for agro-pastoralism – critical to Theme 1 and underpinning Themes 2 and 3 – are, therefore, those for Agriculture and Subsistence. These are integral to, and their survival is partly conditioned by, patterns of land use that are reflected in the whole Cultural Landscape, which almost wholly comprises unenclosed land within the open commons and the enclosed land within the valley sides and bottoms which occupies the remainder. They have a close relationship, particularly in unenclosed land, to Domestic and Religious sites and are also largely conserved by the reversion of land to rough ground or to long-term pasture. There is also a strong inter-relationship between the presence of above-ground and below-ground remains and SHINE features of Domestic type, which are concentrated in unenclosed land and frequently include earthworks resulting from agricultural use such as field systems in association with prehistoric huts, medieval settlement sites and more rarely shielings. Of particular note is:

- That the high concentration of prehistoric religious sites in unenclosed land also offers testament to how burial mounds, cairns and other ritual and burials were intended to be seen as part of the territories of prehistoric communities; the investment of resources in sites such as Castlerigg were also supported and enabled by agriculture in surrounding landscapes. Many cairns in this category are marked as being of uncertain date, and consideration was given to whether in terms of intrinsic significance they should receive a lower score; there is a risk, however, that this would undermine their high archaeological potential.

- The concentration of prehistoric sites, overwhelmingly categorised as above-ground features, within unenclosed land and in areas of (largely post-medieval) intakes and land that had remained open until recent enclosure, and consideration that its rarity in inbye can at least in part be attributed to the intensity of land use in core agricultural land from the first millennium AD.
- Similarly, medieval features that have been categorised as above-ground features and more rarely as structures are more commonly found in intake land rather than the core areas of medieval inbye land, due again to the nature and intensity of land use in inbye land.
- The increased significance of structures within the post-medieval category but again noting that they are numerically more dominant in areas of intakes and even unenclosed land. Although many field barns and farmsteads are included as SHINE records, it is clear that fewer of those that are sited within inbye land are included. Most fields and sheepfolds were erected within post-medieval intakes, land enclosed in the late 18th and 19th centuries and unenclosed land, which is where the relict traces of long-redundant agricultural activity are most densely concentrated.

Industrial features display differences in their distribution within woodland, enclosed land and unenclosed land. They include sites of outstanding significance, including 12 Neolithic stone axe factory sites and medieval bloomeries. Their dominance in terms of numbers is also, however, a consequence of the ease of desk-based identification (e.g. quarries, easily identified from historic maps and modern satellite images) and local variation in the extent of systematic fieldwork of industrial sites and features within easily-accessible unenclosed land, to a lesser extent farmland and within woodland. The latter, for example, has resulted in the addition of hundreds of charcoal-burning platforms to the HER, as in Duddon and within the extensive ancient woodlands that comprise over 10% of Coniston. Industrial features are overwhelmingly distributed across the agro-pastoral landscape, extractive industry only accounting for 0.16% of those areas large enough to have been mapped by HLC.

Finally, and with a view to the following stages of this report, it is important to reiterate that the SHINE features form a proportion of the total contribution that the historic environment – of heritage assets in the context of the open commons, enclosed land, woodland and designed landscapes in particular - makes to natural capital and these benefit streams (see Appendix 1).

4.2.3 Applying the SHINE methodology to the case-study areas

The maps for each case-study area show:

- The distribution of Scheduled Monuments, listed buildings and RPGs set against a simplified National HLC map, which provides the context for understanding the distribution of SHINE features
- The distribution of SHINE features set against an HLC map supplied by the LDNPA and as published in the WHS Nomination Document.

Eskdale

Summary of significance

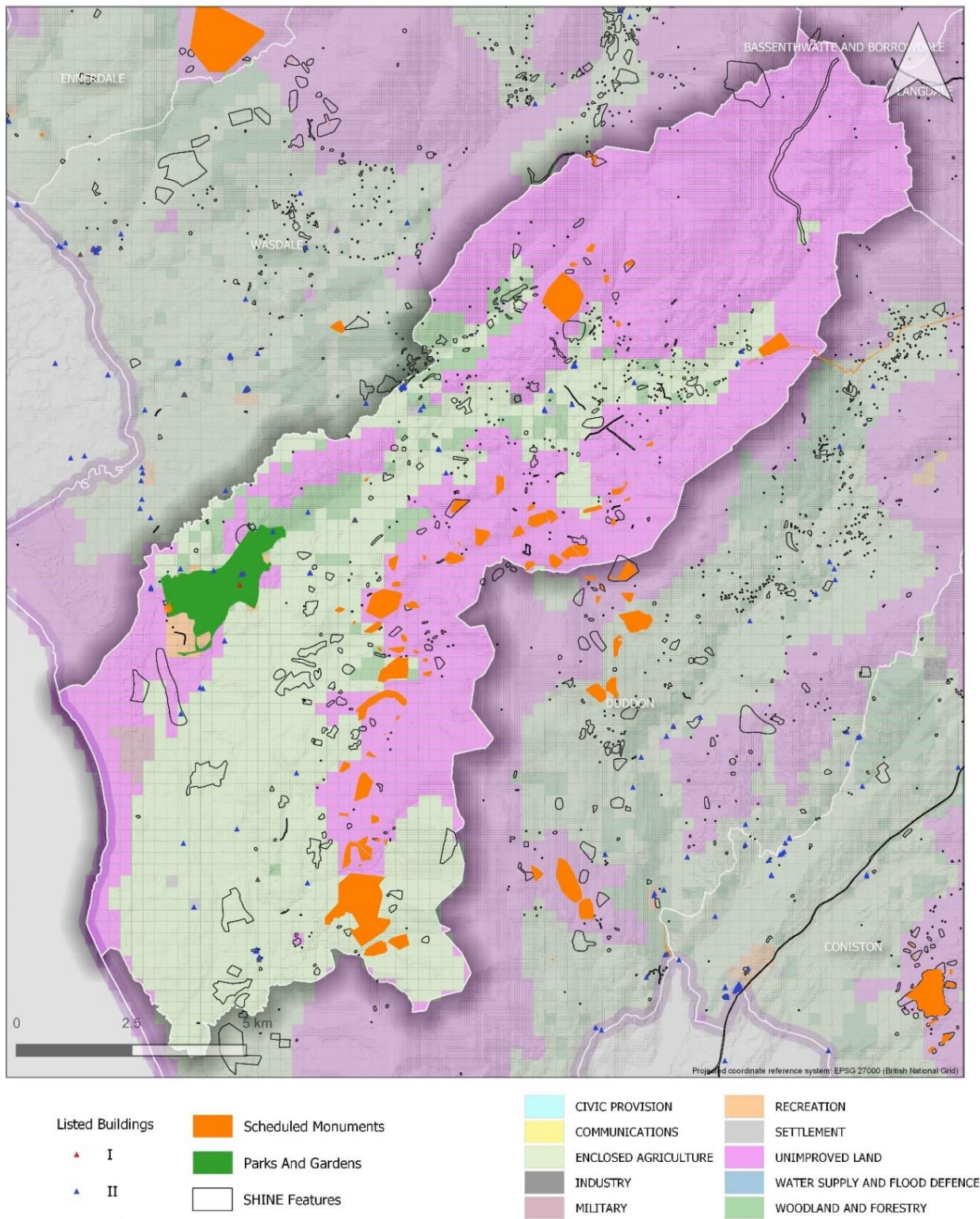
The Eskdale case study area is located in the south west of the LDNP (see Figure 2.1, p5) There are 451 SHINE features within an area of 162.39 km², the density of 2.77 features per km² being less than the Lake District median of 3.61. These are concentrated in the upper reaches of the enclosed intakes and inbye land (32.2%) and unenclosed land (52.8%, the Lake District average being 34.5%) in the valleys and bordering open commons to the north and east of Eskdale Green, of particular significance in this area being:

- Very high concentrations in a regional and national context of Romano-British and especially prehistoric features of Agriculture and Subsistence, Domestic, Religious and Transport types (field systems, cairnfields, hut circles, trackways and ritual sites) in Unenclosed Land and also in some areas of Planned Enclosure (3.8%, being recent enclosure of rough ground), which at 1.1 and 16.6% greatly exceed the study-wide average of 0.34 and 6.6%; the importance of the SHINE features is heightened within the context of the Scheduled Roman forts at Hardknott and Ravenglass (part of the Hadrian's Wall World Heritage Site) and the many and often extensive Scheduled Monuments in Unenclosed Land. The parkland of Muncaster Castle also retained features of this period
- A concentration of Medieval features (10%, compared to a Lake District average of 8.9%), mostly of Agricultural type with some settlement and trackway earthworks (Domestic and Transport) in Unenclosed and Intake Land, almost all of the latter being Above-Ground features preserved by long-term pasture within enclosures that are probably later in date. The distribution of Medieval shielings, settlement and field systems in Unenclosed Land complements the size and distribution of coherent groupings, often intertwined with Prehistoric field features, that have been designated as Scheduled Monuments.
- A concentration of Post-medieval Industrial features (at 33.3% lower than the average of 54.3%) resulting from the minerals industry in the upper valleys, mostly in Intakes and at the edges of Unenclosed Land, which provides an accurate reflection of Industrial activity in Eskdale.
- Post-Medieval Agriculture and Subsistence and some Domestic features are concentrated to the north-east of Muncaster Castle, especially within Intake Land and including some notable peat houses and stock enclosures in Unenclosed Land. They largely avoid the inbye land of the valley as it broadens out to the sea, richer soils here being associated with larger farmsteads (rarely recorded in SHINE) and fields being enlarged into the second half of the 20th century. Monuments by Form display a similar pattern, most also being clearly Agriculture and Subsistence in origin.
- Following on from the distribution of Post-medieval Agriculture and Subsistence features, the relatively high percentage of structures (39.4%, average 36.9%) is again concentrated in Unenclosed Land and Intakes (including peat houses and many stock enclosures), leaving an evident shortfall in the number of field barns and farmsteads with traditional buildings recorded in SHINE.

Particularly notable when SHINE features are seen in relationship to designated heritage assets is the apparent localised distribution of medieval and earlier SHINE features in

relationship to an exceptionally high density of Scheduled Monuments in Unenclosed Land, and the much lower density of SHINE Structures and listed buildings in areas most affected by the enlargement and rebuilding of farms in the late 18th and 19th centuries (Figure 4.3). Large grey polygons in Enclosed Land are mostly ridge and furrow, those in Unenclosed Land being prehistoric hut circles and the group of peat huts and enclosures north of Boot.

LDNP: Eskdale SHINE Features and Designated Heritage Assets



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Figure 4.3: Eskdale – distribution of designated heritage assets, on a National Historic Landscape Characterisation base map

Introduction

Eskdale changes, in a relatively short distance, from high fells, through central lowland enclosed pasture, to the coastal plain. Each has its own character, with inevitable interconnections, as follows:

- Rough ground (Unenclosed Land) (85.65 km², 52.8%)
- Ancient Fields (52.34 km², 52.3%)
- Planned Fields (6.16 km², 6.2%)
- Post-war Fields (5.3 km², 3.3%)
- Ancient Woodland (52.34 km², 0.9%)
- Plantations (6.76 km², 4.2%)
- Parks and Gardens (1.06 km², 0.7%)
- Extractive Industry (0.06 km², <0.1%)
- Freshwater Body including Water Sports (1.06 km², 0.7%)

The earliest evidence for human activity in the valley is in the Mesolithic, c. 8,000BC, in the Esk estuary, with exploitation of the coastal resources, followed by a scatter of Neolithic sites including stone axe factories (e.g. Glaramara). There are more-extensive remains of Bronze Age settlement, field systems and ceremonial sites (stone circles) particularly in the upper reaches of the valley, in the 2nd millennium BC. The evidence for Prehistoric settlement within Unenclosed Land is closely linked to the presence of field systems and cairnfields with trackways. Roman activity is attested to by the two forts, at Ravenglass (with its well-preserved bath-house) and at Hardknott. Ravenglass was an important Roman port and supply point, linked via a contemporary road through Hardknott to the fort at Waterhead, south of Ambleside. Norse settlement, during the 9th to 11th centuries is reflected in place-name evidence and physical evidence such as stone crosses, for example, at Waberthwaite and Muncaster.

Following the Norman conquest of the Lake District in the late 11th century, most of Eskdale was incorporated into Copeland Forest. Over time, assarting (taking land out of the forest and into cultivation) established the pattern of small farmsteads and irregular stone-walled inbye on the valley floor that persists to the present day. There followed the transhumant pattern of summer stock grazing on the high fells that still exists, the evidence for which being in the form of shielings and trackways extending into the valley bottoms (which are included as SHINE features or as part of Scheduled Monuments in Unenclosed Land but are seldom identified as separate features where they form a more integral part of field systems defined by drystone walls)

The establishment of a vaccary (cattle ranch or dairy) at Brotherikeld by the Cistercian Furness Abbey in 1292 appears to be part of a further colonisation of the valley in the late 13th century – early 14th century, prior to the impact of the Black Death in the mid-14th century. Bootle, on the coastal plain, received its market charter in the early 14th century, although Ravenglass had received its charter in the early 13th century, perhaps reflecting its greater importance as a port, albeit a small one. Medieval bloomery sites associated with the iron industry date from the 13th century.

From the late 16th century onwards, intake occurred on the lower slopes of the fells, creating the familiar pattern of inbye, later intake and fell grazing seen elsewhere across

the Lake District. Outgangs provided access to and from the fells for grazing stock. Many Eskdale farms appear to have been rebuilt from the late 16th to the 18th centuries.

The uplands have also been used for peat cutting – and a particular feature of Eskdale is the large number of stone-built peat huts (Medieval in origin, rebuilt in the 18th century and in use into the 20th century) – and for wood fuel and kindling, and bracken for thatch and animal bedding. While there is some late 18th/19th century planned enclosure in the lowland there is none in the upper reaches of the valley, mainly because of the inhospitable topography. The valley was exploited for its minerals, particularly in the 19th century when the narrow-gauge railway was built (1875) to carry iron ore to the port at Ravenglass. It now functions as a tourist attraction.

Although a relatively remote valley now (and possibly busiest in the Roman period), Eskdale did not attract many visitors in the Post-medieval period and this perceived remoteness seems to have protected it from the worst of 20th century development. It has an important place in the agro-pastoral development of the Lake District, its exploitation for minerals and has a place in the development of the landscape conservation movement, albeit in the 1930s against tree-planting in the upper reaches of the valley, which campaigning reinforced the case for its later designation as a national park.

Analysis

A total of 451 SHINE features have been identified in Eskdale. These are concentrated to the east of the lower reaches of the valley and to the north-east of the RPG of Muncaster Castle; those in Enclosed Land relate to a small number of listed farm buildings, with higher densities outside the core areas of Medieval Inbye and including in areas of Recent (Planned) Enclosure that have been taken in from the fells.

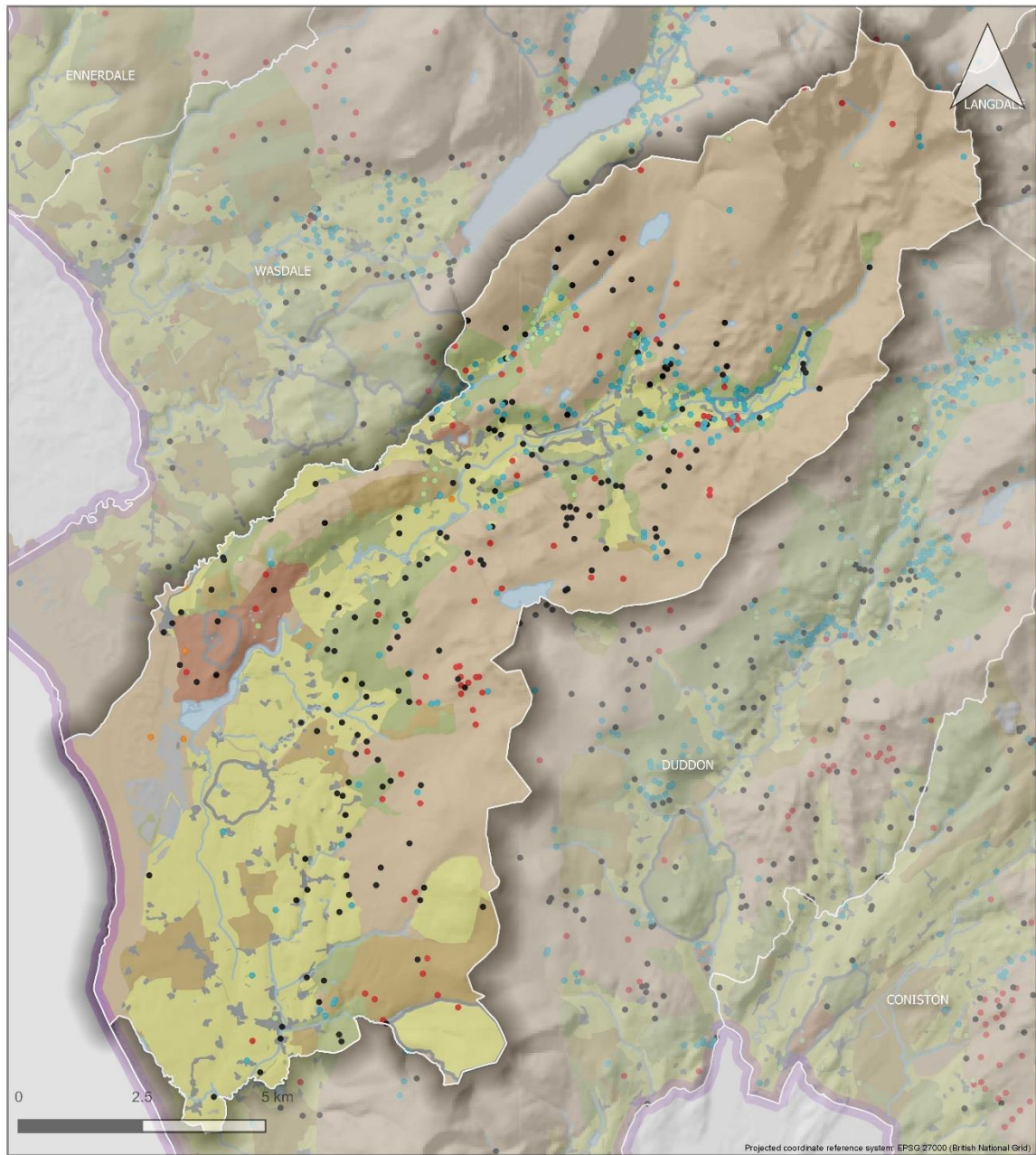
Table 4.6: Date of SHINE features in Eskdale

Period	Prehistoric	R-B		Early Medieval	Medieval	Post-Medieval	20 th century	Uncertain date
Eskdale	75	5		1	45	150	2	173

There are a considerable number of Prehistoric features (Table 4.6), including Mesolithic remains near the coast and a concentration of ceremonial and burial sites in Unenclosed Land and Recent (Planned) Enclosure in the higher reaches of the valley, for example in the Brat’s Moss area. The majority of prehistoric sites (Figure 4.4, red points) occur on Unenclosed Land, with a few outliers on the edges of Woodland and Enclosed Land on the north side of the valley and including what appears to be Intake on the south side of the valley, roughly opposite Boot. The cluster of prehistoric sites in the south of the valley is in Recent (Planned) Enclosure, that was taken in from the fells in the 19th century. Although few Romano-British sites are identified as manageable through agri-environment schemes, sites in the valley include two Roman forts (which would have had connecting roads and at least one (Ravenglass) civilian settlement (or vicus) and a bath-house. Their designated status excludes them from the SHINE dataset. Only one Early Medieval site is included but an increasing number of Medieval sites is recognised: these are concentrated within Enclosed Land, and at a finer level predominantly within Intakes, the long and predominantly pastoral use of which has led to a higher level of protection than in the Inbye land (Figure 4.4). The most dated sites are allocated to the Post-Medieval period (Figure 4.4, blue points), with a heavy emphasis within Intakes and on the edges of Unenclosed Land in the upper reaches of the valley with a significant

number of Industrial sites of varying degrees of scale. The highest number of sites is in the Uncertain category, although the great majority seems to date from the later Medieval or Post-Medieval periods. These occur principally on the land immediately below the Unenclosed Land, seemingly mostly sandwiched between the A595 and the fells to the east, in the lower valley. Elsewhere in Eskdale, these sites of Uncertain date are mainly within Enclosed Land with easy access to Unenclosed Land; where they are located on Unenclosed Land, they neither extend onto the higher fells at the head of the valley to the north-east nor onto the high land to the south-east that forms the watershed with Duddon valley (Figure 4.4).

LDNP Cultural Landscapes: Eskdale SHINE Features by Period



- | | | | |
|------------------------------|-----------------------------|-----------------------------|-------------|
| ● PREHISTORIC (pre-43AD) | ● EARLY MEDIEVAL (410-1066) | ● POST-MEDIEVAL (1540-1900) | ● UNCERTAIN |
| ● ROMANO-BRITISH (43-410 AD) | ● MEDIEVAL (1066-1540) | ● 20TH CENTURY | |

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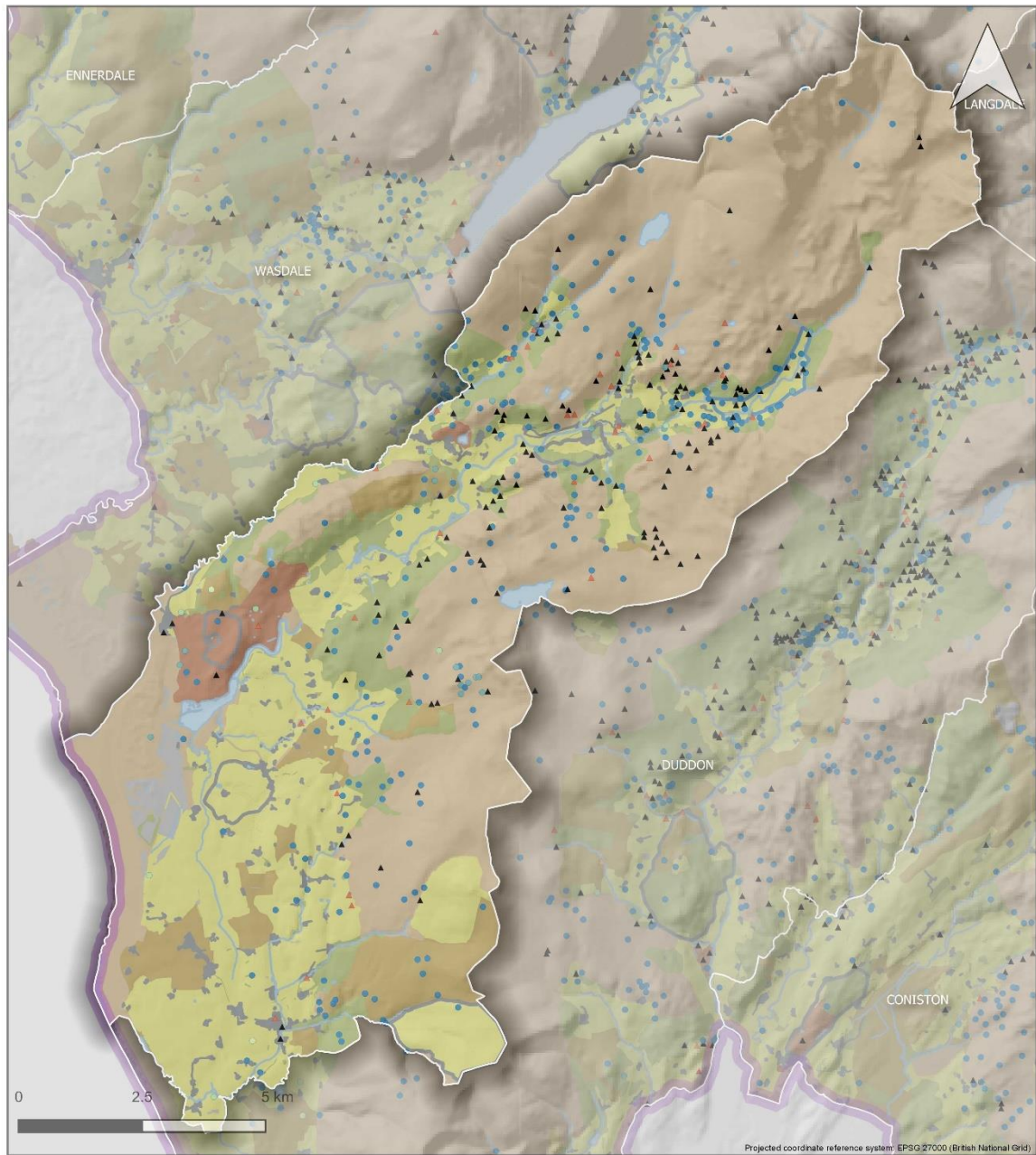
Figure 4.4: Eskdale – distribution of SHINE features by Period, on a Lake District Historic Landscape Characterisation base map

Table 4.7: Form of SHINE features in Eskdale

Form	Above ground	Below ground	Above + below ground	Structures
Eskdale	238 (52.8%)	25 (5.5%)	10 (2.2%)	178 (39.4%)

The highest number of features (52.8% out of a survey-wide score of 59.9%) in the Form category (Table 4.7) are above-ground remains – remains of earthwork and stone-built features that are not substantial enough to be identified as Structures. Structures is the next highest category (39.4% out of a survey-wide score of 36.91%), and mostly comprise field barns and other farm buildings within Enclosed Land, and mostly sheep folds, biolds and peat houses within Unenclosed Land and Enclosed Land (sheep folds and biolds being concentrated in the more-recently enclosed Intakes within Enclosed Land). Sites which combine structures and above-ground features (25) are mostly categorised as Industrial, Domestic (including the peat houses above Boot Bank) and Agricultural (sheepfolds and buildings). Many are located on the boundary of Enclosed Land with Unenclosed Land and Woodland (Figure 4.5). A much smaller proportion (5.5%) is identified as having below-ground remains only and an even smaller proportion (2.2%) as having both above- and below-ground remains. Notable again is the concentration of SHINE features in Intakes within Enclosed Land, and in Woodland and Unenclosed Land (Figure 4.5), the latter being where most Scheduled Monuments (predominantly Romano-British and Prehistoric sites with an intermixture of hut circles, trackways, field systems and funerary cairns) are located. Their occurrence often in apparent clusters suggests they are topographically-driven in their location.

LDNP Cultural Landscapes: Eskdale SHINE Features by Form



- | | | |
|-----------------------------------|--|--|
| ● Above-ground feature(s) | ● Well-preserved below-ground feature(s) | ▲ Structure(s) + above + below-ground feature(s) |
| ● Above + below-ground feature(s) | ● Degraded below-ground feature(s) | ▲ Structure(s) + above-ground feature(s) |
| ● Below-ground feature(s) | ▲ Structure(s) | ▲ Structure(s) + below-ground feature(s) |

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Figure 4.5: Eskdale – distribution of SHINE features by Form (Legibility), on a Lake District Historic Landscape Characterisation base map

Table 4.8: Type of SHINE features in Eskdale

FISH category	Agric & Sub	Domestic	Industrial	Religious	Transport	Monument (by Form) & Unassigned	Other Categories
Eskdale	170	44	88	71	16	52	10

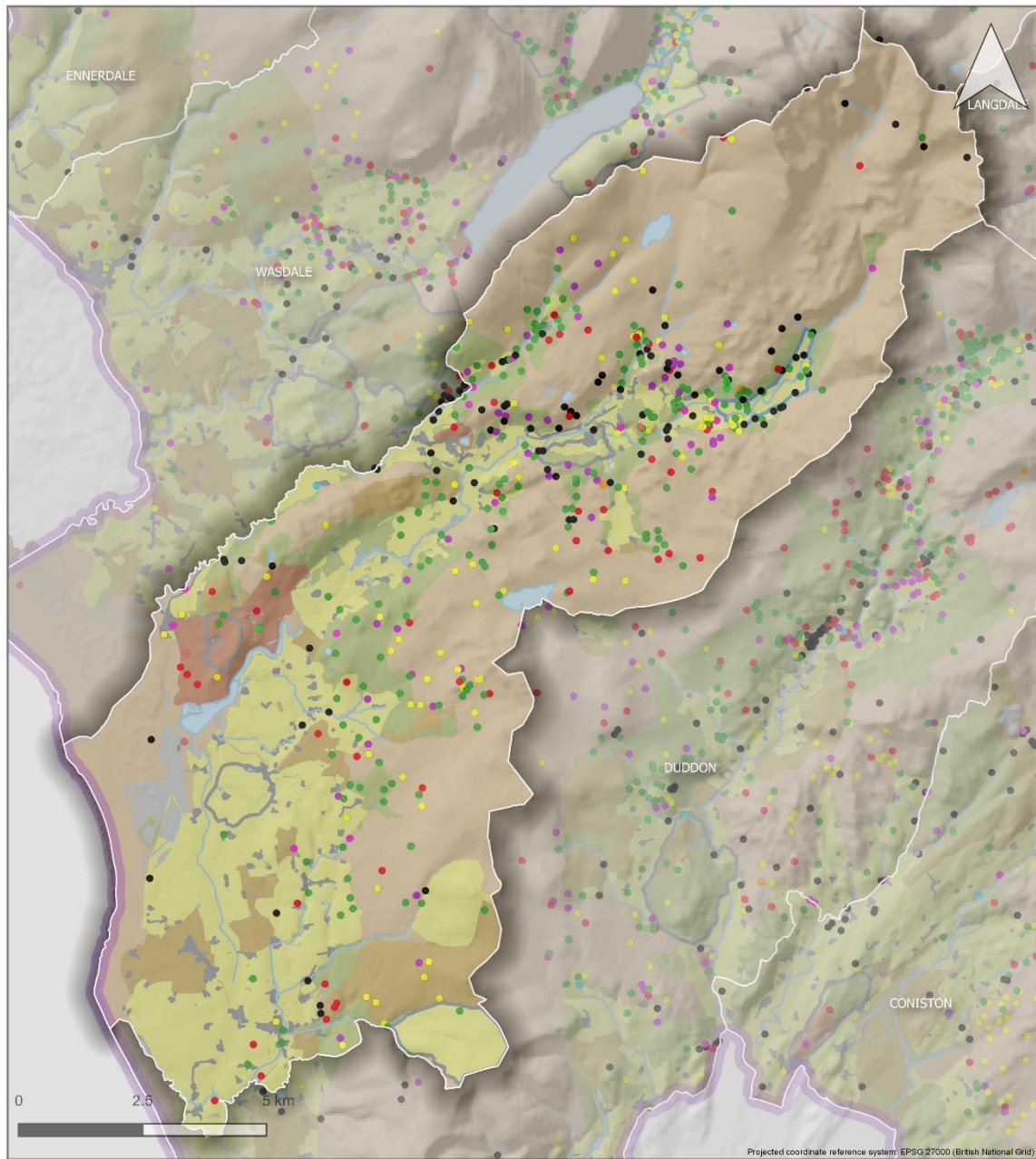
In keeping with the Agro-Pastoral Tradition, recognised as the principal OUV of the WHS, the predominant category of site in Eskdale is that of Agriculture and Subsistence (37.6%), emphasising the importance agriculture has played in the Lake District from the prehistoric period to the present (Table 4.8). These are dispersed across Enclosed and Unenclosed Land, but with the following notable distinctions:

- Within Enclosed Land, there is a notable concentration of features (mostly fields, wash folds and sheepfolds) within Intake land, outside the core of medieval Inbye land
- Those within Unenclosed Land again include a high number of structures for the management of sheep, but are dominated by features of Romano-British and prehistoric date whose distribution respects extensive Scheduled Monuments which also include domestic and ritual features and trackways.

When Agriculture and Subsistence features are combined with other categories that contribute significantly to or support the Agro-Pastoral Tradition (Domestic, Religion, Transport and Monuments by Form) the proportion in this overall category rises to 78.2%, concentrated in Unenclosed Land. A small number of Prehistoric and later features, including a model farm, are sited within the designed landscape of Muncaster Castle.

Industry, an essential part of the Lake District economy for millennia, has left its mark in Eskdale and SHINE sites form an additional 19.5% of the total for the valley; these are concentrated in the iron-producing north-east part of the valley (Figure 4.6), and include charcoal-burning platforms within Woodland. These Industry sites are located mainly in Enclosed Land but also within Woodland. Four Industrial locations occur at the very head of the valley, Post-Medieval industrial sites. One Monument (by Form) also occurs at this elevation. Elsewhere these Monuments (comprising 11.5% of the total in Eskdale) occur almost equally in Unimproved land and Enclosed Agriculture (Figure 4.6).

LDNP Cultural Landscapes: Eskdale SHINE Features by Broad Type



- | | | | |
|-------------------------------|------------------|-----------------------------------|----------------------------------|
| ● AGRICULTURE AND SUBSISTENCE | ● COMMUNICATIONS | ● GARDENS, PARKS AND URBAN SPACES | ● RELIGIOUS, RITUAL AND FUNERARY |
| ● CIVIL | ● DEFENCE | ● INDUSTRIAL | ● TRANSPORT |
| ● COMMEMORATIVE | ● DOMESTIC | ● MARITIME | ● UNASSIGNED |
| ● COMMERCIAL | ● EDUCATION | ● MONUMENT (BY FORM) | ● WATER SUPPLY AND DRAINAGE |
| | | ● RECREATIONAL | |

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Figure 4.6: Eskdale – distribution of SHINE features by Type, on a Lake District Historic Landscape Characterisation base map

Haweswater

Summary of Significance

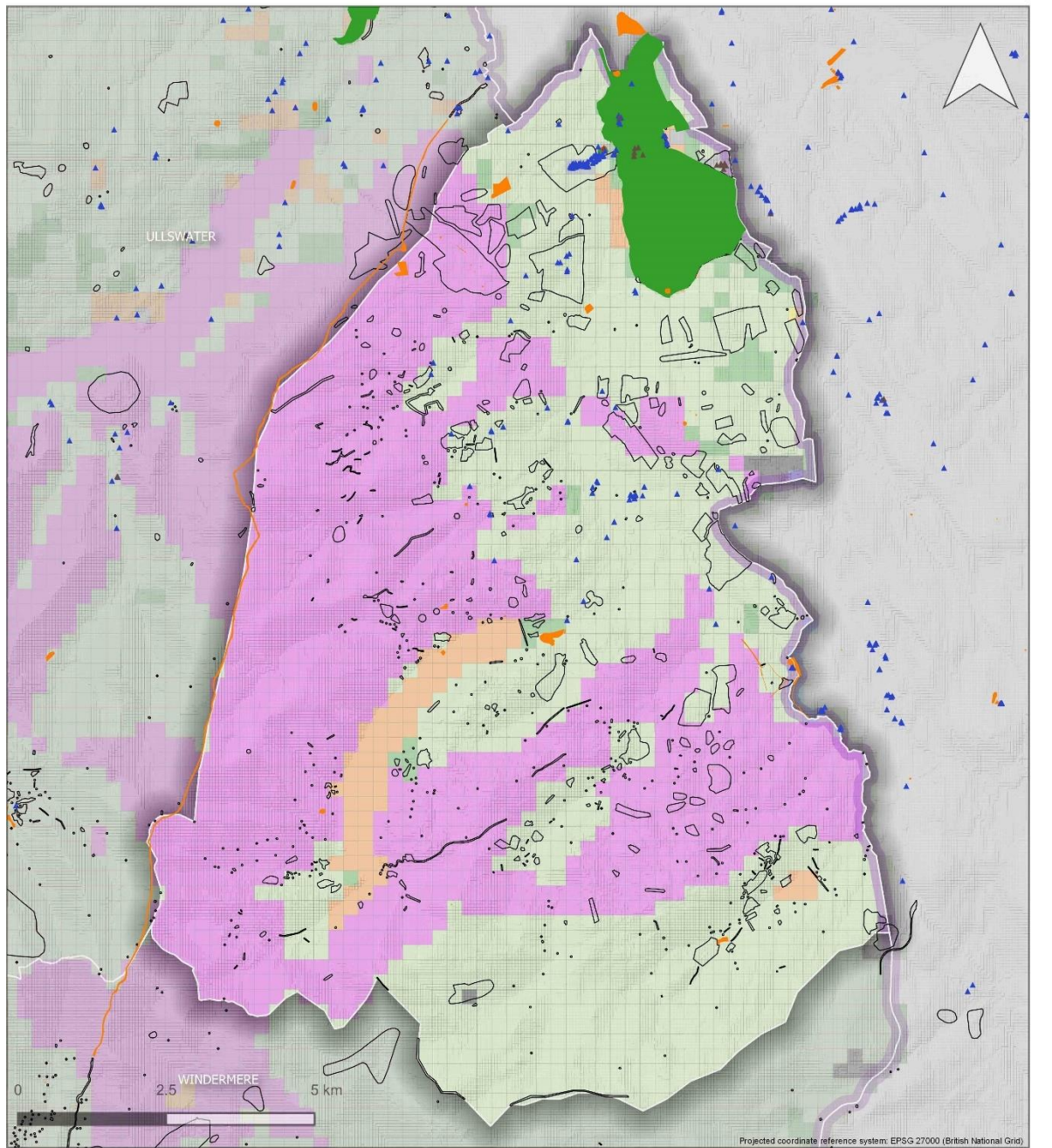
The Haweswater case study area is located in the north east of the LDNP (see Figure 2.1, p.5). There are 754 SHINE features within an area of 145 km², the density of 5.2 features per square kilometre being considerably higher (the second highest after Langdale) than the Lake District median of 3.61. Of particular significance are:

- The scattering of features of all dates across Unenclosed Land, which at 45% of the area exceeds the Lake District average of 34.5%; Prehistoric and particularly Medieval features (including granges and field systems associated with the management of the lands of Shap Abbey) exceed the Lake District average for SHINE features, at over 9% (average 6.58%) and 20.16% (average 8.93%), prehistoric Religious features being almost wholly located within Unenclosed Land and areas of Recent (Planned) Enclosure of open commons. Although many Scheduled Monuments are small in scale and thus intermingled with SHINE features, areas with fewer SHINE features have Scheduled Monuments, including the Roman road along the valley's western boundary, or – notably within the large late enclosures around Sleddale Pike – are in areas of the highest ground which have little other recorded evidence for settlement and land use.
- Medieval settlement (Domestic) and land use features (Agriculture, e.g. lynchets and ridge and furrow) are also concentrated within some areas of Intakes and the Designed Landscape of Lowther Castle but are again relatively uncommon within the core more-intensively cultivated areas of Medieval arable farmland, which as it extends from Haweswater towards Lowther has more in common with the historic pattern of the Eden valley – village-based farmsteads surrounded by strip fields with routeways to the open fells.
- Recorded Post-medieval features are 4.6% lower, at 50%, than the Lake District average, and include high densities of Industrial features (resulting from quarrying, minerals and the 20th century water industry) which have a markedly different distribution than those of the Agriculture and Subsistence type which are rare in core medieval agricultural land.
- SHINE structures offer significant evidence for stock husbandry, in particular the management and care of sheep, in Unenclosed Land and some Intakes, in contrast to their sparsity in areas of core Medieval farming and settlement where farmsteads (with dense concentrations of listed buildings within conservation areas) are concentrated in villages. Farmsteads of the Lowther estate, although well-known for its agricultural improvements in the post-1750 period, are poorly represented in SHINE.

Comparison of the distribution of Scheduled Monuments, which are relatively few in number, and listed buildings to SHINE features underlines the importance of non-designated archaeological features recorded in SHINE and farmstead buildings which have no current record. Non-designated heritage assets, including a high proportion of prehistoric date, are scattered across Unenclosed Land to a greater extent than in other case study areas. Relatively few surviving traditional farmsteads in Enclosed Land are included as SHINE features, Relatively few surviving traditional farmsteads in Enclosed Land are included as SHINE features, – including in areas where the Lowther estate was most active in rebuilding and reorganizing its farms from the late 18th century (Figure

4.7). Figure 4.7 also shows the largest-scale SHINE features in grey, mostly field systems and deserted prehistoric to medieval settlements and quarries.

LDNP: Haweswater
SHINE Features and Designated Heritage Assets



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Figure 4.7: Haweswater – distribution of designated heritage assets, on a National Historic Landscape Characterisation base map. Note the linear monument to the western boundary which is the Roman road at High Street.

Introduction

There is significant contrast between the landscape of high mountains and glaciated valleys on the one hand and the lower limestone landscape of the Lowther valley to the north and north-east, with a resultant differing content and character. The main valley was flooded in 1935 to create a reservoir. Almost half (45%) of what land remains is Registered Common Land. The area and proportion of land taken up by different types of historic landscape, out of a total area of 145 km², is as follows:

- Rough ground (Unenclosed Land) (65.25 km², 45%)
- Ancient Fields (39.47 km², 27.2%)
- Planned Fields (19.85 km², 13.7%)
- Post-war Fields (5.85 km², 4.0%)
- Ancient Woodland (0.44 km², 0.3%)
- Plantations (4.51 km², 3.1%)
- Parks and Gardens (3.19 km², 2.2%)
- Extractive Industry (0.48 km², 0.3%)
- Freshwater Body including Water Sports (4.73 km², 3.3%)

Prehistoric activity in the area is attested by the number of burial cairns on the high points of the fells around Haweswater, while burial and ceremonial monuments of Neolithic and Bronze Age date occur on the lower Askham Fell, west of Askham.

Roman period activity is reflected in settlement evidence in the high-level road at High Street, west of the valley, leading to and from the fort at Waterhead, south of Ambleside from the fort near Penrith.

Sculptural stone, place-name and pollen evidence indicate an Early Medieval presence in the area but further physical evidence does not currently exist. By the Medieval period, land in the valley was owned by the Premonstratensian Shap Abbey (est. 1190), the Lowther family (first documented 1184) and Askham manor (first documented 1280).

There is no Inbye extant along the reservoir in Haweswater and only a few vestiges of Intake survived inundation. Both Inbye and Intake survive in the Swindale valley to the south of Haweswater. Although the reservoir in Wet Sleddale (south of Swindale) has drowned some of the valley-bottom Inbye, small Medieval fields with ridge and furrow do survive beyond its boundary, along with a Scheduled deer pound that has Medieval origins. The south-facing valley sides contain a suite of Medieval cultivation terraces associated with nearby Sleddale monastic grange, now overlain by more-recent field boundaries.

The parkland around Lowther Castle and Askham Hall was remodelled in the 18th century. The estate at Lowther contains evidence of lynchets, a deserted Medieval village and a deer park. Fields around Askham and Helton reflect their origins in the Medieval period. The many examples of 16th century and later farmhouses, and later farm buildings, probably reflect the process of enclosure of those once-open Medieval fields, the individual strips now fossilised by their later stone field walls, and the enlargement of some farms which is reflected elsewhere in the Eden Valley area.

Few tourists and no villas reflect the relative remoteness of Haweswater, on the north-east edge of the Lake District massif and, while the valley was visited by Wordsworth and Coleridge and by Turner, it did not become a popular destination. The construction of the reservoirs at Haweswater and Wet Sleddale contributed to the landscape conservation movement in the 20th century though not to the same extent as the inundation of Thirlmere. Purchase of land by John Marshall in the early 19th century established its place in the early development of the conservation movement although the focus moved from here to more-popular valleys. Its principal contribution has been to the agro-pastoral development of the Lake District for which there are significant field system remains, particularly in Wet Sleddale and Swindale and of a different nature in the lower lands, for example, around Askham and Helton.

Analysis

A total of 754 SHINE features have been identified in Haweswater. These are distributed fairly evenly across the area, on both the hard rock of the fells and the limestone of the Lowther valley to the north-east. There is a relative lack of features on the highest ground to the far west and to the far south.

Table 4.9: Date of SHINE features in Haweswater

Period	Prehistoric	R-B	Early Medieval	Medieval	Post-Medieval	20 th century	Uncertain date
Haweswater	69	3	1	152	377	38	114

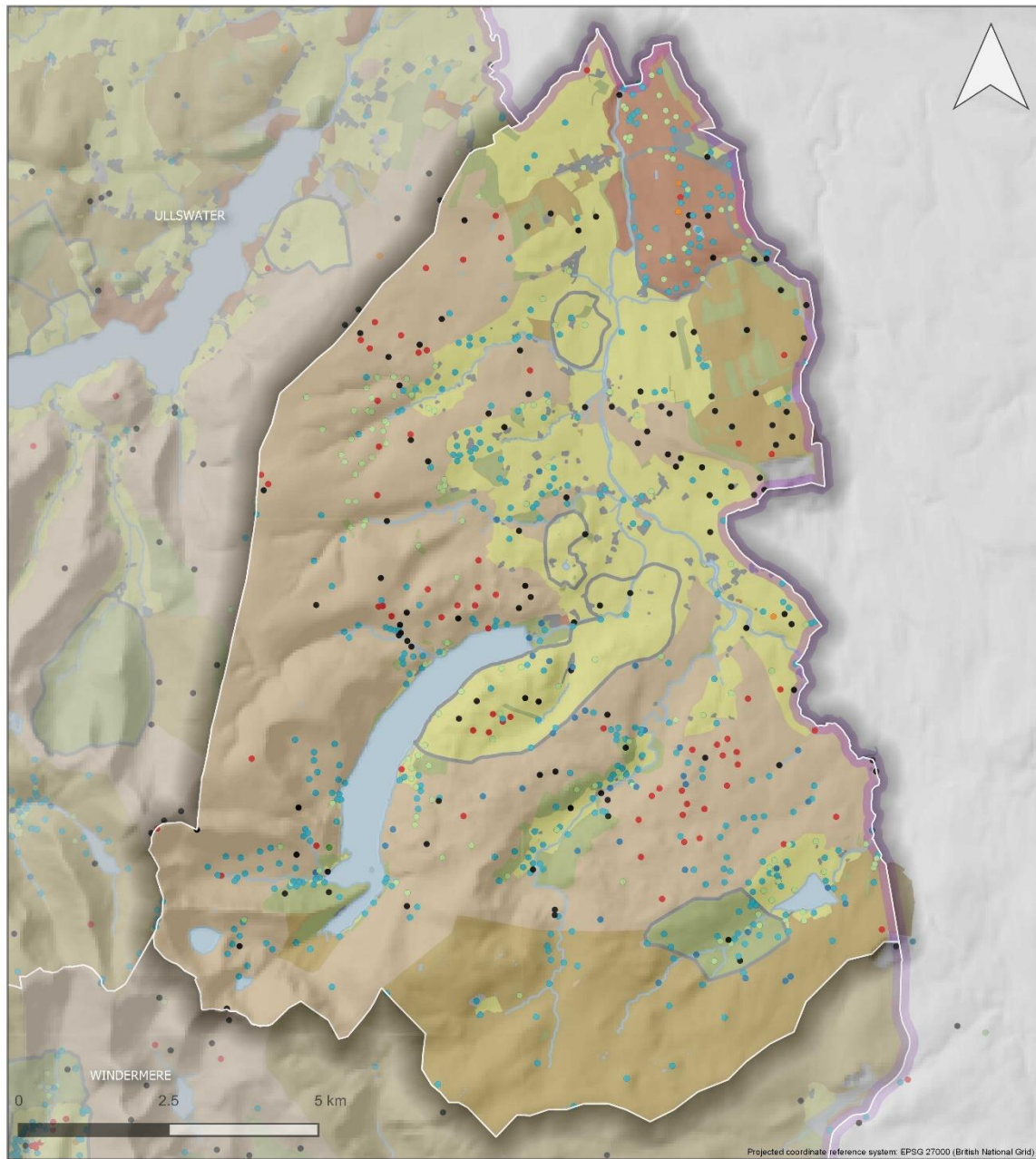
There are a considerable number of Prehistoric features (Table 4.9), with a concentration of ceremonial and burial sites in Unenclosed Land and Recent (Planned) Enclosure in the higher reaches of the valley to the west and south. The majority of Prehistoric sites occur on Unenclosed Land, with several isolated sites on Recent (Planned) Enclosure and Enclosed Land along the eastern boundary of the valley, as well as one in Lowther Park at the northern tip of the area (Figure 4.8). The western boundary of the valley is marked by the High Street Roman road that connected the Roman forts near Penrith and Ambleside. Only one Early Medieval site is identified, through hog-back stones at Lowther Church, with pollen evidence from Littlewater indicating extensive clearance in the late 6th/early 7th centuries.

152 Medieval sites are included in the SHINE dataset for Haweswater. They are distributed across the area, with a concentration, mainly sheepfolds and biolds, on the Unenclosed Land at the head of Heltondale Beck (Figure 4.8). The Medieval period includes many remains of buildings, settlements and their associated field systems in the Enclosed Land of the Lowther valley, as well as the establishment of Lowther Castle and Park and Setterah Park and its moated site. Although Shap Abbey and its associated listed buildings and Scheduled Monuments lies on the very edge of the area, near the boundary between Enclosed Land that includes the Medieval field system around Shap, and Unenclosed Land to the west, its wider influence is registered in granges such as Sleddale Grange and its associated field system in Wet Sleddale. There are also associated shielings on the higher ground.

The majority of SHINE entries for Haweswater is for the Post-Medieval period, some 50% of the overall total. Many are on Unenclosed Land, particularly at the head of Haweswater Reservoir and to its west and have an industrial focus (Figure 4.8). Other concentrations occur within Enclosed Land and on the boundaries between Enclosed and Unenclosed Land on the limestone. A small number of 20th century features occur

across the area, many of which are linked to the various reservoirs and their associated infrastructure, mostly on Unenclosed Land. Those SHINE entries whose date is Uncertain are distributed across the area, with a reduced number on the higher land to west and extreme south, with a majority still on Unenclosed Land and within the RPG at Lowther and the Recent (Planned) Enclosure immediately to its south.

LDNP Cultural Landscapes: Haweswater SHINE Features by Period



- PREHISTORIC (pre-43AD)
- ROMANO-BRITISH (43-410 AD)
- EARLY MEDIEVAL (410-1066)
- MEDIEVAL (1066-1540)
- POST-MEDIEVAL (1540-1900)
- 20TH CENTURY
- UNCERTAIN

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Figure 4.8: Haweswater – distribution of SHINE features by Period, on a Lake District Historic Landscape Characterisation base map

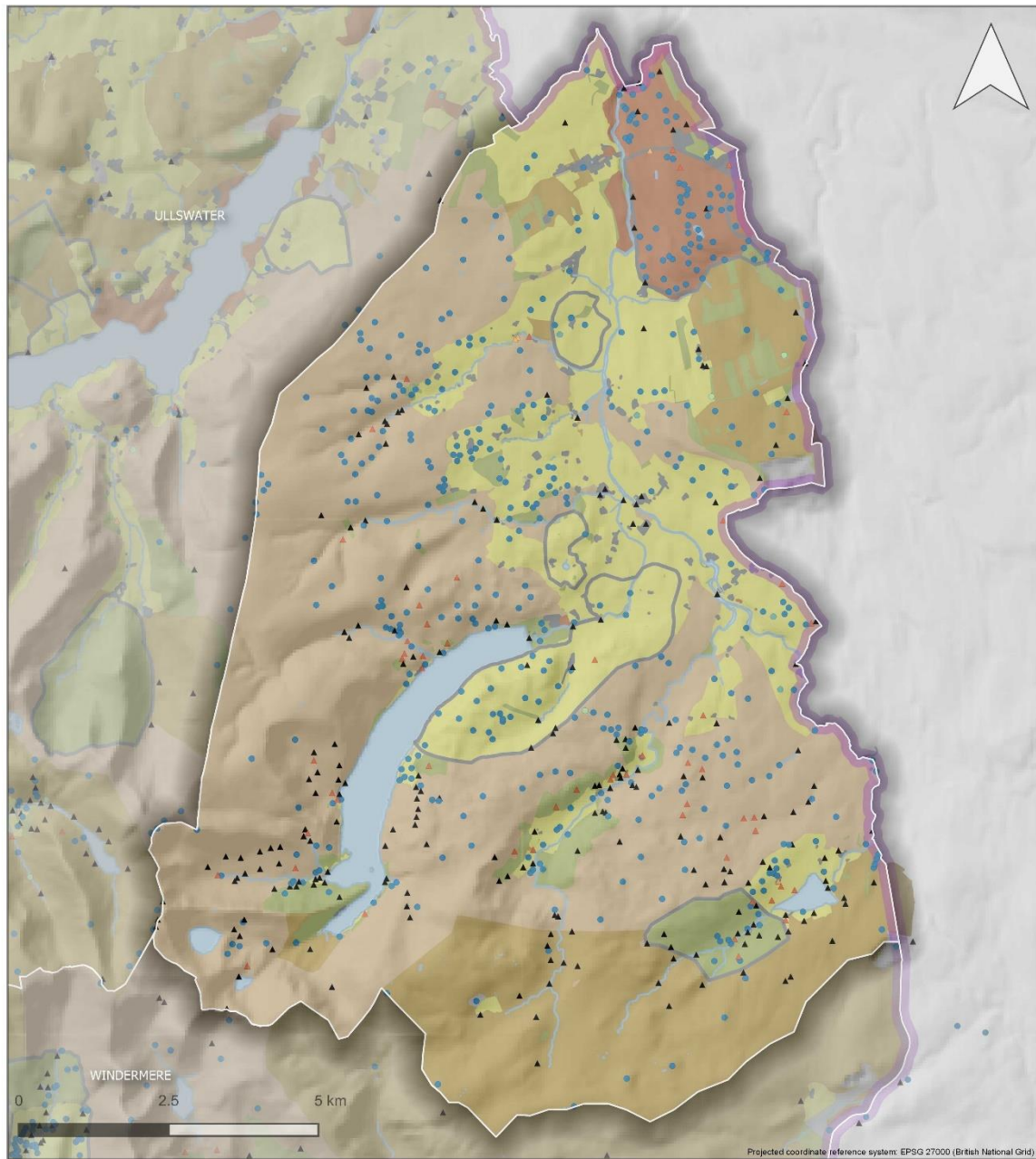
Table 4.10: Form of SHINE features in Haweswater

Form	Above ground	Below ground	Above + below ground	Structures
Haweswater	472 (62.5%)	3 (0.4%)	4 (0.5%)	275 (36.4%)

The highest number of features (62.5% out of a survey-wide score of 59.9%) in this Form category (Table 4.10) are above-ground remains – remains of earthwork and stone-built features that are not identified as Structures. The majority occur on Unenclosed Land with a significant number in the Bampton-Butterwick and Heltondale areas of Enclosed Land. There is a further concentration of above-ground structures in the Lowther RPG to the north.

Structures is the next highest category (36.4% out of a survey-wide score of 36.9%; Table 4.10). These appear mainly across the southern half of the Haweswater valley area (Figures 4.9 and 4.10) and mostly comprise sheepfolds and biolds as well as infrastructure associated with the water industry. They are principally on Unenclosed Land, extending in small numbers onto the Recent (Planned) Enclosure of the Shap Fells at the extreme south of the area. A comparatively small number of Structures occurs across all the land types in the northern half of the area, including the Designed Landscape of the Lowther RPG.

LDNP Cultural Landscapes: Haweswater SHINE Features by Form



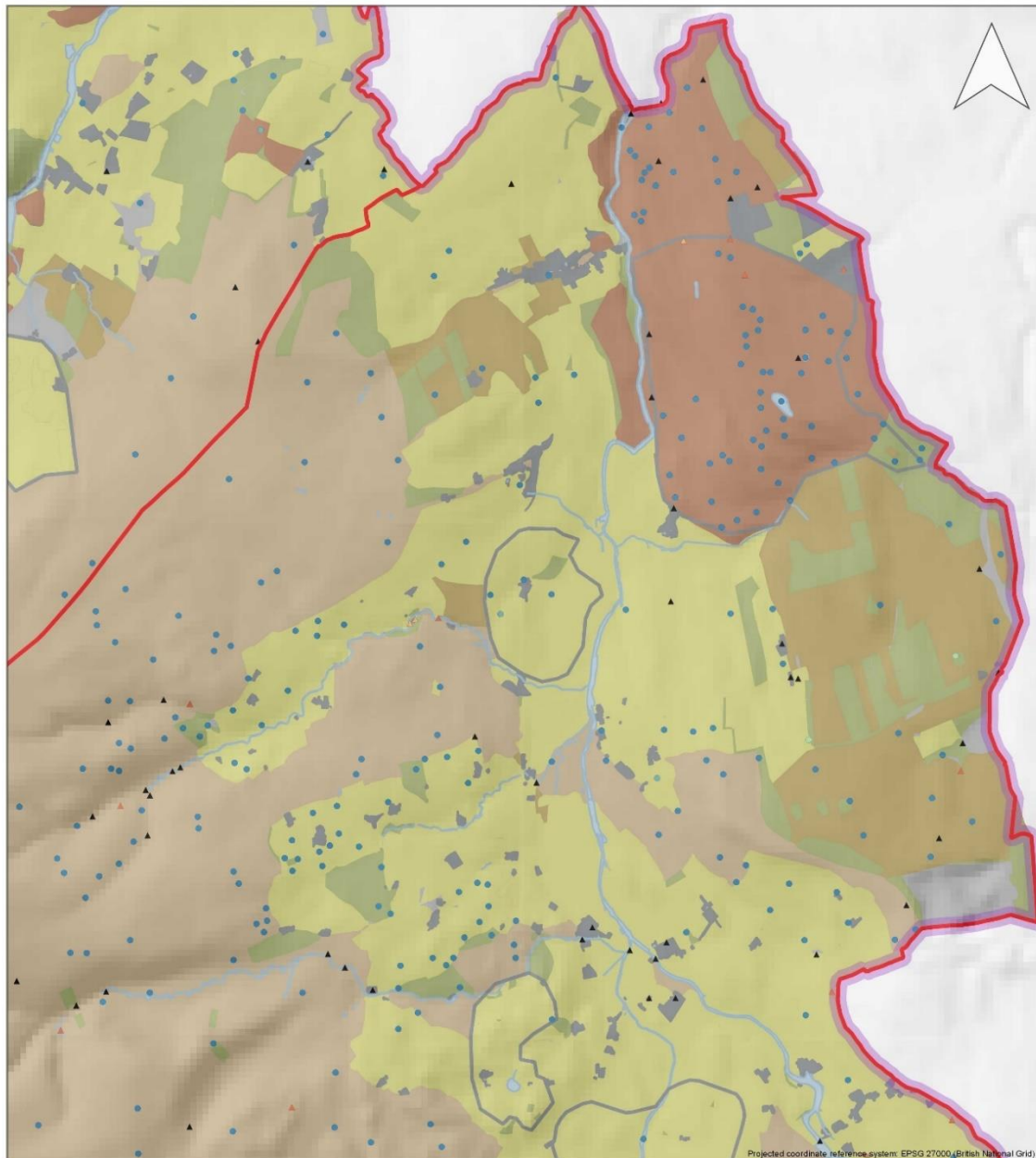
- | | | |
|-----------------------------------|--|--|
| ● Above-ground feature(s) | ● Well-preserved below-ground feature(s) | ▲ Structure(s) + above + below-ground feature(s) |
| ● Above + below-ground feature(s) | ● Degraded below-ground feature(s) | ▲ Structure(s) + above-ground feature(s) |
| ● Below-ground feature(s) | ▲ Structure(s) | ▲ Structure(s) + below-ground feature(s) |

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Figure 4.9: Haweswater – distribution of SHINE features by Form (Legibility), on a Lake District Historic Landscape Characterisation base map

LDNP Cultural Landscapes: SHINE features by form -
Haweswater (zoomed)



- | | | |
|-----------------------------------|--|--|
| ● Above-ground feature(s) | ● Well-preserved below-ground feature(s) | ▲ Structure(s) + above + below-ground feature(s) |
| ● Above + below-ground feature(s) | ● Degraded below-ground feature(s) | ▲ Structure(s) + above-ground feature(s) |
| ● Below-ground feature(s) | ▲ Structure(s) | ▲ Structure(s) + below-ground feature(s) |

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Figure 4.10: Haweswater – distribution of SHINE features by Form (Legibility), on a Lake District Historic Landscape Characterisation base map, showing the very low number of Structures within Enclosed Land where there are many isolated farmsteads with traditional buildings not shown in SHINE

Table 4.11: Type of SHINE features in Haweswater

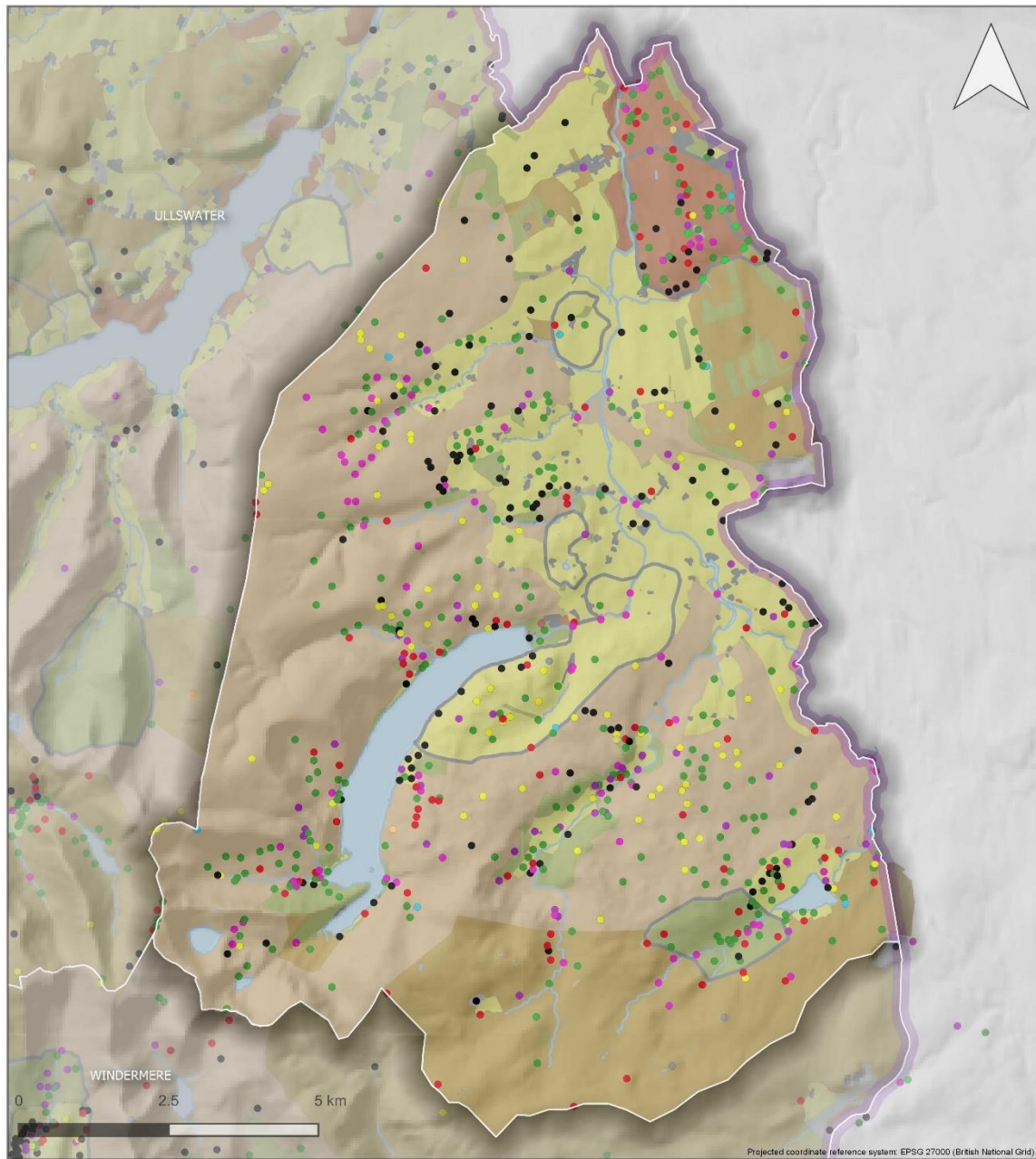
FISH category	Agric & Sub	Domestic	Industrial	Religious	Transport	Monument (by Form) & Unassigned	Other Categories
Haweswater	290	55	129	81	83	92	24

In keeping with the Agro-Pastoral Tradition, recognised as the principal OUV of the WHS, the predominant category of site in Haweswater is that of Agriculture and Subsistence (38.46%; Table 4.11), once again emphasising the importance agriculture has played in the Lake District from the prehistoric period to the present. Spatially, the majority of the identified sites occur in Unenclosed Land with a concentration in the western part of Enclosed Land in the Bampton-Butterwick and Heltondale areas of enclosure extending into the foothills of the fells (Figure 4.11).

The second largest group is Industrial (17.1%) with concentrations in both Unenclosed and Enclosed Land around Haweswater reservoir, Wet Sleddale and in and on the fringes of Enclosed Land in the Bampton-Butterwick and Heltondale areas. These mostly reflect activities associated with the water industry, and quarrying at various scales, with a little mineral extraction adjacent to the main reservoir. Monument (by Form) is the next largest group, at 12.2%, distributed across the area, with foci around Haweswater reservoir, Wet Sleddale and in the Lowther RPG. Transport (11%) features relate to river crossings in the Inbye Land and are scattered in Unenclosed Land and distributed throughout while Religious, Ritual and Funerary sites (10.7%) are almost exclusively to be found on Unenclosed Land, in the form of prehistoric burial cairns and stone circles and alignments. There is a small number of burial cairns within Naddle Forest, in the demarcated area that reflects the previous extent of a large deer park. Domestic (7.3%) features display a close inter-relationship with Prehistoric and Medieval settlement sites (Figure 4.11).

The small number of Other categories comprises only 3.2% of SHINE features within the Haweswater Valley area and includes 9 features specifically associated with Water Supply and Drainage.

LDNP Cultural Landscapes: Haweswater SHINE Features by Broad Type



- | | | | |
|-------------------------------|------------------|-----------------------------------|----------------------------------|
| ● AGRICULTURE AND SUBSISTENCE | ● COMMUNICATIONS | ● GARDENS, PARKS AND URBAN SPACES | ● RELIGIOUS, RITUAL AND FUNERARY |
| ● CIVIL | ● DEFENCE | ● INDUSTRIAL | ● TRANSPORT |
| ● COMMEMORATIVE | ● DOMESTIC | ● MARITIME | ● UNASSIGNED |
| ● COMMERCIAL | ● EDUCATION | ● MONUMENT (BY FORM) | ● WATER SUPPLY AND DRAINAGE |
| | | ● RECREATIONAL | |

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Figure 4.11: Haweswater – distribution of SHINE features by Type, on a Lake District Historic Landscape Characterisation base map

Langdale

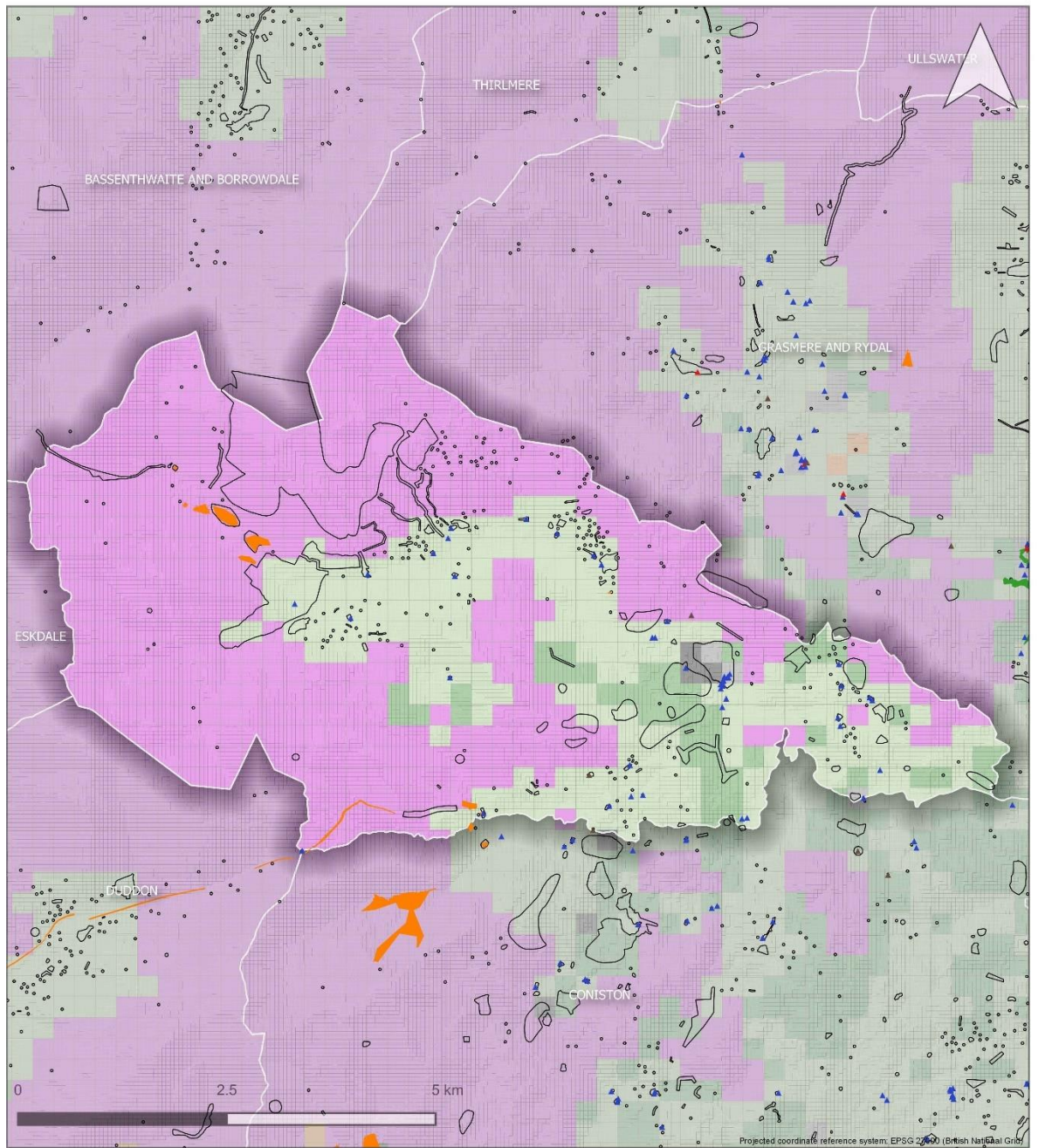
Summary of Significance

- The Langdale case study area is centrally located in the LDNP (see Figure 2.1, p5). There are 325 SHINE features within a small valley landscape of 42.20 km², the density of 7.77 being more than double the Lake District median of 3.61. Langdale is a 'classic' example of Anglo-Scandinavian settlement, the 'ring garth' recorded in the 13th century surrounding the core of arable and hay meadow Inbye around which farmsteads are located, with outgangs connecting this core running through the valley-side Intakes (most pre-dating the 17th century) to the open fells (Figure 4.12). Of particular significance are:
- The inter-relationship of SHINE and other designated and non-designated heritage assets to a valley landscape that almost wholly comprises open fells which occupy 62.4% of the area (the Lake District average being 34.5%) and Ancient Fields (28.2%, comprising Intakes, mostly enclosed by the 17th century, surrounding a core of Inbye Land probably continuously farmed for over a thousand years).
- The concentration of Medieval and Prehistoric features within Unenclosed Land and within or bordering Intakes, including around the Scheduled Monuments (Prehistoric field systems, settlements and cairnfields) around Mickleden Beck to the west.
- A concentration of Post-medieval features, which at 71.1% far exceed the Lake District average of 54.26, in the Intakes to the north of Great Langdale where they are associated with 16th-17th century farmsteads, and resulting from industrial activity to the east. Charcoal-burning platforms and other features remain within the Ancient Woodland which is concentrated around the Industrial areas to the east and which at 4.8% exceeds the Lake District average of 2.6%.
- A higher proportion of Structures than in other pilot areas that are representative of traditional farmsteads and farm buildings, accompanied by evidence for a more 16th-17th century farmhouses and farm buildings that have been listed.

Figure 4.12 also shows the largest-scale SHINE features in grey, notably medieval cairnfields and field remains in the Unenclosed Land to the west and, in the Enclose land and Woodland to the east, quarries and charcoal-burning platforms.

LDNP: Langdale

SHINE Features and Designated Heritage Assets



Listed Buildings

- ▲ I
- ▲ II
- ▲ II*

Scheduled Monuments

- Parks And Gardens
- SHINE Features

- | | |
|------------------------|----------------------------------|
| ■ CIVIC PROVISION | ■ RECREATION |
| ■ COMMUNICATIONS | ■ SETTLEMENT |
| ■ ENCLOSED AGRICULTURE | ■ UNIMPROVED LAND |
| ■ INDUSTRY | ■ WATER SUPPLY AND FLOOD DEFENCE |
| ■ MILITARY | ■ WOODLAND AND FORESTRY |

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Figure 4.12: Langdale – distribution of designated heritage assets, on a National Historic Landscape Characterisation base map

Introduction

Central to the Lake District, 'long dale' (in Norse) is a classic glaciated valley. Narrow and steep-sided, it evokes an atmosphere of enclosure and containment. The area and proportion of land taken up by the dominant types of historic landscape, out of a total area of 42.20 km², is as follows:

- Rough ground (Unenclosed Land) (26.35 km², 62.4%)
- Ancient Fields (11.89 km², 28.2%)
- Planned Fields (0.06 km², 0.1%)
- Post-war Fields (0.31 km², 0.1%)
- Ancient Woodland (2.03 km², 4.8%)
- Plantations (1.91 km², 0.2%)
- Extractive Industry (0.3 km², <0.1%)
- Freshwater Body including Water Sports (0.4 km², <0.1%)

Some of the most notable prehistoric heritage in the Lake District is represented by the Neolithic axe factories at Pike of Stickle, the output from which is to be found across the British Isles. Contemporary rock art has been found on two boulders at Copt Howe, en-route to Pike of Stickle from the south. Here is little further evidence of prehistoric activity in the area, other than the the scheduled prehistoric cairnfield, field system and funerary cairn at Mickleden Beck.

The Roman fort at Waterhead, south of Ambleside and on the shores of Windermere, had a large vicus (civilian settlement) adjacent to it. This fort was linked by roads to Hardknott and Ravenglass to the west and to the north, ultimately to Carlisle, via High Street.

Norse settlement from the 10th century is attested by place-name evidence and the possible community meeting place or 'thing' mound at Fell Foot Farm. The ring garth at the head of the valley dates from at least the 13th century, and is documented in a grant of 1216. With distinctive patterns of Inbye enclosure in the valley bottom, often with pollards along the boundaries, Intake of the lower valley sides occurred from the 16th-18th centuries. Thus was created the familiar pattern of Inbye, Intake and fells for grazing that occurs across the Lake District. Many of the vernacular farmhouses, particularly in Great Langdale, were rebuilt in the 16th and 17th centuries, rather earlier than the widespread evidence for rebuilding in the 1660-1750 period elsewhere in the Lakes, and contemporary with this expansion of Intake enclosure.

While the settlement of the upper part of the valley is relatively scattered, lower down, towards Ambleside, the impact of Industrial activity has left a more-dense pattern of settlement. The first of these is the Neolithic stone axe factory around Pike of Stickle, matched by the rock art on the main route into the valley at Copt Howe. Iron working is documented from the Medieval period, and may have promoted the development of woodland to supply forges such as at Lingmoor Fell. Post-medieval industries include gunpowder (at Elterwater) and quarrying of the distinctive green slate at Chapel Stile. Slate quarrying has been extensive in the valley, as has mineral extraction for copper and iron ore. Other industries include peat cutting, charcoal burning, potash production and milling. There appears to have been a decline in iron forges over the 18th century, and the

valley is not as significant in this respect as other parts of the Lakes. A very distinctive feature is the number of 17th century and earlier packhorse bridges.

Although Langdale has been at the heart of the landscape conservation movement for its special qualities, particularly in terms of land acquisition to conserve the landscape, it has not loomed large in the Picturesque movement nor has it suffered the proliferation of villas in the 19th century. It came late to tourism, for which it is now popular, but inspired Romantics such as the Wordsworths and, much later, W H Auden.

While providing inspiration for the Romantics and others, the valley is a key representative of the agro-pastoral development of the Lake District and for the landscape conservation movement which has resulted in so much of the valley bottom now being owned by the National Trust.

Analysis

A total of 325 SHINE features have been identified in Langdale. The majority of these occur in Enclosed Land, particularly in Intake, and date to the Post-medieval period. There is, necessarily, a corresponding dearth of SHINE features in Unenclosed Land and what few there are occur on the fells mostly to the east of Stickle Tarn and at the western end of the valley.

Table 4.12: Date of SHINE features in Langdale

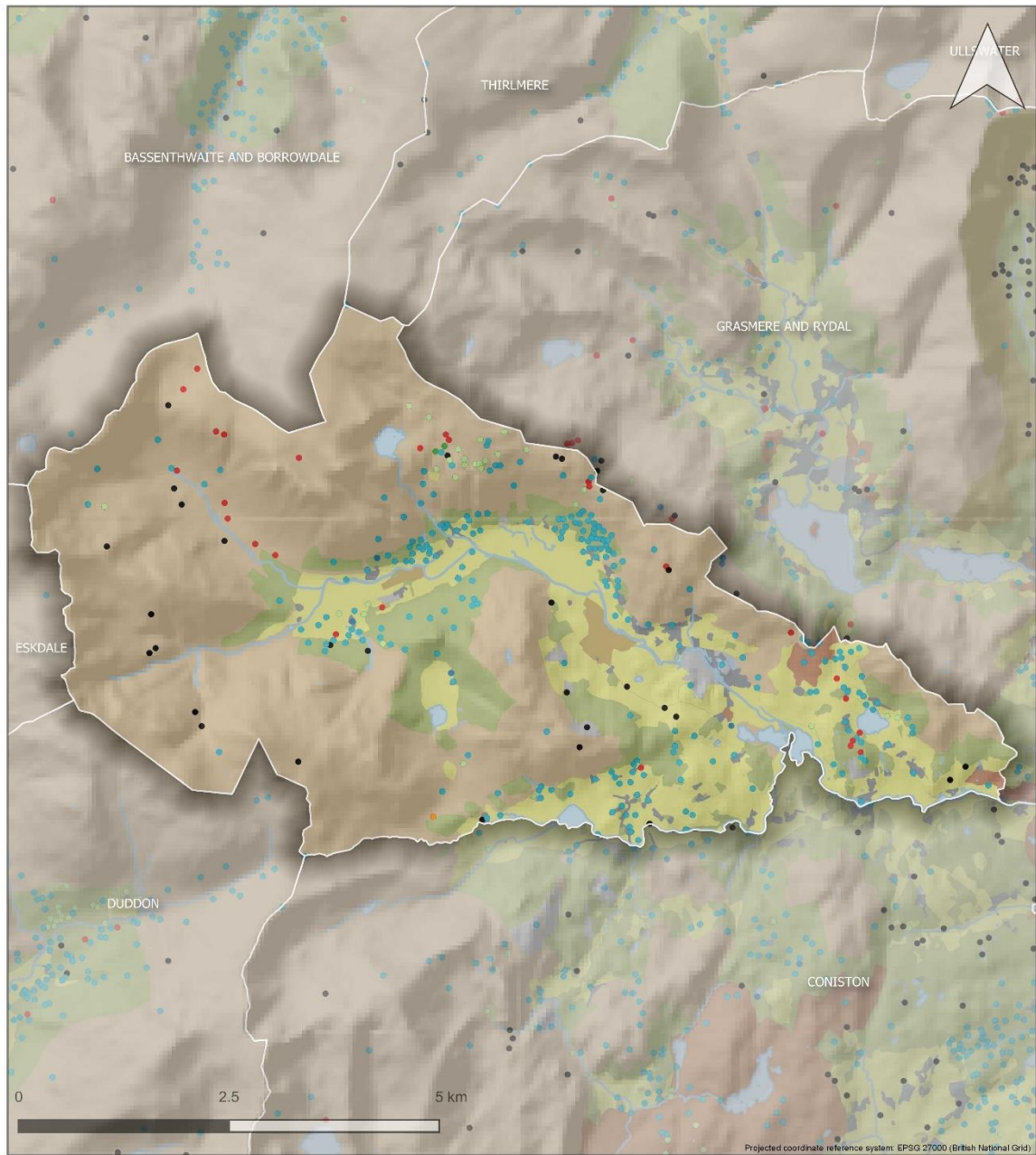
Period	Prehistoric	R-B	Early Medieval	Medieval	Post-Medieval	20 th century	Uncertain date
Langdale	26	1	2	30	231	4	31

The 26 Prehistoric features (Table 7.12) comprise 8% of the total of 325, of which 17 are located within Unenclosed Land, principally to the north and north-west of the valley bottom (Figure 4.13), including the Neolithic axe factories at Pike of Stickle. However, 9 occur within enclosed land of one form or another (Inbye, Intake, Woodland), with a cluster to the west of Loughrigg Tarn. Only one Romano-British site is identified, adjacent to the southern border of the valley, associated with the route between the Roman forts at Waterhead, south of Ambleside, and at Ravenglass, via Hardknott. Only 2 Early Medieval sites are identified, both in the cluster of sites dating from prehistory to the Post-Medieval period east of Stickle Tarn. Over half of the identified Medieval sites (9.2%) occur in this area of Unenclosed Land east of Stickle Tarn, comprising traces of boundaries, cultivation and probably transhumant settlement. Most of the remainder occur within Enclosed Land in the valley bottom (Figure 4.14).

Post-Medieval sites predominate, comprising 71.1% of the identified sites in the Langdale Valley, far exceeding the Lake District average of 54.3%. Some occur in Unenclosed Land, particularly relating to stock management in the high fells to the west, with a cluster south and east of Stickle Tarn and above Robinson Place. The majority however occur within Enclosed Land and particularly within Intake – and relating to clearance cairns, trackways, farmsteads, field barns, stock enclosures and cultivation - on the south-facing north side of the valley, between Chapel Stile to the east and Middle Fell Farm to the west.

There is a small number of 20th century sites with those of Uncertain date comprising 9.5% of the SHINE total.

LDNP Cultural Landscapes: Langdale SHINE Features by Period



- | | | | |
|------------------------------|-----------------------------|-----------------------------|-------------|
| ● PREHISTORIC (pre-43AD) | ● EARLY MEDIEVAL (410-1066) | ● POST-MEDIEVAL (1540-1900) | ● UNCERTAIN |
| ● ROMANO-BRITISH (43-410 AD) | ● MEDIEVAL (1066-1540) | ● 20TH CENTURY | |

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Figure 4.13: Langdale – distribution of SHINE features by Period, on a Lake District Historic Landscape Characterisation base map

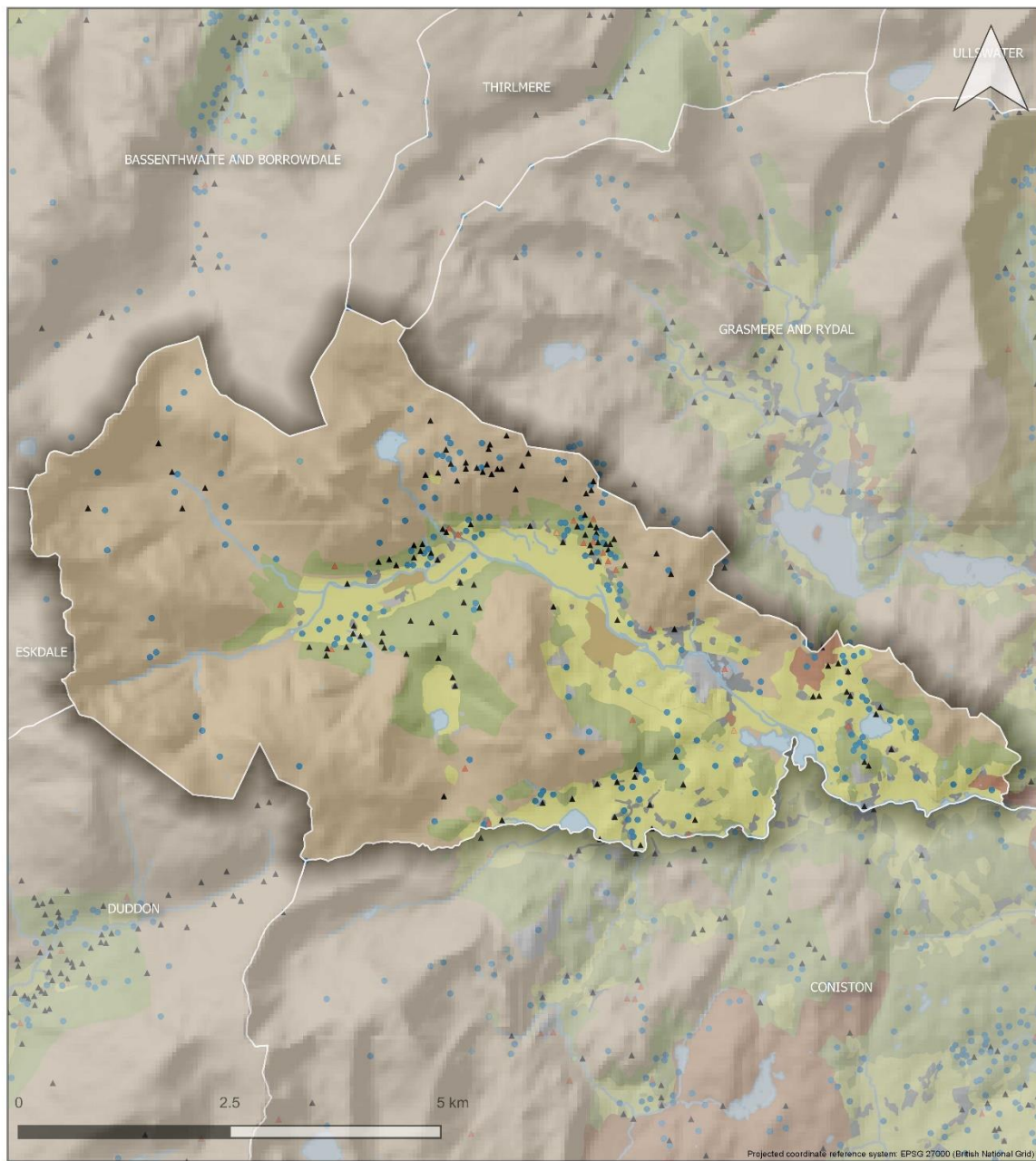
Table 4.13: Form of SHINE features in Langdale

Form	Above ground	Below ground	Above + below ground	Structures
Langdale	185 (56.9%)	0 (0 %)	1 (0.3%)	139 (42.7%)

The highest number of features (56.9% out of a survey-wide score of 59.9%) in this Form category (Table 4.13) are above-ground remains – remains of earthwork and stone-built features that are not identified as Structures. These are distributed throughout the valley with relative concentrations in Unclosed Land adjacent to Stickle Tarn and above Robinson Place. There is a further concentration in the Intake areas of Enclosed Land between Chapel Stile and Middle Fell Farm with a distribution throughout the Inbye land, though with some notable blank areas.

Structures is the next highest category (42.7% out of a survey-wide score of 36.9%). Their distribution is similar to that of the Above-ground features, with concentrations adjacent to Stickle Tarn, above Robinson Place and in Intake on the south-facing slopes between Chapel Stile and Middle Fell Farm. There is more of a concentration of Structures on or near the boundary between Inbye and Intake within Enclosed Land.

LDNP Cultural Landscapes: Langdale SHINE Features by Form



- | | | |
|-----------------------------------|--|--|
| ● Above-ground feature(s) | ● Well-preserved below-ground feature(s) | ▲ Structure(s) + above + below-ground feature(s) |
| ● Above + below-ground feature(s) | ● Degraded below-ground feature(s) | ▲ Structure(s) + above-ground feature(s) |
| ● Below-ground feature(s) | ▲ Structure(s) | ▲ Structure(s) + below-ground feature(s) |

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Figure 4.14: Langdale – distribution of SHINE features by Form (Legibility), on a Lake District Historic Landscape Characterisation base map

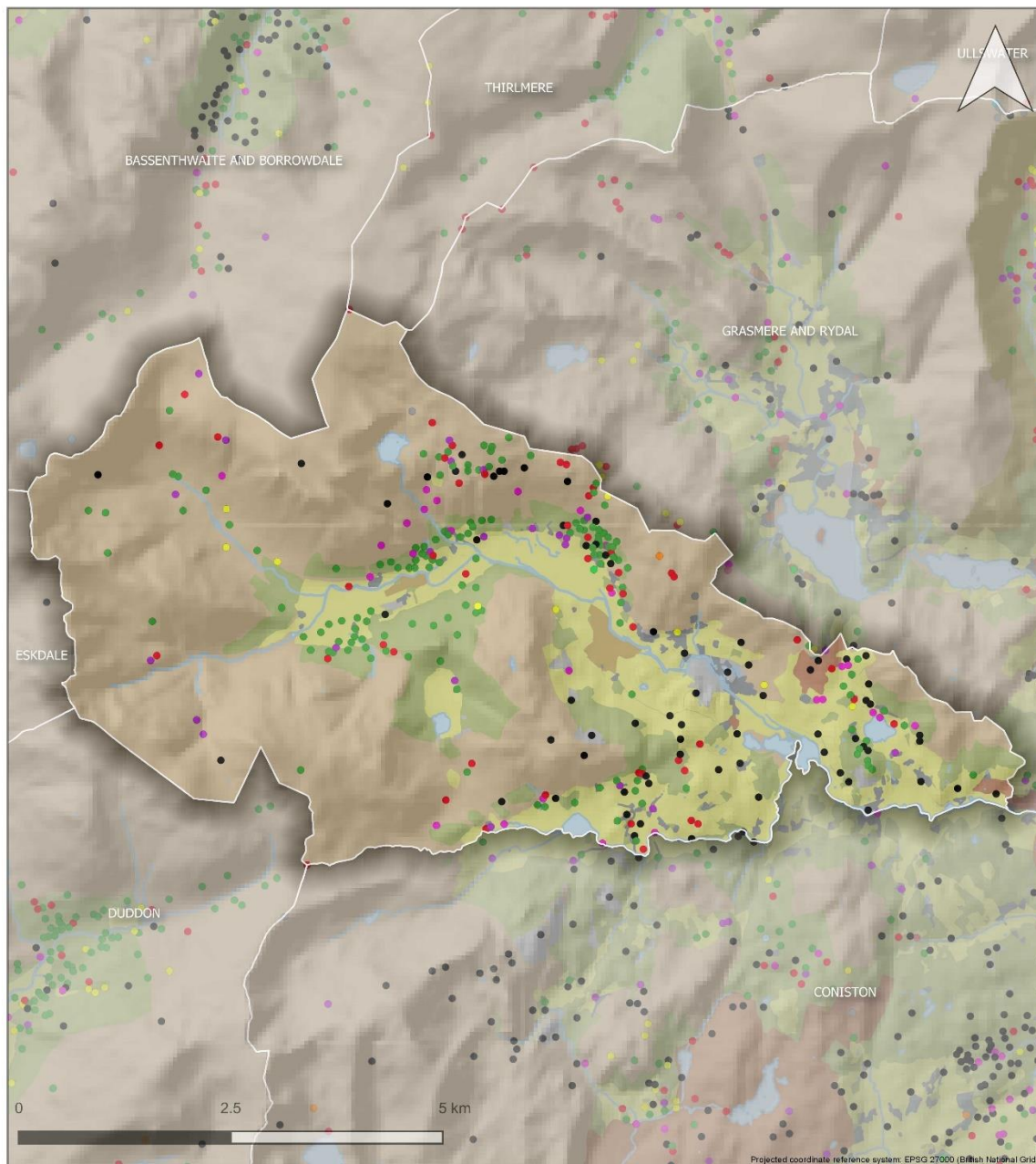
Table 4.14: Type of SHINE features in Langdale

FISH category	Agric & Sub	Domestic	Industrial	Religious	Transport	Monument (by Form) & Unassigned	Other Categories
Langdale	142	23	72	9	27	48	4

In keeping with the Agro-Pastoral Tradition, recognised as the principal OUV of the WHS, the predominant category of site in Langdale is, once again, that of Agriculture and Subsistence (43.7%) (Table 4.14), emphasising the importance agriculture has played in the Lake District from the prehistoric period to the present. Some of these sites are distributed across Unenclosed Land, at the western end of the valley and in the concentration east of Stickle Tarn. However, the majority occur within Enclosed Land and in particular in that area between Chapel Stile and Middle Fell Farm. There is also a small cluster south of the water course in the Inbye and north-facing Intake between Oxendale Beck and the confluence with Stickle Ghyll at the head of Great Langdale (Figure 4.15). Some to the east of the valley, at Wall End with its cruck barn and Stool End, survive from the expansion of farms and enlargement of fields.

Industrial is the next most-common category at 22.2% with a scatter throughout the Enclosed Land in the western half of the Valley and something of a concentration in the area south and east of Stickle Tarn but with few sites elsewhere in Unenclosed Land. The Industrial sites on the north-facing slopes south of Chapel Stile reflect the importance and extent of slate quarrying in the area. Monument (by Form) comprises 14.8% of the total and occurs principally in Unenclosed Land with a focus in the Little Langdale area. A number of these sites through the valley occur at or near the boundary of Enclosed and Unenclosed Land. Transport comprises 8.3%, mostly bridges and trackways, and Domestic 7.1% which includes a high proportion of Medieval and Prehistoric date in Unenclosed Land and to a lesser extent Intakes. Religious, Ritual and Funerary provides only 2.8% of SHINE entries and are chiefly of Prehistoric date within or on the edge of Unenclosed Land; 3 sites are located in the area of an extensive scheduled Prehistoric cairnfield and dispersed Medieval settlement in the Mickleden Beck-Langdale Fell area. All the other categories comprise 1.2% of the total of SHINE entries for Langdale.

LDNP Cultural Landscapes: Langdale SHINE Features by Broad Type



- | | | | |
|-------------------------------|------------------|-----------------------------------|----------------------------------|
| ● AGRICULTURE AND SUBSISTENCE | ● COMMUNICATIONS | ● GARDENS, PARKS AND URBAN SPACES | ● RELIGIOUS, RITUAL AND FUNERARY |
| ● CIVIL | ● DEFENCE | ● INDUSTRIAL | ● TRANSPORT |
| ● COMMEMORATIVE | ● DOMESTIC | ● MARITIME | ● UNASSIGNED |
| ● COMMERCIAL | ● EDUCATION | ● MONUMENT (BY FORM) | ● WATER SUPPLY AND DRAINAGE |
| | | ● RECREATIONAL | |

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Figure 4.15: Langdale – distribution of SHINE features by Type, on a Lake District Historic Landscape Characterisation base map

Upper Derwent Test and Trial area

Introduction

This area comprises the majority of the valleys of Borrowdale and Bassenthwaite together with Thirlmere and a small part of Ullswater (see Figure 2.1, p5). There are 1,133 SHINE features within an area of 360.18 km², 161.48 of this being Unenclosed Land (44.8%), 107.16 being Ancient Fields (29.5%) and 11.81 Planned Fields (3.3%). After Coniston and Ennerdale, Thirlmere has the highest proportion of land (9.17%, the average being 7.6%) taken up by Plantations, the overall figure for the T & T area being 28.87 km² (8%). There is 5.25 km² (1.46%) of Ancient Woodland, and 14.8 km² (4.1%). Taken as a whole, the area has a lower-than-average density of Prehistoric (2.3%) and Medieval (3.97%) features, the density of SHINE features in Unenclosed Land being far lower than in other case study areas (there is a clustering around the Scheduled Monuments at Carrock Fell), far outweighed by Post-medieval features (74.4%, Lake District average of 54.3%). These are overwhelmingly Industrial in origin, 33.1% with a higher share of this total being associated with the minerals industries south of Borrowdale. There are very strong contrasts in this area between:

- South of Derwent Water, where there is a very dense concentration of Post-medieval Domestic, Agriculture and Subsistence and especially Industrial features in the valleys and on the valley sides, with many stock enclosures extending into the Unenclosed Land.
- Thirlmere, which has a high proportion of Post-medieval Agriculture and Subsistence and Domestic features resulting from the abandonment of farmsteads and farmland.
- Northern Bassenthwaite. The pattern is very different in the broader valley landscapes dominated by Medieval farmland and Inbye to the north of Thirlmere and Bassenthwaite, where many Industrial features have been recorded but many farmsteads and field barns are not recorded in SHINE as Structures – in contrast to the scattering, excepting in Recently (Planned) Enclosure, of listed buildings across this area.

South of Derwent Water

South of the Jaws of Borrowdale, slate-walled valley-bottom Inbye extends into Seathwaite and Stonethwaite, originating in at least the 13th century landholdings of Fountains and Furness Abbeys (formalised in 1209) but probably much earlier. Place-name evidence includes some British elements, such as Derwent, but Scandinavian names predominate, suggesting much earlier Norse settlement and landscape enclosure for which little overt physical evidence exists. Subsequent development by both abbeys resulted in the establishment of extensive sheep granges, including a vaccary (cattle ranch) at Stonethwaite. This pastoral agriculture was enhanced by the development of Intakes of semi-improved grassland on the lower slopes of the fells, beyond the valley-bottom Inbye land, with summer grazing (seasonal transhumance) on the higher fells. Associated temporary summer encampments - shielings – associated with this practice occur, evidenced particularly above Langstrath.

Watendlath has developed from two Medieval ring garths in the valley bottom, with small early Intakes on the fell-side, above this Inbye. As elsewhere in Borrowdale, buildings date from the 17th to the 19th centuries and reflect the local vernacular.

North of the Jaws of Borrowdale, the valley bottom widens out and the enclosures appear more generous in extent. Settlement and farmsteads both north and south of the Jaws were established in the 16th century, after the Dissolution of the Monasteries and the breaking up of their landholdings e.g. Stair and Seatoller. Some of the larger enclosures may be of 18th century date. The settlement pattern is one of isolated farmsteads and small hamlets and villages with field boundary walls providing a strong overall pattern in the landscape, even though later amalgamation and some field enlargement has had an impact.

Bassenthwaite

East, south and north of Bassenthwaite Lake the valley widens and enclosure is more extensive with a greater proportion of Inbye and smaller amounts of Intake. Fields remain bounded by stone walls though (now) there occur more trees within those boundaries than in Borrowdale. Fields are generally larger than in Borrowdale, which may be an 18th century phenomenon. Intake does occur still, for example, south-east of Bassenthwaite, with a distinct moorland boundary line separating the Intake from the higher fells towards Bassenthwaite Common and Skiddaw.

As in Borrowdale, place-name evidence indicates a strong Norse element, suggesting settlement and agricultural exploitation of the area in the Early Medieval period. Blindcrake, to the north-west of the northern end of Bassenthwaite Lake, is a linear settlement with abutting fossilised Medieval strip fields, now enclosed by hedges and walls. This suggests a re-structuring of local land division separate to and probably later than the Scandinavian activity.

Farmsteads and associated barns date generally from the 17th century, with a preponderance from the 18th and 19th centuries. This is reflected in the associated settlements, such as Caldbeck, where the many such buildings acknowledge its agricultural origins. The presence of a 12th century church indicates a much earlier establishment date for the settlement. In addition, the many water-powered mills also indicate the significant, later, Industrial phase of the village's development. Mining is first recorded around Caldbeck in the 13th century and was at its height in the 17th century, the income from which was undoubtedly invested in part in the buildings of that date. Lead, copper and barytes were mined, while the mills also processed wool, corn, bobbins (for the Lancashire cotton industry) and paper.

Elsewhere in the valley, mineral was mined, for example, graphite ('wad') at Seathwaite, uniquely; elsewhere, iron, tungsten, arsenic and zinc were also won. Slate was also quarried in quantity. The importance of the mining industry is attested to by the incorporation of the Company of Mines Royal in the 16th century and its subsequent exploitation of Lake District minerals generally and specifically in this valley, where it also had a smelter near Keswick.

Development of the mining industry saw expansion of other industries such as woodland management, for timber within the mines and for fuel for smelting, which led to an increase in the management of coppiced woodland. In the same way, the growth of the Lancashire cotton industry resulted in bobbin mills being developed. In the Medieval period, the increase in monastic sheep granges saw the development of markets and woollen mills to meet the demand that increased productivity demanded.

Thirlmere

The upper, southern part of this valley is dominated by the late-19th century Thirlmere Reservoir and the associated coniferous plantations to east and west. Most of the arable land that would once have been farmed now lies either beneath the waters of the reservoir or the surrounding woodlands. There are hints of what there once was, in a few places on the edges of the reservoir, with some remnant Medieval strip fields at Armboth and Wythburn. Generally, there appears to have been relatively small amounts of Intake up the lower slopes of the fells, beyond the now-submerged Inbye. However, the boundaries of the extensive plantations do look as if they include, at least in part, areas of agglomerated Intake. While some of this is later parkland, that may also have utilised existing Intake boundaries as its upslope limit.

To the north, beyond the reservoir dam, the valley bifurcates and opens out into St John's in the Vale, towards Threlkeld, and towards Castlerigg and Keswick, either side of High Rigg. Valley-bottom fields predominate, enclosed by stone walls, with a minimal amount of Intake up the fell slopes. The dispersed farmsteads in these areas include some with buildings of 17th century date.

Further north, below the Skiddaw massif, in the valley of the River Glenderamackin, there is evidence of field systems of at least Medieval date. This includes the possible former common field to Threlkeld, adjacent to the current Threlkeld Hall, while the name Guardhouse, further east, suggests the presence of a ring garth. Meanwhile, at Townfield and Burns Farm, south-west of Threlkeld, there remain narrow strips, elements of the town fields of Threlkeld and Wescoe. Pipe Rolls of 1197 mention Threlkeld, so the fields could be at least 12th century in date but, as with Blindcrake, north-west of Bassenthwaite Lake, Medieval strip fields could indicate earlier local land reorganisation, probably subsequent to the Scandinavian activity attested by the place-name evidence hereabouts.

Earlier activity in this valley is evidenced by Castlerigg stone circle (late Neolithic) and Prehistoric, probably Bronze Age clearance and cultivation on Threlkeld Knotts. It is also attested by the Roman marching camp near the stone circle. A small Early Medieval hillfort is located at Shoulthwaite and there also exist shielings at Clough Head on Threlkeld Knotts which are of Early Medieval or Medieval date, attesting to the longevity of the transhumance practices that continue to this day.

In addition to these examples of the importance of the agro-pastoral industry, and the hints of the evidence that now lies beneath the reservoir, there is evidence of other Industrial activity. This includes mining activity for copper, from the 16th century at least, as well as lead, on Helvellyn. Slate and micro-granite have been quarried in the past, the latter still being won at Threlkeld quarry.

The valley provided an important through-route between the north and south of the Lake District, probably for millennia. The Bronze Age cairn at the summit of the Pass of Dunmail, also the reputed burial place of Dunmail, the last king of Early Medieval Cumbria, was located to be seen by passers-by as well as locals. The 18th century packhorse bridge at Sosgill, St John's in the Vale, indicates the continuing importance of this area as a through-route for produce.

The flooding of this valley in the late 19th century was hugely controversial and was pivotal in the development of the concepts of landscape conservation and the creation of

organisations such as the National Trust. Although apparently not a popular tourist destination, it was a meeting place for the Wordsworths and Coleridge, at the ‘Rock of Names’, and buildings and natural features occur in the work of the poets.

Analysis

There are 1133 SHINE entries for the Upper Derwent T&T area. The whole of Thirlmere lies within this area, as well as a significant part of Borrowdale and Bassenthwaite (though excluding a large part of the Skiddaw massif and the lowland to its north and east). A small part of Ullswater valley is included, between Mosedale Beck and Trout Beck and south onto Matterdale Common.

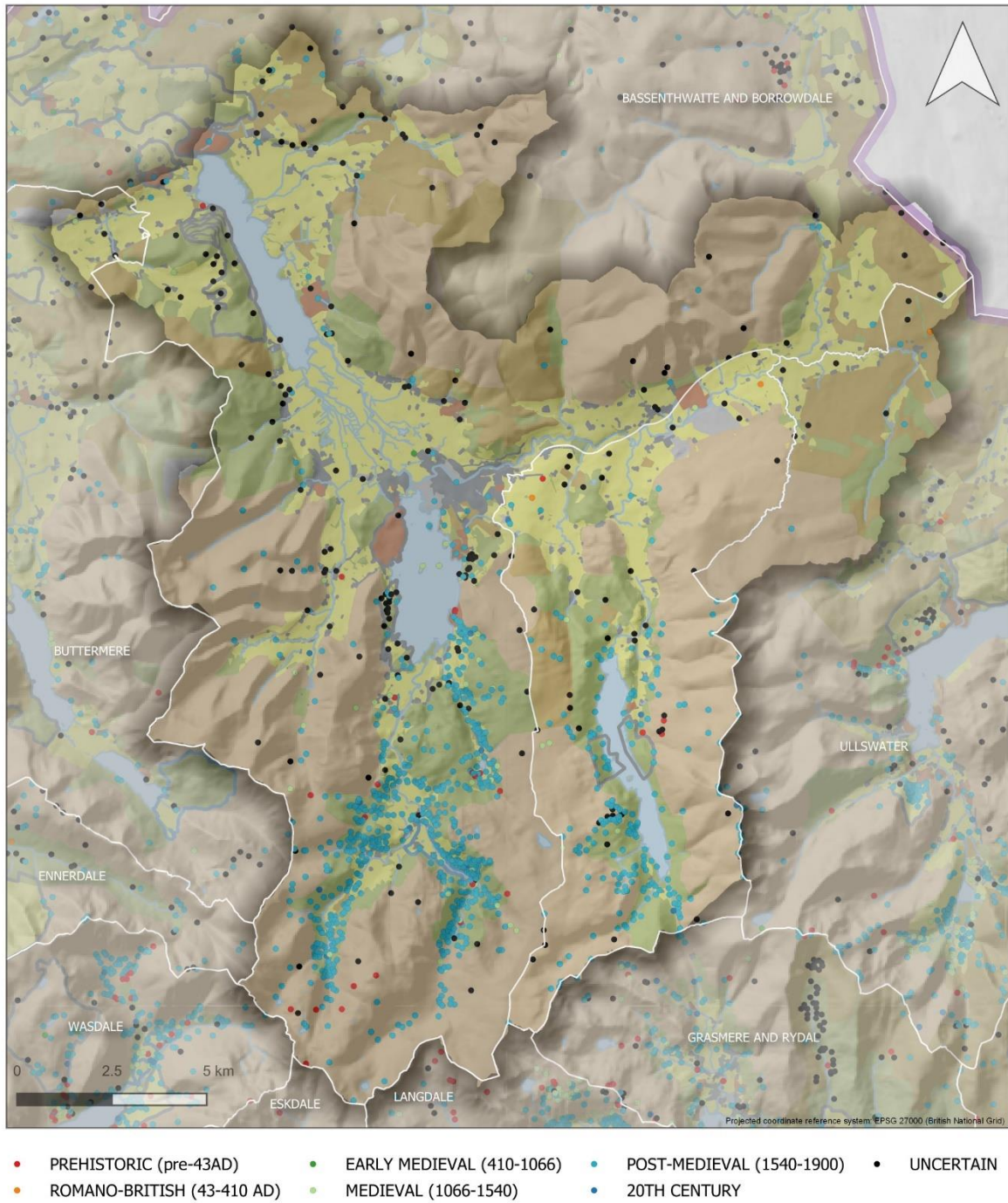
The data provided below (Table 4.15) show the numbers for each category within the bounds of the Test & Trial area. The data for Borrowdale and Bassenthwaite and Thirlmere valleys are also provided for comparative purposes only, if only to show what has been excluded from the Borrowdale and Bassenthwaite valley. The small number of SHINE sites in Ullswater valley have been counted manually. The figures in brackets reflect the number of SHINE sites in those parts of Borrowdale and Bassenthwaite and Ullswater included in the Test & Trial area, compared with the numbers across the valleys as a whole.

Table 4.15: Date of SHINE features in Upper Derwent

Period	Prehistoric	R-B	Early Medieval	Medieval	Post-Medieval	20 th century	Uncertain date
Upper Derwent	26 (2.3%)	3	1	45 (4.0%)	843 (74.4%)	14	201
<i>(Borrowdale & Bassenthwaite)</i>	<i>30 (22)</i>	<i>2 (1)</i>	<i>2 (1)</i>	<i>62 (38)</i>	<i>737 (644)</i>	<i>14 (8)</i>	<i>283 (161)</i>
<i>(Thirlmere)</i>	<i>4</i>	<i>2</i>	<i>0</i>	<i>7</i>	<i>199</i>	<i>6</i>	<i>40</i>
<i>(Ullswater)</i>	<i>25 (0)</i>	<i>7 (1)</i>	<i>1 (0)</i>	<i>58 (0)</i>	<i>332 (8)</i>	<i>13 (0)</i>	<i>98 (8)</i>

The majority of Prehistoric SHINE sites occurs in the south of the area, with most of those in Unenclosed Land south of Borrowdale and on the east side of Thirlmere (Figure 4.16). There are a few further Prehistoric sites scattered across Enclosed Land, mostly in Inbye. The three Romano-British sites occur in or immediately adjacent to the Glenderamackin valley, on the route between Keswick and Penrith. Medieval sites also occur in the southern part of the Test & Trial area, distributed across both Unenclosed and Enclosed Land. By far the largest group of SHINE sites is those dated to the Post-Medieval period. These sites are concentrated almost exclusively in the southern parts of the area, in Borrowdale, Watendlath and Thirlmere. While most of them are in Unenclosed Land, there is a significant proportion in Enclosed Land, in both Intake and Inbye. Sites of 20th century date are scattered across the area, with the majority in the southern half and occurring in Unenclosed and Enclosed Land. Sites of Uncertain date are scattered throughout, with the majority within Borrowdale and Bassenthwaite, with fewer in Thirlmere and a scatter in the small part of Ullswater. They occur predominantly in Enclosed Land, in Intake, Inbye and Recent (Planned) Enclosure as well as, to a far lesser extent, in Unenclosed Land.

LDNP Cultural Landscapes: Upper Derwent SHINE Features by Period



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Figure 4.16: Upper Derwent T&T area – distribution of SHINE features by Period, on a Lake District Historic Landscape Characterisation base map

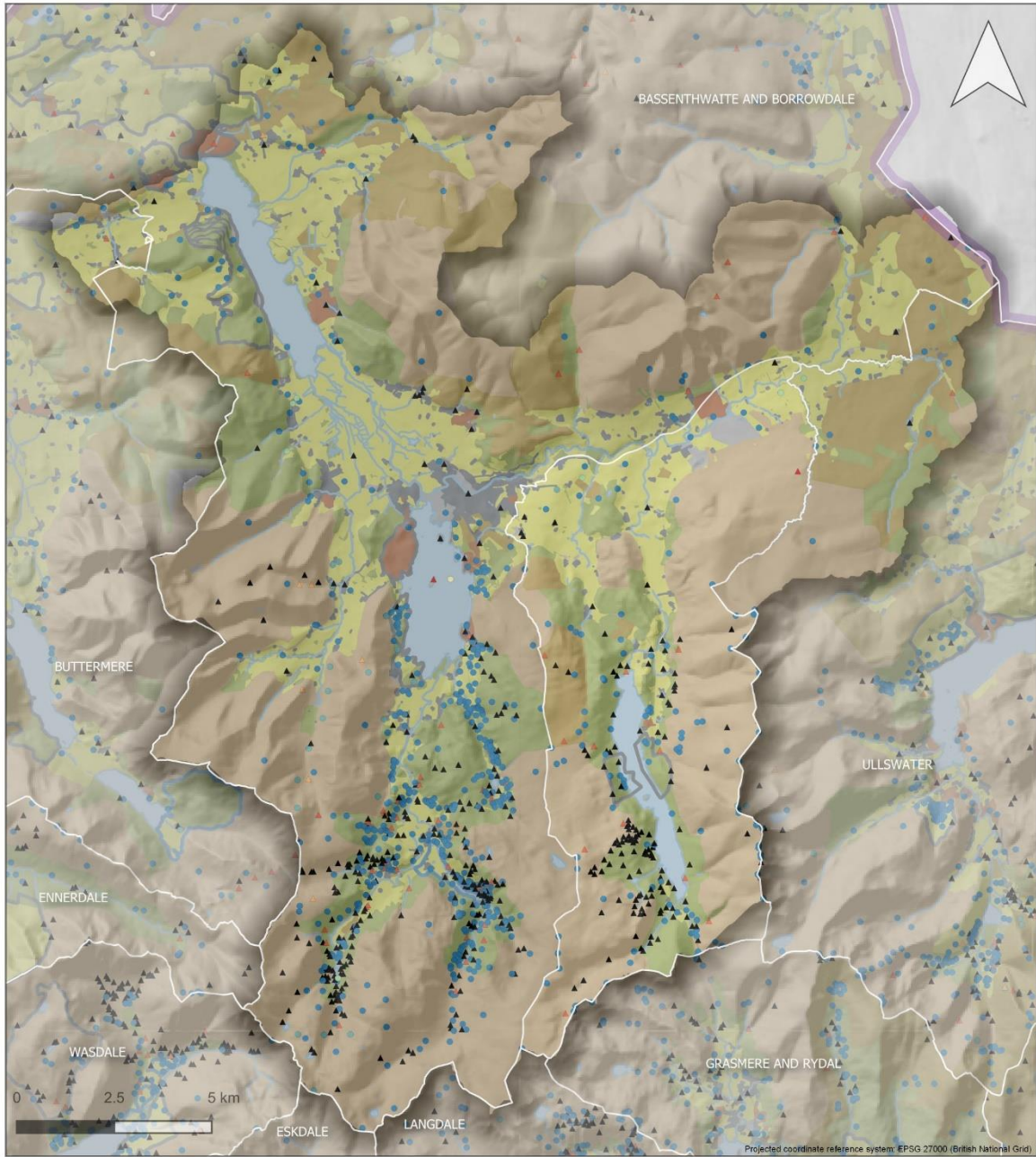
Table 4.16: Form of SHINE features in Derwent

Form	Above ground	Below ground	Above + below ground	Structures
Upper Derwent	607 (53.57%)	8 (0.7%)	26 (2.29%)	492 (43.42%)
<i>(Borrowdale & Bassenthwaite)</i>	648	15	39	428
<i>(Thirlmere)</i>	109	2	2	145
<i>(Ullswater)</i>	346 (13)	9 (1)	16 (1)	163 (2)

The vast majority of Above-Ground features occur in the southern part of the Test & Trial area, in Borrowdale, Watendlath (extending either side of the southern half of Derwent Water) and, less densely, Thirlmere (Table 16, Figure 4.17). There is a reduced occurrence to the north around Bassenthwaite Lake and to the east of Keswick, towards Penrith. These sites occur on Enclosed Land in Watendlath and north of the Jaws of Borrowdale, extending in the same category of land southwards in Seathwaite and Langstrath and onto the higher Unenclosed Land of the fells further south. Similarly, the sites in Thirlmere extend from the lower Enclosed Land and Woodland onto the higher fells to the south.

The distribution of the other major part of this Category, Structures, is slightly different. These are concentrated in the Borrowdale area, particularly in Seathwaite and Langstrath, with another concentration in the south-west quadrant above Thirlmere Reservoir (Figure 4.17). In Borrowdale, the distribution appears to be principally in Intake in Enclosed Land and then extends into the higher reaches of the Unenclosed fells. In Thirlmere, the distribution is focused within the extensive plantation woodlands to the south-west of the reservoir, before extending into higher Unenclosed Land. There is a thin scatter of Structures across the Test & Trial area, on both Enclosed Land (Inbye and Intake) and Unenclosed Land west of Derwent Water and both sides of Thirlmere Reservoir.

LDNP Cultural Landscapes: Upper Derwent SHINE Features by Form



- | | | |
|-----------------------------------|--|--|
| ● Above-ground feature(s) | ● Well-preserved below-ground feature(s) | ▲ Structure(s) + above + below-ground feature(s) |
| ● Above + below-ground feature(s) | ● Degraded below-ground feature(s) | ▲ Structure(s) + above-ground feature(s) |
| ● Below-ground feature(s) | ▲ Structure(s) | ▲ Structure(s) + below-ground feature(s) |

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Figure 4.17: Upper Derwent T&T area – distribution of SHINE features by Form (Legibility), on a Lake District Historic Landscape Characterisation base map

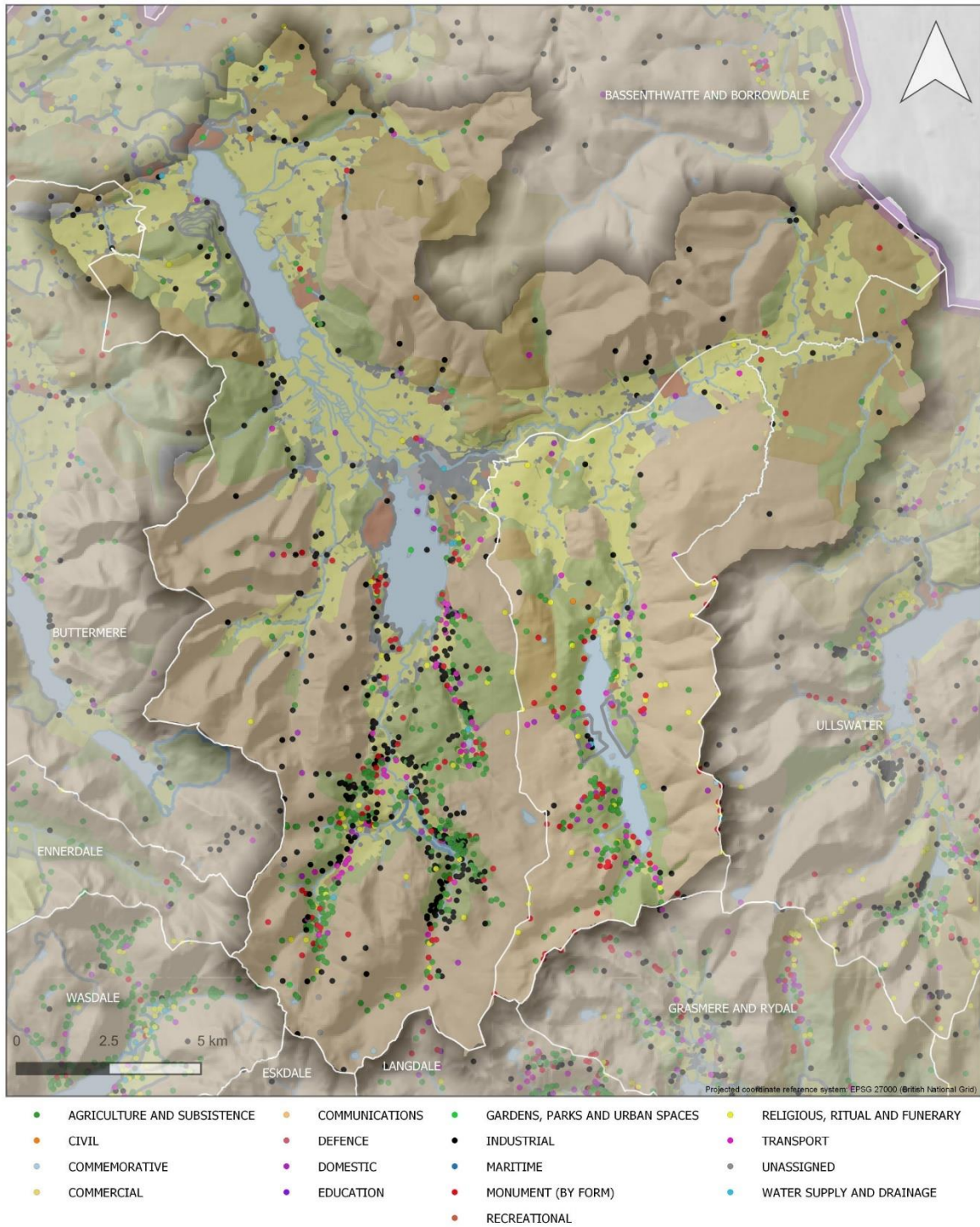
Table 4.17: Type of SHINE features in Derwent

FISH category	Agric & Sub	Domestic	Industrial	Religious	Transport	Monument (by Form) & Unassigned	Other Categories
Upper Derwent	405	52	375	69	64	130	38
(Borrowdale & Bassenthwaite)	349	45	462	66	58	101	49
(Thirlmere)	103	27	24	30	13	50	11
(Ullswater)	151 (3)	39	181 (6)	69 (3)	22 (1)	50 (3)	22 (1)

The majority of SHINE features (35.7%) in this Category belong to Agriculture and Subsistence (Table 4.17) and they are to be found predominantly in the upper reaches of Borrowdale (including Watendlath) and Thirlmere, in Enclosed Land (both Inbye and Intake) and into the higher Unenclosed Land of the fells (Figure 4.18). Hardly any such sites occur in any land category from the southern tip of Derwent Water northwards. The next largest category is Industrial, at 33.1%. The distribution of these sites mimics that of the Agriculture and Subsistence category but does extend north of Borrowdale. Such sites occur rarely in Inbye Land but do occur in Intake, Woodland and Unenclosed Land and noticeably at the boundary between different land categories.

Monument (by Form) is the third largest category (11.5%), distributed mainly south of the southern half of Derwent Water in Borrowdale and Bassenthwaite (Figure 4.18) and adjacent to and above Thirlmere Reservoir, in Woodland, Recent (Planned) Enclosure and Unenclosed Land. Religious sites (6.09%) occur mainly in Unenclosed Land, located, as cairns, on the high points principally within Borrowdale and Thirlmere. Transport sites (5.6%) occur mainly within the Borrowdale and Thirlmere areas and are focused mainly but not exclusively in the valley bottoms. Domestic sites (4.5%) occur principally in the valleys, reflecting the location of the main settlement distribution. The aggregated Other category accounts for the remaining 38 SHINE sites in the Test & Trial area and include Gardens, Defence sites and sites associated with Water Supply and Drainage.

LDNP Cultural Landscapes: Upper Derwent SHINE Features by Broad Type

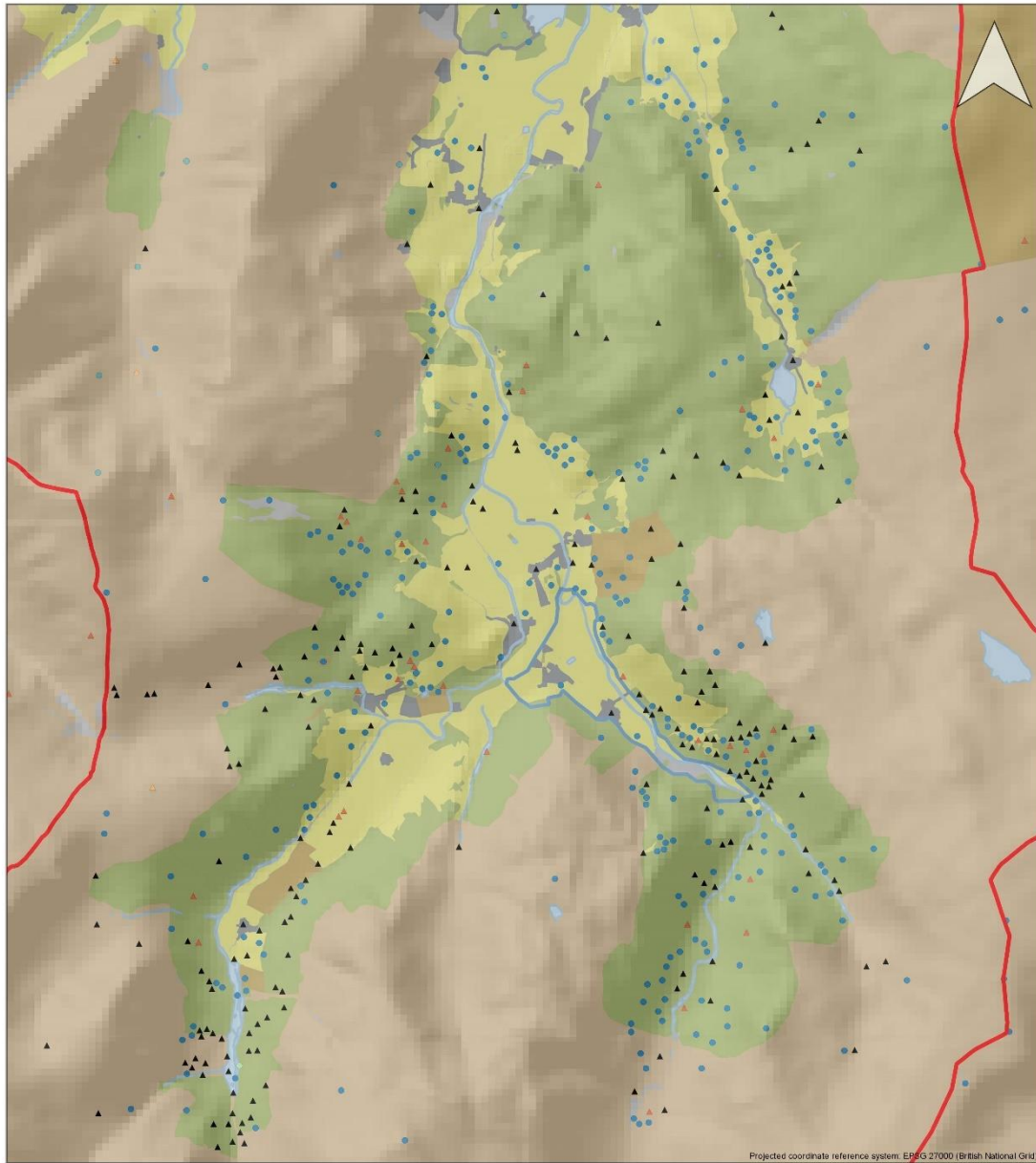


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Figure 4.18: Upper Derwent T&T area – distribution of SHINE features by Type, on a Lake District Historic Landscape Characterisation base map

LDNP Cultural Landscapes: SHINE features by form -
Bassenthwaite and Borrowdale (South)



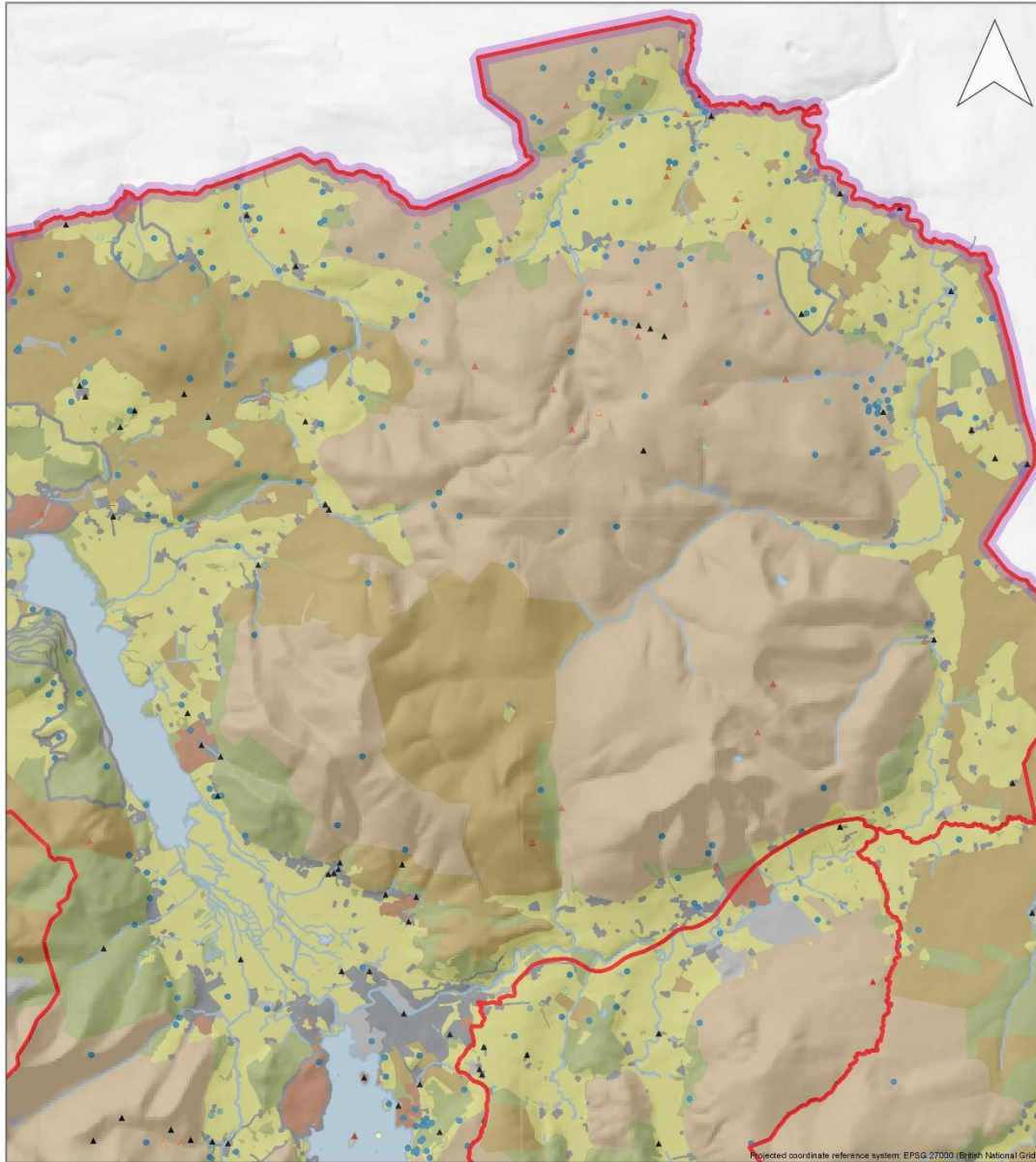
- | | | |
|-----------------------------------|--|--|
| ● Above-ground feature(s) | ● Well-preserved below-ground feature(s) | ▲ Structure(s) + above + below-ground feature(s) |
| ● Above + below-ground feature(s) | ● Degraded below-ground feature(s) | ▲ Structure(s) + above-ground feature(s) |
| ● Below-ground feature(s) | ▲ Structure(s) | ▲ Structure(s) + below-ground feature(s) |

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Figure 4.19: Upper Derwent T&T area – distribution of SHINE features by Form (Legibility) to the south of the Jaws of Borrowdale, on a Lake District HLC base map. Most above-ground features and structures are Industrial, with a much lower proportion of structures relating to traditional farm buildings

LDNP Cultural Landscapes: SHINE features by form -
Bassenthwaite and Borrowdale (South)



- | | | |
|-----------------------------------|--|--|
| ● Above-ground feature(s) | ● Well-preserved below-ground feature(s) | ▲ Structure(s) + above + below-ground feature(s) |
| ● Above + below-ground feature(s) | ● Degraded below-ground feature(s) | ▲ Structure(s) + above-ground feature(s) |
| ● Below-ground feature(s) | ▲ Structure(s) | ▲ Structure(s) + below-ground feature(s) |

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Figure 4.20: Upper Derwent T&T area – distribution of SHINE features by Form (Legibility) to the north-east of Keswick, on a Lake District HLC base map

4.3 Stage 3: Conceptually map ‘Cultural Capital’ values that are not adequately captured by the NCA approach

4.3.1 SHINE data as part of the Natural Capital Stock

Whilst ‘Natural Capital’ has been defined by the Natural Capital Committee as ‘*the parts of the natural environment that provide value to people*’ (Natural Capital Committee 2017), there is no consistently-applied definition of ‘Cultural Capital’ which, at an international level, is taken to include intangible heritage and ways of inherited and changing ways of living, understanding and relating to each other and the environment (Parracchini et al. 2018). These two concepts of Natural Capital and Cultural Capital are inter-related and impact on each other, as underlined by the fact that all areas of landscape in England have functioned and been adapted to support people and habitats over millennia. The agro-pastoral landscape of the Lake District and its heritage of stock enclosures, relict field systems and farmsteads is thus integral to supporting services and reflects past approaches and changing perceptions towards the regulation and provisioning of food and a wide range of other benefits. This includes access to, and management of, its unenclosed commons, and the shift from communal to more individual systems of land management as reflected in the patterns of piecemeal enclosure within the in-bye land, and the absorption of valley-side pastures as intake enclosures.

Moreover, ‘cultural capital’ within the natural capital accounting framework continues to be a confusing concept with multiple meanings (see the discussion in Section 4.3.2 of this report for an exploration of the concept). The most recent publication of the UK Natural Capital Committee on terminology makes no reference to ‘cultural capital’ (Natural Capital Committee 2019) despite the fact that cultural services are identified as one of the four categories of ecosystem services.

The resolution of these issues is outside the brief of this project, but of critical importance is the need to understand the contribution of SHINE assets to cultural capital and ecosystems services. This calls for an approach that considers the relationships between ecology, soil science, architecture, and archaeology within a landscape context (which is beyond the scope of this project). A central aim of this part of the project is to determine how SHINE features relate to the stock of natural capital and the benefits to people that flow from it as cultural ecosystem services (CES). It is important to note that:

- The historic environment, as seen in the full typological range of cultural landscapes from woodland and unenclosed land to patterns of enclosure that cover more than 70% of England’s land area, is an integral, underpinning and seamless part of natural capital.
- ‘Semi-natural’ features, although separately quantified and assessed, are anthropogenic, resulting from adaptation of natural features by people to fulfill specific local needs (Fuller et al. 2017), for example, the range of fauna, flora and tree species in fields and their boundaries, woodland, wood pasture and parkland.
- Heritage assets help to tell the story of how places have developed into their present form and are intertwined within the perceptual and aesthetic qualities attached by people to landscape. They play a core and under-rated role in shaping the perceptions of those people who are attracted to Cumbria (around 65% based on Cumbria Visitor Survey 2018) and the Lake District.

- ‘Landscape and scenery’ is thus doubly cultural, comprising – as defined in the European Landscape Convention - ‘*An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*’ (Council of Europe 2000).

Church et al. (2014) developed a new conceptual framework for cultural capital as part of the UK National Ecosystem Assessment Follow-on work in relation to CES. The approach was based on the notion of ‘environmental settings’ developed earlier for the UK NEA (2011). The approach focused on assessing cultural benefits associated with ecosystems from the perspective of interactions between people and the natural environment (i.e. ‘*...cultural services are based on a place, locality, landscape or seascape-based perspective to cultural ecosystem services*’) (Church et al. 2014). The work also distinguished between the following:

- Cultural values: defined as the collective norms and expectations that influence how ecosystems accrue meaning and significance for people.
- Environmental spaces: defined as, the places, localities, landscapes and seascapes in which people interact with each other and the natural environment.
- Cultural practices: understood as the expressive, symbolic, embodied and interpretive interactions between people and the natural environment.
- Cultural benefits: the dimensions of human well-being that can be associated with and that derive from these interactions between people and the natural environment.

Indicators were developed for assessing the four categories of culture and places, with a focus on the use of travel cost information and visitor numbers at specific sites.

The Office of National Statistics (ONS) which is developing the UK natural capital accounting system, has a cultural services category in its accounting methodology, but currently it only measures recreation (ONS 2019a). The only figure in the accounts, relates to the ‘*cultural service of nature providing recreational opportunities*’ although not all outdoor recreation is included (only that which incurs travel costs, and only short day trips, thus missing out on a large element of expenditure from tourism). The ONS accounts state that ‘*other cultural services are also provided by natural capital, such as aesthetic appreciation and heritage value. These additional cultural service accounts are not yet developed...*’. Science and education, and ‘Non-material benefits’ such as recreational enjoyment and aesthetic experience, field game sports, and ‘spiritual, symbolic and other interactions’ are also mentioned but not discussed in the report.

The most recent accounts suggest that the value of recreation in the Mountains, Moorlands and Heath habitats of the UK was estimated to be £199.3 million in 2017 (ONS 2019a). Additional accounts indicated that ‘nature in the urban environment’ was valued £2.5 billion (2017), based on recreational visits (measured through trip expenditure) and the asset value was valued at £104.0 billion (ONS 2019b). The accounts also note that the welfare value of all ‘urban nature’ recreational visits are estimated to be £7.9 billion per annum (based on using the Outdoor Recreation Valuation Tool (ORVal) and MENE visitor data).

The existing definitions of Natural Capital lead to some confusion over the material and non-material benefits offered by Cultural as opposed to Natural capital. Cultural Ecosystem Services are defined in the Millennium Ecosystem Assessment (2005) as ‘*the*

nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences’ whereas it is commonly accepted that benefits can be derived from material remains such as field systems and buildings. This definition makes CES considerably more difficult to evaluate on a quantitative basis than other service flows, and we would argue that cultural heritage assets do generate a range of tangible services that can be measured in terms of benefit flows to particular sectors of a population. Overviews of published studies using CES have shown how this uncertainty and inconsistency of approach has contributed to a *‘lack of rigour in identifying cultural ecosystem services’* and the *‘ecosystem elements that underpin CES’*, their inter-relationships over time and space and methods of identifying and working with beneficiaries themselves in order to better understand the benefits that CES deliver and setting out how they value these benefits (Blicharska et al. 2017). Cultural heritage is mainly *‘conceptualised as a subcategory of cultural ecosystem services as a predominantly intangible service or benefit of ecosystems’* (Holleland et al. 2017, 220). Conceptual frameworks have not generally considered archaeological sites and historic buildings, and how the interaction of human and cultural factors may inspire and influence *‘more intangible benefits of, for example, inspiration, spirituality and aesthetics’*, as *‘in themselves services or benefits of ecosystems’* (Holleland et al. 2017). Where historic environment data have been used the tendency has been to rely on assessing only designated heritage assets (e.g. in Stanik et al. 2018). The emphasis in many published assessments is on simple measures of visitor numbers to designated sites as a basis for assigning monetary value to CES (its weakness being reliance solely upon visits to paid attractions, see Section 4.5). This risks under-estimating the extent to which historic processes are integral to other ecosystem services, for example through the following: conditioning supporting services in the form of habitats and the formation of soils, the provision of food and local skills, the regulation of climate through the conservation of traditional materials and of carbon embedded in peat and woodland, and contributions to recreation and wellbeing.

It follows that conceptual frameworks for the assessment of the historic environment and heritage assets, and their contribution to the benefits that flow from them, need to take a broader view than commonly-used criteria for the management of heritage and understand the contribution of SHINE features in the context of landscapes and the values people attach to them. Opportunities for integrating historic processes and characteristics into natural capital and ecosystem services have been considered in other pilot studies (see Powell et al. 2018, 2019a, 2019b), and are also set out in Appendix 2 with reference to the key types of SHINE features found in the Lake District. However, the numbers of assets in the dominant categories of Agriculture and Subsistence, Industry, Domestic and Religious, and also the indeterminate Monuments by Form, are not sufficient as a measurement of cultural services in their own right. SHINE assets need to be considered in the context of the associated benefit flows that they deliver, to both residents and visitors, based on age and significance, their intrinsic legibility, accessibility, and their relationship to each other and the wider cultural landscape. This study, therefore, takes a broad view in considering how SHINE features contribute (as non-designated heritage assets) to the historic landscape of the Lake District, and to the CES that flow from its stock of natural and historic capital.

4.3.2 Conceptualisation of cultural capital

The current state of discussion regarding the nature of cultural capital and CES is limited in its approach. Natural capital accounting is based on identifying a stock of ‘capital’

from which ‘services’ are generated over time. Services that are utilised by individuals or groups, or society as a whole, create flows of benefits over time. Utilisation itself can diminish or enhance the stock of natural capital (e.g. through adverse impacts from over-use, or from restoration work which improves the stock of capital). Valuing benefit flows requires understanding the nature of the flow, who (or what) benefits, a means of putting a value on those flows, and understanding how flows may alter over a specific time period. In order to understand benefits and services generated there is a need to have a clear definition of the ‘capital’ involved, what it consists of, and its boundaries. The current situation includes the following:

- Millennium Ecosystem Assessment (2005) defines CES as ‘*the nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences*’.
- Church et al. (2014) in relation to CES developed an approach focused on assessing cultural benefits associated with ecosystems from the perspective of interactions between people and the natural environment. ‘Cultural benefits’ are defined as: ‘*the dimensions of human well-being that can be associated with and that derive from these interactions between people and the natural environment*’.
- The ONS NCA approach is currently only measuring a sub-set of recreational benefits using visitor numbers and estimated average trip expenditure.
- Cultural heritage is mainly ‘*conceptualised as a subcategory of cultural ecosystem services as a predominantly intangible service or benefit of ecosystems*’ (Holleland et al. 2017, 220).
- Conceptual frameworks have not generally considered archaeological sites and historic buildings, and how the interaction of human and cultural factors may inspire and influence ‘*more intangible benefits of, for example, inspiration, spirituality and aesthetics*’ (Holleland et al. 2017).
- Where historic environment data have been used the tendency has been to rely only on assessing designated heritage assets or paid attractions – similar to the limited data for visits explored in section 4.5 (Stanik et al. 2018).

It makes sense to think of the benefits of cultural heritage as flowing from interactions between people and the environments they are in, or visit. However, a clear understanding of cultural capital is required in order to identify the potential services and benefit flows that might arise within a specific stock of capital and the mechanisms that might alter the capacity for benefit generation. In this project we have conceptualised cultural capital in relation to heritage as consisting of three elements or components: physical assets, collective character, and practice and process. Figure 4.21 summarises the characteristics of the three components, which are described in more detail below:

- ‘Physical assets’ consist of material or physical remains; these may include buildings, ruins, ground features such as ridge and furrow, earthworks or other forms of heritage asset such as trackways, and a wide range of objects, along with documents and books, photos and works of art.
- ‘Collective character’ (in terms of rural and urban landscapes) are the larger scale outcomes resulting from the interplay of different human activities and the environment over time. This can result in landscapes such as those of the Lake District or the Cotswolds, cities and urban areas, influenced by buildings or groups

of structures, topographic form, as well as resource utilisation (e.g. hefting of sheep on commons) and production processes (e.g. certain types of food).

- ‘Practice and process’ can be thought of as the institutional arrangements and structures that have developed (usually over time) for managing local resources, and the factors that influence those arrangements. Some of the components of this form of capital are tangible, such as organisations of individuals that agree on local governance and rule structures about how to access and use resources; other aspects are more intangible, such as memories, language, dialects and place names.

Physical assets tend to be the remnants of past activity, inter-related and present within the ‘collective character’, enabling interpretation and understanding of the larger outcomes (e.g. making the landscape ‘legible’), forming as well as adding to the particular characteristics of an area or collection of assets. Physical assets will vary in how they influence collective character. Physical assets (such as buildings, ruins, ground features) may also have direct impact on natural capital through provision of supporting, regulating, and provisioning ecosystem services. However, such effects are likely to be limited, small scale (except for provisioning services where iconic sites might generate large economic benefits) and localised.

Collective character in relation to landscape is likely to have larger scale impacts on some ecosystem services such as biodiversity, carbon sequestration, water movement, and nutrient cycles. Landscape may also (as in the case of National Park and AONB areas) generate economic benefits through attracting large numbers of visitors as well as through utilisation for agriculture and forestry.

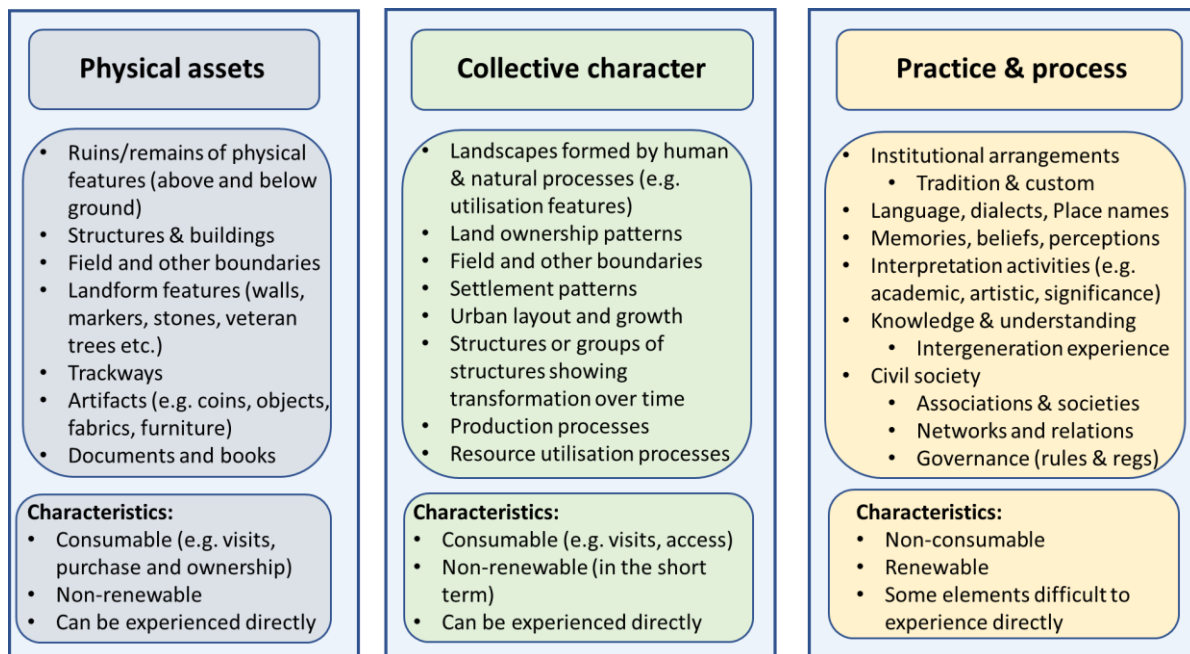


Figure 4.21: Summary of cultural capital in terms of physical assets, collective character, and practice and process components

Both physical assets and collective character can be ‘consumed’. Physical assets can be purchased, owned as well as visited and experienced directly, either in situ or in some form of museum or gallery. Physical assets and collective character may also generate

‘non-use’ benefits to a wider population from people knowing they exist and are protected (and can be measured through existence or option valuation techniques). The physical assets of cultural capital are also non-renewable. If they are lost, damaged, or destroyed in some way they cannot be replaced, making it extremely difficult to value the ‘capital’. The physical heritage capital from a particular period of time is fixed and can only decrease (e.g. a Roman fort cannot be replaced). This means the value can go up or down (it will fluctuate over time), as value is assigned (or not) to the existence of physical objects. It is recognition, interpretation, and understanding of benefits flowing from cultural heritage that creates value. Since ecosystem services and benefits arise from the capital, we can assign values to the capital based on the value of the services (and thus benefit flows) generated. The same applies to the ‘collective character’ outcomes. They are consumable, but in a more limited way, through ownership or control of access to the areas themselves. They can also be damaged and destroyed, and in the short-term are non-renewable (for example, it would take time to restore a landscape that has been significantly altered through the impacts of modern agriculture, or ‘re-wilded’).

The third component of cultural capital, ‘Practice and process’, is more complex, potentially renewable, but more difficult to experience directly. Institutional arrangements such as customs, traditions, and ‘ways of doing’, are part of the culture of place and may well attract people to visit or live in a place. A key aspect of this form of capital is knowledge and understanding of how to utilise local resources (such as the range of land quality for grazing). This is sometimes referred to as ‘tacit’ knowledge that only comes from long experience with an environment, building on knowledge passed down across generations. These forms of capital are functional in the sense that they operate to access and utilise the other two forms of cultural heritage asset; they are transformational in that the structures governing process operate (and change) over time resulting in changes to collective character and to physical assets. Practice and process thus controls the level of ecosystem services generated and the extent to which benefit flows are experienced. To be successful they must also transform over time to adapt to new conditions (i.e. be resilient), and when the practice and process structures alter, then the collective character, and possibly some physical assets, are also likely to change.

A key aspect of cultural capital is its constantly shifting nature, a reflection of developing knowledge, understanding, recognition, and interpretation, which makes it difficult to quantify at any given point in time. Recognition only comes with understanding based on knowledge and interpretation of past societies and past activities. As new information and new ways of interpreting physical assets and collective character are applied, our understanding of cultural heritage alters and the capital itself can be explored and valued in a different way. *‘People bring a wide range of ‘cultural and environmental baggage with them when they interpret /understand the assets and historic landscapes that they observe from within their own suite of mental constructs’* (Smith, K., Personal Communication, 2020).

4.3.3 Application of the concept to the SHINE assets

The focus of the project is exploration of the nature and utility of the heritage assets in the SHINE dataset, given the objectives for which it was created, and the constraints involved in its establishment and maintenance. An overview of the SHINE assets leads to the following conclusions:

- Intrinsic significance of heritage assets:

- SHINE features and other heritage assets are subject to different legislative and conceptual frameworks than the natural environment and the management of the wider landscape. They are, moreover, irreplaceable assets, the stock of which is vulnerable to degradation and loss, which cannot be replaced or restored in the same way as some habitats or even dry stone walls and other boundaries.
- SHINE features merit consideration in the context of other historic features such as dry stone walls and pollarded trees in in-by-land that are funded through other options in the AES and contribute to a broad range of 'service flows' or benefits that arise from different places in the Lake District, and how they are used and perceived.
- Differences between archaeological sites/ structures and historic buildings:
 - The different legislative frameworks for historic buildings and archaeological sites, and the origins and development of HERs as records of the archaeological resource, mean that:
 - A higher proportion of known archaeological sites, including the results of past finds, surveys and thematic studies of monument types, are included in HERs than historic buildings that remain in different forms of use; these include a proportion of archaeological sites known to be of national importance but not – as the legislation for archaeological sites allows for discretion - considered as eligible for protection through the scheduling process. It is also clear that a very high proportion of surviving enclosures for management of sheep, 20th century anti-invasion defences, quarries and mines are included in the SHINE dataset.
 - The rapid nature of past listing surveys and the rigour with which the criteria were applied means that the overwhelming majority of 19th century traditional farm buildings are a) not designated, b) are not systematically included in HERs and c) are more likely to include buildings that future assessments may reveal have regional and national significance.
 - There is uncertainty in how to apply the criteria for assessment of the archaeological resource and historic buildings in order to rank SHINE and other features in terms of their local, regional and national importance.
- SHINE features as a proportion of service flows from the historic environment:
 - SHINE features, some 42% of the HER, comprise a proportion of identified 'known' sites and structures which also have potential for significant future discoveries within and beneath them. Whilst many individual HER entries may relate to single examples of its 287 Scheduled Monuments, and form a proportion of non-designated historic buildings within its 23 Conservation Areas and 9 RPGs, there is a more straightforward relationship between its 1793 List Entries and the 2,000 individual buildings and structures which make up the total of the List.
 - Service flows are also affected by the landscape context to SHINE features, there being differences in this respect between:

- Unenclosed land, which has the highest proportion of prehistoric to medieval features within a landscape that also has a high number of Scheduled Monuments also containing clusters of particularly coherent groupings of the same period, often large in scale; these relate to peat and other deposits with high potential significance in their own right as paleoenvironments
 - Different types of enclosed land – a lower proportion of features within inbye than intake land, reflecting the intensity of farming in the former for over a thousand years and the preservation of features as part of long-term pasture in the latter; whilst farmsteads with listed and unlisted buildings tend to survive within inbye land, or are sited on its fringes, field barns and enclosures for stock (particularly sheep) are far more commonly encountered within intake land.
 - Woodland, which may retain features relating to earlier land use and settlement; Ancient Woodland has the strongest link to historic communities and industries, due for example to the survival of charcoal-burning platforms in relationship to the evidence for the growth of fuel in coppiced underwood.
- There is not a straightforward relationship between numbers of designated and non-designated heritage assets, making it difficult to assess SHINE features separately – and in relationship to designated heritage assets - in terms of their contribution to the cultural heritage value of an area. The reason for this is that many designated archaeological sites, particularly those within unenclosed land, contain assemblages of many individual structures, features and associated below-ground remains in contrast to the way that listed buildings are identified and addressed on an individual basis. It is for this reason that the overall figure of 42%, being the overall proportion of SHINE assets that form part of the HER, is taken as a starting point for considering the proportion of service flows that derive from heritage assets as part of the historic environment.
- Omissions from SHINE:
 - Although dry stone walls and other boundary features are included within the mapping of patterns of enclosure by HLC, it is clear that – in view of the inclusion of some specific walls and boundaries including those of post-medieval date within SHINE – some walls of special interest (medieval and earlier outer walls to outgangs and inbye land, for example) would be eligible for inclusion as SHINE features. Although they can be managed as boundary features within the appropriate AES option, there needs to be more formal recognition of the importance of boundary features as an integral part of an historic, functioning and evolving farmed landscape, those within inbye land relating to more than one thousand years of continuous occupation.
 - The contribution made by traditional farm buildings to the agro-pastoral landscape is under-represented in the SHINE data, the extent of which would be useful to determine. This does not have to be dependent on detailed survey, as the National Trust holds Vernacular Building Surveys dating back to the 1980s on its holdings and such records can be integrated into a rapid mapping of the historic character and survival of traditional farmsteads and field barns

into the HER, following the model developed in other parts of England including the PDNP (Edwards and Lake 2015).

Following the analysis in Section 4.2 and despite the differences between archaeological sites and historic buildings and the omissions from SHINE outlined above, the contribution of SHINE features to the benefits that flow from the historic environment can, in broad terms, be set out in Table 4.18 below.

Table 4.18: Relationship of SHINE to ecosystem service generation

Ecosystem services	Relationship of SHINE to benefit streams
Sense of place	Agriculture and Subsistence features, supported by Domestic and Religious features and which together make up 46.5% of SHINE records and 22% of features dating from the medieval period and earlier, combine with the historic character of enclosed and unenclosed land to make the strongest contribution to Sense of Place.
Sense of history	SHINE features of all types, as 42% of HER records and in relationship to designated heritage assets, contribute to understanding the historic development of the Lake District's communities, agro-pastoral landscape, industries and national events such as the anti-invasion measures of 1940.
Spiritual, aesthetic and artistic values	Although less than 1% of SHINE features were created to serve the developing idea of the sublime and the 'Picturesque' from the 18 th century, SHINE features contributed to how these landscapes were experienced and valued, and continue to contribute to sense of place and to thus play a key role in the context of different landscape settings.
Amenity value	Although less than 1% of SHINE features directly relate to its historic development as an amenity landscape, SHINE features within openly-accessible unenclosed land and to a lesser extent within visually and recreationally-accessible enclosed land make a strong contribution to amenity value. This is further enhanced by evidence for their stewardship and care.
Communal value	Traditional farm buildings and livestock enclosures built in local materials and craft traditions complement as structures the benefits offered by field boundaries and the wider farmed landscape as a framework for continued agricultural practice and commons management.
Educational and scientific value	Buried archaeology with above-ground sites and structures may contain extremely significant remains of intrinsic value and also illustrate (through for example the analysis of pollen) the development of past environments and climates, complementing the evidence offered by field boundaries, historic trees and soils etc.

The Table indicates significant positive contributions to several of the identified ecosystem services, which are illustrated in Figure 4.22 below. Figure 4.22 indicates that the SHINE data consists only of physical assets (mainly above and below ground features, and structures) allocated to seven use categories (such as domestic, industrial, religious, etc.). Although these assets form only around 42% of the total number of identified physical assets in Cumbria they do contribute in terms of influencing the collective character of an area, mainly related to landscape and settlement patterns, and to a much lesser extent they also contribute to Practice and process structures through reminders of the long history of livestock management on the fells.

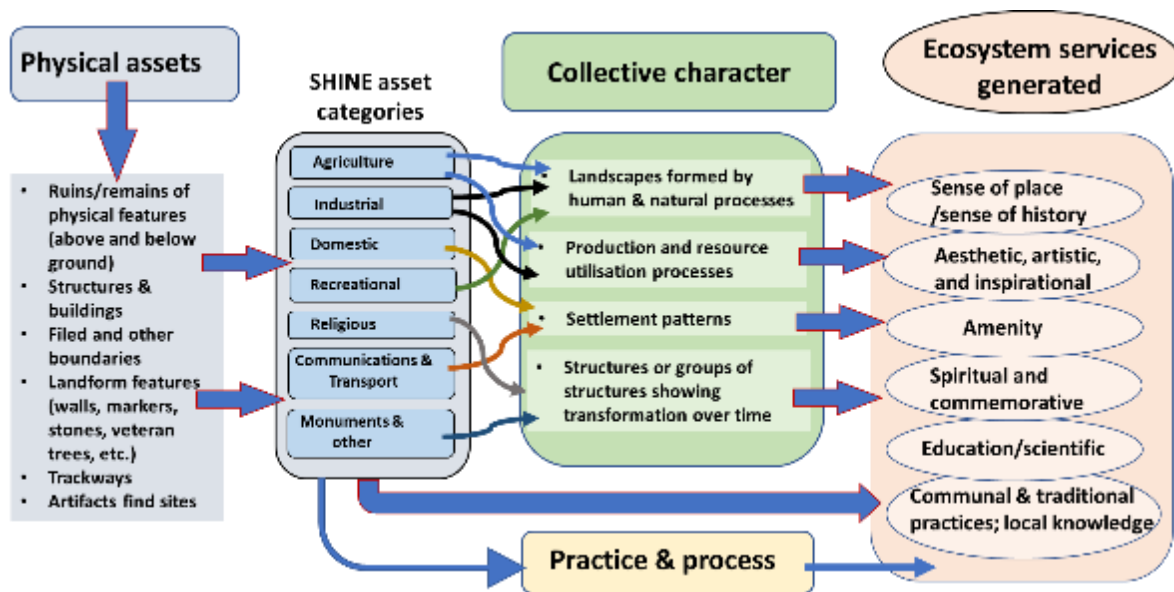


Figure 4.22: Mapping the 'socio-ecological system service flows' from the SHINE cultural capital assets

Figure 4.22 above indicates that the ecosystem services generated by the cultural capital in the SHINE assets comes from its contribution to the formation of assemblages and patterns (i.e. landscapes) valued by residents and visitors. However, some of the physical assets themselves also deliver CES that generate benefit flows (such as increased sense of place and history, aesthetic and inspirational, and amenity benefits) as well as enhancing wellbeing. The research carried out for this project has focused only on the ecosystem services generated directly by the cultural capital, and not on other services generated by the material assets (the stock of capital), such as provisioning, which would capture, for example, the full range of economic benefits for the local area through tourism.

The SHINE data consists only of physical assets (features and structures above and below ground) and that are limited in their potential utility for understanding the ecosystem services and benefit flows generated by a lack of connection with the other two components of cultural capital. The SHINE assets only form part of the cultural heritage of an area, they are a partial selection of the physical assets with incomplete information - a significant proportion of the HER assets are not dated, and there is an almost complete absence of asset condition data, making valuation difficult and potentially impossible.

More significant, in terms of the way cultural capital is conceptualised in this paper, is the lack of any clear acknowledgement (in the data set) of linkages to the wider collective character that make up the landscape. Physical assets are listed as separate items rather than as parts of broader assemblages, thus stripping out assessment of potential larger cultural values they might contribute. The linkage between physical assets and collective character is at best weak, at worse non-existent, requiring expert judgement to explore their wider value.

Determination of the value of benefits deriving from cultural capital is not possible by separating out some assets from their larger context, and their inter-relationships with the full range of heritage assets in an area, limiting the potential utility of the SHINE data as a means to value cultural heritage across an area. Physical assets are reduced to

features which a farmer may or may not be paid to manage, with only limited understanding of their level of significance in the local area. With limited understanding of the assets and their role in the landscape those utilising the functional structures may not appreciate their value in landscape character formation. The outcome potentially, is isolation of a set of physical assets, a decline in cultural capital, and a decline or loss of ecosystem services and the benefits that flow from them.

4.4 Stage 4: Provide a basic economic assessment of the value the assets bring to the local economy through their contribution they make to ‘place’

4.4.1 Introduction

Data from the case study areas were taken from the SHINE dataset as identified in the descriptions of the case study areas above. The model was designed to incorporate the categories of assets in the SHINE dataset. The basis of the model is the valuation of the number and condition of the SHINE assets in each of the case study areas, as modified by score regarding legibility, time depth and inter-relationships within the area (see the section below on scoring). Valuation was based on identification of a set of benefits flowing from the cultural services provided by the SHINE assets, application of financial proxies to those values, and aggregating the values across the number of visitors, residents, and livestock farmers within each case study area.

Resident numbers were derived from recent census data, adjusted to take into account the boundaries of the study areas. A number of assumptions were made in relation to visitor numbers to each case study area. The model is based on visitor days, which includes both day and overnight visitors. There was an absence of data on visitor numbers to the specific case study areas (which in the case of the Upper Derwent T&T area consists of multiple valleys and distinct areas). We are aware that even within the case study areas there is a considerable variation in visitor numbers, some parts of a case study area have high levels of visitors and other parts have low numbers. The total number of visitor days (28 million) were initially divided between the 13 valleys to get an average per valley estimate (2.15 million/valley/yr). This figure was then adjusted for each case study area using data from the Cumbria Tourism Survey (2018) and LDNP surveys. Estimates were made based on some indications of the proportion of tourists visiting different parts of the national park, the accessibility of different areas, and the level of attractions in the area.

4.4.2 Scoring

The model for scoring SHINE features builds on previous work that has been developed for valuing dry stone walls in the PDNP (Powell et al. 2018) and then the Lower Severn Vale and for Buildings and their Boundaries (Powell et al. 2019a and b). The model has been adapted to assess SHINE features as a proportion of the total heritage value of an area, and specifically as part of how the Lake District has functioned and been adapted over millennia, and how they form an integral part of the stock of natural capital in the LDNP which cannot in practice be separated from the other assets with which they are intertwined in their local contexts.

It considers:

1. The types of heritage assets included in SHINE.

2. Their legibility, as above-ground features, structures or below-ground remains.
3. Their time-depth, using their recorded date.
4. The inter-relationships of SHINE features to other heritage assets and the landscapes in which they developed.

Function – this considers the contribution of each asset type to benefit streams, giving primacy to agricultural, industrial (e.g. water mills, mining structures) and other features that form part of the Agro-Pastoral and Industrial landscapes (Theme 1 of OUV) (note assigned scores are provided below in brackets):

- Agriculture and Subsistence, comprising 30.4% of SHINE features (0.9)
- Domestic and Religious, comprising 9.6% of SHINE features including a high proportion of medieval and earlier sites that are an integral part of Unenclosed Land and may rarely survive in Enclosed land (0.7)
- Industrial, Transport, Monuments by Form, comprising 49.0% of SHINE features (0.5)
- Other, at 11.1% (0.2)

Legibility – this considers the contribution of that heritage assets make through their presence and survival to the cultural landscape and benefit streams, based on the simplified analysis by Form used for SHINE:

- Any combination of above ground/ below ground and structure (0.9)
- Above ground or structure (0.7)
- Below ground (0.4)
- Degraded (0.1)

The scoring acknowledges that less-legible features, although having high archaeological potential in their right, make less evident contribution to the cultural heritage of an area.

Time Depth – this considers the length of time that SHINE features have been present in the landscape and thus have contributed to sense of history and place, based on simplifying the 37 categories used by FISH into:

- Early Medieval and earlier, comprising 6.9% of SHINE features (0.9)
- Medieval, 8.9% of SHINE features (0.8)
- Post-Medieval, 54.3% of SHINE features (0.5)
- Uncertain, 27.3% of SHINE features which has been given a median score as most are Post-Medieval (0.5)
- 20th century, 2.1% (0.2)

Inter-relationships – the extent to which an asset, or group of assets, might illustrate sense of history and place alongside and in the context of their historic landscapes and other heritage assets, need to be considered, and their value is enhanced, when considered as types of asset in relationship to:

- Designated and non-designated heritage assets, thus explaining gaps which can be explained by the presence of extensive Scheduled Monuments or the need for

recognition of the importance of traditional farm buildings and dry stone walls as heritage assets

- The historic landscape, thus explaining the sparsity for example of heritage assets in remoter areas of Unenclosed Land or the more intensive use of cultivated Inbye land

SHINE features relate to:

- Unenclosed Land (0.9), which retains the highest proportion of Scheduled Monuments of Medieval and earlier date and non-designated heritage assets of importance for:
 - the richest evidence for above-ground heritage features and structures of Romano-British and earlier date, and of Medieval date, in combination with known below-ground elements.
 - a high number of Post-Medieval date structures for sheep (mostly biolds, sheep folds and washes) which relate to communal land management, and other structures such as peat houses in some areas.
 - well-preserved Industrial sites and lithic scatters of Prehistoric date.
- Enclosed land (0.7) in the valley sides and bottoms, which retains some Scheduled Monuments, most listed farm buildings and of importance for:
 - Ancient Fields, subdivided into:
 - Inbye Land, the core agricultural land surviving from before the 13th century where as a result of long use archaeological features are rare, and most structures comprise farm buildings; it contains a small proportion of Medieval ring garths and walls to outgangs, and farmsteads whose sites may date from before the 13th century
 - Intake Land, mostly dating from the Medieval period to the 17th century and with a higher proportion of Medieval and earlier archaeological features; most structures comprise stock enclosures and field barns, with some lime kilns, mines and quarries
 - Planned enclosure which in a national context is not associated with such a rich assemblage of heritage assets but which in the Lake District includes extensive areas of Unenclosed Land which in many cases has reverted to scrub and may retain Medieval and earlier features.
- Ancient Woodland (0.7) which may retain – although typically less legible to non-specialists than features in Unenclosed and Enclosed Land - features remaining from earlier land use and settlement and also can retain high numbers of platforms for burning charcoal and trackways associated with Industrial sites.
- Parks and Gardens which may retain features remaining from earlier land use and settlement (0.6).
- Plantations dating from late 19th century and not so rich as habitats or in archaeological potential (0.2).
- Post-War Enclosed Land (0.1), associated with more intensive agriculture.

A key consideration for three of the four scores has been to develop a simple method that assesses the type, legibility in the landscape and recorded date of SHINE features in

relationship to historic landscape types (as shown in Table 4.19) and other heritage assets. Whilst the Lake District Historic Landscape Characterisation (HLC) uses polygons above a 0.5 hectare scale, and has amalgamated these into more simplified form for the Cultural Landscape Maps (CLMs) published in the Nomination Document, the National Historic Landscape Characterisation (NHLC) has used the same broad-to-narrow terminology to bring nearly 20 years of polygonised mapping into a structure using 250x250m and 500x500m cells. This project has published, as annexes, maps using these local and national scales of analysis; it must be stressed that detailed analysis of the Lake District HLC was beyond the resources available to this project, the data being shown against the published CLMs, whereas it has been possible to provide an analysis of the Dominant types of historic landscape using the NHLC data (Locus Consultants and Exegesis 2017) which is Open Source (Table 4.20). Table 4.21 shows the proportion of land, including for all of the 13 valleys, which is taken up by these historic landscape character types.

Table 4.19: Relationship of National HLC Types to the CLMs shown in the Lake District HLC

National HLC Broad Type	National HLC Dominant Type	Lake District HLC as shown in CLMs
Enclosed Land	Ancient Fields	Inbye Land Intake Land
	Unplanned Fields	
	Piecemeal Enclosure	Recent enclosure
	Planned Enclosure	
	Post-war Enclosed Land	
Designed landscapes	Deer parks Parks and Gardens	Designed landscapes
Industrial	Extractive Industry	
Unenclosed land (part of NHLC Unimproved land)	Rough ground (all types)	Unenclosed land
Woodland	Ancient Woodland	Woodland
	Plantation	Coniferous Plantations

Table 4.20: GIS data used in the project

Data layer	Source	Open data?
SHINE LDNP	LDNP	No
LDNP HER	LDNP	No
LDNP WHS 13 Valleys boundary	LDNP	No
LDNP Historic Landscape Character	LDNP	No
National Historic Landscape Character	Archaeology Data Service	Yes
LDNP Cultural Landscapes	LDNP	No
Countryside Stewardship options/agreements	Natural England	Yes
OSTerrain50	Ordnance Survey	Yes
Google Satellite	Google	No (but freely available to use with copyright attribution)

Table 4.21: Area and numbers of SHINE features in each valley, in relationship to National HLC Dominant Types

Valley	Area in km2	Nos of features	Rough Ground	Ancient Fields	Planned Fields	Post-War Fields	Ancient Woodland	Plantations	Parks & Gardens	Extractive Industry	Freshwater Body & Water Sports
Borrowdale & Bassenthwaite	420.44	1130	182.66 (43.44%)	136.23 (32.4%)	24.85 (5.91%)	26.94 (6.4%)	5.12 (0.01%)	24.25 (5.76%)	2.31 (0.55%)	0.38 (0.09%)	11.88 (2.82%)
Buttermere	144.33	164	35.48 (24.58%)	44.1 (30.55%)	17.26 (11.95%)	32.91 (22.8%)	1.44 (0.99%)	7 (4.84%)	0.12 (0.08%)	0.34 (0.23%)	5.37 (3.72%)
Coniston	270.15	1308	57.91 (21.43%)	97.16 (35.96)	7.81 (2.89%)	9.7 (3.59%)	27.19 (10.06)	58.93 (21.81%)	0.81 (0.29%)	1.00 (0.37%)	8.77 (3.24%)
Duddon	152.26	553	77.10 (50.63)	51.54 (33.84)	7.43 (4.87%)	3.3 (2.16)	2.9 (1.9%)	8.63 (5.66)	0.15 (0.09%)	-	0.26 (0.17%)
Ennerdale	106.35	243	43.2 (40.623%)	27.55 (25.9%)	8.52 (8.01%)	9.4 (8.83%)	0.41 (0.38)	13.3 (12.5%)	0.41 (0.38%)	-	3.18 (2.99%)
Eskdale	162.39	451	85.65 (52.74%)	52.34 (32.23%)	6.16 (3.79%)	5.3 (3.26%)	1.50 (0.92%)	6.76 (4.16%)	1.06 (0.65%)	0.06 (0.003%)	1.06 (0.65%)
Grasmere & Rydal	64.14	255	23.47 (36.59%)	32.28 (50.63%)	0.72 (1.12%)	1.42 (2.21%)	1.92 (2.99%)	0.72 (1.12%)	0.5 (0.77%)	-	1.07 (0.41%)
Haweswater	145.00	754	65.25 (45%)	39.47 (27.22%)	19.85 (13.68%)	5.85 (4.03%)	0.44 (0.30%)	4.51 (3.11%)	3.19 (2.2%)	0.48 (0.33%)	4.73 (3.26%)
Langdale	42.20	325	26.35 (62.44%)	11.89 (28.17%)	0.06 (0.14%)	0.31 (0.09%)	2.03 (4.81%)	1.91 (0.24%)		0.2 (0.006%)	0.4 (0.012%)
Thirlmere	81.13	258	41.51 (51.16%)	26.43 (32.47%)	0.13 (0.16%)	1.13 (1.39%)	0.38 (0.46%)	7.44 (9.17%)	0.38 (0.46%)	0.31 (0.38%)	4.24 (4.24%)
Ullswater	213.80	534	79.06 (36.97%)	54.85 (10.27%)	21.49 (4.02%)	30.05 (5.62%)	3.69 (5.62%)	9.21 (1.72%)	3.81 (0.71%)	0.19 (0.03%)	9.81 (1.83%)
Wasdale	122.65	438	52.77 (43.02%)	40.31 (32.86%)	2.96 (2.41%)	11 (8.96%)	2.06 (1.67%)	2.96 (2.41%)	0.25 (0.20%)	-	2.88
Windermere	367.14	1071	20.05 (5.46%)	126.66 (34.49%)	60.19 (16.39%)	91.66 (24.96%)	11.64 (3.17%)	30.49 (8.30%)	1.97 (0.53%)	0.67 (0.18%)	14.95 (0.25%)
TOTAL	2292.05	7484	790.46 34.5%	740.81 32.32%	177.43 7.74%	228.97 9.98%	60.72 2.64%	175.01 7.63%	14.96 0.65%	3.63 0.16%	68.6 2.99%

Scores within each case study areas for each of the three measures (time-depth; legibility; inter-relationships) were weighted based on the proportion of SHINE assets falling within the different categories (i.e. time period for time-depth; above/below ground for legibility; landscape type for inter-relationships). An example of the heritage scoring approach for SHINE assets is provided in Table 4.22 and Figure 4.23 below. The weighted scores for all of the case study areas are summarized in Table 4.23.

Table 4.22 and Figure 4.23 illustrates how the scores were allocated in the Haweswater case study area. The Haweswater area, like the other case studies, had a predominance of Agricultural features on the SHINE data base (n=290), along with a significant number of industrial features (n=129; remains of mine workings, etc.), monuments, religious, and transport features. Time-depth scores are based on multiplying the proportion of total assets in each one of five different time period categories (e.g. early and pre-medieval, medieval, 20th century, etc.) by the relevant score allocated to the category (i.e. 0.9, 0.8, 0.5, 0.2, 0.4; see Figure 4.23). The scores were assigned through expert opinion that reflects the significance of each time period in terms of the SHINE features' impacts on the landscape of the area. Table 4.22 illustrates that in the case of Haweswater, half of the SHINE features (0.5) were indicated as dating to the medieval period, providing a mean score of 0.25 for that category of feature, compared to a mean score of 0.087 for the early and pre-medieval features (making up less than 10% of the total number of features). The post-medieval features thus have a much larger impact on the landscape than the much smaller proportion of features dating from earlier periods in time. Summing the proportional scores across the time-period categories provides an overall score of 0.569.

Table 4.22 also provides the scores derived for Legibility and Inter-relationships. Legibility scoring is based on the number of SHINE features that are either above or below ground, and those that are structures or a combination of features and structures. Below ground features are necessarily less visible in terms of the feature itself and the impact on the landscape and thus receive a lower score than above ground features and structures. Just over 62% of the SHINE features in Haweswater are defined as above ground, producing an average score of 0.438 when multiplied by the significance factor of 0.7. the mean Legibility score for all features in the area is 0.77.

Inter-relationships describe the relationship of each category of SHINE feature to the surrounding landscape in terms of the significance of the type of feature in making visible the relational links between cultural forces and natural factors in the landscape. Significance factors range from 0.9 for features associated with unenclosed land down to 0.1 for features linked to recently enclosed land. Table 4.22 shows that 57% of the SHINE features relate to 'Enclosed land (*in-bye and valley bottoms*)' providing a mean score of 0.399 and an overall score for all SHINE features in Haweswater of 0.727.

Table 4.22 Example of scoring time-depth, legibility, and inter-relationships of SHINE features in the landscape (as applied to the Haweswater case study area)

Time Period	Early and pre-medieval	Medieval	Post medieval	20 th Century	Uncertain	Overall Mean score
Time period significance factor	0.90	0.80	0.50	0.20	0.40	
Proportion of SHINE features	0.097	0.202	0.500	0.050	0.151	1.00
Mean score	0.087	0.161	0.250	0.010	0.060	0.569

Legibility	Above ground feature	Below ground feature	Above + below ground feature	Structure + above and /or below ground feature/structure combination	Legibility Mean score
Legibility significance factor	0.7	0.4	0.4	0.9	
Proportion of SHINE features	0.626	0.004	0.005	0.365	1.000
Mean score	0.438	0.002	0.002	0.328	0.770

Inter-relationship	Unenclosed land	Enclosed land (in-by and valley bottoms)	Woodland	Designed landscape	Recent enclosure	Inter-relationship mean score
Inter-relationship significance factor	0.90	0.70	0.70	0.60	0.10	
Proportion of SHINE features	0.229	0.570	0.159	0.011	0.031	1.00
Mean score	0.206	0.399	0.111	0.006	0.003	0.727

(Note: Scores are based on a total of 754 SHINE Features in the Haweswater case study area)

Figure 4.23 also illustrates the scoring for two additional factors affecting cultural ecosystem services generated by the cultural landscape: functional type, and condition. The ‘function’ of a SHINE feature relates to its significance on the landscape over time. Thus, agricultural features were allocated a higher significance factor than other features due to the greater impact of agricultural activity on the landscape. The final column in Figure 4.23 describes the condition of features in the landscape. The scores are based on a single survey of heritage features in the area which indicated that 83% of all heritage features surveyed were in fair or good condition and around 7% in bad or very bad condition. However, not all assets were included and there is some missing data. An overall score of 0.8 was assigned across all SHINE features to reflect the indicated relatively good condition of assets.

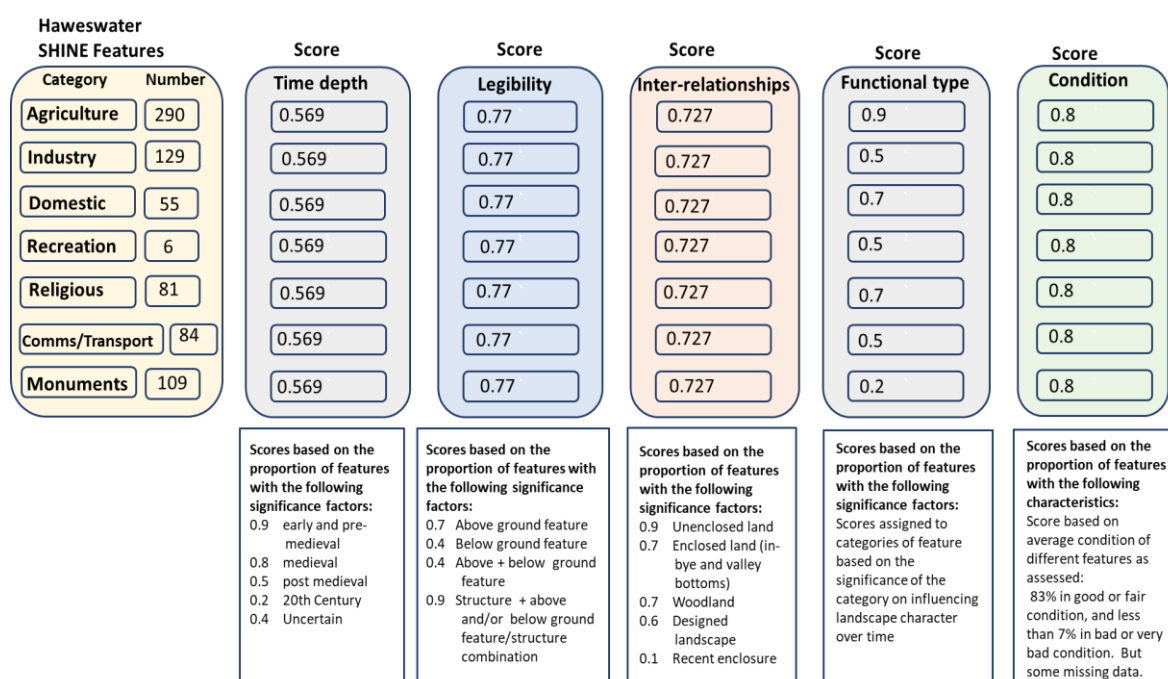


Figure 4.23 Example of SHINE Asset scoring for the Haweswater case study area

All the scores identified in Figure 4.23 were incorporated into the return-on-investment model as factors that influence the value of the heritage assets in the area. It is worth noting that scores for time-depth, legibility, and inter-relationships are quite similar. This is due in part to the limited information in the SHINE data base which places the data into a limited number of categories which are then weighted to derive an average score within a defined area. As each case study area has a similar proportion of assets in the same categories, the weighted scores for time depth, legibility, and inter-relationships also tend to be similar.

Condition data for the cases study areas came from earlier surveys on condition of heritage assets in Haweswater and Eskdale. In Eskdale a partial survey of approximately 65% of the SHINE features revealed 53% to be in ‘bad or very bad condition’, resulting in a condition a condition score of 0.45 (based on a 0 to 1 scale).

Table 4.23: Weighted case study scores for time-depth, legibility, and inter-relationships, and condition

Case study area	Time-depth	Legibility	Inter-relationship	Condition
Eskdale	0.515	0.534	0.733	0.45
Haweswater	0.569	0.770	0.727	0.80
Langdale	0.559	0.542	0.867	0.60
Upper Derwent T&T	0.501	0.778	0.785	0.60

A survey in Haweswater revealed 8.5% of the assets had no condition data identified, and some sites were identified as being vandalised or have other significant problems, such as no longer existing, being overgrown, or under water. However, the survey indicated 83% of assets to be in good of fair condition, and less than 7% in bad or very bad condition – resulting in a condition score of 0.8. No condition data were available for Langdale or Upper Derwent T&T areas therefore a mid-point score of 0.6 was utilised, based on the Eskdale and Haweswater scores.

4.4.3 Model outputs

A social return-on-investment (SROI) model was developed for the study to explore the value of cultural services generated in terms of benefit flows over time to identified sectors of the population. Each case study area was considered separately to enable application of local contextual data such as population size, farmer numbers, and visitor numbers. The model was limited to valuing the ‘direct’ non-market benefits arising from heritage assets in each case study area. The term ‘direct’ refers to benefits experienced directly by those living in and visiting the area. The model does not incorporate indirect non-market values (such as existence, bequest, and option values) related to the stock of cultural heritage capital, and neither does it include market values and employment creation arising from such activities as tourism, a portion of which could be attributed to cultural heritage of an area. The model outputs, therefore, can be considered as a conservative estimate of the value of benefits generated by the cultural heritage in each case study area.

Figure 4.24 provides a simplified illustration of model operation. In the model each category of heritage asset (e.g. agricultural, industrial, religious, etc.) is explored separately to identify the unique set of benefit flows generated, and each identified benefit flow is treated independently in terms of calculating the value generated. The final operation, not illustrated in Figure 4.24, sums the present value for each identified benefit flow to produce the total value of benefits generated by the heritage assets in an area.

Prior to constructing the model the set of heritage assets were analysed to create categories of asset with similar impacts on the landforms, both in terms of their visible impact, and cultural effects (e.g. agriculture influences the landscape, and also creates working practices, customs and traditions which influence how people value an area and its heritage). For each category of asset the cultural services generated were analysed, and for each service, the types of beneficiaries were identified (e.g. residents, farmers, visitors to the area). The model was then constructed by incorporating each individual benefit flow into the calculations.

The model can be considered in terms of two sets of linked modules that analyse the value of each identified benefit flowing from cultural services generated by heritage

assets. The first module (Heritage asset scoring) involves assessing the quality and quantity of the heritage assets contributing to the cultural services and benefit flows, (referred to as the ‘overall asset incidence’). This involves identifying the number and type of heritage assets in a defined area that generate a particular flow of benefits. In this model the density of heritage assets per km² within a defined area was utilised as the basis for assessing the incidence (in practice this is the number of SHINE assets per km²). As different categories of asset have different impacts on the landscape and culture, each category of SHINE asset was treated separately in terms of measuring density and scoring. The density measure for each category of heritage asset was then multiplied by a range of significance factors relating to age (time depth), its ‘visibility’ (legibility), and the way in which it relates to the wider landscape context (inter-relationship). The density score was then further modified through multiplication by functionality and condition scores. The outcome of the first module is a measure of ‘asset incidence’ within an area (this can be conceptualised as *‘an expert informed measure of the cultural significance of the current stock of a category of heritage asset within a defined area’*).

This measure of incidence modifies the level of benefits initially identified as flowing from each category of heritage asset. The second part of the model operation, the Heritage asset valuation module, takes this measure of incidence and links it to a measure of value for each identified benefit flow. The Figure 4.24 illustrates the valuation process for a single identified benefit flow (e.g. sense of place, amenity, or improved sense of wellbeing). The source of monetary valuation is application of a ‘financial approximation’ to the measured level of heritage asset incidence. The benefit flow from an asset generates value to a person (the beneficiary) which is not captured by the market (e.g. an improved sense of wellbeing from spending time in a cultural landscape). In order to place a monetary value on this benefit the model builders explore alternative means by which a similar level of wellbeing might be generated, through activities which have a market price. For example, spending time relaxing at a health spa, taking a counselling course, or undergoing some therapy may all produce positive measures of wellbeing, for a price. The activity most closely associated with the benefit flow of interest is selected and the cost is utilised to ‘approximate’ the change in value experienced by the individual beneficiary. The financial value applied may then be modified by the level of exposure to the benefit flow by different individuals (e.g. residents live in the area, visitors may only visit for a day or even a few hours) and/or limited to specific types of individual (e.g. livestock farmers in the area, visitors who explicitly visit an area to experience the landscape).

The modified financial approximation is only for a single individual and must then be multiplied by the number of individuals of each identified different type that are benefitting (such as resident, visitor, farmer, etc.). The output from this calculation provides a total current annual value for the benefit flow under consideration. As the model explores benefit values over time the future flow of benefits is then discounted over the period of interest (in this model values we discounted over periods from 10 years using the recommended Treasury Green Book (2018) discount rate of 3.5%). The outcome from the model is the present value generated by the flow of benefits over a ten-year period. The present values of each identified benefit flow for each category of heritage asset, and for each category of beneficiary, are then summed to provide the total present value of the cultural benefits generated over a ten-year period by the current stock of heritage assets in a defined area. The structure of the model also enables values to be generated for different numbers and types of beneficiary, and the various categories

of heritage asset. It can also explore heritage values over varying time periods and explore changes in the value of benefit flows generated through change in the quality or quantity of the stock of heritage assets.

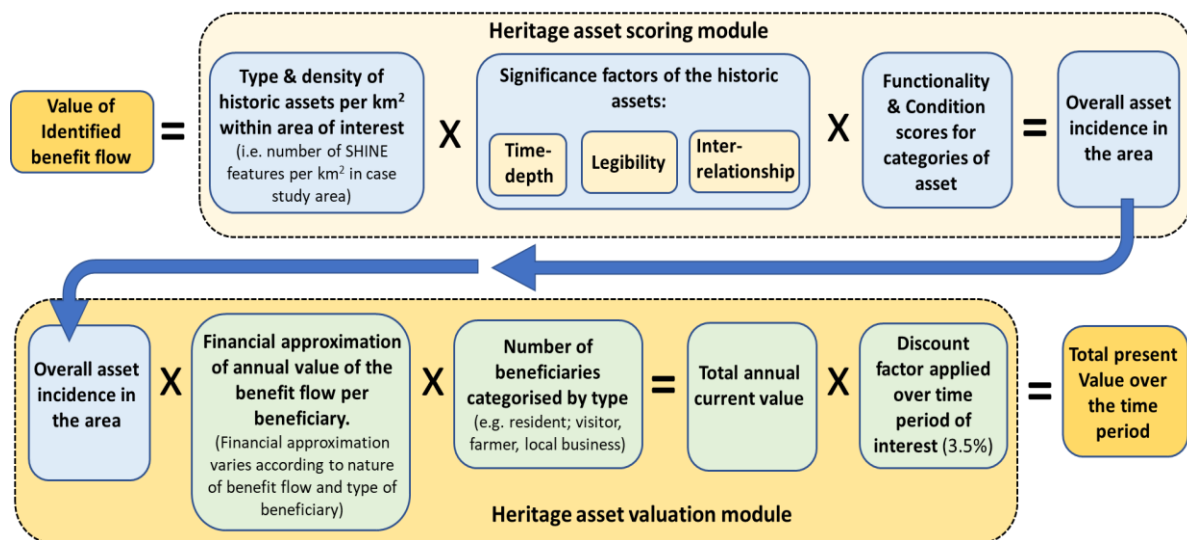


Figure 4.24: Simplified breakdown of the return-on-investment model operation

The valuation model outputs are summarized in Tables 4.24-4.27. The tables indicate the present value of cultural services from SHINE assets over a 10-year, discounted at 3.5% annually (Treasury Green Book 2018).

The model outputs are based solely on values generated by the categories of SHINE assets (with the assumption that these assets contribute 40% of the total value of cultural heritage assets) in each of the case study areas. An approximation of total heritage asset values could be produced by incorporating all of the heritage assets in the HER for the case study areas examined (this task was beyond the resources available for the research). Variation in PV figures between the areas can be accounted for by a range of factors:

- Number and mix of assets in each area.
- Scoring applied to assets in each area.
- Condition score in each area.
- Number of residents in each area.
- Number of visitor days assigned to each area.

Model outputs reveal that the largest proportion of cultural service value is contributed from agricultural/subsistence assets, which is not surprising given the high proportion of this category of asset in the SHINE dataset. Agricultural/subsistence assets contribute slightly more than half of the value of benefit flows in each of the areas (ranging from 52 to 62%). There is more variability in benefits flowing from industrial heritage, the Upper Derwent T&T area has the largest proportion of industrial assets (25.8%) of the three areas, and Haweswater the lowest at 12.7%.

The majority of value derives from just four categories of asset:

- Agriculture.
- Industrial.
- Domestic.
- Religious.

The majority of value in each case study comes from Agriculture and industry (ranging from 67% to 78% of the total value). Agricultural/subsistence assets comprise the largest category of assets in each case study area, and also contribute more significantly to generating flows of benefits. The lowest values come from recreation assets. This is not surprising given the small number of assets in this category in the SHINE dataset. It must be kept in mind that the values generated by the model represent the identified benefit flows to visitors and residents. The model is currently based only on assessing direct benefits (arising from direct experience of, and interaction with, the cultural landscape – i.e. use values). In many ways the figures represent a conservative estimate of the value of cultural services generated by cultural and historic assets. There has been no attempt to include indirect (or ‘non-use’) values such as option, existence, and bequest values. Neither does the model incorporate economic values arising from the benefits of visitor spending, or job creation based on utilisation and/or maintenance of the cultural capital.

Values range from a low of £100.4 million to £363.8 million over a ten-year period (i.e. ranging from around £10 million/year to 36 million/yr in present value terms. Total present values over the ten-year period are significantly higher in Langdale and the Upper Derwent T&T areas than for the other two case studies. This is interesting as Langdale is the smallest area with the least number of assets (325 SHINE assets spread over 42km²) compared to 1,133 assets for Derwent, but spread over a much larger area.

The higher value of the benefit flows from the Upper Derwent T&T area would be expected given its much larger area, the greater number of heritage assets, a larger resident population, and a much larger number of visitors than the other areas (an estimated 3 million visitor days/year, compared to 1.5 million for Langdale, 1.7 million for Eskdale and 0.95 million for Haweswater).

Table 4.24: Eskdale: Present value of cultural services generated by SHINE assets over a 10-year period

SHINE Asset Category	Total Present value (over 10 yrs)	% of total value (over 10 yrs)
Agricultural/subsistence	£52,969,131	52.74%
Industrial	£14,295,846	14.23%
Domestic	£10,007,092	9.96%
Recreation	£487,358	0.49%
Religious	£16,147,807	16.08%
Communication/transport	£2,761,697	2.75%
Monuments + other	£3,768,905	3.75%
Total	£100,437,836	100.00%

Table 4.25: Haweswater: Present value of cultural services generated by SHINE assets over a 10-year period

SHINE Asset Category	Total Present value (over 10 yrs)	% of total value (over 10 yrs)
Agricultural/subsistence	£124,058,838	55.44%
Industrial	£28,393,823	12.69%

Domestic	£16,948,251	7.57%
Recreation	£1,320,643	0.59%
Religious	£24,960,152	11.15%
Communication/transport	£18,489,001	8.26%
Monuments + other	£9,596,672	4.29%
Total	£223,767,380	100.00%

Table 4.26: Langdale: Present value of cultural services generated by SHINE assets over a 10-year period

SHINE Asset Category	Total Present value (over 10 yrs)	% of total value (over 10 yrs)
Agricultural/subsistence	£224,113,137	61.98%
Industrial	£59,907,398	16.57%
Domestic	£26,791,920	7.41%
Recreation	£832,047	0.23%
Religious	£10,483,795	2.90%
Communication/transport	£22,465,274	6.21%
Monuments + other	£16,973,763	4.69%
Total	£361,567,334	100.00%

Table 4.27: Upper Derwent T & T area: Present value of cultural services generated by SHINE assets over a 10-year period

SHINE Asset Category	Total Present value (over 10 yrs)	% of total value (over 10 yrs)
Agricultural/subsistence	£192,850,501	53.01%
Industrial	£94,058,163	25.85%
Domestic	£18,259,825	5.02%
Recreation	£2,508,218	0.69%
Religious	£24,229,383	6.66%
Communication/transport	£16,052,593	4.41%
Monuments + other	£15,851,936	4.36%
Total	£363,810,617	100.00%

There are a number of explanations for why Langdale, the smallest area with the fewest SHINE assets, might have such a large total value over the ten-year period as depicted in Table 4.26. A key difference between Langdale and the other areas is the density of heritage assets per km². Langdale has 7.7 SHINE assets per km² compared to Upper Derwent T&T area which has 2.75. Eskdale has a density of 2.8 per km² and Haweswater has a density of 5.2 per km², although these two areas are also less densely populated and tend to have lower visitor numbers, which also reduce the values of the benefit flows. In the model, density of assets/km² is being utilised as a means of assessing the extent of SHINE heritage assets across a large landscape and a relatively small change can have a significant influence on the manner in which the model tracks the generation of service flows. In addition, the inter-relationships score for the heritage assets in Langdale is significantly higher (at 0.867) than the other areas indicating a higher value from the impact of heritage assets on the cultural landscape. Finally, Langdale also has large numbers of visitors, which have an impact on the size of the benefit flows calculated. Thus, in terms of model operation, a relatively small area with a high density of heritage asset is likely to have more visible impacts on the landscape, and hence generate higher levels of benefits to visitors and residents. The high density of features per km². is partially the result of the valley being largely owned by the National Trust who have undertaken extensive archaeological surveys – hence the better understanding of what is there and the greater density and therefore greater extent of inter-relationships. In some of the other case study areas, such as Eskdale, the SHINE

assets are rather thinly distributed across large parts of the landscape. What we do not know is whether the other valleys would have concomitantly enhanced values if they all benefitted from the same degree of survey attention that Langdale has had, it is a possibility that could be explored at a later date.

4.5 Stage 5: Identify the tourism value of SHINE features

4.5.1 Introduction

The 'tourism value' of SHINE features is intimately tied up with their effect on the physical landscape. The model has explored the generation of direct benefits flowing (largely to residents and visitors), but it has not examined the economic services and benefits generated in the region through tourism. Detailed studies exist of the economic impact of tourism in the LDNP, based on fine grained studies of tourist types and expenditure patterns (e.g. STEAM Trend Final Report for 2009-18).

4.5.2 Identify the tourism value of SHINE features

Identifying the tourism value of SHINE features is difficult in two ways:

- Assumptions about visitor numbers and benefits obtained from visits are made from limited tourism survey information.
- SHINE features are fully integrated with other heritage assets to create the cultural landscape; separating out one set of assets from the rest is an artificial exercise that cannot be undertaken with any level of accuracy.

First, the model has made assumptions derived from surveys (Cumbria Tourism 2018) about visitor numbers to the case study areas, based on indications of visitor benefits and activities undertaken and described in surveys. The model then allocates benefit flows to proportions of visitors based on the nature of the benefit flow, and the proportions of visitors to an area that potentially benefit, as outlined in tourism surveys. It would be difficult to calculate a precise value based on number of tourists benefitting, however the model does allocate values to residents and visitors within each case study area. Visitors vastly outweigh the number of residents and the model assigns the majority of benefits flow to visitors. The value outputs from the model are based on calculating the number of people benefitting from each identified service flow. In the case study areas approximately 80 – 90% of values derived from the SHINE assets arise in the form of visitor benefits. Where resident populations are higher (such as in the Upper Derwent T&T area) then a larger proportion of benefits is attributed to residents. In general resident populations in the case study areas tend to be small. Langdale, for example, only has a resident population of 523, so it is not surprising that a million or more visitor days per year will generate large benefit flows that outweigh the values assigned to the resident population. One way to improve the model might be to consider the potential for the case study areas to provide benefits to those living in close proximity. Residents of Ambleside (with a population of 2,600) located at the end of the Langdale valley, for example, may well benefit from proximity and ease of access to the Langdale area.

Secondly, SHINE features are intertwined with other heritage assets that contribute to the cultural landscape value of the Lake District and cannot be separated out in terms of which features contribute values. Our best estimate, based on the fact that SHINE features represent about 40% of the total assets in the HER, is that SHINE features

contribute approximately 42% of overall heritage value. Varying proportions of tourists benefit from heritage assets in a number of ways, including aesthetic experiences, amenity value associated with recreation, and improved wellbeing, but it is difficult to determine an overall tourism value since the SHINE features are an integral part of the cultural landscape.

In the model assumptions have been made for the number of tourists benefitting from different service flows. This varies from 25% who may benefit from improved knowledge and understanding from a visit to 67% who may benefit from improvement in wellbeing. One way to estimate the tourism value would be to assume that around two thirds of visitors benefit from an improvement in well-being (there are indications that just over two-thirds visit the countryside, Cumbria Tourism 2018) and apply that to the economic benefits generated by tourism to arrive at a 'tourism value' of cultural heritage. Taking 42% of this value will then give an estimate of the 'tourism value' of SHINE assets. Tourism economic impact data for the Lake District National Park indicates a total economic impact from tourism of £1.480 billion for 2018 (STEAM Trend Final Report for 2009-18). This is based on 28.55 million visitor days generated from 19.8 million visitors. Applying the suggested calculation outlined above, the economic impact of the cultural heritage is £962 million per annum and 42% of this, is £404 million per year, which could be potentially identified as the 'tourism value' of the SHINE features. A similar approach using slightly different data from 2018 (Cumbria Tourism 2018) based on average daily spend of visitors and average expenditure on accommodation of staying visitors in Cumbria provides a slightly lower estimate of £359.6 million per year for the tourism value of SHINE assets. Both of these calculations assume that the cultural heritage is a key element attracting the visitors to travel to the Lake District, but it is important to keep in mind that a significant proportion of visitors undertake more than one activity in a single visit, so the cultural heritage itself is not always the sole, or even key reason, for visiting.

An alternative approach would be to explore the different areas of spending and allocate proportions of relevant spending to the proportion of visitors who derive some benefit from the cultural heritage of the area. The limited information on reasons for visiting, and on locations visited, would make this a difficult task. A more valid approach would be to expand the current ecosystem services model to incorporate provisioning services and calculate the value of economic service generated by cultural heritage, an activity that was not possible within the current project due to time and resource constraints.

4.6 Stage 6: Determine the impact of AES and other spending on SHINE features

4.6.1 Introduction

The aim of this stage of the project is to determine the impact of AES and other spending on SHINE features in the LDNP. To begin with funding streams associated with the management of SHINE features were identified. Where data sources were available a quantitative analysis of the spend on SHINE features was undertaken. Following this analysis the impact of the spend on SHINE features was investigated through:

- A review of secondary sources (reports, surveys, assessments) produced by Historic England, Defra, Natural England, LDNP and Local Government.

- Telephone interviews with individuals with knowledge of the impact of AES and other spending on SHINE features.
- A workshop session on the SHINE approach.

As a result of the analysis a number of recommendations are made in Section 5 to address gaps in the evidence base on the impact of AES and other spending on SHINE features.

4.6.2 Funding streams and spend on SHINE features

Introduction

In addition to AES there may be funding from Historic England, Government Agencies and Local Government for some categories of SHINE feature, including special funding mechanisms, such as the Farming Recovery Fund. However, specific enquiries about the nature and extent of these non-AES funding streams made during the stakeholder telephone interviews and workshop found that the level of funding was thought to be negligible and did not provide any additional information on how they have been used. Therefore, the remainder of this section focuses on spending delivered through AES.

Agri-environment schemes have been operating in the LDNP for nearly 30 years, starting with the Environmentally Sensitive Areas (ESA) scheme in 1993. Since their inception an important role for AES has been to maintain and enhance the protective management of heritage assets on farmland. As noted in Section 3.2 the SHINE dataset was created in 2008 to inform conservation management of heritage assets under Environmental Stewardship and subsequently Countryside Stewardship from 2015. Both Environmental Stewardship and Countryside Stewardship are voluntary AES that provide financial incentives for farmers and land managers to look after and improve the environment.

Natural England operates the Open Data Geoportal⁹ which contains datasets on live AES agreements held farmers and land managers. The Geoportal also contains information (area and length) of environmental features included within each agreement that can be used to calculate the amount of money spent on each feature. The Environmental Stewardship scheme is currently winding down and was closed to new agreements in 2014. This means that the Geoportal generates a partial picture of the total spend on environmental features over the lifetime of the scheme because many agreements have ended, and this should be borne in mind when interpreting the data.

Spending on SHINE features within the Countryside Stewardship AES

The main elements of Countryside Stewardship (Defra 2020a) relevant to SHINE features are:

- Higher Tier: Multi-year agreements and certain standalone capital items for the most environmentally important sites. These are usually in places that need complex management.
- Mid Tier: Multi-year agreements and capital items that focus on widespread environmental issues.

⁹ <https://naturalengland-defra.opendata.arcgis.com/>

- Capital Grants: These are typically for 2 years:
 - Hedgerows and Boundaries: capital grant to restore existing farm boundaries and provide benefits to the environment and landscape.
 - Traditional farm building restoration pilot: capital grant to restore traditional farm buildings. This pilot project is operating in 5 National Parks, including LDNP.

Farmers and land managers create a Countryside Stewardship agreement by selecting from a menu of over 240 management options and capital grants to maintain, restore or enhance the management of environmental features on their land. The standard agreement length is for 5 years, in exceptional cases they can be longer. While the database has information on all the options and capital grants selected by farmers and land managers to create the agreements, it does not show if a selected option is associated with a SHINE feature and, therefore, the amount of money spent on SHINE features cannot be calculated directly.

After consultation with the PSG and Historic England it was decided to estimate the potential for spending on SHINE features by calculating the spend on options associated with heritage asset management. In total 38 heritage related options were identified and grouped into 3 management categories (Table 4.28):

- Historic and archaeological features.
- Historic landscapes.
- Boundaries.

Each option was given a simple score (High, Medium, Low) according to its likely association with SHINE features (Table 4.28). For example, Option HE1 *Historic and archaeological feature protection* was given a High score because it was thought that it would be highly likely that the feature under management would be recorded in the SHINE dataset, while Option BN12 *Stone wall restoration* was given a Low score as most stone walls in the Lake District are not included in the SHINE dataset.

Table 4.28: Countryside Stewardship options and the management of Shine features

Option code	Option description	Likely association with SHINE feature
Historic and archaeological features		
HE1	Historic and archaeological feature protection	High
HE2	Historic building restoration	Medium
HE3	Removal of eyesore	Low
HS1	Maintenance of weatherproof traditional farm buildings	Medium
HS2	Take historic and archaeological features currently on cultivated land out of cultivation.	High
HS3	Reduced depth, non-inversion cultivation on historic and archaeological features	High
HS4	Scrub control on historic and archaeological features	High
HS5	Management of historic and archaeological features on grassland	High
HS6	Maintenance of designed/engineered water-bodies	High
HS7	Management of historic water meadows through traditional irrigation	High

Option code	Option description	Likely association with SHINE feature
HS8	Maintenance of weatherproof traditional farm buildings in Remote areas	Medium
HS9	Restricted depth crop establishment to protect archaeology under and arable rotation	High
Historic landscapes		
BE4	Management of traditional orchards	Low
BE5	Creation of traditional orchards	Low
BE7	Supplement for restorative pruning of fruit trees	Low
TE2	Planting Standard Parkland Tree	Low
TE3	Planting Fruit Trees	Low
TE9	Parkland Tree Guard - welded steel	Low
TE14	Identification of orchard fruit tree varieties	Low
WD4	Management of wood pasture and parkland	Medium
WD5	Restoration of wood pasture and parkland	Medium
WD6	Creation of wood pasture	Low
Boundaries		
BE3	Management of hedgerows	Low
BN1	Stone-faced bank repair	Low
BN2	Stone faced bank restoration	Low
BN3	Earth bank creation	Low
BN4	Earth Bank Restoration	Low
BN5	Hedgerow laying	Low
BN6	Hedgerow coppicing	Low
BN7	Hedgerow gapping up	Low
BN8	Hedgerow supplement - casting up	Low
BN9	Hedgerow supplement - Substantial new work	Low
BN10	Hedgerow supplement - top binding and staking	Low
BN11	Planting new hedges	Low
BN12	Stone wall restoration	Low
BN14	Stone wall supplement - Stone from quarry	Low
BN15	Stone wall supplement - difficult sites	Low
FG13	Stone gate post	Low

Analysis

At the beginning of 2020 there were 364 live Countryside Stewardship agreements operating withing the LDNP covering 118 km² (5.2%). 138 (38%) of the agreements contained one or more options associated with the management of heritage assets. The total committed spend on heritage options was £4,812,159 with 65.6% being spent on historic landscapes, 19.0% on boundaries and 15.4% on historic and archaeological features (Table 4.29).

Spend within the historic landscapes category was dominated by 2 options, WD5 *Restoration of wood pasture and parkland* (£1,534,880) and WD6 *Creation of wood pasture* (£1,177,347). Three options accounted for the majority of spend in the boundaries category: BN12 *Stone wall restoration* (£407,975), BN5 *Hedgerow laying*

(£208,125) and BN11 *Planting new hedges* (£114,167). Two options accounted for the majority of spending in the historic and archaeological features category: HE2 *Historic building restoration* (£556,448) and HS1 *Maintenance of weatherproof traditional farm buildings* (£141,375). The most widespread options across all agreements containing heritage options were in boundaries category: BN12 *Stone wall restoration* (71 agreements), BN5 *Hedgerow laying* (43), BE3 *Management of hedgerows* (38) and BN11 *Planting new hedges* (32) (Table 4.29).

Table 4.29: Countryside Stewardship options spend (£)

Option code	Option description	Number of agreements	Spend (£)
Historic and archaeological features			
HE1	Historic and archaeological feature protection	1	25,160
HE2	Historic building restoration	6	556,448
HE3	Removal of eyesore		0
HS1	Maintenance of weatherproof traditional farm buildings	25	141,375
HS2	Take historic and archaeological features currently on cultivated land out of cultivation.		0
HS3	Reduced depth, non-inversion cultivation on historic and archaeological features		0
HS4	Scrub control on historic and archaeological features		0
HS5	Management of historic and archaeological features on grassland	7	12,279
HS6	Maintenance of designed/engineered water-bodies		0
HS7	Management of historic water meadows through traditional irrigation		0
HS8	Maintenance of weatherproof traditional farm buildings in Remote areas	2	6,730
HS9	Restricted depth crop establishment to protect archaeology under and arable rotation		0
	Total spend		741,992 (15.4%)
Historic landscapes			
BE4	Management of traditional orchards	2	8,237
BE5	Creation of traditional orchards	1	9,047
BE7	Supplement for restorative pruning of fruit trees	1	276,520
TE2	Planting Standard Parkland Tree	6	128,282
TE3	Planting Fruit Trees	2	10,058
TE9	Parkland Tree Guard - welded steel		0
TE14	Identification of orchard fruit tree varieties	1	13,862
WD4	Management of wood pasture and parkland		0
WD5	Restoration of wood pasture and parkland	5	1,534,880
WD6	Creation of wood pasture	4	1,177,347
	Total spend		3,158,233 (65.6%)
Boundaries			
BE3	Management of hedgerows	38	35,547
BN1	Stone-faced bank repair	1	682
BN2	Stone faced bank restoration	3	42,398
BN3	Earth bank creation		0
BN4	Earth Bank Restoration	1	5,166

Option code	Option description	Number of agreements	Spend (£)
BN5	Hedgerow laying	43	208,125
BN6	Hedgerow coppicing	10	12,380
BN7	Hedgerow gapping up	24	56,335
BN8	Hedgerow supplement - casting up	7	9,717
BN9	Hedgerow supplement - Substantial new work		0
BN10	Hedgerow supplement - top binding and staking		0
BN11	Planting new hedges	32	114,167
BN12	Stone wall restoration	71	407,975
BN14	Stone wall supplement - Stone from quarry	5	8,624
BN15	Stone wall supplement - difficult sites	4	9,978
FG13	Stone gate post	1	840
	Total spend		911,934 (19.0%)

Table 4.30 shows the majority of the spend on Countryside Stewardship heritage options is on features that have a Low or Medium likelihood of being recorded in the SHINE dataset. Less than 1% of the spend is on features which have a high likelihood of being recorded in the SHINE dataset. This would suggest that Countryside Stewardship is helping to maintain and enhance the protective management of heritage assets on farmland which contribute to the broader OUV of the Lake District, particularly field boundaries and tradition farm buildings rather than features with a high likelihood of being recorded on the SHINE dataset. The uptake of Countryside Stewardship heritage options presented in this section was broadly in line with the evidence from the interviews conducted with heritage professionals which is discussed in Section 4.6.3 below.

Table 4.30: Level of Countryside Stewardship option spend by likely association with SHINE features

Option code	Option description	Spend (£)
Likely association with SHINE feature: High		
HE1	Historic and archaeological feature protection	25,160
HS2	Take historic and archaeological features currently on cultivated land out of cultivation.	0
HS3	Reduced depth, non-inversion cultivation on historic and archaeological features	0
HS4	Scrub control on historic and archaeological features	0
HS5	Management of historic and archaeological features on grassland	12,279
HS6	Maintenance of designed/engineered water-bodies	0
HS7	Management of historic water meadows through traditional irrigation	0
HS9	Restricted depth crop establishment to protect archaeology under and arable rotation	0
	Total spend	37,439 (0.8%)
Likely association with SHINE feature: Medium		
HE2	Historic building restoration	556,448
HS1	Maintenance of weatherproof traditional farm buildings	141,375
HS8	Maintenance of weatherproof traditional farm buildings in Remote areas	6,730
WD4	Management of wood pasture and parkland	0

Option code	Option description	Spend (£)
WD5	Restoration of wood pasture and parkland	1,534,880
	Total spend	2,239,433 (46.5%)
Likely association with SHINE feature: Low		
BE3	Management of hedgerows	35,547
BE4	Management of traditional orchards	8,237
BE5	Creation of traditional orchards	9,047
BE7	Supplement for restorative pruning of fruit trees	276,520
BN1	Stone-faced bank repair	682
BN10	Hedgerow supplement - top binding and staking	0
BN11	Planting new hedges	114,167
BN12	Stone Wall Restoration	407,975
BN14	Stone wall supplement - Stone from quarry	8,624
BN15	Stone wall supplement - difficult sites	9,978
BN2	Stone faced bank restoration	42,398
BN3	Earth bank creation	0
BN4	Earth Bank Restoration	5,166
BN5	Hedgerow laying	208,125
BN6	Hedgerow coppicing	12,380
BN7	Hedgerow gapping up	56,335
BN8	Hedgerow supplement - casting up	9,717
BN9	Hedgerow supplement - Substantial new work	0
FG13	Stone gate post	840
HE3	Removal of eyesore	0
TE14	Identification of orchard fruit tree varieties	13,862
TE2	Planting Standard Parkland Tree	128,282
TE3	Planting Fruit Trees	10,058
TE9	Parkland Tree Guard - welded steel	0
WD6	Creation of wood pasture	1,177,347
	Total spend	2,535,287 (52.7%)

Spending on SHINE features within the Environmental Stewardship AES

The Environmental Stewardship scheme was launched in 2005 and closed to new applicants in 2014. The final agreements will be completed in 2024. The scheme provides payments to farmers and land managers in England who deliver environmental management on their land and has five major objectives:

- conserve wildlife;
- maintain and enhance landscape quality and character;
- protect the historic environment;
- protect natural resources;
- promote public access and understanding of the countryside.

There are four elements to Environmental Stewardship: Entry Level Stewardship (ELS), Organic Entry Level Stewardship (OELS), Uplands Entry Level Stewardship (UELS) and Higher Level Stewardship (HLS):

- ELS provides a straightforward approach to supporting the good stewardship of the countryside. This was done through simple and effective land management that went beyond the Single Payment Scheme requirement to maintain land in good agricultural and environmental condition.
- OELS is the organic strand of ELS. It was geared to organic and organic/conventional mixed farming systems and was open to all farmers not receiving Organic Farming Scheme aid. OELS aimed to encourage a large number of organic farmers across a wide area of farmland to deliver simple yet effective environmental management.
- UELS supports hill farmers with payments for environmental management. This element of Environmental Stewardship succeeded the Hill Farm Allowance. It was open to all farmers with land in Severely Disadvantaged Areas, regardless of the size of the holding.
- HLS involves more complex types of management than ELS. Farmers and land managers receive advice and support, and agreements are tailored to local circumstances. HLS applications were assessed against specific local targets and agreements are offered where they meet these targets and represent good value for money. They could be combined with ELS, OELS or UELS.

The three ELS elements required farmers and land managers to manage land according to specified environmental standards for a period of 5 years in return for a set payment per hectare. Entry into ELS was determined by a 'points per hectare' calculation where points are earned by selecting from over 80 different land management options. The general payment was £30 per hectare per year for all land entered into the scheme, provided participants deliver 30 points worth of options per hectare. HLS agreements lasted for 10 years, with a break clause at five years, and applicants could choose from over 90 management options and supplements. The level of payment relates to the range of options that have been chosen. HLS includes payments for capital items such as historic building restoration.

The NEODG option data for the Environmental Stewardship scheme has the same limitations as the Countryside Stewardship data and does not show if a selected option is associated with a SHINE feature and, therefore, the amount of money spent on SHINE features cannot be calculated directly. The methodology developed for the analysis of the Countryside Stewardship data was adapted for the Environmental Stewardship data to estimate the potential for spending on SHINE features. The uptake of HLS and ELS heritage options are analysed separately as spend figures can only be calculated for HLS options because ELS payments were calculated on a hectare basis.

Analysis

At the beginning of 2020 there were 443 live Environmental Stewardship agreements operating within the LDNP and 379 (85.5%) of these agreements contained one or more options associated with the management of heritage assets. Of those agreements with associated heritage options all but 3 were joint ELS and HLS 10 year agreements. There were 2 ELS only agreements that was about to expire and one HLS only agreement. The oldest agreement was started in November 2009 and the most recent began in

November 2014. Uptake HLS and ELS heritage options are analysed separately as spend figures can only be calculated for HLS options because ELS payments were calculated on hectare basis.

The total committed spend on HLS heritage options was £8,980,880 with 63.5% being spent on boundaries, 34.9% on historic landscapes, and 1.6% on historic and archaeological features (Table 4.31). However, it is likely that the spend in historic and archaeological features category is underrepresented as financial data was missing for two options; *HAP Historical and archaeological feature protection* and *HTB Restoration of historic buildings*, which were identified in the interviews with heritage professionals as significant areas of activity and spend. In the boundaries category two groups of option, hedgerow management and restoration (£2,812,999) and stone wall restoration (£1,799,915) dominated the spending. Maintenance and restoration of parkland and wood pasture options (£3,050,881) accounted for the majority of the spend in the historic landscape category.

Table 4.31: Environmental Stewardship HLS options spend (£)

Option code	Option description	Likely association with SHINE feature	Number of agreements	Spend (£)
Historic and archaeological features				
HD01	Maintenance of weatherproof traditional farm buildings	Medium	5	54,143
HD02	Take out of cultivation archaeological features currently on cultivated land	High	1	74,106
HD03	Reduced-depth, non-inversion cultivation on archaeological features	High	0	0
HD04	Management of scrub on archaeological features	High	0	0
HD05	Management of archaeological features on grassland	High	11	13,533
HD06	Crop establishment by direct drilling (non-rotational)	High	0	0
HD07	Arable reversion by natural regeneration	High	0	0
HD08	Maintaining high water levels to protect archaeology	High	0	0
HD09	Maintenance of designed/engineered water bodies	High	0	0
HD10	Maintenance of traditional water meadows	High	0	0
HD11	Restoration of traditional water meadows	High	0	0
UHD12	Maintenance of weatherproof traditional farm buildings in remote locations	Medium	0	0
UHD13	Maintaining visibility of archaeological features on moorland	High	3	3,180
HAP	Historical and archaeological feature protection	High	11	Missing data
HTB	Restoration of historic buildings	Medium	3	Missing data

Option code	Option description	Likely association with SHINE feature	Number of agreements	Spend (£)
E	Removal of eyesore	Low	0	0
	Total spend			144,962
Historic landscapes				
HC05	Ancient trees in arable fields	Low	0	0
HC06	Ancient trees in intensively managed grass fields	Low	1	0
HC12	Maintenance of wood pasture and parkland	Medium	11	414,936
HC13	Restoration of wood pasture and parkland	Medium	23	2,330,658
HC14	Creation of wood pasture	Low	2	32,958
HC18	Maintenance of high-value traditional orchards	Low	10	23,625
HC20	Restoration of traditional orchards	Low	10	9,350
HC19	Maintenance of traditional orchards in production	Low	0	0
HC21	Creation of traditional orchards	Low	6	2,869
STT	Standard parkland tree/hedgerow tree and planting	Medium	44	118,215
TP	Parkland tree guard – post and wire (wood)	Low	67	187,072
MT/SF	Planting fruit trees	Low	14	4,539
TO	Orchard tree guard (tube and mesh)	Low	15	2,452
TOF	Orchard tree guard (cattle proof)	Low	5	1,656
TOS	Orchard tree guard (sheep proof)	Low	5	6,400
FP	Orchard tree pruning	Low	0	952
	Total spend			3,135,682
Boundaries				
HB11	Management of hedgerows of very high environmental value (both sides)	Low	3	1,627,020
HB12	Management of hedgerows of very high environmental value (one side)	Low	2	708,480
HB14	Management of ditches of very high environmental value	Low	4	986,760
HR	Hedgerow restoration including laying, coppicing and gapping up	Low	2	8,218
HR2010	Hedgerow restoration including laying, coppicing and gapping up	Low	112	464,260
HF	Hedgerow supplement – removal of old fence lines	Low	11	3,101
HSC	Hedgerow supplement – substantial pre-work	Low	3	1,920
HSL	Hedgerow supplement – top binding and staking	Low	0	0
WR	Stone wall restoration	Low	5	53,370
WR2010	Stone wall restoration	Low	184	1,608,687
WRS	Stone wall supplement – stone from holding	Low	24	13,464

Option code	Option description	Likely association with SHINE feature	Number of agreements	Spend (£)
WRQ	Stone wall supplement – stone from quarry	Low	6	9,870
WRD	Stone wall supplement – difficult sites	Low	74	114,524
BR	Stone-faced hedge bank repair	Low	4	5,392
BS2010	Stone-faced hedge bank restoration	Low	4	32,340
ER2010	Earth bank restoration	Low	7	20,059
ERC	Casting up supplement – hedge bank options	Low	23	23,497
DR	Ditch, dyke and rhine restoration	Low	8	13,995
LSP	Stone gate post	Low	6	5,280
	Total spend			5,700,237

Table 4.32 shows that 99% of the spend on Environmental Stewardship HLS heritage options is on features that have a Low (66.5%) or Medium (32.5%) likelihood of being recorded in the SHINE dataset. It is estimated that 1% of the spend is on features which have a high likelihood of being recorded in the SHINE dataset. As with Countryside Stewardship, this analysis would suggest that Environmental Stewardship HLS is helping to maintain and enhance the protective management of heritage assets on farmland which contribute to the broader OUV of the Lake District.

Table 4.32: Level of Environmental Stewardship HLS option spend by likely association with SHINE features

Option code	Option description	Spend (£)
Likely association with SHINE feature: High		
HAP	Historical and archaeological feature protection	Missing data
HD02	Take out of cultivation archaeological features currently on cultivated land	74,106
HD03	Reduced-depth, non-inversion cultivation on archaeological features	0
HD04	Management of scrub on archaeological features	0
HD05	Management of archaeological features on grassland	13,533
HD06	Crop establishment by direct drilling (non-rotational)	0
HD07	Arable reversion by natural regeneration	0
HD08	Maintaining high water levels to protect archaeology	0
HD09	Maintenance of designed/engineered water bodies	0
HD10	Maintenance of traditional water meadows	0
HD11	Restoration of traditional water meadows	0
UHD13	Maintaining visibility of archaeological features on moorland	3,180
	Total spend	90,819
Likely association with SHINE feature: Medium		
HC12	Maintenance of wood pasture and parkland	414,936
HC13	Restoration of wood pasture and parkland	2,330,658
HD01	Maintenance of weatherproof traditional farm buildings	54,143
HTB	Restoration of historic buildings	Missing data
STT	Standard parkland tree/hedgerow tree and planting	118,215
UHD12	Maintenance of weatherproof traditional farm buildings in remote locations	0
	Total spend	2,917,952
Likely association with SHINE feature: Low		
BR	Stone-faced hedge bank repair	5,392
BS2010	Stone-faced hedge bank restoration	32,340
DR	Ditch, dyke and rhine restoration	13,995

Option code	Option description	Spend (£)
E	Removal of eyesore	0
ER2010	Earth bank restoration	20,059
ERC	Casting up supplement – hedge bank options	23,497
FP	Orchard tree pruning	952
HB11	Management of hedgerows of very high environmental value (both sides)	1,627,020
HB12	Management of hedgerows of very high environmental value (one side)	708,480
HB14	Management of ditches of very high environmental value	986,760
HC05	Ancient trees in arable fields	0
HC06	Ancient trees in intensively managed grass fields	0
HC14	Creation of wood pasture	32,958
HC18	Maintenance of high-value traditional orchards	23,625
HC19	Maintenance of traditional orchards in production	0
HC20	Restoration of traditional orchards	9,350
HC21	Creation of traditional orchards	2,869
HF	Hedgerow supplement – removal of old fence lines	3,101
HR	Hedgerow restoration including laying, coppicing and gapping up	8,218
HR2010	Hedgerow restoration including laying, coppicing and gapping up	464,260
HSC	Hedgerow supplement – substantial pre-work	1,920
HSL	Hedgerow supplement – top binding and staking	0
LSP	Stone gate post	5,280
MT/SF	Planting fruit trees	4,539
TO	Orchard tree guard (tube and mesh)	2,452
TOF	Orchard tree guard (cattle proof)	1,656
TOS	Orchard tree guard (sheep proof)	6,400
TP	Parkland tree guard – post and wire (wood)	187,072
WR	Stone wall restoration	53,370
WR2010	Stone wall restoration	1,608,687
WRD	Stone wall supplement – difficult sites	114,524
WRQ	Stone wall supplement – stone from quarry	9,870
WRS	Stone wall supplement – stone from holding	13,464
	Total spend	5,972,110

In contrast to the uptake of historic and archaeological features options in HLS, there was widespread uptake in ELS (Table 4.33). Of the 378 ELS agreement 40.5% included ED1 *Maintenance of weatherproof traditional farm buildings* 31.7% included ED5 *Management of archaeological features on grassland* and 18.6% included UD13 *Maintaining visibility of archaeological features on moorland*. These findings were supported by the interviews with heritage professionals who noted the value of ED5 and UD13 for the protection of archaeological features and the maintenance of visibility.

Table 4.33: Environmental Stewardship ELS options and the management of Shine features

Option code	Option description	Likely association with SHINE feature	Number of agreements
Historic and archaeological features			
ED1	Maintenance of weatherproof traditional farm buildings	Medium	153
ED2	Take out of cultivation archaeological features currently on cultivated land	High	0
ED3	Reduced-depth, non-inversion cultivation on archaeological features (minimum till)	High	0
ED4	Management of scrub on archaeological features	High	5

Option code	Option description	Likely association with SHINE feature	Number of agreements
ED5	Management of archaeological features on grassland	High	120
UD12	Maintenance of weatherproof traditional farm buildings in remote locations	Medium	22
UD13	Maintaining visibility of archaeological features on moorland	High	65
Boundaries			
EB1	Hedgerow management for landscape (on both sides of a hedge)	Low	113
EB2	Hedgerow management for landscape (on one side of a hedge)	Low	125
EB3	Hedgerow management for landscape and wildlife	Low	98
EB4	Stone-faced hedgebank management on both sides	Low	7
EB5	Stone-faced hedgebank management on one side	Low	17
EB6	Ditch management	Low	46
EB7	Half ditch management	Low	10
EB8	Combined hedge and ditch management (incorporating EB1 Hedgerow management for landscape)	Low	7
EB9	Combined hedge and ditch management (incorporating EB2 Hedgerow management for landscape)	Low	9
EB10	Combined hedge and ditch management (incorporating EB3 Hedgerow management for landscape and wildlife)	Low	11
EB11	Stone wall protection and maintenance	Low	267
EB12	Earth bank management on both sides	Low	10
EB13	Earth bank management on one side	Low	3
EB14	Hedgerow restoration	Low	13
UB4	Stone-faced hedgebank management on both sides on or above the Moorland Line	Low	0
UB5	Stone-faced hedgebank management on one side on or above the Moorland Line	Low	0
UB11	Stone wall protection and maintenance on or above the Moorland Line	Low	0
UB12	Earth bank management on both sides on or above the Moorland Line	Low	0
UB13	Earth bank management on one side on or above the Moorland Line	Low	0
UB15	Stone-faced hedgebank restoration	Low	1
UB16	Earth bank restoration	Low	0
UB17	Stone wall restoration	Low	21

4.6.3 Impact of AES and other spending on SHINE features

Review of secondary sources

The review of secondary sources aimed to identify any previous work that had investigated the impact of AES and other spending on SHINE features in the LDNP. A

systematic literature search was undertaken of the websites of Historic England, Defra, Natural England and the LDNP. This was supplemented with a literature search using Google, Google Scholar and the Web of Science. The search of the Defra and Natural England research portals was based on the following themes and keywords:

- Themes:
 - Agri-Environment Scheme Monitoring
 - Landscape, Historic & Amenity
 - Horizon-scanning & Cross-Cutting Issues
- Key Words:
 - SHINE or Selected Heritage Inventory for Natural England
 - Heritage or Archaeology
 - Historic Environment
 - Environmental Stewardship
 - Countryside Stewardship

The same keywords were used search the other websites. The search was conducted between 9th and 12th December 2019 and yielded 14 publications. These publications ranged from technical reports on the development and revision of the SHINE system (see for example, Defra 2012, 2013; Exegesis SDM Ltd. 2012) to general reports on monitoring the impacts of Environmental Stewardship and Countryside Stewardship (see for example, Food and Environment Research Agency 2018; Land Use Consultants 2015; Cookson and Tickner 2103). The reports yielded no information on impact of AES and other spending on SHINE features. Historic England has commissioned research to gather evidence to support the continued inclusion of the heritage assets in AES now and in the future. This research includes the analysis of existing datasets and feedback from users of SHINE data and HEFERS. However, the research will not be published until the summer of 2020 and is unavailable for review. The dearth of information from secondary sources meant the stakeholder interviews and workshop became the main source of evidence on the impact of AES on SHINE features.

Stakeholder interviews and workshop

Telephone interviews were undertaken with four heritage professionals with knowledge of the impact of AES and other spending on SHINE features. The interview schedule had three sections which investigated the impact of AES and other spending on SHINE features:

- Experience with SHINE, Environmental Stewardship and Countryside Stewardship.
- Impact of Agri-Environment Schemes on the management of SHINE features.
- Impact of other funding streams on the management of SHINE features.

The workshop session was attended by 9 stakeholders who had experience of working with SHINE and/or AES and focused on the operational aspects of SHINE. Evidence from the workshop session is woven into the following sections.

Experience with SHINE, Environmental Stewardship and Countryside Stewardship

All the interviewees had experience of working with SHINE and current and past AES. This included inputting to the development and delivery of policy at local and national levels; providing advice and guidance to farmers and land managers in choosing appropriate options and completing agreement applications (essentially acting as agents); and being involved in the compilation and enhancement of SHINE data and its use in responding to consultations for archaeological management advice. Sometimes these roles overlapped so the assessment that follows is an amalgamation of views rather than being attributable to any one person.

All interviewees considered that, from an historic environment perspective, input to and the outcomes delivered by Environmental Stewardship were superior to the subsequent Countryside Stewardship. This was because of the perceived strengths and weaknesses of the overall schemes rather than, necessarily, an issue with the SHINE dataset itself. Nonetheless, issues around SHINE were also noted. It was pointed out that spending under Environmental Stewardship was far greater than under Countryside Stewardship which supported the findings of the analysis presented in Section 4.6.2.

SHINE

Interviewees and workshop attendees were asked to assess SHINE in terms of its perceived strengths and weaknesses. SHINE was considered to have provided a useable dataset for Natural England, identifying assets that can be included within and be managed through AES.

It was suggested that SHINE was quite limited in the information it could provide to stakeholders when it was first designed. There were very strict rules about what could be accepted, which mean it was not a comprehensive heritage inventory. The GIS limitations meant that discrete heritage assets that were close together had to be grouped into a single SHINE record with a short description. This meant that the importance of the record may not have been fully recognised in the short description. In turn this means that the importance of the assets may not have been conveyed to the advisors, farmers and land managers when selecting options for Environmental Stewardship. With advances in GIS technology the information available about individual sites has improved and this has proved beneficial to stakeholders using the system. It was noted that there had to be a trade-off between the amount of information that could be provided and the ease of using the system.

SHINE has raised the profile of the historic environment with farmers and land managers who often have no idea what heritage assets are on their landholding, their nature, location, importance or how they should be managed or they do not recognise what they know about as being a heritage asset, for example, field boundaries.

While strengths were identified, weaknesses were also raised. It was considered that, in order to maximise the benefits of SHINE, project officers and others on the ground and at Natural England and the Rural Payments Agency (RPA) need a certain level of knowledge and understanding in order for that to be achieved. This appears not always to have been available for Countryside Stewardship and, even when the lack of expertise has been recognised, workloads do not allow for it to be filled by formal or informal consultation. A similar issue was raised in the workshop where it was suggested that the SHINE dataset is not being used effectively in Countryside Stewardship. SHINE contains

a lot of information that can be used to inform the development of agreements, but it was reported that, in some cases, there is a suspicion that is not being used at all.

The lack of condition data was seen by the interviewees and workshop attendees as a weakness in the system, although SHINE can only be as good as the HER data from which it is derived. The general lack of resources for local authority heritage services means that such data are usually lacking and the ability to make site visits to create such information as part of the consultation process is neither available nor possible in the time-scales for responses (nor is there capacity within local authorities or Natural England). The lack of condition data gave cause for concern where the condition or even presence of a feature may have altered between the record having been made originally and the land being entered into an agreement. Subsequent RPA checks might then identify discrepancies that had not been taken into account at the time of agreement, resulting in the farmer or land manager being put at risk, not for any action within the time of agreement but because of the lack of up to date condition information at the time of agreement. The lack of expertise amongst those doing such compliance checking, and their ability to recognise where a feature has no surface manifestation, is a separate but important issue.

Both the telephone interviews and the workshop identified an issue relating to the contents of the SHINE dataset and its relationship to the management of heritage assets through AES. The point was made that the categories of heritage asset that are included in the SHINE dataset are a sub-set of the heritage assets that contribute to the OUV of the Lake District WHS. It was suggested that the importance of some heritage assets such as field boundaries and traditional farm buildings were so obvious to advisors, farmers and land managers that they did not need to be recorded in SHINE. However, it was also argued that this runs the risk, within AES, of non-SHINE historic assets being perceived as less important in some way and not being taken into account when AES agreements are being informed.

Allied to the above point is the fact that, in the main, SHINE concentrates on individual assets not the wider historic landscape. While this is picked up to an extent through the use of NCAP and HLC information, it was suggested that the lack of this over-arching and historic consideration could, perhaps, devalue the individual feature because of the lack of understanding of its role in its contextual or palimpsest landscape. The ability to consider how an asset is understood and how best it can be managed is diminished as a result at a time when such features are increasingly under threat from proposals that have potentially large-scale landscape impact, such as tree planting.

The existence of baseline data on the distribution of heritage assets was seen as a fundamental component of developing a comprehensive SHINE dataset that could inform AES. There is a need also to recognise that the SHINE dataset reflects that of the HER, as well as what can be managed under AES. The fact that there are inconsistencies in the data contained in HERs across the country means that these inconsistencies will be transferred to SHINE. So, for example, in the Peak District the Medieval field boundaries around contemporary settlements are in the SHINE dataset because they are in the HER, while for the Lake District, in the main such field boundaries are not in the SHINE dataset because they are not in the HER. These datasets are organic, they are never complete and there are significant resource implications to maintaining and increasing them.

It was reported that some of the perceived weaknesses of SHINE have more to do with the process of application than the dataset and the advice provided. For example, the exclusion of advice for Scheduled Monuments means that some mapped areas of extensive prehistoric archaeology in the uplands are full of omissions when only the undesignated can be presented and commented on through SHINE. There is a concomitant risk of different or even conflicting conservation advice being given by different organisations for the same area and the importance of the contextual landscape represented by those areas considered not to be of national importance is being underplayed. This does not take into account the possibility that some of those undesignated features or areas could be of national importance but are undesignated to date, either because they have not been assessed or the designated areas have been taken to be representative samples rather than reflecting the full extent of what is otherwise deemed to be of national importance. While recognising the differing responsibilities of different organisations, it was suggested that this partition of advice and guidance was less than helpful in provision of holistic, integrated conservation advice.

The lack of linkage between data provision from one scheme being transferred to another was raised. Time and effort have been expended – and paid for from the public purse – in creating Farm Environment Plans (FEP) to inform Environmental Stewardship agreements. However, there seems to be little or no reference to these documents, in the process of transitioning an Environmental Stewardship agreement to Countryside Stewardship, to inform the content of the HEFER. The example was given of a Bronze Age burial mound which, recorded on the FEP but omitted from the HEFER, was only picked up because a Natural England advisor spotted it, thought it was a barrow and enquired about it. It was suggested that good elements appear to be being lost in the transition from one scheme to another.

Another example was the creation of polygons in SHINE to identify the area of interest. The need to leave a minimum 20m buffer between polygons raises the possibility of omission of close but different heritage assets or the need to brigade them together in one large polygon which can be confusing. This could result in a Medieval field system containing different heritage assets requiring different options – boundaries, low-input grassland, non-ground disturbance – but if these are depicted all on one map, the individual elements cannot be identified, not even individual fields so identification and location of the features of interest by the farmer or land manager becomes increasingly difficult or confusing. Indeed, one interviewee, who is also a landowner and in a mid-Tier Countryside Stewardship agreement, reflected that the historic environment information was difficult to interpret from the maps provided with the agreement. The same person, reflecting on the experience of running T&T workshops, suggested that SHINE data needs to be presented more simply for farmers and land managers. They noted that the workshops had demonstrated that many farmers and land managers were positive with regard to heritage, but their knowledge was mainly inherent knowledge with some very light to non-existent. While this lack of knowledge was considered surprising, these perceptions are consistent with others' views that different people have different views of what constitutes heritage. An old sled run from a peat cutting to a farmstead might be considered heritage by an archaeologist but not by the farmer who is aware that his grandfather used it; and, as noted above, field boundaries are usually just field boundaries to a land manager.

The lack of resources available to local authority heritage services was perceived as a weakness but again, this cannot be laid at the door of SHINE itself. It does mean,

however, that the national application of SHINE is being reduced as some local authorities opt out because increasing resource restrictions have resulted in staff being either reduced or becoming non-existent. It was suggested that a significant negative reaction might be anticipated from land managers and the heritage sector if natural environment assets were only considered if the holding had a Site of Special Scientific Interest (SSSI), Special area of Conservation (SAC) or Special Protection Area (SPA).

Impact of Agri-Environment Schemes on the management of SHINE features

Environmental Stewardship

The strengths of Environmental Stewardship were deemed to lie in a range of issues. These included the fact that there were no spatial restrictions to the scheme; it was focussed on the whole holding; and more funding was available, for example, an option for the restoration of traditional farm buildings (*HTB Restoration of historic buildings*) was available from the beginning of Environmental Stewardship (see Gaskell and Edwards 2014). At another level, there was a projects option (*HAP Historical and archaeological feature protection*) which had considerable conservation impact, and which formed part of the agreement and benefitted from the opportunity to enter into dialogue with all relevant parties. The capital grant scheme appeared to be very effective, not least because it gave the historic environment a higher profile, through its demonstrable successes, for example, in the case of traditional farm buildings, in the over-subscription to the option and the imposition of increasingly tight eligibility criteria. Higher Level Stewardship project features were considered to be better managed than features generally although it was more difficult to assess those in agreements but outside of such projects.

The interviewees found it difficult to say how much of an impact Environmental Stewardship had on the management of SHINE features. They were not aware of any monitoring that had been undertaken to measure the impacts on SHINE features in the LDNP or indeed elsewhere for that matter. However, in addition to the HAP and HTB capital options in HLS it was stated that two ELS options, ED5 and UD13, were particularly valuable for the protection of archaeological features and the maintenance of their visibility.

All the interviewees commented on the effectiveness that dialogue had in explaining and enabling potential applicants to be aware of the benefits that could be achieved through historic environment options, for wildlife and landscape as well as historic environment, and the ways in which other options, such as for grassland, could benefit historic features and still provide an attractive level of income while providing a wide range of benefits. Overall, it was considered that there was wider coverage, it was more attractive, than Countryside Stewardship, to farmers and land managers and was very useful for the uplands.

The above notwithstanding, a number of perceived weaknesses were expressed by the interviewees. There was a feeling that the process was often a box-ticking exercise on the part of agents. This was reinforced by the fact that consultations often arrived late in the process and, as a result, rather than inform applications, it became difficult to influence them. As a result, achievements were often more limited than they needed to have been.

Other issues included the lack of condition data which, when combined with the scarce to non-existent formal monitoring capability, meant that the impact of conservation measures and their effectiveness was difficult to quantify. It was also reported that knowledge of what went into an application or was approved in an agreement, was wholly reliant on the relationship with and generosity of any one project officer. Coupled with the lack of condition data, any local monitoring capacity (voluntary or otherwise) could not be utilised. The prevention of metal detecting on agreement land was seen as positive additional protection for the historic environment.

In another National Park, where there was in-house provision of farm advice, and the engagement with both Entry and Higher Level Stewardship, despite the relative lack of staff, this meant that a wider range of options, focussed on conservation rather than what the farmer or land manager might initially think or want, raised the profile of heritage assets and resulted often in a better overall agreement for all concerned. It must be noted that the LDNP does not have such in-house provision and is therefore reliant on the skills, expertise and application of others.

Countryside Stewardship

As with the discussion of the impact of Environmental Stewardship on the management of SHINE features the interviewees found it difficult to say how much of an impact Countryside Stewardship has had. Again, they were not aware of any monitoring that had been undertaken to measure impacts in the LDNP.

In assessing the strengths of Countryside Stewardship, field boundary options such as BN12 *Stone wall restoration* and BN5 *Hedgerow laying* were seen by the interviews to have been very effective. However, it was noted that they are not seen as heritage assets in their own right so important elements like wall furniture are at risk of being removed during wall rebuilding. The resultant uniformity of wall rebuilding can lead to the loss of local and regional styles and the importation of alien ones, which in turn impact on the overall character of the local landscape.

It is acknowledged that the bulk of Environmental Stewardship agreements encompassing SHINE features would have had little or no 1:1 advice or contact. However, where that had been possible through in-house and other provision, the quality of applications and, where successful, agreements was considered to be far greater than where there had been no such contact. The changes in consultation procedures in Countryside Stewardship resulted in far fewer opportunities for such contact and a perception of poorer applications and agreements as a result. Although the provision of SHINE data was seen as a positive contribution to the conservation of heritage features, the lack of face-to-face contact, the lack of ability to influence decisions over options and the lack of feedback on what might be in an application or, ultimately, in an agreement, was seen as significantly diluting this benefit. This lack of consultation opportunities was seen a retrograde step compared to Environmental Stewardship. One interviewee described it as being better than nothing and some attempt, at least, at achieving a standard national coverage.

Inevitably, any new process is compared with its predecessor and the weaknesses of Countryside Stewardship are usually framed by comparison with the preceding Environmental Stewardship. Overall, with less funding and spatially-restricted delivery, it was reported that Countryside Stewardship has proved less attractive to potential

applicants resulting in less up-take which has had a perceived negative impact on heritage assets. Higher Tier has proved more attractive – because of higher levels of funding – but it was also reported that there has been a capacity issue within Natural England resulting in up to 50% of applications not going through. It was also reported that Natural England has not been consistent across England in its use of National Park Authority staff to provide additional capacity. Another weakness of Countryside Stewardship raised during the interviews was insufficient funding for some grassland options which made them unattractive to farmers and land managers and negative impressions have been compounded by issues with late payments, for example. Impressions gained from the farming community suggested that, in addition, uncertainty because of Brexit and post-Brexit issues, meant farmers and land managers were unwilling to commit.

Mid-Tier had no species-rich grassland option, for example, so there is no protection for heritage assets contained within it, so more features are deemed to be more at risk. While it was subsequently made available, the strict definition of species-rich grassland excluded heritage assets.

Management advice has been provided to Higher Tier Countryside Stewardship but often there was only a short time in which to do this as consultations have often been bunched and, if they are for large areas like commons, are very time-consuming, jeopardising the provision of appropriate advice in a timely manner. Where management advice has been provided, there is no feedback thereafter and consequently, there is no knowledge of what has gone into an application, what has been accepted and therefore what is in any agreement. With little or no national monitoring and not possible at a local level, not least because of that ignorance, it has not been possible to assess impacts, either positive or negative, or demonstrate the benefits of the investment of public funds. In addition, it still feels as if the consultation is towards the end of a process, when the application has already been decided and the SHINE consultation is done to tick boxes, rather than at the beginning to assess what range of options might be available.

While the issues facing Natural England in processing applications are acknowledged, there has been very little liaison or face-to-face meetings with project officers, farmers or land managers. The view was expressed that HLS achieved a lot more because of engagement on the ground, achieving additional thorough explanation. This does not happen now because of changes in the scheme delivery and Natural England officers are very, very busy. This also impacts on the ability to raise awareness of the potential negative impacts of options. For example, grassland options are popular because the payment rates are higher than historic environment options but could be damaging to heritage assets because the requirements are tighter in delivering for some habitats. The opportunity to talk to farmers gives the opportunity to resolve these issues but this is not possible with the Higher-Tier because it is delivered by Natural England, so delivery is wholly reliant on the skills, expertise and interest of the remote project officer, losing out on local contact, local knowledge and the power of face-to-face contact, explanation and facilitation. As a result, there is no knowledge if an application has been maximised or if all opportunities have been investigated/considered. It was disconcerting to be given an example of an agent who allegedly told one applicant that there was no funding for the historic environment in Countryside Stewardship.

The consensus was that, generally, Countryside Stewardship had more-onerous conditions, particularly leading to verification issues and changing evidence requirements; that there was now insufficient funding for local authority staff to provide data to HEFERS; there are no consultations on Mid-Tier agreements (unless the holding contained a Scheduled Monument); options have been removed; and heritage assets that previously were eligible for example, dewponds, are now not eligible for funding. Initially, there was a lack of a traditional farm building option which was then produced after long delays but is limited to 5 upland National Parks; the budget initially was limited, then it was increased, then the deadline for applications was moved. Overall, Countryside Stewardship was considered to suffer from budget limitations and a constrained development period resulting in something that was poorer than Environmental Stewardship in coverage, options and ability to manage heritage assets.

Impact of other funding streams on the management of SHINE features

The interviewees were able to identify two non-AES funding streams for the management of heritage assets in the Lake District. Funding was available from the National Lottery Heritage Fund and the Friends of the Lake District. No information was available on whether or not the funding specifically involved the management of SHINE features.

4.7 Stage 7: Work with the Cumbria Pioneer ELMS T&T to explore how well the SHINE approach works to inform historic environment asset assessment

4.7.1 Introduction

The aim of this stage of the project is to explore how well the SHINE approach works to inform historic environment asset assessment in both Areas Plans (AP) and Land Management Plans (LMP) being developed as part of the Cumbria Pioneer ELMS T&T. This also included consideration of what other approaches are possible, desirable, what resources they need, and whether they are replicable elsewhere. To achieve this aim a workshop was held with 9 stakeholders from the T&T team and organisations with experience of heritage asset management under AES and telephone interviews were undertaken with 4 heritage professionals with knowledge of AES implementation and heritage assets.

4.7.2 Cumbria Pioneer ELMS T&T

Background

ELMS will be the cornerstone of agricultural policy after the UK has left the European Union. ELMS will be the vehicle for achieving the goals of the 25YEP and is based on the principle of ‘public money for public goods’ (Defra 2020b). The public goods ELMS will pay for include:

- 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.

To develop ELMS Defra is undertaking a large stakeholder-led programme of ‘tests and trials’ for certain elements of the scheme design and plans to pilot the approach in 2021 ahead of roll out of the ELM scheme in 2024 (Defra 2020b). Defra established tests and trials in 2018 as a mechanism to co-design the ELM scheme with stakeholders and to help refine and improve the policy framework and delivery methods. The purpose was to help Defra understand how critical building blocks of the new scheme could work in a real life environment. This includes:

- Understanding the practicalities and requirements of the new scheme, such as the role of expert advice.
- How to incentivise collaboration to achieve greater environmental returns.
- Exploring how new or innovative delivery approaches could be used across different geographies and sectors.

Delivery of Cumbria Pioneer ELMS T&T

Phase 1

Phase 1 of the Cumbria Pioneer ELMS T&T took place over the winter of 2018. Initial engagement took place with farmers and land managers in two test catchments in Cumbria: the Upper Derwent T&T area in the LDNP and the Waver Wampool T&T area in the north-west of Cumbria.

Interviews were undertaken with farmers and land managers about their views on engagement with AES, and what their hopes and fears were for future agri-environment schemes. The interviews sought their initial thoughts about ELMS, bearing in mind that little was known about the policy as development was in its infancy. Farmers and land managers were asked about their understanding and views on public payments for public goods.

A desk-based exercise reviewing best practice around area and land management planning was undertaken as Defra is exploring the use of APs and LMPs as a basis for ELMS. The review of good practice, plus stakeholder input and feedback, helped shape proposals for a two-tier public goods planning approach for ELMS (Cumbria Catchment Pioneer and LDNP Partnership 2019):

- An AP framework, with two elements – an Area Baseline document, containing data on natural capital and cultural landscape assets and an Area Priorities Plan.
- LMPs at the farm/holding scale – which provide the holding-scale detail and basis for an ELMS contract.

The Phase 1 report recognised that while individual physical features can be mapped, such as those in the SHINE dataset (and designated heritage assets), the intangible elements of a cultural landscape cannot. The report also recognised that current baseline data for heritage assets was far from comprehensive.

Phase 2

In October 2019, Defra agreed funding for Phase 2 of the project which will be completed 2021. This phase is testing ideas in the two test catchments. This will involve:

- Co-creating an AP with stakeholders and land managers. The AP will consist of a public goods baseline and the prioritisation of public goods.
- The AP will be used to inform five LMPs in each test catchment. These will involve a cross section of land managers, farmers, and woodland owners.
- Five LMPs will also be created in each test catchment that are not supported by an AP. This will act as a control to test the hypothesis that APs make a difference in the development of LMPs.
- The 25YEP is the framework used to define public goods. Attention is being paid to the six goals of the plan which are to be delivered through ELMS, including beauty, heritage and engagement.

4.7.3 How well does the SHINE approach work?

The stakeholder workshop and telephone interviews considered the strengths and weaknesses of the SHINE approach in informing historic environment asset assessment and its use within APs and LMPs.

Using SHINE to informing historic environment asset assessment

It was reported that the SHINE dataset could provide some of the information required to generate baseline information on heritage assets for ELMS and inform ELMS public goods priorities. However, it was also suggested that the SHINE approach required further development to be fully effective. The key findings from the workshop and interviews were:

The SHINE dataset

- There was variable coverage of heritage asset categories contained in the SHINE dataset. This was in part due to variations in heritage asset survey coverage and its reliance on the HER. As a consequence, SHINE does not provide comprehensive coverage for the historic environment. While SHINE was strong on the coverage of archaeological assets it was weaker on other heritage assets and features that contribute to the OUV of the Lake District, such as traditional buildings and field boundaries. Improvements in baseline survey coverage was needed both spatially and for different heritage asset categories. It was reported that there has been chronic underfunding for heritage asset surveys.
- The omission of scheduled heritage assets was seen as a limitation but not one that could not be overcome through the integration of other datasets that included scheduled features.
- The SHINE dataset did not contain data on the condition of assets needed to inform management practice. Providing condition information for SHINE assets would require field survey. This would probably be too resource intensive at the AP scale but would be practical at the LMP scale where guidance on management is provided particularly if provision could be made through appropriate remote sensing techniques.

- The SHINE dataset is a collection of individual heritage assets and does not consider these assets in relation in the context of the historic landscape. It was suggested that consideration needed to be given to the wider historic landscape so that assets are not undervalued if considered in isolation. It was suggested that the evidence compiled for the Lake District WHS designation could be used alongside SHINE to inform decision making for ELMS priorities.

Area Plans

- The SHINE dataset can be difficult to interpret without specialist understanding. Setting ELMS priorities will require some understanding of the benefit flows from the ecosystem services provided by heritage assets. The co-production of ELMS priorities with stakeholders may be weakened if the benefit flows are insufficiently articulated.
- Concern was expressed that without additional survey work heritage assets would be underrepresented in the GIS tool that will inform the public goods priorities for the AP. It was suggested the GIS layer containing heritage asset information may be less well populated than for other topic layers and that this may create a perception that heritage assets are less important. It was suggested that the more heritage asset data that can be provided for an AP the more chance that heritage will be perceived to be on the same playing field as the other topics.
- Careful consideration of the use of GIS to inform APs should be taken. Heritage assets can be seen by some users as a constraint layer rather than an opportunities layer in GIS decision tools. Heritage assets can be viewed as features to avoid rather than proactively manage to maintain or enhance the benefit flows.
- There will be a tension between simplicity of message at one end of the scale and the sophisticated evaluation of data to determine priorities and the setting of desired outcomes at the other. The availability of resources will have an impact across the board, from data collection and evaluation through to prioritisation and messaging and communicating with farmers and land managers:
 - An AP should be a combination of data and evidence, specialist interpretation and evaluation. But also it has to include the farmers and land managers who will contribute their own understanding and knowledge of their farms so that the plan is co-produced. There is a need to include farmers' knowledge about their area as well as the data and specialist analysis.
 - The AP should be less top down. Farmers and land managers will be engaged to determine what the heritage assets are. They will also be involved in setting the priorities.
- The AP and LMPs will be based on the co-produced understanding of the public goods in an area and what the priorities are. The land managers and farmers will then decide which tiers of ELMS they want to engage with and participate in. There will be different levels of data and evidence needed for the different tiers of ELMS. There will be layers of complexity.

Land Management Plans

- The LMPs will draw upon information on heritage assets collected for the AP. For example, an AP for a valley will have the public goods asset baseline across the

whole of the valley and then prioritise the public goods in terms of their importance. The AP will also identify what outcomes depend on multiple holding delivery and what can be done on the farm by farm basis. The LMP uses the same heritage asset dataset but is cut out for the individual land holding. The dataset will be used for different purposes because APs and LMPs are asking different questions.

- Creating appropriate narratives and messaging will be very important when working with farmers and land managers. The Phase 1 survey of farmers and land managers found that many of them just wanted clear guidance on what to do. They wanted to know what the priorities are and what the other stakeholders wanted them to do. It was suggested that many farmers and land managers were not desperate to know the reasoning behind the prioritisation.
- Advisors need to be able to distil down all the information in SHINE so that it is easily understood by farmers and land managers.
- All data sets have imperfections concerning distribution and condition. Three days have been allocated to the creation of each LMP and the condition of heritage assets will be considered as part of the LMP creation. Creating LMPs will improve the accuracy of the databases. They will add new information to existing records and even identify unrecorded heritage assets. LMPs will be an important means of enhancing the core dataset. Another example of co-production. It creates a virtuous circle which grounds the existing information record. Farmers and land managers can add knowledge about recorded assets and introduce previously unrecorded assets to the database. There is an opportunity for Defra to make data enhancement part of the process.

Potential for other approaches and the development of the SHINE approach

The workshop participants and telephone interviewees were asked if there were any alternatives to using the SHINE approach, what resources would they need and whether they would be replicable elsewhere. The key findings from the workshop and interviews were:

Other approaches

- SHINE appears to have performed reasonably well in difficult circumstances that have become more difficult as time and schemes have progressed. It was recognised that there were some weaknesses in the SHINE dataset and the process by which SHINE data was used to inform the development of AES agreements. There were mixed views on whether the SHINE approach should be reformed or replaced by another approach based more directly on the HER.
- Many of the comments received concerned issues outside the scope of the project and related to:
 - The need to integrate into ELMS the cross-compliance regulations for heritage assets, boundaries and Scheduled Monuments that existed under the Basic Payment Scheme of the Common Agricultural Policy (CAP).
 - Perceived inadequacies in the funding and remit of heritage services across all levels of government but particularly in local government.
 - Policy on heritage protection and designation including the rationalisation of heritage designation.

- Data sharing between national agencies, Local Authorities and AES advisors.
- It was concluded that the SHINE dataset should form the centrepiece for evidence-based decision making in ELMS, but to be fully effective it needed to be developed and enhanced.

Development of the SHINE approach

- It was suggested that the SHINE approach could be developed and improved to provide baseline data for ELMS:
 - Include scheduled heritage assets.
 - Expand coverage to include all heritage assets that contributed to OUV, such as traditional buildings and field boundaries.
 - Integrate the SHINE dataset of tangible heritage assets with approaches that include and have mapped intangible elements of cultural landscapes.
 - Additional survey work is required to provide heritage asset baseline data that is fit for purpose within ELMS. LMPs should include an element for surveying heritage assets and these data should be added to the SHINE dataset.
- Knowledge exchange opportunities between farmers and land managers and heritage advisors was raised as issue affecting heritage asset assessment and management. The ability to meet face-to-face was considered a very important part of the process. Such meetings facilitated greater understanding by applicants, agents and advisors of the benefits that can accrue from historic environment options, as well as those derived from other options, whose implementation can also benefit heritage features. These latter include those concerned with boundary options, which also deliver wildlife and landscape benefits, grassland management and grazing levels. The ability to engage in a two-way exchange of knowledge was considered to result in better, more integrated and holistic AES agreements that maximised the return on investment and benefited not just SHINE features but wildlife and the landscape as well.
- Further consideration needs to be given to the role of specialist advice in the management of heritage assets and how this is integrated into LMPs. Under Countryside Stewardship the opportunity to advise farmers and land managers is limited. It may lead to better ELMS outcomes if more direct and tailored advice could be given. However, there are resource challenges in being able to integrate specialist historic environment advice in support of project officers negotiating agreements. Failing to do so may result in missed opportunities and the delivery of substandard outcomes on the ground. There is a case to argue for more contact time for heritage specialists and ensuring that the product of SHINE consultations is available before project officers engage with applicants, so that the full suite of information is available to inform options considerations and the delivery of as full a range of public goods as possible.
- In previous AES there has been an emphasis on funding for farmers and land managers and not for advisors. It was suggested that independent advice should be seen not as a cost but as an essential investment to maximise public goods delivered through options across a holding.
- Consideration should be given to incorporating data on the condition of heritage assets in the SHINE dataset as information data on the condition of assets is

needed to inform management practice. Condition surveys of heritage assets could be undertaken as part of the LMP.

- It was concluded that an enhanced SHINE dataset would be applicable to ELMS at a national level. It was also concluded that major resources would be required to improve the coverage of SHINE, both spatially and by category of asset.

4.8 Stage 8: Attaching value to heritage assets which can be used to outline the benefits to partners, farmers and land managers of including heritage features in ELMS

4.8.1 Introduction

The project has explored whether it is possible to attach a value to heritage assets which can be used to outline the benefits to partners, farmers and land managers of heritage features in ELMS. Two sources of information feed into this: first, the valuation modelling of the SHINE data, and second, a stakeholder workshop.

The valuation model demonstrated the capacity for assigning monetary values to heritage assets in distinct areas. The model did not attempt to value individual physical assets, but valued the contribution to landscape character of a large number of assets within an area, demonstrating the range of benefits flowing from maintenance of the assets. The workshop brought together 12 stakeholders from organisations with experience of heritage asset management under AES. The workshop was divided into two sessions. The first session explored how heritage assets within SHINE were valued and the second session considered if these values could be used to outline the benefits to partners, farmers and land managers of including heritage features in ELMS.

4.8.2 Valuing heritage assets within SHINE

The key findings from the workshop were:

- There is a range of different factors that contribute to the value of a SHINE heritage asset. Participants identified the following contributory factors:
 - Designation: The significance and importance of an asset is recognised through designation.
 - Condition: The value of an asset can be influenced by its degree of intactness and level of preservation.
 - Time depth: As a proxy for significance and importance values.
 - Visibility: Being able to see and access the asset. There is also a value knowing that an asset exists even it cannot be seen or accessed. For example, below ground archaeology or a traditional farm building hidden from view.
 - Rarity: Rarity can influence the value of an asset.
 - Legibility: Recognising the asset and understanding what it is and means. This is increased where there is clear evidence offered by heritage assets and documents.
 - Inherent value: sense of time and sense of place. These are often very important to farmers and land managers and their families, and local communities.

- Connectivity/Inter-relationships: There is a set of values associated with the connectedness of the historic assets. For example, how the asset is linked to other heritage assets in the area. If there is connectedness, then the cumulative value would increase.
- Function and land use: The condition of an asset can be influenced by land management. Inappropriate management can lead to damage and destruction. Appropriate management can maintain and/or enhance value.
- Impact on local economy: Heritage assets can have an economic value in generating positive impacts for the local economy through tourism and visitor spending.
- Ability to deliver multiple values: For example, heritage, landscape, biodiversity, economic, evidential, recreational, health and wellbeing, and educational value.

It is important to note that the intuitive responses from the workshop attendees has informed the analyses undertaken by the valuation modelling work using empirical data, thus joining up otherwise potentially separate-seeming project elements. The valuation model incorporated into its structure, measures of the following:

- time depth and legibility
- connectivity, inter-relatedness of assets
- condition
- function and land use
- generation of multiple values to residents and visitors.

4.8.3 Attaching and explaining value

Explaining the value of cultural capital is a difficult task when stakeholders such as land managers and owners only have a partial understanding of assets that are present, the way they are connected, and their impact on and significance for the cultural development of a place over time. A certain level of expertise is required to identify and ascertain the value of cultural heritage assets. Most people do not have the relevant expertise, or access to guidance – whether ‘heritage specific’ or extracted from the National Character Area profiles. Techniques are, therefore, required to demonstrate the value of cultural capital in ways that are understandable and accessible.

Workshop participants were asked to focus on the issue of how to frame the messaging and consider how they would explain the value of a SHINE asset to somebody else and how they would persuade somebody, who may not agree with them, about the value of the assets. The participants were asked to consider two different types of stakeholder:

- How to convince a farmer of the value of a SHINE asset, where their focus might very much be at the individual holding level.
- How to convince a Government Minister of the value of SHINE assets. Their focus might be at a national or regional level.

The key findings from the workshop were:

Farmer or land manager

- It is important to understand the farmer's or land manager's perspective as a starting point for engagement. In particular what the heritage asset means to the farmer or land manager and what are their feelings and motivations. This can help to frame the messaging about the benefits of including heritage assets in ELMS.
- The messaging and narratives have to be suitable to the target audience. Narratives using NCA would need to be adapted to language used by farmers and land managers.
- The messenger has to be trusted and respected. There is a greater chance of delivering a successful message when the farmer or land manager trust the messenger.
- Heritage advisors, particularly through one-to-one meetings, have knowledge of and experience in explaining the value of heritage assets using everyday language, including narratives involving:
 - Significance.
 - Importance.
 - Rarity.
 - Community value.
 - Economic value.
 - Intrinsic value.

However, many farm advisers, agents, and project officers, although they will all have particular areas of expertise, will not have the relevant level of knowledge and understanding to advise effectively on heritage assessment, which means that in many instances heritage assets are ignored or overlooked.

- Explanation is a key factor in persuading farmers or land managers to include heritage assets in ELMS. Explanation helps develop understanding, understanding helps to develop appreciation and appreciation can lead to positive action.
- Story telling is a valuable technique that is used to persuade farmers or land managers to include heritage assets in ELMS. For example, describing the asset and explaining what it is, how it was created, how it links to the surrounding area, what it means to different people, and how it can be considered valuable. It all helps to tell the story.
- Reasons to include heritage assets in ELMS include:
 - Farmer or land manager's sense of custodianship, pride and place.
 - Increasing a farmer or land manager's standing (level of respect and appreciation) in the local community and among their peers.
 - Economic benefits to the farmer through ELMS participation through the ways in which SHINE assets can be utilised to deliver a range of public goods. Particularly important as BSP will be phased out and ELMS will be the only form of agricultural support.

Government Minister

- Narratives using NCA could be persuasive. Policy makers will be familiar with NCA and 25YEP objectives and WHS objectives.
- Evidence-based policy making is a guiding principle in government. Evidence showing the benefit flows from ecosystem services provided by heritage assets using NCA would be useful in supporting arguments to persuade a Minister of the value of SHINE assets.
- Stress the multiple social, economic and environmental benefits derived from SHINE assets and how inclusion of heritage assets in ELMS will help deliver:
 - The public goods under the beauty, heritage, and engagement with the natural environment goal of the 25YEP.
 - Improvements in farmer and landowner health and well-being through a sense of custodianship, pride and place.
 - Increased economic benefits to farmers and land managers and local communities through income from maintenance and restoration, and tourism.

4.8.4 Potential for developing a toolkit for communicating heritage value

At the workshop, some participants indicated the importance of linking clear information, the pride farmers take in good management, and the guidance to how land is used.

Given the potential for providing some indication of monetary value for heritage assets in a defined area, and the evidence from the workshop, it would be worth exploring the development of guidance that works at a national level and can then be linked to the NCAPs, demonstrating the value of and enabling users to see how farm buildings/other structures, and heritage assets relate to patterns and assemblages in the landscape and different ways that land is managed.

This could potentially be piloted in the Lake District and a couple of other areas. Development of a simple toolkit would be massively useful and also take the strain off the (possibly diminishing number of) heritage advisers who cannot be expected to offer advice on every holding without a large increase in funding. Inter-disciplinary approaches would be required to make training effective for all other ELMS advisers. Figure 4.25 illustrates use of the re-conceptualisation of cultural capital presented earlier in this report to develop a toolkit of guidance capable of being customised, or tailored to specific locations or areas. Ideally, the tailoring would go down to the level of the individual holding to demonstrate linkages to the land manager between individual heritage assets, landscape character, ecological quality, and socio-economic benefits.

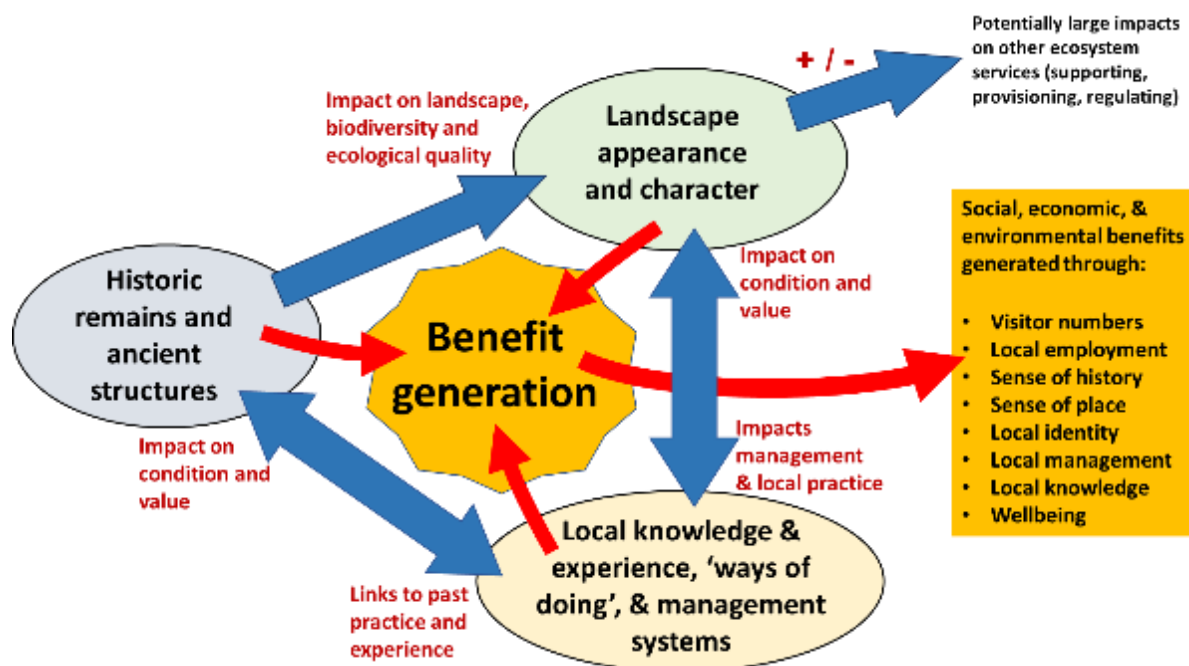


Figure 4.25: Communicating the benefits of cultural capital to land managers and other stakeholders

Visualisations and basic economic information could be drawn up at area level to demonstrate linkages and potential outcomes if physical heritage assets improve or decline in condition. Understanding of the current level of ‘practice and process’ in an area could also help advisory bodies in understanding where and how to target information and guidance. A toolkit would have to provide not only simple approaches for knowledge exchange but also techniques to enable local advisors to draw on general techniques and approaches to apply to local conditions.

4.9 Stage 9: Identify the cultural services/public goods that are derived from these assets and the valuation of these and the case for public payments for maintaining and enhancing these public goods through ELMS

The project has focused on exploring and valuing the benefits flowing from ecosystem services generated by the cultural capital embodied in the SHINE assets. The research has deliberately avoided any attempt to identify and value the full range of ecosystem services due to resource limitations. Appendix 2 of this report provides an overview of the ecosystem services generated by the following categories of heritage assets: Agriculture and Subsistence, Domestic, Industrial, Religious, Parks and Gardens. (Historic England 2014 Forum on Information Standards in Heritage (FISH) Thesauri (<http://thesaurus.historicengland.org.uk>); Historic England 2015 Historic Characterisation Thesaurus (<http://www.heritage-standards.org.uk/wp-content/uploads/2016/05/Historic-Characterisation-Thesaurus-Aug-2015.pdf>) Cultural Ecosystem Services that were generated from the SHINE assets examined in this project include the following:

- Sense of place and aesthetic and artistic values because of:
 - Locally distinctive materials, styles and forms of architecture and the forms and nature of construction and enclosure.

- Direct link to local environments through use of local materials.
- Aesthetic and artistic stimuli provided by these agricultural and subsistence assets.
- Sense of history:
 - A rich source of evidence for the agricultural development from the Neolithic period onwards.
- Spiritual, communal, and commemorative value:
 - Through interaction with agricultural buildings and landscapes leading to community cohesion, vibrancy, integration and sustainability, capacity building and enabling opportunities including enhanced community valuing of the cultural landscape and heritage assets.
- Amenity value:
 - By improving the quality of life and health and wellbeing of residents and visitors, both mental and physical, through a well-maintained, understood and cared-for environment; providing visitor destinations by giving people reasons to want to visit; enabling people to interact with the natural and historic environment by providing access and accessibility, physically, visibly and intellectually, to enhance the value of people's recreation and leisure opportunities.
- Educational and scientific value:
 - Through increasing knowledge, understanding, appreciation and enjoyment of heritage assets and landscapes and the historic and natural environment generally.
 - By providing opportunities for discovery, identification, education and research - for example in the transition from communal to more individual ways of living.

There is often confusion between the definitions of natural capital, ecosystem services, public goods, and public benefits. The natural capital is the stock of assets which generates ecosystem services. When these services are analysed to identify who benefits and how, a range of benefit flows can be ascertained for each ecosystem service generated. Benefits flowing from natural capital through the generation of ecosystem services affect various sectors of society, groups and individuals in different ways. Some benefits flow to individuals who own the natural capital assets (e.g. farmers who utilise soil to produce food), other benefits are accessible to a wider range of people as 'public goods' (such as clean air and water, and access to the countryside for recreation through open access or rights of way).

In order to assess the benefits flowing from each ecosystem service generated by natural capital it is necessary to identify the categories of beneficiary, the number of beneficiaries in each category, and the manner in which they benefit. In order to understand the magnitude of benefits some measure of value is required. The approach taken in this research is a return-on-investment model whereby the level of benefits generated annually are assessed for each identified service flow within a defined geographic area. Within the model the cultural capital (SHINE heritage assets) generates the services identified above. The number of residents and visitors benefitting in different ways from the services are measured (and in some cases estimates are made based on assumptions),

and the value attained from ‘consumption’ of the service is assessed at either the household or individual level using financial approximations (i.e. surrogates with a market value similar to the benefits obtained). The valuation model then calculates a present value total over a given period of time (ten years) for benefits flowing from the CES generated by the SHINE assets.

Section 4.4 of the report describes the benefit flows, model outputs and nature of those benefitting. Present value estimates range from £100.4 million to £363.8 million over a ten-year period across the four case study areas. The majority of value in each area is generated by benefits from Agricultural and industrial heritage assets (ranging from 67% to 78% of the total value). Agricultural/subsistence assets comprise the largest category of assets in each case study area, and also contribute more significantly to generating flows of benefits. The lowest values come from recreation assets. The majority of direct benefits are experienced by visitors (based on an estimated 19.8 million visitors to the Lake District in 2018). Although residents experience a higher level of benefits per household per year than visitors (due to living year-round in the area) the resident populations of each case study area are small and far outweighed by the number of visitors.

The model presented in this report has focused on valuing the direct benefits flowing from the public goods generated by the ecosystem services, i.e. those benefits that are shared across residents and visitors to the case study areas. The valuation does not include:

- Values generated by non-SHINE heritage assets in the area.
- Benefit flows from other categories of ecosystem service (supporting, regulating, provisioning) generated by the cultural capital.
- Indirect (or ‘non-use’) values such as option, existence, and bequest values.
- Economic values arising from the benefits of visitor spending, or job creation based on utilisation and/or maintenance of the cultural capital.

The valuation model is a partial and conservative estimate of the value of public goods generated and does not address the value of private goods and services generated (e.g. through provisioning services).

Despite this the model indicates significant levels of value arising from the public goods. These annual public benefit flows are generated from a relatively small base of heritage assets in each case study area (a few hundred to slightly over 1,000 individual assets). As indicated earlier in this report, some of the physical assets generate value because of their significance and visibility (e.g. a roman fort, a Neolithic stone circle, a post-medieval farm or villa, and in some areas post-medieval industrial remains). More significant though is the influence of the SHINE assets on the landscape over several millennia, and the influence on governance structures and knowledge for managing the agricultural resources, and on inspiration and aesthetic appreciation. It is the cultural landscape that attracts visitors, as well as creating inspiration.

The question then becomes one of understanding the relationship between the SHINE assets (physical assets), the cultural landscape, and the landscape management practices and processes in order to ensure that the benefits flowing from this assemblage of cultural capital are maintained. The historic assets form links to the past, they enable

interpretation of human development and management of resource over time in an area. In some cases (e.g. stone walls, farm buildings) they continue to support ancient (tried and tested) practices of livestock management, and they contribute to the understanding of how a particular set of landscapes and ecosystems have developed.

The public benefits from SHINE assets are created largely by private actions of landowners and managers on private and land with varying degrees of public rights of access. The impact of private land management, however, has implications far beyond the ownership boundaries, influencing public goods in the form of a valued cultural heritage landscape, and the aesthetic, spiritual, sense of place, amenity, and wellbeing benefits that flow from it. Land managers do not necessarily recognise the significance of individual historic assets in contributing to wider landscape values and benefit flows, and managing historic assets can involve a cost, in terms of lost productive land, or particular management actions that require resource inputs. Given the scale of public benefits, and the reliance on private land managers to protect a relatively small number of historic assets from degradation and disappearance there is a case for public payments for maintaining and enhancing these assets through ELMS, in order to ensure the continued generation of the public benefits shared by residents, visitors, and even those who have never visited the area.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The SHINE dataset contains a subset of data from each English local authority Historic Environment Record (HER), designed specifically to service the needs of inputting historic environment advice into agri-environment schemes. With the exception of grade II listed buildings, which are dealt with by local planning authorities and thus managed at a local level, designated heritage assets are excluded. It is subject to variations in the thoroughness of past surveys, the extent to which the results have been entered into HERs, and local variations in the character, legibility and distribution of features in the landscape.

5.2 Lessons learned

5.2.1 How SHINE features contribute to the Outstanding Universal Value (OUV) of the Lake District National Park

- SHINE features are a significant part of the attributes and components that combine to give the Lake District its OUV, as defined by ICOMOS in the justification for Inscription of the World Heritage Site. They enable appreciation and understanding of historic land use, through physical, visual and intellectual access to them. They complement the evidence offered by designated heritage assets and the historic landscape and provide the foundations for the living traditions of the Lake District, the development of the Picturesque movement and its distinctive legacy, and the development from the late 19th century of a landscape conservation movement of global importance.
- Agriculture and Subsistence records in SHINE have the strongest relationship to all three of the ‘intertwining and interdependent themes’ which underpin OUV, in

particular Theme 1: A landscape of exceptional beauty, shaped by persistent and distinctive agro-pastoral traditions and local industry which give it special character. They are also seen and experienced within Enclosed and Unenclosed landscapes that also result from the Agro-pastoral tradition and have been mapped through Historic Landscape Characterisation.

- Industrial and Transport features in SHINE also play an integral role in informing and understanding this theme, being also found in Woodland and in a small number of Industrial areas as mapped by HLC.
- Domestic and Religious features in SHINE are mostly prehistoric to medieval in date, and are concentrated in Unenclosed Land and Intakes as a result of this land being wholly or partly excluded from arable use.

5.2.2 Assessing SHINE features in the Lake District National Park using the NCA/Cultural Capital process

Following analysis of SHINE data obtained from the HER, 7484 SHINE records were identified. A number of issues, outlined below, were identified in relation to the original design, construction, and purpose of the SHINE dataset, which limits its potential for use as a tool in valuing cultural heritage. These include the following:

- The SHINE dataset is a subset of data from each English local authority Historic Environment Record (HER), intended to identify features of heritage significance that could potentially be managed through agri-environment scheme options, and thus assist in the input of historic environment advice into agri-environment schemes.
- SHINE records for archaeological sites thus have a critical role in alerting users to sites of local to national importance that may otherwise be overlooked, only a proportion of the latter being designated as part of the designation processes. The measurement of 'Significance' as an attribute of the data relates to the degree to which it is considered protection of the heritage asset could be achieved through Countryside Stewardship. It is not a useful indicator for identifying the value or importance of a site.
- Whilst scheduled sites are excluded from SHINE, understanding of their location, type and date is vital when considering the density, pattern and significance of SHINE records in any area.
- Variations in the location, type and date of SHINE data results from variations in the thoroughness of past surveys and the extent to which the results have been entered into HERs, as well as variations in survival.
- Although grade II listed buildings are included in the SHINE database, being dealt with by local planning authorities and thus managed at a local level, SHINE records for traditional buildings form only a small proportion of those that survive on traditional farmsteads or as outfarms and field barns.

Analysis of Form, Type and Period of SHINE assets in the context of their historic landscapes has revealed patterns of interest:

- Analysis of SHINE data shows that patterns of historic land use have affected the character, legibility and distribution of features in the landscape. This raises the

importance of understanding SHINE data as part of overall landscape character, from the frameworks offered by the National Character Areas to Historic Landscape Characterisation.

- Most Agriculture and Subsistence archaeological features (30.35% of SHINE records) are located in areas of Unenclosed Land whence settlement and any arable agriculture has retreated since at least the 14th century. The Lake District Cultural Landscape maps also show that the predominantly pastoral use of Intake land has preserved a much higher number of above-ground features than in areas of Inbye (often surrounded by medieval ring-garth walls to keep the stock from damaging arable and hay crops) that have been in continuous agricultural use for over a thousand years. SHINE records only cover a small number of boundary walls to fields, former deer parks and outgangs, the patterns and time-depth of which have been captured through Historic Landscape Characterisation.
- The extent and distribution of industrial activity in the Lake District (from the quarrying and finishing of stone axes in the Neolithic period to slate quarrying in the 21st century) is reflected in the slightly higher overall percentage share (32.41%) of Industrial features. These are sited in Enclosed and Unenclosed Land and Woodland, their very nature often precluding other forms of land use, resulting in the survival of a higher number of individual sites. These are widely dispersed as bloomeries, bobbin mills and other individual features and small-scale sites such as quarries across different landscape types (including many charcoal-burning platforms in Ancient Woodland) whilst also being clustered in particular areas.
- Transport features mostly comprise packhorse and other bridges, traces of routeways in areas that have reverted to rough ground or pasture and also a small number of the outgangs that survive as corridors that enabled the movement of people and stock between Inbye, through Intake and out onto the open fells.
- Above-ground features of Religious and Domestic type, being above-ground traces of sites, are predominantly of Medieval or earlier date and concentrated in Unenclosed Land. There are some Nonconformist chapel sites and ruins in Enclosed Land and which more usually survive in built form in settlements, some of which are listed.
- The remaining types, with the exception of Defence, are almost all of 19th and 20th century date. A small number of the viewing platforms that express the 18th and 19th century Picturesque Movement are included within SHINE, and Designed Landscapes can include a wide variety of remains from earlier settlements, agriculture and industry.

SHINE records form 42% of records that have been positively identified through inclusion in the Lake District HER. Consideration has been given to the accuracy of SHINE as a proportion of the historic environment as a whole and as a proportion of what is known and recorded in the Lake District HER. Analysis concludes that:

- Over 90% of the landscapes in which SHINE data are located derive from the Agro-pastoral tradition, comprising a wide variety of enclosed land, unenclosed land and ancient woodland including boundary features, veteran and historic trees.
- There is some inconsistency in the inclusion of boundary walls. Whilst most deer park walls are included in the SHINE database, it is more difficult to see a pattern in the inclusion or otherwise of medieval ring-garth and outgang walls, which are

those that surround historic Inbye land or line the routeways that extend from Inbye to the open fells. This again raises the importance of identifying the patterns of historic walls as mapped through Historic Landscape Characterisation.

- Understanding the distribution and density of designated heritage assets makes a significant contribution to recognising the contribution that SHINE records make to understanding and appreciation of the Lake District landscape and its OUV. This is particularly the case in Unenclosed Land and some Intake enclosures, where scattered SHINE features dating from the prehistoric period, some clearly of regional and national importance but undesignated, survive in relationship to coherent sites that are Scheduled. However, difficulties arise for the following reasons:
 - there is no straightforward means of aligning Scheduled Monuments with HER records for individual features included within them;
 - the inclusion of archaeological sites in the HER, and thus in SHINE, results from a combination of chance discoveries, systematic fieldwork (particularly from the 1980s) and thematic assessment for identifying which sites of national importance should be scheduled (particularly thorough for Industrial themes), and remote sensing;
 - it is clear that whilst most surviving Industrial features, ruinous structures and enclosures for sheep have been identified as a result of thematic survey and the fact that they can be more readily identified than ploughed-out features in farmland or boundaries and other features in woodland,
 - built structures, particularly traditional farmsteads and farm buildings, are not systematically included in the HER or, as a result, in SHINE;
 - a high proportion of Monuments (by Form not Function) and Unassigned SHINE categories can readily be assigned to specific date ranges and types categories, especially Agriculture and Subsistence.

The analysis of SHINE features within the case study areas has further highlighted how local variations relate to historic landscape character:

- Eskdale and Haweswater both have an above-average area of Unenclosed Land, but exhibit strong differences in their distribution of SHINE features. Those in Unenclosed Land in Eskdale, which has a westerly aspect facing the sea, form a much lower proportion of heritage assets (there being extensive and coherent groupings which are Scheduled Monuments) than in Haweswater, where the aspect and topography offered more limited prospects for prehistoric settlement. Similarly, the density of SHINE features and other identified heritage assets is far lower in the uplands around Skiddaw, in the Upper Derwent Test and Trial area, than in other case study areas.
- Langdale stands out as an area with a much higher proportion of Post-medieval features including farm buildings, the overwhelming majority of which are sited within 14th-17th century Intakes outside the core medieval Inbye land which is surrounded by a 13th century or earlier ring-garth wall. These are located within National Trust holdings that have been subject to intensive survey.
- Industrial features tend to be clustered in specific areas and provide an accurate reflection of the location of industries in the case study areas.

- In striking contrast, there are extensive areas – particularly of core medieval farmland – where traditional farmsteads and their buildings are largely absent from the HER and therefore from SHINE.
- Historic Landscape Characterisation offers a useful framework for assessing patterns in the distribution of designated and non-designated heritage assets, with great potential to deepen understanding of the character and benefits offered by the natural capital stock, but it needs to be used critically (particularly with regard to Planned Enclosure which often covers areas of rough ground where boundary walls are barely legible). It would also benefit from a mapped overview of the character and condition of boundary features, and a critical overview of the habitat types that they relate to.

The valuation of SHINE features in the case study areas was based on a natural capital accounting approach. The SHINE assets were defined as cultural capital, integrated with the underlying natural capital in the LDNP. Analysis enabled assessment of the contribution of SHINE features to the cultural capital stock, of central importance being that:

- The historic environment, dominated in the Lake District by the interaction of enclosed and unenclosed land, is an integral, seamless and underpinning part of natural capital as defined by the Natural Capital Committee as ‘the parts of the natural environment that provide value to people’.
- SHINE features form about 42% of heritage assets on the HER, providing evidence for and illustrating how people have settled, farmed, used local resources and demonstrated and changed their beliefs and values.

Cultural capital is capable of generating a wide range of ecosystem services (supporting, regulating, provisioning, cultural), particularly at landscape scale, but this project has focused on the exploration of cultural ecosystem services, which is widely recognised as being the least developed area of ecosystem services valuation. This project has expanded upon cultural ecosystem services set out in the National Character Area profiles for the Lake District National Park and considered how the historic environment and heritage assets deliver the following ecosystem services:

- Sense of place: the contribution of the landscape, the settlement pattern and heritage assets to the distinctive quality and character of the Lake District.
- Sense of history: intrinsic value as a rich source of evidence for the historic development of the Lake District in its local, national and international context.
- A source of inspiration for spiritual, aesthetic and artistic values resulting from the contribution of the heritage to the landscape and recognition of the sublime.
- Amenity value: the role of a well-maintained, understood and cared-for environment in enhancing quality of life and health and wellbeing; physical and intellectual access giving people reasons to want to visit thereby contributing to the local and wider economy.
- Communal and local practices: heritage assets provide the infrastructure for continued traditional practices and the continued utilisation and passing on of experiential knowledge in how to make use of local natural resources.

- Educational and scientific knowledge: illustrating and providing the evidence for increased knowledge and understanding; providing opportunities for discovery and learning how social and economic change is reflected in landscape.

The model identified the type of benefits flowing from the ecosystem services calculating number and type of beneficiaries (residents and visitors) in each case study area. Benefit flows were influenced by scoring of the heritage assets in terms of their age (time-depth), legibility (how visible in the landscape), and the extent of their inter-relationship with the landscape. Assumptions were also made about condition of the physical assets based on condition survey data for Eskdale and Haweswater. A set of financial approximations were selected to monetise the benefit flows, and depreciation and discount calculations used to provide present value estimates of the benefits generated by the cultural capital over a ten-year period.

The outcomes from the valuation model indicated that the majority of value in each case study comes from Agriculture and Industry (ranging from 67% to 78% of the total value). This is not unexpected given that Agricultural/Subsistence and Industrial assets comprise the largest categories of assets in each case study area, and also contribute more significantly to generating flows of benefits. Values range from a low of £100.4 million in Eskdale to £363.8 million in the Derwent T&T area over a ten-year period (i.e. ranging from around £10 million/year to 36 million/year in present value terms).

The model also indicated that 80 – 90% of values are generated by visitors, the remainder by residents. Again, this is not unexpected given the huge numbers of visitors to the LDNP, which vastly outweigh the relatively small number of residents. It must be kept in mind that the valuation model is a conservative estimate of values generated by cultural heritage based solely on direct experience (i.e. by residents and visitors) and does not include indirect values that might be attributed to the wider population.

5.2.3 The SHINE approach, AES and ELMS

Funding streams associated with the management of SHINE features were identified. Quantitative data were identified for the Countryside Stewardship and Environmental Stewardship AES and analysis of the spend on heritage features was undertaken. It was not possible to link spending directly to SHINE features. The total spend on heritage options at the end of 2019 was £4,812,159 with 65.6% being spent on historic landscapes, 19.0% on boundaries and 15.4% on historic and archaeological features. It was concluded that Countryside Stewardship is helping to maintain and enhance the protective management of heritage features on farmland which contribute to the broader OUV of the Lake District, particularly field boundaries and traditional farm buildings rather than features with a high likelihood of being recorded in the SHINE dataset.

Although the Environmental Stewardship scheme closed to new applicants in 2014 and is being wound down, the spend on the HLS options within the remaining agreements has been almost twice that compared to Countryside Stewardship (£8.9 million), with 63.5% being spent on boundaries, 34.9% on historic landscapes, and 1.6% on historic and archaeological features. It was noted that within ELS agreements, which are based on an area payment, two options, ED5 and UD13, were particularly valuable for the protection of archaeological features and the maintenance of their visibility. As with Countryside Stewardship, it was concluded that Environmental Stewardship is helping to maintain and enhance the protective management of heritage features on farmland

which contribute to the broader OUV of the Lake District to a greater extent than features with a high likelihood of being recorded in the SHINE dataset.

The literature review found that there is little secondary information available on the impact of AES spending on SHINE features. A qualitative exploration of the impact of AES spending on SHINE features was undertaken using telephone interviews and a workshop with heritage professionals. It was reported that both Environmental Stewardship and Countryside Stewardship were having a positive impact on the management of SHINE features and the broader historic environment. However, it was considered that, from an historic environment perspective, input to and the outcomes delivered by Environmental Stewardship were superior to the subsequent Countryside Stewardship AES.

The project investigated how well the SHINE approach works to inform heritage asset assessment as part of the Area Plans (AP) and Land Management Plans (LMP) being developed as part of the Cumbria Pioneer ELMS T&T. A workshop was held with stakeholders from the T&T team and organisations with AES heritage experience and augmented with telephone interviews with heritage professionals with knowledge of AES implementation. It was reported that the SHINE dataset could provide some of the information required to generate baseline information on heritage assets for ELMS and inform ELMS public goods priorities. It was suggested that the SHINE approach required further development to be fully effective in informing ELMS in relation to the following issues:

- The SHINE dataset has variable coverage of heritage asset categories and needs to be understood in relationship to other aspects of the historic environment including the mapping of historic landscape character.
- SHINE omits Scheduled Monuments and highly-graded (I and II*) listed buildings but this is a limitation which can be easily overcome through the integration of Historic England data.
- SHINE does not contain data on the condition of assets needed to inform management practice.
- SHINE is a collection of individual heritage assets and does not consider these assets in the context of the broader historic landscape.

Knowledge exchange opportunities between farmers and land managers and heritage advisors was raised as an issue affecting heritage asset assessment and management. The ability to meet face-to-face was considered a very important part of the process. Such meetings facilitated greater understanding by applicants, agents and advisors of the benefits that can accrue from historic environment options, as well as those derived from other options, whose implementation can also benefit heritage features. Conversely, it also enabled the specialist advisors to understand better the issues being faced by applicants and how those issues influenced the options being applied for.

Overall, the SHINE approach is considered to have performed reasonably well and effectively in difficult circumstances that have become more difficult as time and schemes have progressed. It was recognised that there were some weaknesses in the SHINE dataset and the process by which SHINE data was used to inform the development of AES agreements. There were mixed views on whether the SHINE approach should be reformed or replaced by cost-effective direct analysis of HERs, thereby avoiding the costs

of maintenance and enhancement of two databases. Such an approach could, for example, assist in identifying and (as far as possible) smoothing out cross-border anomalies. Other datasets such as the National Character Areas and HLC should also be used, in tandem, in order to ensure that SHINE data are understood and properly managed in relationship to field boundaries and other features in their contextual landscape.

The project explored whether it is possible to attach a value to heritage assets which can be used to outline the benefits to partners, farmers and land managers of heritage features in ELMS. Two sources of information fed into this, the valuation modelling of the SHINE data and a stakeholder workshop. It was clear from the workshop that the historic environment is not fully appreciated by many farmers and land managers, their agents, Natural England project officers and RPA staff. This is not necessarily the result of indifference, more the product of different specialisms, interests and understanding and lack of effective training. If the importance of the historic environment is to be fully acknowledged in the development and delivery of ELMS, then a significantly enhanced understanding of the nature, content, role and potential of the historic environment in the delivery of public goods needs to be established among land managers, advisers and delivery bodies. It would be more effective if SHINE or successor heritage consultations within ELMS were made at the same time as those covering other objectives.

5.3 Recommendations

1. There should be greater recognition of the value of SHINE as a dataset which reflects the attributes and components of locally-distinctive landscapes that can also be of regional and national importance.
2. There must also be recognition of the fundamental contribution of the historic environment as a whole, and that in recognising the heritage element of features such as field boundaries, a more-integrated approach to Natural Capital is required in order to maximise the range of public benefits and goods that can be delivered through agri-environment schemes. Related to this, there should also be acknowledgement of the interaction of Natural and Cultural Capital, and the contribution that the latter makes to sense of place, sense of history and other cultural ecosystem services.
3. Following on from the above, there should be a recognised and nationally-consistent framework (at national and NCA level) to aid in the identification and assessment of non-designated heritage assets, distinguishing those which make a strong contribution to local character and those of national importance, of equivalent significance to designated assets but which remain undesignated.
4. Variations within and between HERs in the location, type and date of SHINE data (including those in the Monuments (by Form not Function) and Unassigned categories) need to be acknowledged within historic and natural landscape contexts, so that any omissions (for example of scattered earthworks in areas of dispersed settlement) can be identified. Options need to build on this understanding of local variation and have sufficient flexibility and simplicity for delivery within the context of individual farm plans.
5. Steps should be taken to ensure that traditional farm buildings are included comprehensively in HERs and thus within SHINE, which can be undertaken at an initial desk-based level through Farmstead Mapping.

6. Initial analysis of the SHINE dataset should be undertaken at a national level, using and refining the techniques outlined in this project, and in relationship to the National Character Areas and National HLC, in order to better understand variations in the distribution, quantity and quality of data across and between HERs. The effectiveness of and improvements to SHINE, and better understanding of its potential in a landscape context, could be effectively delivered through the selection of sample areas in contrasting landscape types.
7. Scaling up the work to a sub-national level – including National Parks and AONBs - should select contrasting historic and present land use areas and types within or across the National Character Areas, which are characterised by different drivers for change and pressures on heritage assets.
8. As a first step, the valuation model should be applied to a selection of other protected areas in order to explore the variability in data availability and quality. The valuation model requires some refinement in two areas:
 - a. Expansion to incorporate the full range of ecosystem services (through building on previous work in valuing linear features buildings and structures)
 - b. Refinement of the methodology for assessing cultural ecosystem service values that incorporates a three-pronged approach accounting for values of physical assets, character, and practice and process in local areas.
9. Provide test cases in a range of different settings to improve the capacity of the model as a tool for providing reliable valuations and identify the relevant sources of empirical and secondary information required.
10. Address gaps in the evidence base on the impact of AES and other spending on SHINE features:
11. Natural England and RPA databases monitoring take-up, coverage and spend within Countryside Stewardship, and in future ELMS, agreements and options should include a 'tag/variable' for SHINE assets. This would enable spend and uptake statistics to be generated for options directly connected to SHINE assets.
12. Current databases on the Natural England Open Data Geoportal only include live agreements. Easier access to AES agreement and options data for all agreements would facilitate analysis of spend and option uptake over the duration of a scheme.
13. Use heritage asset valuation to outline the benefits to partners, farmers and land managers of including heritage features in ELMS.
14. Given the potential for providing some indication of monetary value for heritage assets in a defined area, and the evidence from the workshop, guidance should be developed that works at a national level and can then be linked to the NCAPs, demonstrating the value of and enabling users to see how farm buildings/other structures, and heritage assets relate to patterns and assemblages in the landscape and different ways that land is managed.
15. The valuation approach should also be used at character area level to indicate to land managers and other relevant stakeholders how changes in condition and existence of heritage assets could impact on local landscape character, the local economy, and wider social and cultural values.
16. This approach should be piloted in the Lake District and a small number of other areas. Development of a simple toolkit would be massively useful and also take the

strain off the (possibly diminishing number of) heritage advisers who cannot be expected to offer advice on every holding without a large increase in funding. Inter-disciplinary approaches would be required to make training effective for all other ELMS advisors.

17. Use the SHINE approach (or an alternative form of direct analysis of the HERs) to inform Land Management Plans and Area Plans. This could apply to future T&T initiatives and the ELMS National Pilot which is due to start in later 2021 and full ELMS delivery.
18. The SHINE approach should be developed and improved to provide baseline data for ELMS:
 - a. Include scheduled heritage assets.
 - b. Expand coverage to include all heritage assets that contribute to OUV, such as traditional buildings and field boundaries.
 - c. Integrate the SHINE dataset of tangible heritage assets with approaches that include intangible elements of cultural landscapes, e.g. livestock management practices.
19. Consideration should be given to the role of specialist advice in the management of heritage assets and how this is integrated into LMPs.
20. The role of independent advice should be considered. This should be seen not as a cost but as an essential investment to maximise the array of public goods delivered through options across a holding.
21. Consideration should be given to incorporating data on the condition of heritage assets in the SHINE dataset as information on the condition of assets is needed to inform management practice. Condition surveys of heritage assets could be undertaken as part of the LMP.
22. Consideration should be given to cost: benefit or return-on-investment analysis of further investment in the development of the SHINE dataset (derived from the HERs) against the development of an algorithm that enables direct analysis of the HERs and the NCA and HLC datasets.

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7 APPENDIX 1: RELATIONSHIP OF BENEFIT STREAMS TO OUV

Benefit streams	Relationship of benefit streams to OUV
Sense of place Sense of history	<p>OUV 1: <i>Continuity of agro-pastoralism and local industry</i> The legibility, date and types of heritage assets illustrate and enhance appreciation and understanding of what makes the Lake District so distinctive in a national and international context, and specifically the development of farming communities, farming systems and industry linked to each other and to external markets by routeways and their associated features.</p> <p>OUV 2: <i>Discovery and appreciation of a rich cultural landscape.</i> The sense of place and history delivered by physical and intellectual access to heritage assets, from structures using local materials and skills to above-ground remains surviving from prehistoric communities, underpins new as well as established appreciation of the cultural landscape.</p> <p>OUV 3: <i>Development of a model for protecting cultural landscape.</i> Visitors and local businesses benefit from good stewardship of the historic environment and of heritage assets, evident through the care and maintenance of archaeological features and historic farm buildings.</p>
Spiritual, aesthetic and artistic values	<p>OUV 2: <i>Discovery and appreciation of a rich cultural landscape.</i> The sense of place and history delivered by physical and intellectual access to heritage assets, from structures using local materials and skills to above-ground remains surviving from prehistoric communities, underpins new as well as established appreciation of the cultural landscape.</p>
Amenity value	<p>A wide range of benefits are provided to people through access to and appreciation of features in the landscape, underpinned by the evidence for farming communities and industrial activity since prehistory (OUV 1), new ways of discovery and appreciation of the cultural landscape (OUV 2) and the evidence for its good stewardship (OUV 3).</p>
Communal value	<p>Communal value has been core to the development of the agro-pastoral tradition (OUV 1) in enclosed and unenclosed land, the siting of farmsteads in relationship to inbye land retaining the vestiges of communal and co-operative farming and now strongly evidenced by the continued practice of hefting sheep and the management of common land, the continued use of local breeds and operation of breed societies, and the passing on of tacit and indigenous local knowledge of how to use the land and continue craft traditions using local stone.</p>
Educational and scientific value	<p>Heritage assets are a rich source of evidence for understanding the development and creation of a distinctive cultural landscape (OUV 1), some directly resulting from and most illustrating how appreciation of cultural landscapes and scenic beauty developed in the past; also to spiritual and physical benefits are provided to people by the landscape.</p>

8 APPENDIX 2: NATURAL CAPITAL BENEFITS OF KEY ASSET TYPES

This appendix sets out, in broad terms and as a framework for enhancement, the benefits that flow from the key types of heritage asset and landscape considered in this project – Agriculture and Subsistence, Domestic, Industrial, Religious, Parks and Gardens (Tables 8.1-8.6). These are the same as the Class Types set out in Historic England’s Thesaurus of Terms for recording heritage to a common standard including for local Historic Environment Records. (Historic England 2014 *Forum on Information Standards in Heritage (FISH) Thesauri* (<http://thesaurus.historicengland.org.uk>); Historic England 2015 *Historic Characterisation Thesaurus* (<http://www.heritage-standards.org.uk/wp-content/uploads/2016/05/Historic-Characterisation-Thesaurus-Aug-2015.pdf>))

Table 8.1: Natural capital benefits of Agriculture and Subsistence

Asset type	Natural capital benefits
<p>Agriculture and subsistence</p> <p>Sites, buildings, structures, features and areas of land associated with cultivation, the management, rearing and fattening of livestock, gathering and processing food and livestock, hunting and fishing.</p> <p>Mostly now occur within Enclosure landscapes, but with often extensive evidence for medieval and earlier agricultural landscapes in Unenclosed Land.</p>	<p>Supporting:</p> <ul style="list-style-type: none"> • synthesis of construction materials into organic material and surfaces including lichens and mosses, including incorporation of above-ground features into rough ground and farmed land • provision of habitats for a range of flora and fauna including nutrient cycling and food sourcing e.g. birds and bats in barns, ground-nesting birds amongst historic meadowland, cultivation and settlement earthworks: <ul style="list-style-type: none"> ○ via the materials used for the construction of buildings’ walls, roofs, surfaces and for boundaries, ○ via the time-depth and design of buildings and other structures, the former linked to duration of habitat and the latter affording some species’ habitats, ○ via the nature of field and other boundaries, the spaces they enclose and their connectivity to surrounding landscapes of different types, ○ via continued use or redundancy of buildings, boundaries and other structures, ○ indirectly through colonising as well as through domesticated fauna and flora, ○ via walls, other boundaries and gardens including orchards for pollinator species, • supporting nitrogen-rich plants and invertebrates in and around farmyards and in historic field boundaries and fields, this being linked to duration (time depth) of habitat • providing food sources for fauna (grain and other foodstuffs resulting from crop cultivation, harvesting, processing and animal-feeding areas). • Soil formation: <ul style="list-style-type: none"> ○ through the creation and maintenance of gardens, orchard, yards, paddocks and fields, both grassed and cultivated. <p>Provisioning:</p>

	<p>The density, date and pattern in the landscape of farmsteads, other buildings, boundaries and the spaces they enclose can provide:</p> <ul style="list-style-type: none"> • Shelter for people (residents and visitors), flora and fauna (both wild and domesticated stock) including micro-climate manipulation for the benefit of crops and livestock through management and maintenance of field boundaries/stock shelters. • Shelter for machinery/equipment, product, people/personnel. • Processing space – food, materials, products. • Commercial operating space for businesses, commerce, industry, agriculture. • Food sourced from the landscape, providing for people through the growing (fields) and processing and storing of crops (barns, mills), shelter and management of livestock (farm buildings), including fruit and vegetables (horticulture/garden buildings, orchards etc.). • Food source for wild fauna through incidental/deliberate provision during the course of the agricultural/subsistence round. • Traditional skills provision/enhancement for construction, repair, maintenance, including contribution to local character reflecting local geodiversity i.e. through use of local traditional materials: stone, slate, brick, lime, timber, as well as other organic materials e.g. thatch, reed, turf. • Employment through traditional crafts as well as in agriculture, industry, commerce etc. • Contribution to local economy through investment in traditional skills and other occupations involved in the wide range of agricultural and subsistence activities, • Sustainable power/generation/supply (contemporary/historic) through harnessing available/appropriate wind, water and solar energy. <p>Regulating:</p> <ul style="list-style-type: none"> • Climate change, through: <ul style="list-style-type: none"> ○ re-use of traditional materials and structures rather than replacement, utilising the embedded energy in the existing building stock, ○ re-use of traditional materials to further reduce the environmental footprint generated in the use of new traditional materials, now often imported over great distances, ○ use of freshly-won local traditional materials where the environmental footprint can be demonstrated to be less than that of imported material or synthetic products, ○ orientation and design, from siting of historic orchards to walled gardens and south-facing farmsteads to 19th century hospital design and modern environmental design, ○ enhancing carbon sequestration through reducing ground-disturbing cultivation e.g. minimum tillage or direct drilling, and maintaining ground cover on peat/peaty soils, ○ stock control and management to avoid poaching of the ground and loss of vegetation cover, soil and carbon,
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	<ul style="list-style-type: none"> ○ sustainable power generation/supply (contemporary/historic) through harnessing available/appropriate wind, water and solar energy. ● Soil health and erosion, through: <ul style="list-style-type: none"> ○ stock control and management to avoid poaching of the ground, loss of soil cover, reducing diffuse pollution, ○ managing cultivation/vegetation cover to mitigate the erosive impacts of wind and rain/snow, ○ impeding the through-flow of water and water-borne silts and other material by maintaining field and other boundaries and managing drainage for areas of hardstanding, ○ managing fertiliser application and quantities to avoid diffuse pollution and changing soil structure. ● Drainage and flood control: <ul style="list-style-type: none"> ○ soft surfaces and uncompacted soils assist in drainage and flood control and in countering the 'heat effect' of surfaced areas in combination with buildings in urban areas. ● Water supply and sewage treatment: <ul style="list-style-type: none"> ○ mills and pumping stations, for example, regulate the flow and treatment of water for powering machinery and for the removal of waste and supply of clean water. ● Boundary definition: <ul style="list-style-type: none"> ○ for (historic/contemporary) livestock management, crop management and definition of ownership boundaries and management units. <p>Cultural: Buildings, boundaries and the fields and other spaces that they enclose are fundamental to landscape character and sense of place and history. The diversity of materials, type, style and the shape and nature of the spaces they enclose, when considered as a whole with the gardens, yards and other enclosed spaces with which they are associated, offer benefits to:</p> <ul style="list-style-type: none"> ● Sense of place and aesthetic and artistic values because of: <ul style="list-style-type: none"> ○ locally distinctive materials, styles and forms of architecture and the forms and nature of construction and enclosure, ○ traditional or specialist-designed forms and styles that are locally-rooted or influenced by national and international social, economic and aesthetic developments, ○ their direct link to local environments through their geodiversity - their use of local earth, clay, timber and stone – and use of other organic materials such as thatch or turf., ○ aesthetic and artistic stimuli provided by these agricultural and subsistence assets and landscapes and the outputs and outcomes that they generate. ● Sense of history: <ul style="list-style-type: none"> ○ through offering a rich source of evidence (time depth) for the agricultural development of places from the Neolithic period. ● Spiritual, communal and commemorative value:
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	<ul style="list-style-type: none"> ○ through interaction with agricultural buildings and landscapes leading to community cohesion, vibrancy, integration and sustainability, capacity building and enabling opportunities including enhanced community valuing of the cultural landscape and heritage assets. ● Amenity value: <ul style="list-style-type: none"> ○ by improving the quality of life and health and wellbeing of residents and visitors, both mental and physical, through a well-maintained, understood and cared-for environment; by attracting inward investment as a result of that maintenance and care; providing visitor destinations by giving people reasons to want to visit; enabling people to interact with the natural and historic environment by providing access and accessibility, physically, visibly and intellectually, to enhance the value of people's recreation and leisure opportunities; providing opportunities to experience tranquility in rural landscapes, including dark skies; contributing to the development of the local economy as a result. ● Educational and scientific value: <ul style="list-style-type: none"> ○ through increasing knowledge, understanding, appreciation and enjoyment of heritage assets and landscapes and the historic and natural environment generally, ○ by providing opportunities for discovery, identification, education and research - for example in the transition from communal to more individual ways of living, the adoption of new building techniques and architectural styles and interaction with local ecologies, reflecting people's accommodation of changing ways of living and working.
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Table 8.2: Natural capital benefits of Domestic

Asset type	Natural capital benefits
<p>Domestic Sites, buildings, structures and features used for permanent, seasonal or temporary accommodation/habitation and related ancillary buildings. Includes agricultural, commercial, military and religious sites or structures/ parts of sites used for residential purposes as well as industrial workplaces that combine both a domestic and industrial function.</p>	<p>Supporting:</p> <ul style="list-style-type: none"> • synthesis of construction materials into organic material and surfaces including lichens and mosses, including incorporation of above-ground features into rough ground and farmed land • provision of habitats for a range of flora and fauna including nutrient cycling and food sourcing e.g. birds and bats in buildings: <ul style="list-style-type: none"> ○ via the materials used for the construction of buildings’ walls, roofs, surfaces and for boundaries, ○ via the time-depth and design of buildings and other structures, the former linked to duration of habitat and the latter affording some species’ habitats, ○ via the nature of boundaries, the spaces they enclose and their connectivity to surrounding landscapes of different types, ○ via continued use or redundancy of buildings, boundaries and other structures, • indirectly through colonising as well as through domesticated fauna and flora, • via settlement and related (mostly Agriculture and Subsistence) earthworks • via walls, hedges and other boundaries around gardens and other spaces linked to domestic use for pollinator species. • Soil formation: <ul style="list-style-type: none"> ○ through the creation and maintenance of gardens, both grassed and cultivated. <p>Provisioning: The density, date and pattern in the landscape of domestic structures and related ancillary buildings, boundaries and the spaces they enclose can provide:</p> <ul style="list-style-type: none"> • Shelter for people (residents and visitors), flora and fauna (both wild and domesticated). • Shelter and commercial storage, processing and operating space for related commercial, agricultural and industrial uses. • Food source for wild fauna through incidental/deliberate provision during the course of the processing agricultural/subsistence products. • Traditional skills provision/enhancement for construction, repair, maintenance, including contribution to local character through local geodiversity i.e. through use of local traditional materials: stone, slate, brick, lime, timber, as well as other organic materials e.g. thatch, reed, turf. • Employment through application of traditional crafts as well as in industrial and other activities carried out within. • Contribution to local economy through investment in traditional skills and other occupations involved in the range of activities undertaken within. • Sustainable power generation/supply (contemporary/historic) through harnessing available/appropriate wind, water, solar energy.

Regulating:

The density, date and pattern in the landscape of domestic structures and related ancillary buildings (and their remains where present as ruins or as above-ground features), boundaries and the spaces they enclose can contribute to regulating:

- Climate change, through:
 - re-use of traditional materials and structures rather than replacement, utilising the embedded energy in the existing building stock,
 - re-use of traditional materials to further reduce the environmental footprint generated in the use of new traditional materials, now often imported over great distances,
 - use of freshly-won local traditional materials where the environmental footprint can be demonstrated to be less than that of imported material or synthetic products,
 - orientation and design, from south-facing dwellings and walled gardens to modern environmental design,
 - sustainable power generation/supply (contemporary/historic) through harnessing available/appropriate wind, water and solar energy.
- Soil health and erosion, through:
 - managing cultivation/vegetation cover to mitigate the erosive impacts of wind and rain/snow,
 - impeding the through-flow of water and water-borne silts and other material by maintaining boundaries and managing drainage for areas of hardstanding.
- Drainage and flood control:
 - soft surfaces and uncompacted soils assist in drainage and flood control and in countering the 'heat effect' of surfaced areas in combination with buildings in urban areas.
- Water supply and sewage treatment:
 - mills and pumping stations, for example, regulate the flow and treatment of water for powering machinery and for the removal of waste and supply of clean water.
- Boundary definition:
 - for (historic/contemporary) definition of ownership boundaries and management units.

Cultural:

Buildings, sites, landscapes and their associated boundaries and the spaces that they enclose are fundamental to landscape character and sense of place and history, and are an integral part of patterns of settlement that have shaped England's landscape for over a thousand years and are also visible in land that has been in communal use as rough ground for at least as long. The diversity of materials, type, style and the shape and nature of the spaces they enclose, when considered as a whole with the gardens, yards and other enclosed spaces with which they are associated, offer benefits to:

- Sense of place and aesthetic and artistic values because of:
 - locally distinctive materials, styles and forms of architecture and the forms and nature of construction and enclosure,

- traditional or specialist-designed forms and styles that are locally-rooted or influenced by national and international social, economic and aesthetic developments,
- their direct link to local environments through their geodiversity - their use of local earth, clay, timber and stone – and use of other organic materials such as thatch or turf.,
- aesthetic and artistic stimuli provided by these domestic, ancillary and other buildings (and their immediate associated landscapes) and the outputs and outcomes that they generate.
- Sense of history:
 - through offering a rich source of evidence (time depth) for the historic development of places in their local, national and international context.
- Spiritual, communal and commemorative value:
 - through interaction leading to community cohesion, vibrancy, integration and sustainability, capacity building and enabling opportunities including enhanced community valuing of heritage assets.
- Amenity value:
 - by improving the quality of life and health and wellbeing of residents and visitors, both mental and physical, through a well-maintained, understood and cared-for environment; by attracting inward investment as a result of that maintenance and care; providing visitor destinations by giving people reasons to want to visit; enabling people to interact with the natural and historic environment by providing access and accessibility, physically, visibly and intellectually, to enhance the value of people’s recreation and leisure opportunities; contributing to the development of the local economy as a result.
- Educational and scientific value:
 - through increasing knowledge, understanding, appreciation and enjoyment of heritage assets and landscapes and the historic and natural environment generally,
 - by providing opportunities for discovery, identification, education and research - for example in the transition from communal to more individual ways of living, the adoption of new building techniques and architectural styles and interaction with local ecologies, reflecting people’s accommodation of changing ways of living and working.

Table 8.3: Natural capital benefits of Industrial

Asset type	Natural capital benefits
<p>Industrial Sites, buildings, structures and features related to the extraction of raw materials, their processing and manufacture into finished goods. Includes structures associated with the supply, storage and/or transmission of power.</p> <p>Most sites are post-1750.</p>	<p>Supporting:</p> <ul style="list-style-type: none"> • synthesis of construction materials into organic material and surfaces including lichens and mosses, including incorporation of above-ground features into rough ground and farmed land, and also into woodland • provision of habitats for a range of flora and fauna including nutrient cycling and food sourcing e.g. birds and bats in buildings: <ul style="list-style-type: none"> ○ via the materials used for the construction of buildings’ walls, roofs, surfaces and for boundaries, ○ via the time-depth and design of buildings and other structures, the former linked to duration of habitat and the latter affording some species’ habitats, ○ via the nature of associated boundaries, the spaces they enclose and their connectivity to surrounding landscapes of different types, ○ via continued use or redundancy of buildings, boundaries and other structures, ○ indirectly through colonising as well as through domesticated fauna and flora, pollutants and other factors leading to development of specialist species on many industrial sites ○ via walls, other boundaries and associated structures for pollinator species. <p>Provisioning: The density, date and pattern in the landscape of sites, buildings, structures and features related to extraction, processing and manufacturing, including their boundaries and the spaces they enclose, can provide:</p> <ul style="list-style-type: none"> • Shelter for people (residents and visitors), flora and fauna (both wild and domesticated). • Shelter for machinery/equipment, product, people/personnel. • Processing space – materials, products. • Commercial operating space for businesses, commerce, industry. • Sources for traditional stone and slate. • Traditional skills provision/enhancement for construction, repair, maintenance, including contribution to local character through local geodiversity i.e. through use of local brick and stone, and very rarely organic materials such as thatch. • Employment through traditional crafts as well as in industry, commerce etc. • Contribution to local economy through investment in traditional skills and other occupations involved in the wide range of historic industrial activities. • Sustainable power generation/supply through harnessing available/appropriate wind, water and solar energy. <p>Regulating:</p>

The density, date and pattern in the landscape of sites, buildings, structures and features related to extraction, processing and manufacturing, including their boundaries and the spaces they enclose, can contribute to regulating:

- Climate change, through:
 - re-use of traditional materials and structures rather than replacement, utilising the embedded energy in the existing building stock,
 - re-use of traditional materials to further reduce the environmental footprint generated in the use of new traditional materials, now often imported over great distances,
 - use of freshly-won local traditional materials where the environmental footprint can be demonstrated to be less than that of imported material or synthetic products,
 - orientation and design, including modern environmental design,
 - sustainable power generation/supply (contemporary/historic) through harnessing available/appropriate wind, water and solar energy.
- Soil health and erosion, through:
 - managing the impacts of activities on soil and vegetation cover to mitigate the potential for pollution and the erosive impacts of wind and rain/snow,
 - impeding the through-flow of water and water-borne silts and other material by maintaining boundaries and managing drainage for areas of hardstanding.
- Drainage and flood control:
 - soft surfaces and uncompacted soils, and water channels and storage areas associated with industrial sites, assist in drainage and flood control and in countering the 'heat effect' of surfaced areas.
- Water supply and sewage treatment:
 - mills and pumping stations, for example, regulate the flow and treatment of water for powering machinery and for the removal of waste and supply of clean water.
- Boundary definition:
 - for (historic/contemporary) land management and definition of ownership boundaries and management units.

Cultural:

Industrial buildings, sites, landscapes and their associated boundaries and the spaces that they enclose are fundamental to landscape character and sense of place and history. Their diversity of materials, type and style of construction and the diversity of landscapes that they occupy, and the nature and form of that occupation, offer benefits to:

- Sense of place and aesthetic and artistic values because of:
 - their direct link to local environments through their geodiversity, particularly for quarries and the materials selected for pre-1850 industrial sites, and how they also illustrate national and international social, economic and aesthetic developments,
 - aesthetic and artistic stimuli provided by these industrial assets and landscapes and the outputs and outcomes that they generate.

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| | <ul style="list-style-type: none">• Sense of history:<ul style="list-style-type: none">○ through offering a rich source of evidence (time depth) for the exploitation of resources from the Neolithic period• Spiritual, communal and commemorative value:<ul style="list-style-type: none">○ through interaction with industrial heritage leading to community cohesion, vibrancy, integration and sustainability, capacity building and enabling opportunities including enhanced community valuing of heritage assets.• Amenity value:<ul style="list-style-type: none">○ by improving the quality of life and health and wellbeing of residents and visitors, both mental and physical, through a well-maintained, understood and cared-for environment; by attracting inward investment as a result of that maintenance and care; providing visitor destinations by giving people reasons to want to visit; enabling people to interact with the natural and historic environment by providing access and accessibility, physically, visibly and intellectually, to enhance the value of people's recreation and leisure opportunities; providing opportunities to experience tranquility in rural landscapes, including dark skies; contributing to the development of the local economy as a result.• Educational and scientific value:<ul style="list-style-type: none">○ through increasing knowledge, understanding, appreciation and enjoyment of heritage assets and landscapes and the historic and natural environment generally,○ by providing opportunities for discovery, identification, education and research - for example in the adoption of new building techniques and architectural styles and interaction with local ecologies, reflecting people's accommodation of changing ways of living and working. |
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Table 8.4: Natural capital benefits of Transport

Asset type	Natural capital benefits
<p>Transport</p> <p>Sites, buildings, structures and features related to the conveyance of goods and/or passengers. Includes man-made routeways, mechanical structures and some vehicle types where it is deemed necessary to record such as monuments.</p> <p>Mostly post-1750 and closely associated with Industrial sites but can include routeways and waymarkers etc. dating from the Roman, medieval and earlier periods.</p>	<p>Supporting:</p> <ul style="list-style-type: none"> • synthesis of construction materials into organic material and surfaces including lichens and mosses • provision of habitats – and particularly wildlife movement corridors connected to other habitat and historic landscape types - for a range of flora and fauna including nutrient cycling and food sourcing e.g. birds and bats in buildings, under bridges and along routes: <ul style="list-style-type: none"> ○ via the materials used for the construction of buildings’ walls, roofs, surfaces (including route surfaces) and for their boundaries, ○ via the time-depth and design of buildings, routeways and other structures, the former linked to duration of habitat and the latter including veteran trees and other natural features along routeway boundaries affording some species’ habitats, ○ via the nature of associated boundaries, the spaces they enclose and their connectivity to surrounding landscapes of different types, ○ via continued use or redundancy of buildings, boundaries and other structures, ○ indirectly through colonising as well as through domesticated fauna and flora, ○ via walls, other boundaries and associated structures for pollinator species. <p>Provisioning:</p> <p>The density, date and pattern in the landscape of sites, buildings, structures and features related to transport in its various forms, including their boundaries and the spaces they enclose, can provide:</p> <p>Shelter for people (residents and visitors), flora and fauna (both wild and domesticated).</p> <ul style="list-style-type: none"> • Shelter for machinery/equipment, product, goods, people/personnel. • Processing space – materials, products. • Commercial operating space for businesses, commerce, industry. • Traditional skills provision/enhancement for construction, repair, maintenance, including contribution to local character through local geodiversity i.e. brick and stone used for bridges and transport buildings, and very rarely organic materials such as thatch. • Employment through traditional crafts as well as in industry, commerce etc. • Contribution to local economy through investment in traditional skills and other occupations involved in the wide range of transport activities. • Sustainable power generation/supply through harnessing available/appropriate wind, water and solar energy. <p>Regulating:</p> <p>The density, date and pattern in the landscape of sites, buildings, structures and features related to transport in all its forms, including their boundaries and the spaces they enclose, can contribute to regulating:</p>

- Climate change, through:
 - re-use of traditional materials and structures rather than replacement, utilising the embedded energy in the existing building stock,
 - re-use of traditional materials to further reduce the environmental footprint generated in the use of new traditional materials, now often imported over great distances,
 - use of freshly-won local traditional materials where the environmental footprint can be demonstrated to be less than that of imported material or synthetic products,
 - use of re-cycled materials in e.g. concrete, road surfacing and building and other materials, to reduce the environmental impact of use of newly-won materials,
 - orientation and design, including modern environmental design,
 - sustainable power generation/supply (contemporary/historic) through harnessing available/appropriate wind, water and solar energy.
- Soil health and erosion, through:
 - managing the impacts of activities on soil and vegetation cover to mitigate the potential for pollution and the erosive impacts of wind and rain/snow,
 - impeding the through-flow of water and water-borne silts and other material by maintaining boundaries and managing drainage for areas of hardstanding.
- Drainage and flood control:
 - soft surfaces and uncompacted soils assist in drainage and flood control and in countering the 'heat effect' of surfaced areas in combination with buildings in urban areas.
- Water supply and sewage treatment:
 - mills and pumping stations, for example, regulate the flow and treatment of water for powering machinery and for the removal of waste and supply of clean water.
- Boundary definition:
 - for (historic/contemporary) land management and definition of ownership boundaries and management units.

Cultural:

Transport infrastructure, including buildings, sites, landscapes and their associated boundaries and the spaces that they enclose, can be fundamental to landscape character and sense of place and history. The diversity of materials, type and style of construction and the diversity of landscapes that they occupy, and the nature and form of that occupation, offer benefits to:

- Sense of place and aesthetic and artistic values because of:
 - locally distinctive materials, styles and forms of architecture and the forms and nature of construction and enclosure (as, counter-intuitively, can be the use of non-local materials in structures such as bridges and viaducts),
 - traditional or imported/ specialist-designed forms and styles that are locally-rooted or influenced by national and international social, economic and aesthetic developments,

- their direct link to local environments through their geodiversity, particularly for pre-1850 industrial sites
- aesthetic and artistic stimuli provided by these industrial assets and landscapes and the outputs and outcomes that they generate.
- Sense of history:
 - through offering a rich source of evidence (time depth) for the historic development of places in their local, national and international context of transport development and provision.
- Spiritual, communal and commemorative value:
 - through interaction leading to community cohesion, vibrancy, integration and sustainability, capacity building and enabling opportunities including enhanced community valuing of heritage assets.
- Amenity value:
 - by improving the quality of life and health and wellbeing of residents and visitors, both mental and physical, through a well-maintained, understood and cared-for environment; by attracting inward investment as a result of that maintenance and care; providing visitor destinations by giving people reasons to want to visit; enabling people to interact with the natural and historic environment by providing access and accessibility, physically, visibly and intellectually, to enhance the value of people's recreation and leisure opportunities; providing opportunities to experience tranquility in rural landscapes, including dark skies; contributing to the development of the local economy as a result.
- Educational and scientific value:
 - through increasing knowledge, understanding, appreciation and enjoyment of heritage assets and landscapes and the historic and natural environment generally,
 - by providing opportunities for discovery, identification, education and research - for example in the adoption of new building techniques and architectural styles and interaction with local ecologies, reflecting people's accommodation of changing ways of living and working.

Table 8.5: Natural capital benefits of Religious, Ritual and Funerary

Asset type	Natural capital benefits
<p>Religious, ritual and funerary Sites, buildings, structures and features related to the practice of rituals and religious beliefs, including funerary rites. Includes ancillary buildings, structures and features of uncertain use, which are thought to be 'ritual' (for example, hill figures).</p>	<p>Supporting:</p> <ul style="list-style-type: none"> • synthesis of construction materials into organic material and surfaces including lichens and mosses • provision of habitats for a range of flora and fauna including nutrient cycling and food sourcing e.g. in churchyards, long-disused sites (structural remains of abandoned churches and chapels, prehistoric ritual sites, birds and bats in buildings: <ul style="list-style-type: none"> ○ via the materials used for the construction of buildings' walls, roofs, surfaces and for boundaries, ○ via the time-depth and design of buildings and other structures, the former linked to duration of habitat and the latter affording some species' habitats, ○ via the nature of boundaries, the spaces they enclose and their connectivity to surrounding landscapes of different types, ○ via continued use or redundancy of buildings, boundaries and other structures, ○ indirectly through colonising as well as through domesticated fauna and flora, ○ via walls, hedges and other boundaries (and gardens) for pollinator species. • Soil formation: <ul style="list-style-type: none"> ○ through the creation and maintenance particularly of grassed areas, including gardens of remembrance and cemeteries. <p>Provisioning: While the density, date and pattern in the landscape of religious, ritual and funerary sites, buildings and structures and related ancillary buildings, boundaries and the spaces they enclose is not dense, they can provide:</p> <ul style="list-style-type: none"> • Shelter for flora and fauna (both wild and domesticated). • Food source for wild and domesticated fauna. • Traditional skills provision/enhancement for construction, repair, maintenance, including contribution to local character through local geodiversity i.e. through use of local traditional materials: stone, slate, brick, lime, timber, as well as other organic materials e.g. thatch, reed, turf. • Employment through application of traditional crafts as well as in industrial and other activities carried out within. • Contribution to local economy through investment in traditional skills and other occupations involved in the range of activities undertaken within. • Sustainable power generation/supply (contemporary/historic) through harnessing available/appropriate wind, water, solar energy. <p>Regulating: Religious, ritual and funerary sites, buildings and structures, their related ancillary buildings, boundaries and the spaces they enclose can contribute to regulating:</p>

	<ul style="list-style-type: none"> • Climate change, through: <ul style="list-style-type: none"> ○ re-use of traditional materials and structures rather than replacement, utilising the embedded energy in the existing building stock, ○ re-use of traditional materials to further reduce the environmental footprint generated in the use of new traditional materials, now often imported over great distances, ○ use of recycled materials to further reduce the environmental footprint generated in the use of new traditional materials, ○ use of freshly-won local traditional materials where the environmental footprint can be demonstrated to be less than that of imported material or synthetic products, ○ sustainable power generation/supply (contemporary/historic) through harnessing available/appropriate wind, water and solar energy. • Soil health and erosion, through: <ul style="list-style-type: none"> ○ managing cultivation/vegetation cover to mitigate the erosive impacts of wind and rain/snow, ○ impeding the through-flow of water and water-borne silts and other material by maintaining boundaries and managing drainage for areas of hardstanding. • Drainage and flood control: <ul style="list-style-type: none"> ○ soft surfaces and uncompacted soils assist in drainage and flood control and in countering the 'heat effect' of surfaced areas in combination with buildings in urban areas. • Boundary definition: <ul style="list-style-type: none"> ○ for (historic/contemporary) definition of ownership boundaries and management units. <p>Cultural: Religious, ritual and funerary buildings, sites, structures, landscapes and their associated boundaries and the spaces that they enclose are fundamental to landscape character and sense of place and history. They are integral to the development of settlement and farmed landscapes from the first millennium, and are evocative and often enigmatic testament to how people regarded landscape and in particular where they survive in unenclosed land in association with agricultural, domestic and other monuments dating from the prehistoric period. Their diversity of materials, type and style of construction and the diversity of landscapes that they occupy, and the nature and form of that occupation, offer benefits to:</p> <ul style="list-style-type: none"> • Sense of place and aesthetic and artistic values because of: <ul style="list-style-type: none"> ○ their materials, styles and forms of architecture, illustrating the interplay of local and external (including international) influences and associated enclosures ○ their direct link to local environments through their geodiversity - their use/exploitation of local earth, clay, timber and stone – and use of other organic materials such as thatch or turf, ○ aesthetic and artistic stimuli provided by these assets and landscapes and the activities and outcomes that they generate. • Sense of history: <ul style="list-style-type: none"> ○ through offering a rich source of evidence (time depth) for the historic development of places in their local, national and international context.
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	<ul style="list-style-type: none"> • Spiritual, communal and commemorative value: <ul style="list-style-type: none"> ○ through individual and collective interaction, often but not exclusively faith-based, leading to community cohesion, vibrancy, integration and sustainability, capacity building and enabling opportunities including enhanced community support for and valuing of heritage assets. • Amenity value: <ul style="list-style-type: none"> ○ by improving the quality of life and health and mental and physical wellbeing of residents and visitors, through a well-maintained, understood and cared-for environment; by attracting inward investment as a result of that maintenance and care; providing visitor destinations by giving people reasons to want to visit; enabling people to interact with the natural and historic environment by providing access and accessibility, physically, visibly and intellectually, to enhance the value of people's recreation and leisure opportunities; providing opportunities to experience tranquility in rural landscapes, including dark skies; contributing to the development of the local economy as a result. • Educational and scientific value: <ul style="list-style-type: none"> ○ through increasing knowledge, understanding, appreciation and enjoyment of heritage assets and landscapes and the historic and natural environment generally that they are part of and contribute to, ○ by providing opportunities for discovery, identification, education and research - for example in the adoption of new building techniques and architectural styles and interaction with local ecologies, reflecting people's accommodation of changing ways of living and working.
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Table 8.6: Natural capital benefits of Gardens and Parks and Urban Spaces

Asset type	Natural capital benefits
<p>Gardens and parks and urban spaces Planned and/or landscaped areas designed for aesthetic or recreational purposes. Includes parkland, drives, waterbodies, boundaries and all related archaeological sites, buildings, structures and features (e.g. lodges, dovecotes, follies), normally associated with parks and urban spaces including street furniture.</p>	<p>Supporting:</p> <ul style="list-style-type: none"> • synthesis of construction materials into organic material and surfaces including lichens and mosses • provision of habitats for a range of flora and fauna including nutrient cycling and food sourcing e.g. birds and bats in associated buildings and other structures: <ul style="list-style-type: none"> ○ via the materials used for the construction of parkland and garden walls and boundaries buildings' walls, roofs, surfaces and for boundaries, ○ via the time-depth and design of boundaries, water bodies, buildings and other structures, the former linked to duration of habitat and the latter affording some species' habitats, ○ via the nature of boundaries, the spaces they enclose and their connectivity to surrounding landscapes of different types, ○ via continued use or redundancy of buildings, boundaries and other structures, ○ indirectly through colonising as well as through domesticated fauna and flora, ○ via walls and other boundaries for pollinator species, • supporting nitrogen-rich plants and invertebrates in and around parks and gardens, • providing food sources for fauna (berries and other foodstuffs resulting from often unusual preponderance of such food-bearing shrubs and other plants in formal/designed planting schemes). • Soil formation: <ul style="list-style-type: none"> ○ through the creation and maintenance of parks and gardens, both grassed and cultivated. <p>Provisioning: Parks and gardens and other areas planned and/or landscaped for aesthetic or recreational purposes and their associated boundaries, buildings and structures can provide:</p> <ul style="list-style-type: none"> • Shelter for people (e.g. parkland buildings for local residents and visitors), flora and fauna (both wild and domesticated animals, e.g. veteran trees in wood pasture and other UK Priority Habitats, including those derived from land use and settlement earthworks in parkland, parkland cattle) including micro-climate manipulation for the benefit of plants and animals through management and maintenance of historic walled gardens, boundaries and shelters. • Shelter for machinery/equipment, people/personnel, entertainment (e.g. bandstands), materials provision (e.g. greenhouses, nurseries). • Food source for wild fauna through incidental/deliberate provision through the planting of particularly fruitful/food-bearing plants. • Traditional skills provision/enhancement for design, planting, construction, repair, maintenance, including contribution to local character through local geodiversity i.e. through use of local traditional plants/materials: stone, slate, brick, lime, timber, as well as other organic materials. • Employment through application of such traditional crafts/skills.

	<ul style="list-style-type: none"> • Contribution to local economy through investment in traditional skills and other occupations involved in the wide range of park/garden/designed landscape activities, • Sustainable power/generation/supply (contemporary/historic) through harnessing available/appropriate wind, water and solar energy. <p>Regulating: Planned and/or landscaped parks and gardens designed for aesthetic or recreational purposes, and their associated boundaries, buildings and structures, can contribute to regulating:</p> <ul style="list-style-type: none"> • Climate change, through: <ul style="list-style-type: none"> ○ re-use of traditional materials and structures rather than replacement, utilising the embedded energy in the existing building stock, ○ re-use of traditional materials to further reduce the environmental footprint generated in the use of new traditional materials, now often imported over great distances, ○ use of freshly-won local traditional materials where the environmental footprint can be demonstrated to be less than that of imported material or synthetic products, ○ orientation and design, from walled gardens and south-facing buildings and structures to modern environmental design, ○ enhancing carbon sequestration and avoiding release of carbon through reducing ground-disturbing cultivation, particularly in extensive areas of historic parkland combining considerable or exceptional historic and biodiversity significance, ○ sustainable power generation/supply (contemporary/historic) through harnessing available/appropriate wind, water and solar energy. • Soil health and erosion, through: <ul style="list-style-type: none"> ○ management to avoid poaching/erosion of the ground, loss of soil cover, reducing diffuse pollution, ○ managing cultivation/vegetation cover to mitigate the erosive impacts of wind and rain/snow, ○ impeding the through-flow of water and water-borne silts and other material by maintaining boundaries and managing drainage for areas of hardstanding, ○ managing fertiliser application and quantities to avoid diffuse pollution and changing soil structure. • Drainage and flood control: <ul style="list-style-type: none"> ○ soft surfaces and uncompacted soils assist in drainage and flood control and in countering the ‘heat effect’ of surfaced areas in combination with buildings in urban areas. • Water supply and sewage treatment: <ul style="list-style-type: none"> ○ mills and pumping stations, for example, regulate the flow and treatment of water for powering machinery and for the removal of waste and supply of clean water. • Boundary definition: <ul style="list-style-type: none"> ○ for (historic/contemporary) definition of ownership boundaries and management units. <p>Cultural:</p>
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	<p>Parks and gardens and other areas planned and/or landscaped for aesthetic or recreational purposes and their associated boundaries, buildings and structures are fundamental to landscape character and sense of place and history. They offer benefits to:</p> <ul style="list-style-type: none"> • Sense of place and aesthetic and artistic values because of: <ul style="list-style-type: none"> ○ locally distinctive materials, styles and forms of architecture and the forms and nature of construction and enclosure, ○ traditional or specialist-designed forms and styles that are locally-rooted or influenced by national and international social, economic and aesthetic developments, ○ their direct link to local environments through their geodiversity - their use of local earth, clay, timber and stone – and use of other organic materials such as thatch or turf., ○ aesthetic and artistic stimuli provided by these heritage assets and the outputs and outcomes that they generate. • Sense of history: <ul style="list-style-type: none"> ○ through offering a rich source of evidence (time depth) for the historic development of places in their local, national and international context, English landscaped parks and gardens being internationally-recognised for their significance. • Spiritual, communal and commemorative value: <ul style="list-style-type: none"> ○ through interaction leading to community cohesion, vibrancy, integration and sustainability, capacity building and enabling opportunities including enhanced community valuing of heritage assets. • Amenity value: <ul style="list-style-type: none"> ○ by improving the quality of life and health and wellbeing of local residents and visitors, both mental and physical, through a well-maintained, understood and cared-for environment; by attracting inward investment as a result of that maintenance and care; providing visitor destinations by giving people reasons to want to visit; enabling people to interact with the natural and historic environment by providing access and accessibility, physically, visibly and intellectually, to enhance the value of people’s recreation and leisure opportunities; providing opportunities to experience tranquility (including spiritual/commemorative opportunities) in these landscapes, as well as dark skies in some; contributing to the development of the local economy as a result. • Educational and scientific value: <ul style="list-style-type: none"> ○ through increasing knowledge, understanding, appreciation and enjoyment of heritage assets and landscapes and the historic and natural environment generally, ○ by providing opportunities for discovery, identification, education and research - for example in reflecting people’s accommodation of changing ways of living and working.
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9 APPENDIX 3: LAKE DISTRICT WORLD HERITAGE SITE INSCRIPTION DECISION: 41 COM 8B.30

The English Lake District (United Kingdom of Great Britain and Northern Ireland)

<https://whc.unesco.org/en/decisions/6902>

The World Heritage Committee,

23. Having examined Documents WHC/17/41.COM/8B and
WHC/17/41.COM/INF.8B1,

24. Inscribes The English Lake District, United Kingdom of Great Britain and Northern Ireland, on the World Heritage List as a cultural landscape on the basis of criteria (ii), (v) and (vi);

25. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis

The English Lake District is a self-contained mountainous area in North West England of some 2,292 square kilometres. Its narrow, glaciated valleys radiating from the central massif with their steep hillsides and slender lakes exhibit an extraordinary beauty and harmony. This is the result of the Lake District's continuing distinctive agro-pastoral traditions based on local breeds of sheep including the Herdwick, on common fell-grazing and relatively independent farmers. These traditions have evolved under the influence of the physical constraints of its mountain setting. The stone-walled fields and rugged farm buildings in their spectacular natural backdrop, form an harmonious beauty that has attracted visitors from the 18th century onwards. Picturesque and Romantic interest stimulated globally-significant social and cultural forces to appreciate and protect scenic landscapes. Distinguished villas, gardens and formal landscapes were added to augment its picturesque beauty. The Romantic engagement with the English Lake District generated new ideas about the relationship between humanity and its environment, including the recognition of harmonious landscape beauty and the validity of emotional response by people to their landscapes. A third key development was the idea that landscape has a value, and that everyone has a right to appreciate and enjoy it. These ideas underpin the global movement of protected areas and the development of recreational experience within them. The development in the English Lake District of the idea of the universal value of scenic landscape, both in itself and in its capacity to nurture and uplift imagination, creativity and spirit, along with threats to the area, led directly to the development of a conservation movement and the establishment of the National Trust movement, which spread to many countries, and contributed to the formation of the modern concept of legally-protected landscapes.

Criterion (ii): The harmonious beauty of the English Lake District is rooted in the vital interaction between an agro-pastoral land use system and the spectacular natural landscape of mountains, valleys and lakes of glacial origins. In the 18th century, the quality of the landscape was recognised and celebrated by the Picturesque Movement, based on ideas related to both Italian and Northern European styles of landscape painting. These ideas were applied to the English Lake District in the form of villas and designed features intended to further augment its beauty. The Picturesque values of landscape appreciation were subsequently transformed by Romantic engagement with

the English Lake District into a deeper and more balanced appreciation of the significance of landscape, local society and place. This inspired the development of a number of powerful ideas and values including a new relationship between humans and landscape based on emotional engagement; the value of the landscape for inspiring and restoring the human spirit; and the universal value of scenic and cultural landscapes, which transcends traditional property rights. In the English Lake District these values led directly to practical conservation initiatives to protect its scenic and cultural qualities and to the development of recreational activities to experience the landscape, all of which continue today. These values and initiatives, including the concept of protected areas, have been widely adopted and have had global impact as an important stimulus for landscape conservation and enjoyment. Landscape architects in North America were similarly influenced, directly or indirectly, by British practice, including Frederick Law Olmsted, one of the most influential American landscape architects of the 19th century.

Criterion (v): Land use in the English Lake District derives from a long history of agro-pastoralism. This landscape is an unrivalled example of a northern European upland agro-pastoral system based on the rearing of cattle and native breeds of sheep, shaped and adapted for over 1,000 years to its spectacular mountain environment. This land use continues today in the face of social, economic and environmental pressures. From the late 18th century and throughout the 19th century, a new land use developed in parts of the Lake District, designed to augment its beauty through the addition of villas and designed landscapes. Conservation land management in the Lake District developed directly from the early conservation initiatives of the 18th and 19th centuries. The primary aims in the Lake District have traditionally been, and continue to be, to maintain the scenic and harmonious beauty of the cultural landscape; to support and maintain traditional agro-pastoral farming; and to provide access and opportunities for people to enjoy the special qualities of the area, and have developed in recent times to include enhancement and resilience of the natural environment. Together these surviving attributes of land use form a distinctive cultural landscape which is outstanding in its harmonious beauty, quality, integrity and on-going utility and its demonstration of human interaction with the environment. The English Lake District and its current land use and management exemplify the practical application of the powerful ideas about the value of landscape which originated here and which directly stimulated a landscape conservation movement of global importance.

Criterion (vi): A number of ideas of universal significance are directly and tangibly associated with the English Lake District. These are the recognition of harmonious landscape beauty through the Picturesque Movement; a new relationship between people and landscape built around an emotional response to it, derived initially from Romantic engagement; the idea that landscape has a value and that everyone has a right to appreciate and enjoy it; and the need to protect and manage landscape, which led to the development of the National Trust movement, which spread across many countries with a similar rights system. All these ideas that have derived from the interaction between people and landscape are manifest in the English Lake District today and many of them have left their physical mark, contributing to the harmonious beauty of a natural landscape modified by: a persisting agro-pastoral system (and supported in many cases by conservation initiatives); villas and Picturesque and later landscape improvements; the extent of, and quality of land management within, the National Trust property; the absence of railways and other modern industrial developments as a result of the success of the conservation movement.

Integrity

The English Lake District World Heritage property is a single, discrete, mountainous area. All the radiating valleys of the English Lake District are contained within it. The property is of sufficient size to contain all the attributes of Outstanding Universal Value needed to demonstrate the processes that make this a unique and globally-significant property. The boundary of the property is the Lake District National Park boundary as designated in 1951 and is established on the basis of both topographic features and local government boundaries. The attributes of Outstanding Universal Value are in generally good condition. Risks affecting the site include the impact of long-term climate change, economic pressures on the system of traditional agro-pastoral farming, changing schemes for subsidies, and development pressures from tourism. These risks are managed through established systems of land management overseen by members of the Lake District National Park Partnership and through a comprehensive system of development management administered by the National Park Authority.

Authenticity

As an evolving cultural landscape, the English Lake District conveys its Outstanding Universal Value not only through individual attributes but also in the pattern of their distribution amongst the 13 constituent valleys and their combination to produce an over-arching pattern and system of land use. The key attributes relate to a unique natural landscape which has been shaped by a distinctive and persistent system of agro-pastoral agriculture and local industries, with the later overlay of distinguished villas, gardens and formal landscapes influenced by the Picturesque Movement; the resulting harmonious beauty of the landscape; the stimulus of the Lake District for artistic creativity and globally influential ideas about landscape; the early origins and ongoing influence of the tourism industry and outdoor movement; and the physical legacy of the conservation movement that developed to protect the Lake District.

Protection and management requirements

As a National Park, designated under the 'National Parks and Access to the Countryside Act 1949' and subsequent legislation, the English Lake District has the highest level of landscape protection afforded under United Kingdom law. Over 20 per cent of the site is owned and managed by the National Trust, which also has influence over a further two per cent of the site through legal covenants. The National Park Authority owns around four per cent of the site, and other members of the Lake District National Park Partnership, including the Forestry Commission and United Utilities Ltd, own a further 16 per cent. A substantial number of individual cultural and natural sites within the English Lake District are designated and have legal protection. The Lake District National Park Partnership has adopted the bid for World Heritage nomination. This provides long-term assurance of management through a World Heritage Forum (formally a sub-group of the Partnership). The National Park Authority has created a post of World Heritage Coordinator and will manage and monitor implementation of the Management Plan on behalf of the Partnership. The Management Plan will be reviewed every five years. A communications plan has been developed in order to inform residents and visitors of the World Heritage bid and this will be developed and extended.

The Management Plan seeks to address the long-term challenges faced by the property including threats faced by climate change, development pressures, changing agricultural practices and diseases, and tourism.

26. Recommends that the State Party gives consideration to the following:

- a. be progressively downsized and extraction volumes limited to what is needed for carrying out conservation of the assets supporting the attributes of the property,
- b. Formally committing to avoiding any negative impact on the Outstanding Universal Value and related attributes of the property from the NWCC energy transportation facility being currently planned; and informing the World Heritage Centre about the results of the Heritage Impact Assessment, and how these will be integrated into planning consent and in the development consent order (DCO),
- c. Informing about the timeframe of the integration of World Heritage consideration into the local plans and policies,
- d. Developing proactive strategies, including alternative national farm-supporting policies, with the farming community, to address the issues that threaten the viability of the shepherding tradition that maintains many of the landscape's significant attributes; recognising and financially compensating farmers for their heritage services in caring for the cultural landscape, as well as values such as genetic diversity of herds and food security,
- e. Rebalancing programs and funding dedicated to improving natural resources with the need to conserve the valuable cultural landscape that the Lake District is by acting on its key attributes and factors,
- f. Strengthening risk preparedness strategies for floods and other disasters that incorporate local knowledge on how to cope with recurrent disastrous natural events,
- g. Developing convincing programs to prevent depopulation, including:
 - (i) develop affordable housing for new households and for local retirees,
 - (ii) ensure that communities have a mix of commercial outlets that serve the local community,
 - (iii) further develop and market local products that benefit residents and local farmers,
- h. Developing an interpretation strategy at the landscape level which communicates the different strands of the Outstanding Universal Value by using the documents put together for the nomination dossier,
- i. Ensuring that careful attention is paid to conservation of landscape-defining features such as land-use patterns, structures such as shelters, dry stone walls, hedgerows, and also to vernacular architecture and Victorian buildings, not only in designated Conservation Areas, but in the whole property.

27. Requests the State Party to submit to the World Heritage Centre and ICOMOS by 1 December 2018 a report on the implementation of the above-mentioned recommendations.