



Lake District
National Park
Partnership

State of the Park 2018

Reporting on the Partnership's Plan 2015-2020



State of the Park Report 2018

Reporting on the Partnership Plan 2015 – 2020

This Report summarises the progress made by the Lake District National Park Partnership to deliver Vision for the National Park. This is the first time we have collated such a broad range of data to provide a picture of the health of the National Park, which will be used in the development of the next Partnership Plan. These key facts and the data that supports them, can be found in the full Report available on our website.

Spectacular Landscape, Wildlife and Cultural Heritage

There is huge potential for restoring nature

A great start has been made restoring **4,967** hectares of peatland

21.6% of the area of protected sites is in favourable condition

37% of water bodies are in 'good' or 'better' ecological status

Prosperous Economy

The Lake District is a good place to run a business, but there is a skills gap and lack of labour

Skills gap increased by **4%**

Average farm owner/tenant age is **59** years of age

Premises with access to superfast broadband has more than doubled from **40% to 84%**

World Class Visitor Experiences

Visitors love the Lakes

93% of people feel health and wellbeing benefits from visiting the Lake District

98% also rate their experience as good or very good

Spending on local produce has increased by **16%**

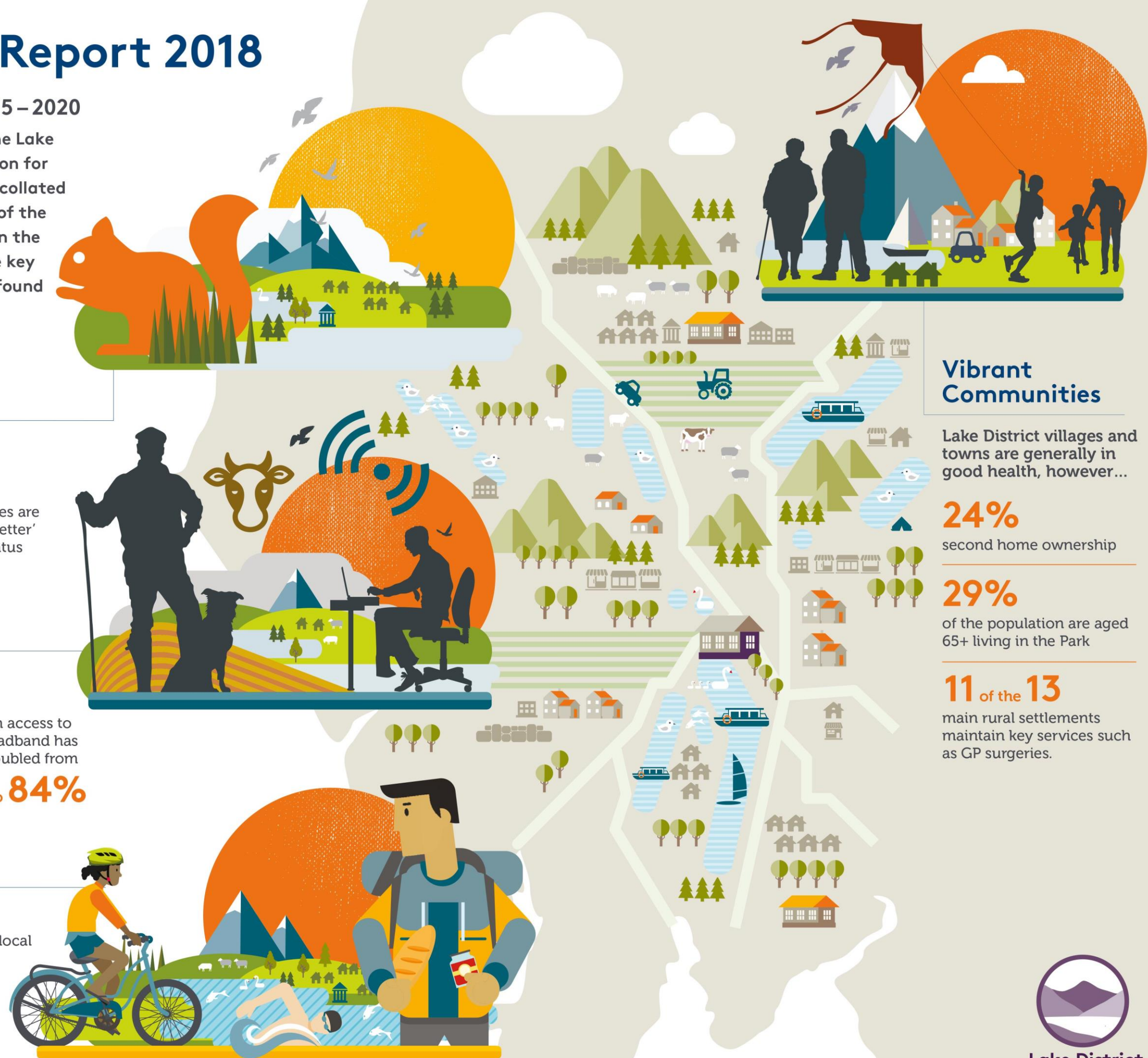
Vibrant Communities

Lake District villages and towns are generally in good health, however...

24% second home ownership

29% of the population are aged 65+ living in the Park

11 of the 13 main rural settlements maintain key services such as GP surgeries.



Lake District National Park

Lake District National Park Partnership State of the Park Report 2018

Contents

1	Introduction.....	3
1.1	Purpose.....	3
1.2	Consideration of World Heritage Site attributes of Outstanding Universal Value	3
2	Strategic context.....	4
2.1	Key Messages - what is the data telling us?.....	4
2.1.1	Spectacular Landscape, Wildlife and Cultural Heritage	4
2.1.2	Prosperous Economy	5
2.1.3	World Class Visitor Experiences.....	6
2.1.4	Vibrant Communities	6
2.2	Strategic Challenges for the next Partnership’s Plan.....	6
3	Lake District National Park Partnership evidence compendium - monitoring indicators framework	8
3.1	Spectacular Landscape, Wildlife and Cultural Heritage	8
3.1.1	Spectacular Landscape	8
3.1.2	Cultural Landscape.....	11
3.1.3	Historic Landscape	15
3.1.4	Wildlife and Habitats.....	17
3.2	Prosperous economy.....	36
3.2.1	Unique farming heritage and concentration of common land.....	36
3.2.2	The visitor economy	39
3.2.3	Underpinning a prosperous economy.....	46
3.3	World Class Visitor Experience	49
3.3.1	Visitor satisfaction and access to information.....	49
3.3.2	Visitor spend and visitor giving	50
3.3.3	Visitor travel.....	51
3.4	Vibrant Communities	52
3.4.1	Access to services and employment	52

3.4.2	Housing	53
3.4.3	Community plans and green spaces	54
4	Monitoring framework mapped data	56
4.1.1	Landscape Character Area Types (Draft) SQ1	56
4.1.2	Fell-going Flocks SQ9	57
4.1.3	Condition of waterbodies – WFD water quality SQ21	58
4.1.4	Tranquillity Map SQ36	60
4.1.5	Flora of Cumbria diversity of vascular plant species.....	61
4.2	Monitoring framework tabulated and text data	62
4.2.1	Landscape Character Assessment SQ1	62
4.2.2	Landscape Change SQ2	65
4.2.3	Condition of SSSIs SQ18	66
4.2.4	Case Studies	68
4.2.5	A survey of the status of the lakes of the English Lake District: The Lakes Tour 2015	71
4.2.6	Condition of existing water based Natura 2000 sites (VO3)	73
4.2.7	Damage Threats and Pressures to habitats	75
4.2.8	Public transport to rural service centres VO32	87
4.2.9	Percentage of properties not used for permanent residential	89
5	Gap analysis and research – a proposed framework	90
5.1	Introduction.....	90
5.2	Purpose of the Research Framework	90
5.3	A model of research engagement.....	91
5.4	Our current needs – the library of research	91
5.4.1	Practical cross cutting issues for improving the Monitoring Framework	91
5.4.2	Spectacular Landscape, Wildlife and Cultural Heritage	93
5.4.3	Prosperous Economy	94
5.4.4	World Class Visitor Experience	96
5.4.5	Vibrant Communities	96
5.4.6	Knowledge sharing from existing research	97

1 Introduction

1.1 Purpose

This report provides an overview of the state of the Lake District National Park, presenting indicator data for the Lake District National Park Partnership's Plan Monitoring Framework to form the Lake District National Park Authority's State of the Park Report 2018. The Report summarises and presents key findings for consideration during the development of the 2020-2025 Lake District National Park Partnership Plan.

Each of the indicators reported on were chosen to provide as clear as possible a picture of how each of the thirteen Special Qualities (and where possible attributes of Outstanding Universal Value, that are components of them) are faring. This provides the main means by which we can measure the state of conservation of these Special Qualities and attributes. Each Special Quality is of equal importance. The indicators that we have chosen are focused on measuring how each Special Quality is faring individually.

This is the first time the Lake District National Park State of the Park report has sought to collate and interpret such a broad range of data to provide a picture of the health of the Park. The data collected is all secondary data, i.e. collected primarily for another purpose but cut to the Park boundary. The use of data in this way comes with caveats, where there are specific concerns or anomalies these are highlighted against the relevant indicator / data set in the evidence compendium (section 3).

1.2 Consideration of World Heritage Site attributes of Outstanding Universal Value

In July 2017 the area within the Lake District National Park 1951 boundary (rather than the extended 2016 boundary) was inscribed as a UNESCO World Heritage Cultural Landscape Site with Outstanding Universal Value (OUV).

There are a large number of attributes of OUV both tangible and intangible which together combine to illustrate, and therefore transmit, World Heritage Site values. There is an international obligation to sustain the health of these OUV of the World Heritage Site (WHS) both locally and at a UK Government scale.

At this time, the purpose of this State of the Park report is not to seek to provide a detailed assessment of the health of the OUV of the WHS. However initial indicators for measuring the state of conservation of some WHS OUV were agreed and included in the existing LDNP Partnership Plan: these examples include listed buildings, scheduled ancient monuments, area of common land and woodland. Where indicators chosen for use in assessing the condition of the Lake District National Park correlate with the measurement of an attribute of OUV this is highlighted within the data tables within each thematic of the evidence compendium (section 3) of this report.

The Lake District National Park Partnership's World Heritage Site Steering Group and Technical Advisory Group recognise that further work is required to ensure the condition of the Lake District World Heritage Site's attributes of OUV are more fully

monitored and reported on; there is opportunity to achieve some of this through the Partnership's developing landscape monitoring approach. However, additional work will be required to identify suitable indicators and undertake OUV attributes monitoring. Examples include:

- Early tourist infrastructure, including villas, as measures of the OUV theme of 'discovery and appreciation of a rich cultural landscape'.
- Key attributes exemplifying the 'development of the landscape conservation movement'; current monitoring is limited to the extent of National Trust land ownership, not therefore providing the full picture.
- Agro-pastoral traditions as measures of the OUV theme of 'a landscape of exceptional beauty, shaped by persistent and distinctive agro-pastoral traditions', such as the number of farming families, the strength of the transitional farming system, and the physical manifestation of an intangible culture of local agricultural shows - distinctive local sports, local dialects, shepherds' guides, smit and lug marks on sheep (ways of distinguishing ownership), collective gathering practices and shepherds' meets. Existing indicators do not reflect the farming communities' presence at such meets or the health and long term future of such events.

The Partnership's World Heritage Site Steering Group and Technical Advisory Group will review, further identify and assess attributes that require additional monitoring, as well as thresholds of concern to direct future actions. These will feed into the next Partnership Plan (2021–2026) and 'Periodic Reporting' required by UNESCO, which will be undertaken in 2021 for submission in 2022.

As the Partnership develops a fuller understanding of the opportunities and responsibilities associated with the Lake District WHS there will be a requirement to build on the strength of the longstanding Partnership, and discussions within the State of the Park working groups, to seek the best approach to enhance the natural environment and protect communities as part of the cultural landscape in the 2021-2026 Partnership Plan. In addition to wider land management discussions consideration will also need to be given to landscape scale programmes of work such as the Cumbria River Restoration Programme and approaches to providing Natural Flood Management measures.

2 Strategic context

2.1 Key Messages - what is the data telling us?

The key messages below are presented by vision themes as set out in the Lake District National Park Plan, and drawn from the State of the Park evidence and monitoring data contained in the evidence compendium (section 3).

2.1.1 Spectacular Landscape, Wildlife and Cultural Heritage

Due to the diverse nature of these key messages, they are best presented as bullet points.

- According to the revised Landscape Character Assessment the visual appearance of the landscape can generally be described as good, although there

are concerns about the condition of the high fells and deterioration of some field boundaries.

- We have experienced a step change in the protection of the historic environment through increased numbers of listed buildings, and a significant reduction in scheduled monuments at risk. We have secured World Heritage Site status.
- There is an urgent need to improve on the current state of nature both inside and outside of protected sites. Only 21.6% of the area of protected sites is in favourable condition. We know that there have been significant losses of habitats and species outside of protected sites over the last 50 years but we have no accurate means of measuring current trends.
- The vast majority of water bodies' hydrological regimes are in the same or better condition compared to five years ago and the status of bathing water quality remains excellent. However, only 37% of water bodies are in 'good' or 'better' ecological status, some water bodies are still deteriorating in condition. Only 4% of SSSI protected rivers and 42% of SSSI lakes are in favourable condition but many lakes are considered under threat.
- A huge 4,967 hectares of peatland has been restored in the last five years. We do not have a definitive figure for the total peat within the Park; we can say that blanket bog and lowland raised bog, as recorded in the Priority Habitats Inventory total 9,673.72 hectares (2017), however this does not take account of additional peat under a variety of vegetation, management, and use. It is therefore dangerous to assume a combination of the above categories give us a satisfactory indication of peat coverage. Condition information is only available for peat within SSSIs, different needs, possibilities and approaches to restoration will apply to different types of peat habitat. The best we can say is that within the Park context in the last five years we have restored a significant area of 'known' peat.
- We estimate that the annual CO₂ emissions in the National Park are 4.55% lower than in 2010 against a target of 8% lower.

2.1.2 Prosperous Economy

Over the period of the current Partnership's Plan the number of premises with access to superfast broadband has more than doubled from 40% to 84%. Whilst there has been a small increase in the number of people employed in farming and land based industries, this sector is significantly economically exposed by potential changes to support payments relating to EU exit and likely to be suffering from an ageing demographic with the national average age of farm owner / tenants being 59 years. The number of people of working age has decreased by 800, and the skills gap, as identified by businesses in the 2015/16 Cumbria Business Survey, increased by 4% since 2013. Feedback from the Business Taskforce and Local Enterprise Partnership is that labour supply is a critical issue for businesses in the Park. Employers are most likely to identify skill gaps in skilled trade occupations, low skilled elementary administration and service occupations. The most frequently cited skills gaps are within workforces requiring technical and practical skills and advanced IT or software skills. Hard-to-fill vacancies are most likely to relate to skilled trades, elementary administration and service occupations. Businesses within the construction, accommodation and food services, professional, scientific and

technical services are more likely to report recruitment difficulties. The main causes of hard-to-fill vacancies have been the low number of applicants, particularly of those with the required skills, remote locations of workplaces and poor public transport. Although the number of day and overnight visitors has increased, particularly in the peak season, overall their daily spend has decreased.

2.1.3 World Class Visitor Experiences

The Lake District is the most visited place in England outside of London. In 2017, 19.17 million people visited; an increase of more than 4 million from 2015. Surveys tell us that 93% of people feel health and wellbeing benefits from visiting the Lake District, 98% also rate their experience as good or very good and everyone can access the information they want. The number of visitors per party has increased, with overseas visitors spending £150 more per visit compared to UK visitors. Overseas visitors have increased in number but fallen slightly as a proportion of all visitors. Spending on local produce has increased by 16% approximately the same increase as visitor giving, during the last five years. We have also encouraged the 89% of people who arrive by motor vehicle to reduce their exploration of the National Park by car, from 85% in 2006 to 72% in 2018.

2.1.4 Vibrant Communities

Whilst the basic services of Lake District villages and towns have generally been maintained, there are concerning trends in the provision of housing and the demographic profile of the resident population. Creating affordable housing is challenging; 87% of housing is unfettered on the open market which has resulted in a 24% second home ownership. Additionally, in some locations, parish level data suggests up to 59% of houses are being used as second or holiday homes. Encouragingly, on average 77 affordable houses have been built each year, since 2013, which is exceeding targets in the Local Plan and 97% of all new homes were approved with a permanent occupancy restriction in 2018. Between 2001 and 2017 the proportion of the population aged 65+ living in the Park increased from 21.7% to 29% (compared to 18% in England as a whole). Whilst there is a strong track record in delivering new homes in the Lake District, the overall population is decreasing and the local demographic becoming unbalanced. The proportion of working age people is decreasing and second home ownership and properties used for holiday lettings is increasing, meaning the need for more affordable homes remains acute. These factors challenge future vibrancy and resilience of our communities.

2.2 Strategic Challenges for the next Partnership's Plan

a. Climate Change

UKCIP18 is forecasting a medium level scenario; it will be warmer than originally predicted in 2009. Urgent actions to reduce carbon emissions are required. The impacts of climate change are evident now and will impact all aspects of the Park. Increasing our focus on adapting to a changing climate and increasing the resilience of the Lake District, particularly around water resources management, is a pressing need.

b. Nature recovery

Our habitats are declining and urgent action is required. Further work on data and evidence will be required although we do already have a good understanding of the main threats to habitats. The Government's 25 Year

Environmental Plan, the Agricultural Bill and the Glover Review will change the context in which we are operating.

c. The future of farming

The viability of farming remains of concern. The move to a public payment for public benefits model is a new opportunity, as part of a wider need to sustain our farming communities and the related World Heritage attributes of outstanding universal value.

d. Demographics

Our communities are ageing and this will present pressure on rural services. As a county our emerging Local Industrial Strategy is highlighting the urgent need to attract and retain young people to visit, live and work in the Lake District and Cumbria.

e. Affordable Housing

Up to 59% of the housing stock in some parishes is being used as second or holiday homes. Many young people and working families cannot afford to buy open market homes in the Park. Both are threats to community viability and a barrier to attracting people to work in the area.

f. Visitor management and experience

Visitor numbers have increased, bringing economic benefit. Investment in digital, transport and public realm infrastructure is essential. Maintaining and developing sustainable transport, and access and recreation opportunities will be essential for the health and wellbeing of our residents and visitors, as well as helping to reduce carbon and support a better visitor experience.

g. Diversification and Local Industrial Strategy

The Local Industrial Strategy highlights the urgent need to attract labour to Cumbria. As well as building on a strong visitor economy, we need to enable a diverse range of opportunities, capitalising on Cumbria's attractiveness as a place to live. We especially want to see opportunities for younger people who want to escape from large cities and/or locals remaining or returning to live and work in the area. To enable this, we need to ensure that the digital connectivity, public services and cultural offer create an attractive environment for diverse and high value economic activity, for example creative and technology workers.

h. Finance and delivery

In order to make progress against the above challenges, a significant increase in the level of resources will be required. Whilst there is an opportunity to continue collaboration and sharing of resources, there will be a need to secure new investment and funding.

i. Political uncertainty

Considerable uncertainties, ranging from the final outcome of the EU-Exit decision to the consequences of the Glover Review of National Parks, will require future plans that are able to respond to the threats and opportunities that emerge.

3 Lake District National Park Partnership evidence compendium - monitoring indicators framework

This section of the report presents the indicators we have chosen to use in our assessment of the State of the Lake District National Park. These indicators are created from the Monitoring Framework of the Partnership Plan, along with additional indicators identified by thematic working groups during the development of the report to improve our understanding of the condition of the National Park and progress made by the Partnership to deliver the Plan's strategies. In each table the 'ideal status' indicated is that which we consider to be most desirable in the interests of the Special Quality to which it relates and is not intended to be used or interpreted as a target. Instead, the indicators should be seen as helping to provide an overall picture of how the Lake District is evolving and performing holistically. The text and comments in the column of the data tables below aim to provide some outline analysis and interpretation of these indicators, to help to tell the story of the overall impact our management decisions are having: as well as to support the process of preparing the next Lake District National Park Partnership Plan.

Dates quoted in brackets indicate the year the data was collected and represent the last known set of available data. Where possible data has been collected to both the 1951 and 2016 boundaries to allow for whole Park reporting (here) and World Heritage Site reporting in 2022; only that relating to the 2016 boundary is displayed below. The Park to the 2016 boundary covers 2,362km² (236,234 ha).

WHS OUV correlation - As indicated in section 2 where an indicator is chosen for use in assessing the state of the Lake District National Park relates to a component of attributes of OUV this is highlighted within the data tables below with an asterisk (*). *Text in italics in the indicator column identifies the OUV attribute interest.*

3.1 Spectacular Landscape, Wildlife and Cultural Heritage

Whilst we recognise that each of the aspects contribute to the fabric and quality of the landscape, for ease of use the spectacular landscape, wildlife and habitats (including water quality), cultural landscape, historic landscape and climate change (including water quantity drought and flood risk, and carbon) themes are reported separately.

3.1.1 Spectacular Landscape

The Lake District landscape looks attractive and based on the Landscape Character Assessment (s (SQ1) can largely be described as being in good condition, with only the high fells considered poor. However, this does not fully capture the condition of habitats and species which are in decline (see section 3.1.4), nor indeed does this indicate how well the landscape is delivering public benefits that arise from healthy habitats (such as clean drinking water (SQ21), flood control or locking up carbon).




The Lake District landscapes have diverse characteristic habitat types and numerous archaeological features. A declining element in nearly every Landscape Character Type is boundary features, whether hedgerows, hedge banks, cobblestone banks or stone walls.




Footpath erosion and poor condition of upland habitats is noted on both high fell types. In some areas historic overgrazing is being tackled although is still needs to be addressed particularly within woodlands on the fells.

The Landscape Character Assessment also identifies, at a small scale across several landscape types, unmanaged woodlands and sub-optimal grazing regimes of particular concern on species rich grassland. The drying of coastal mosses is also highlighted as concerning. Several traditionally managed elements are in decline in the upland valley landscapes, and the replacement of parkland trees needs to be planned for in upland limestone, farmland and low fell landscapes. More detail about landscape character assessment and landscape change is available in sections 4.2.1 and 4.2.2.


The area of Protected Landscape features managed, restored and created under agri-environment schemes (SQ3) has decreased from 68% in 2015 to 57% in 2018.


Key:

 no change (in line with idea status)
  increase (in line with idea status)
  decrease (in line with idea status)

 no change (not in line with ideal status)
  increase (not in line with ideal status)
  decrease (not in line with ideal status)

text = Indicates direction of trend but has no ideal status against which to measure
 - = data not currently available

Indicator or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
* SQ1	The condition of the landscape. (<i>Extraordinary beauty and harmony, Fusion between a natural landscape and farming system</i>)	Landscape Character Assessment 2008	No deterioration		LCA desk-based revision in 2018 and reviewed by group of experts.	See map 4.1.1, section 4.2.1 and table on	Until the developing landscape monitoring approach is in place it is difficult to indicate trend for this metric.
SQ2	Landscape change (as measured from fixed points across the whole site)	Indicator being established under the Lake District National Park	No negative change	-	-	See update in section 4.2.2.	Until the developing landscape monitoring approach is in place it is difficult to indicate trend for this metric.

Indicator or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
		Partnership's Breakthrough Action 1 (2018).					
*SQ3	Area of Protected Landscape features managed, restored and created under Agri-environment schemes. (<i>Farming traditions of the English Lake District - Local techniques of landscape maintenance, stonewalling, hedging, coppicing, pollarding</i>)	68% (2013)	No decrease		2018 figure not felt to be very meaningful includes ELS and 'low value' ES options. 'Higher value' codes will be used to generate a replacement indicator SQ3a below.	57.07% (2018) (134,813.8 hectares)	A large number of existing agri-environment agreements in the Lake District are not due to expire until 2020 combined with a poor uptake of schemes due to complexities of the system means a reduction in new agreements and therefore area protected.
*SQ3a	Area of Protected Landscape features managed, restored and created under Agri-environment schemes 'high value' options. (as SQ3)	New indicator 95,181.50 ha (40.29%), 4,871m, 1,215 trees	No decrease	-	High	95,181.50 ha (40.29%), 4,871m (hedgerows), 1,215 trees (total of higher value options listed in comments)	MEOPL PLNB1 – ES Analyser 2018 (codes EE10, EL3, UC22, UJ12, UL18, HC10 – HC 18, HC 20, HC21, HC7- HC9, HK10- HK19, HK6 – HK9, HL10, HL13, HL15, HL7-HL9, HP2, HQ10, HQ13, HQ3 – HQ8, HR1, HR2, HR4, HB11, HB12, EC2, HC6. Recommend that codes EJ11, UB11, UB17, UC5, UD12 and UJ3 are added – not available 2018). This approach is a more valuable in terms of identifying environmental benefits delivered, and landscape and WHS OUV monitoring and reporting than SQ3.

3.1.2 Cultural Landscape

a. Complex geology and geomorphology

The number of active stone and slate quarries (SQ4), of which there are nine, has remained constant since 2015.

b. Unique farming heritage and concentration of common land


Indicators SQ7 to SQ13 show a stable to mixed picture of health for the Lake Districts unique farming heritage. Work is required to both update some key data sets and, through research, identify the 'ideal' against which to measure status. A fuller description of this data can be found in section 3.2.1.



c. Access to the Fells

The length of temporary fencing on Registered Common Land under an agri-environment schemes (SQ14) has been recorded from 26 distinct consents dating from 2000 to 2015, resulting in 143.05km of fences. The net change in redundant fencing on the high fells (SQ15) will not be reported upon because a method of ascertaining robust relevant data and a baseline has yet to be established.


d. A model for protecting cultural landscapes


The extent of National Trust land ownership (SQ29) is currently used as a proxy to indicate an ownership and management model to protect cultural landscape. This figure has increased from 44,567 hectares in 2015 to 45,255.98 hectares in 2018, largely due to inclusion of National Trust owned land within the 2016 National Park extension area. Consideration should be given to the addition of other suitable land management models in the future to provide a fuller representation of protection for landscape within the Park, for example National Park Authority, Wildlife Trust and other sympathetic ownership approaches. The number of Nationally Significant Infrastructure Projects approved contrary to the policies of the adopted Lake District Local Plan (SQ30) remains at zero.

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
*SQ4	The number of active stone and slate quarries. <i>(Rich mining and quarrying system; Local natural resources have strongly influenced the</i>	9 (2012)	No significant change		High	10 (2018)	Annual Monitoring Report, Lake District National Park Authority

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
	<i>built environment and the wider Landscape - The physical remains of past mining and quarrying)</i>						
*SQ7	Total area of common land. <i>(Physical areas of Common Land. Continuing vitality of the system of common land management, Long standing and continuing local traditions of common land management).</i>	64,500 ha / 645 km ² (2015)	No decrease		High	66,252 ha / 662.52 km ² (2018)	An increase of 1752 ha due to the 2016 extension to the Park. Natural England – relevant date 27 Oct 2017 http://gismeta/Meta/Details/142
*SQ8	Total number of Herdwick flocks. <i>(Hefted grazing and collective management of Herdwick Flocks)</i>	155 (2012) – national. 132 (2012) – Cumbria	Further research required	Increasing	Reasonable	136 (in Cumbria) (2018)	Data from the Herdwick Sheep Breeders Assoc. the 155 figure in the LDNPP Plan was the national total number of registered flocks.
*SQ9	Number and geographic spread of farms with fell going flocks. <i>(Pastoral system that has evolved in the Lake District for over a thousand years and its continuation by today's farmers maintains a unique farming legacy. Hefted grazing and collective management)</i>	472 Map (fig. 42 Partnership Plan)	No significant change		Updated data required	472 (2015), see map 4.1.2	Currently best validated available data is that used in the 2015 LDNPP Plan and WHS nomination document (Lakeland Shepherd's Guide 2005). Data makes no distinction made between breeds or flock sizes.
*SQ10	Total number of commercial farm holdings. <i>(Pastoral system that has</i>	1,083 (2013)	Further research required	Increasing	High	1,162 (2016)	2016 data is that published in the Defra June survey of Agriculture and Horticulture in December 2017.

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
	<i>evolved in the Lake District for over a thousand years and its continuation by today's farmers maintains a unique farming legacy).</i>						
*SQ11	Number of holdings by total area size groups. (See SQ 10).	<5ha = 79; 5<20ha = 193; 20<50ha = 200; 50<100ha = 237; >100ha = 374 (2013)	Further research required	Increasing, except on of <5 ha farms	High	<5ha =65; 5<20ha = 232; 20<50ha = 221, 50<100ha = 236; >=100ha= 408 (2016)	2016 data published in the Defra June survey of Agriculture and Horticulture in December 2017.
SQ12	Sustainable use of agricultural land	Crops and fallow = 2,067ha; Temporary grass = 3,488ha; Permanent grass = 77,142ha; Sole right rough grazing = 42,409ha; Woodland = 3,247ha; Other land = 535ha (2013)	Further research required	mixed	Unresolved anomaly – see comments	Crops and fallow = 1,856ha; Temporary grass = 2,369ha; Permanent grass = 101,102ha; Sole right rough grazing = 39,475ha; Woodland = 4,966ha; Other land = 3,009ha; Total Farmed Area =152,777ha (2016)	2016 data published in the Defra June survey of Agriculture and Horticulture in December 2017. Unexplained increase in permanent grass area and total farmed area of about 24,000 ha between 2015 NPMP data (2013) and current data (2016).
*SQ13	Sustainable balance of livestock, including local and traditional breeds. (<i>Hefted grazing and collective management</i>)	Total cattle = 63,714 (inc. dairy 9,404; beef 15,863, calves<1yr 19,550; other	Further research required	Cattle down, sheep up, poultry down,	High	Total cattle = 60,303. (inc. dairy 8,542; beef 15,397; calves<1yr 19,392; other cattle 16,972). Total sheep = 686,423 (inc. breeding ewes 334,137; lambs under 1yr	2016 data published in the Defra June survey of Agriculture and Horticulture in December 2017. Compared with 2015 NPMP data (2013) there has been a

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
	<ul style="list-style-type: none"> <i>Herdwick Flocks</i> <i>Rough Fells Flocks</i> <i>Swaledale Flocks</i>) 	cattle 18,898). Total sheep = 669,279 (inc. breeding ewes 340,338; lambs under 1yr 308,321; other sheep 20,620). Total poultry = 295,720. Total pigs = 4,901. Horses = 1,066. (2013)		horses up slightly		330,491; other sheep 21,795). Total poultry = 173,667. Total pigs 1,936. Horses 1,107. (2016)	fall in breeding ewe numbers of 6,201, but an increase in lambs of 22,170. Fall in cattle numbers of 3,411. Large falls in pigs and poultry numbers.
*SQ14	The length of temporary fencing on Registered Common Land under an agri-environment schemes. (<i>Open, common land and an integral part of hill farming system</i>)	New Indicator 143.05km (2018)	Decreasing	-	High	143.05km of fences. (26 distinct consents dating from 2000 to 2015)	No previous baseline or method. Data has been collected, based on fencing on Common land with Secretary of State consent.
SQ15	Net change in redundant fencing on high fells	to be determined	to be determined	-	-	Not available	Not currently possible to measure and monitor this.
*SQ29	Extent of National Trust land ownership. (<i>Properties owned by the National Trust; knowledge and perception that the creation of the National Trust was inspired by the English</i>)	44,567 ha (2015)	Increasing		High	45,255.98 ha (2018)	From National Trust. Increase largely due to 2016 extension to the Park.

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
	<i>Lake District landscape)</i>						
SQ30	Number of Nationally Significant Infrastructure Projects approved contrary to the policies of the adopted Lake District Local Plan	0 (2015)	No increase		High	0 (2018)	Annual Monitoring Report, Lake District National Park Authority

3.1.3 Historic Landscape


a. Rich archaeology and historic landscape






The engaging nature of this this special place has inspired local communities, through the Volunteer Archaeology Network and their concerted effort of practical conservation works, as well as private owners undertaking repairs, to:


- Significantly reduce the number of scheduled monuments at risk (SQ6) from 118 in 2015 to 22 in 2018.
- Reduce the number of listed buildings at risk (SQ5), including lime kilns, from 87 in 2015 to 77 in 2018,

b. Distinctive buildings and settlement character

Conservation Areas with character appraisals and management plans (SQ24) have slightly decreased over the last five year period from 96% in 2015 to 91% in 2018. However, at the time of writing there are no Conservation Areas at risk (SQ25), and the number of Conservation Areas (SQ25a) has remained the same. Around the National Park, the number of listed buildings (SQ26) has risen from 1,771 to 1,791 over the same period. Development sympathetic to local character by settlement (SQ27) has been assessed using the current Local Plan policy CS03 as 97% of those planning permissions being in line with this policy, a slight reduction from 100% in 2013/14.

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
*SQ6a	Number of scheduled monuments. (See SQ6)	281(2015)	No decrease		High	287 (2018)	Annual Monitoring Report, Lake District National Park Authority

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
*SQ6	Number of scheduled monuments at risk. <i>(Landscape that reflects a long history of settlement, agriculture and industry)</i>	118 (2015)	Decreasing		High	22 (2018)	2015 saw an increase from 79 (2012) and 71 (2013) to 118, so 2018 figure is a particularly significant decrease.
*SQ26	Number of listed buildings. (See SQ24)	1,771 (2015)	No decrease		High	1,791 (2018)	Annual Monitoring Report, Lake District National Park Authority
SQ5	Number of listed Buildings at risk. <i>(The local architecture varies from the traditional vernacular buildings with related characteristics to the more formal architectural style buildings)</i>	87 (2015)	Decreasing		High	77 (2018) (7 Grade I & II, 70 Grade II)	Annual Monitoring Report, Lake District National Park Authority
*SQ25 a	Number of Conservation Areas. (See SQ24)	23 (2015)	No decrease		High	23 (2018)	Annual Monitoring Report, Lake District National Park Authority
*SQ24	Conservation Areas with character appraisals and management plans <i>(The local architecture varies from the traditional vernacular buildings with related characteristics to the more formal architectural style)</i>	96% (2014)	Increasing		High	91.3% (21 of 23) (2018)	Annual Monitoring Report, Lake District National Park Authority. However, no Conservation Areas are deemed to be at risk.

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
*SQ27	Development sympathetic to local character by settlement. (See SQ24)	100% (23) (2013/14)	100% of permissions in line with Local Plan policy CS03			97% (32) (2018)	Annual Monitoring Report, Lake District National Park Authority

3.1.4 Wildlife and Habitats

The nationwide decline in biodiversity is well known and accepted and the Lake District has not been immune to this. In the last 20 years much work has been done to try to maintain and restore existing habitats and species in the National Park. The Government's 25 year Environment Plan sets a new challenge to restore 75% of terrestrial and freshwater sites to favourable condition. Moreover its goal is to move beyond this to achieve the large scale habitat recovery and reconnection required to deliver a full range of public benefits through the development of a 'Nature Recovery Network to protect and restore wildlife, and provide opportunities to re-introduce species that we have lost from our countryside'. The Nature Recovery Network is seen as the vehicle for delivering the recommendations of the Lawton Review and also for building resilience to climate change, conserving pollinating insect populations, restoring peatlands, carrying out natural flood management, expanding woodlands, whilst delivering a wide range of social and economic benefits.

a. Habitats

Overall, changes in the condition of priority habitats (SQ16) has been mixed since 2013, currently the condition of these habitats is only monitored within protected areas (SSSIs) and it is not possible to report comprehensively on the extent and condition of habitats outside SSSIs in the Lake District National Park. This is a major deficiency.

The condition of habitats in the high fells has improved (particularly in SSSIs) but is still generally poor with further work required to restore peat bog hydrology, and recreate woodland and scrub habitats which are highly fragmented. In Lake District SSSIs only 6% of dwarf shrub heath and 26% of blanket bogs are recorded as being in favourable condition. Outside protected sites there are large areas of the fells where key habitats have been lost entirely and the condition of remaining habitat is (on average) likely to be worse. This is significantly due to grazing regimes, either past or present. When the condition of habitats in the fells is poor and vegetation lacks physical structure this results in slower rates of carbon capture, faster runoff of rainwater and greater risk of soil loss.

Much has already been done to alter grazing regimes particularly within SSSIs; further habitat decline has generally been halted but the success of habitat restoration is mixed. Changes in the slow-growing habitats of the fells are likely to be gradual. Continued attention to and adjustments of grazing regimes is essential if successful habitat recovery is to be secured.



Priority habitats (SQ17) within the Lake District National Park are found on designated and undesignated sites, under agri-environment schemes and also on land under no scheme. Less than half (44%) of priority habitats are found on designated sites, and a quarter of priority habitats are not on designated sites or under an agri-environment scheme (80% of this is either coastal and floodplain grazing marsh or woodland).

Figures from Natural England record the condition of SSSI within the National Park (SQ18). In 2014 26.97% were in favourable condition and 64.5% in unfavourable recovering condition. In April 2018 this showed a slight fall over the five years with 23% in favourable condition and 62% in unfavourable recovering condition. The National Park extension has 24% of SSSI in favourable condition, and 48% in unfavourable recovering condition.

In-bye habitats, subject to the pressures of inorganic fertilisers and supplementary feed, are particularly fragmented and require expansion and reconnection especially for wildflower and pollinator-rich areas. Species-rich neutral grasslands are in particularly short supply, with only c320ha of the two priority habitat hay meadow types recorded within the National Park. This reflects a general lack of wildflowers which in turn affects pollinating insects. Better news, is that remaining species rich grassland habitat in SSSIs is in moderate condition (54% favourable) and there has been progress with hay meadow restoration outside of SSSIs through the Cumbria Wildlife Trust and agri-environment agreements (see section 4.2.4 for hay meadow case study).

Soils are clearly crucial for the healthy functioning of habitats and for farming. Examples of soil loss and degradation can often be seen, and whilst there are a number of research projects underway no systematic data has been collected on soil condition in the National Park (see 4.2.4.c for soil case study). Future Partnership work would benefit from an improved understanding of the state of the Parks soils (see section 5.1 for a synopsis of the limitations of the monitoring framework). One approach worth exploring is Ecological Outcome Verification (EOV) which offers a robust monitoring protocol to provide guidance into the regenerative management of land, starting with soil. In recent years an emerging area of earth and environmental research focuses on the 'Critical Zone' defined as the uppermost layers of the solid Earth and lower most part of the atmosphere, within which almost all life is sustained. Critical Zone science draws together disciplines of geology, geomorphology, soil science and ecology in an integrated approach focused particularly on how soil and water provide essential ecosystem services. Central to Critical Zone science approach is recognition of the importance of feedbacks between biological and physical systems and that building resilience within the Critical Zone is a key priority from local to global events.

Valuable work has been done to restore the hydrology of blanket bogs and also to re-establish small areas of woodland and scrub habitat. Further systematic work is required to expand or re-establish lost habitats and restore healthy functioning of the landscape. Restoration work has been carried out on a huge 4,967.37ha of peatland (SQ20) in the last five years (2013-18), which includes work done by Cumbria Wildlife Trust's Wetland Restoration and Peatland Restoration projects as well as work undertaken by Natural England on lowland peat SSSI, and the RSPB (see section 4.2.4.a for degraded peat case study).

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
SQ16	Condition of priority habitats	32.5% (2014)	Improving	See comments	Reasonable	See summary table of SSSI condition no data outside SSSIs (SQ18) See also table of damage and threats to priority habitats section 4.2.7	The best data regarding priority habitat condition relates to that found in SSSIs (SQ18). Condition outside SSSIs is the subject of research suggestion – see section 5. Changes in methodology mean it is not possible to extrapolate trend data.
SQ17	Extent of priority habitats	85,681.89ha (2014)	Increasing	See comments	Reasonable	61,552.234ha (and a further 61,018.84ha of fragmented heath, good quality semi-improved grassland, grass moorland not classified as PH total = 122,571.077ha)	Not including lakes, rivers or ponds (all open water). Calculated based on the occurrence of priority habitats taken from the Priority Habitats Inventory. Decrease is most likely due to change in methodology rather than actual habitat loss - PHI data has been refined to produce higher definition of habitats within mapped polygons and improve the quality of information. Changes in methodology make extrapolation of trend data difficult.
SQ18	Condition of SSSI's	26.97% in favourable condition; 64.50% in unfavourable recovering condition. (2014)	Improving		Reasonable	23% in favourable condition; 62% in unfavourable recovering condition. (2018)	See table on for further breakdown and analysis by broad habitat type.
SQ20	Amount of peatland restored	0 (2015)	Increasing		Reasonable	4,967.37 ha	From Cumbria Peat Partnership

b. Species

The health of species is inevitably linked to that of the habitats upon which they rely. They are vulnerable to factors such as climate, pollution, persecution and anything encountered on migration routes, for example both Salmon and breeding birds have been in long term decline in the National Park. Work to identify the status of Priority Species (SQ19) continues. A list of 288 species with legal protection or of conservation concern has been identified and is available from LDNPA. This is an increase from the 173 species identified on the 2009 list.

i. Birds

A visual inspection of the Cumbria change maps in the Breeding Bird Atlas 2007-11 (British Trust for Ornithology, 2013) shows that there have been significant decreases over a 40 year period in the distribution of following breeding bird species, which have seen their steepest decline within the National Park:

- Redshank, lapwing, yellow wagtail, black grouse, corncrake, whinchat, golden eagle, corn bunting, lesser spotted woodpecker, grey partridge.

There have also been significant increases over the same 40 year period in the distribution of:

- Greylag goose, nuthatch, stonechat, siskin.

Curlews are a well-known sight to hillwalkers with the semi natural grassland and moorland of the uplands being a favoured place to breed. Their presence in tetrad survey plots have seen a long term decline both in numbers of 'plots present at' and 'density on occupied plots'. Between 1980 and 2000 Lapwing declined by 63%, Curlew by 39%, Golden Plover abundance index crashed from 26 to 1, and Redshank from 8 to 1. Populations of Skylark, Meadow Pipit, Whinchat and Wheatear all declined.

The Further concerns about the Lake District bird populations are highlighted in BTO wetland WEBS bird data for Lake Windermere. Goose populations have increased significantly since 1993 whilst numbers of Goldeneye, Pochard and other ducks have decreased. Worryingly BTO reports that it does not currently have volunteers carrying out the annual Wetland Bird Survey for the site with no data since 2014/15.

The 2009 Lake District Breeding Wader Project report 'An indicator of Change for breeding wading birds in the Lake District' analysed redshank, lapwing, curlew and snipe data. It showed that breeding wading bird density generally declines further into the centre of the Park. This is in part a reflection of the enclosed nature of the central Lakes valleys and long term declines are also linked to changes in land management practice. Between 2000-2011 Curlew data showed a mixed picture of decline and gain, and mirrored the 2009 reports findings of stable remnant populations, generally on the fringe of the Park.

The dates quoted give an indication of the age of available data and no more detailed (less than 10km²) park wide breeding wading bird data has been found to be available. It would be interesting to see what additional information a repeat of the methodologies outlined in the 2009 paper would reveal. Further detailed analysis of the BTO data could give additional information on changes in the distribution and abundance of breeding bird species.

England's (and the Lake District's) last Golden Eagle died in 2016. The local extinction of this iconic species marks the end of an era. Golden Eagles arrived in the Lake District from Scotland in the late 1950s and a pair first bred at Hawsewater in 1969. A shortage of suitable habitat and food will be amongst the reasons for the failure of this species. Further examination of the background to this extinction and identification of actions to reverse this loss are required.

Sightings of migrating Osprey in the Lakes increased in the late 90s. With a view to encouraging them to breed the Lake District Osprey Project built a nest platform in Wythop Woods overlooking Bassenthwaite Lake NNR. In 2001 a pair of Ospreys took to the platform, nested and successfully reared one chick for the first time in over 150 years as a result of natural re-colonisation. Ospreys have returned every year since, swapping to a different nest site and successfully raising at least one and often two chicks each year. Proactive management of the NNR, combined with sustainable woodland management, species protection and public viewpoints to generate support, have facilitated their expansion throughout the county. There are currently 6 pairs in Cumbria (some of which are Bassenthwaite originated chicks), and nearly 20 pairs in England. The future for Ospreys is hopefully a positive one, with the greater awareness of their unique ecology, and a significant reduction in persecution it is hoped their expansion will continue throughout England. A key element to the success of the project has been engaging local people. In 2018 over 80 volunteers contributed 6,000 hours of their time to promote and protect this iconic bird. For further information see <http://www.ospreywatch.co.uk>.

ii. Fish

Notable fish include the Arctic Charr which occur in several lakes in the National Park, preferring deep, cool water when not spawning. It is therefore particularly vulnerable to changes in water temperature resulting from climate change and nutrient enrichment. A number of studies carried out on Windermere have reported marked declines in the population both the North and South basins of Windermere, reflecting environmental change. The declines were larger in the South Basin where nutrient enrichment is higher. A study in 2015 on Windermere spawning grounds (which need to be clean, silt free gravels) also showed that fine silt had smothered some of these areas, reducing the ability of the fish to successfully rear young.

The Lake District has the only two remaining UK populations of the Vendace, the UK's rarest freshwater fish and a relic of the last ice age, in Derwentwater and Bassenthwaite Lake. Spending most of its life in deep, dark cold waters and only coming into shallow water to spawn Vendace, like the Charr, are vulnerable to changes in water temperature. Until 2013/14 it was believed that only the Derwentwater

population remained. In 2017 the first footage of a wild Vendace was recorded in Bassenthwaite Lake. The Centre for Ecology and Hydrology's long term Cumbrian Lakes monitoring programme has shown the Derwent Water population has remained robust throughout the last approximately 20 years and currently stands at an estimated 5,000 adults. DNA analysis suggests that the Bassenthwaite population may have originated in Derwent Water and travelled downstream to Bassenthwaite Lake.

Atlantic Salmon are an iconic indicator of healthy river systems and they form part of the designation of several designated rivers within the National Park. However, there is no salmonid survey data covering the whole National Park but 157 sites were surveyed as part of a catchment wide salmonid survey of the Derwent catchment which found numbers to be generally very low with the exception of a few key tributaries. In 2014 the salmon stock assessment (for England) was the worst on record with many rivers failing to achieve their minimum safe levels (known as the conservation Limit). The Environment Agency convened a Salmon Summit in 2015 and went on to develop and launch the Salmon Five Point Approach with partners in 2016. The aim is to stabilise, then recover, salmon stocks to sustainable levels. The approach sets out high level actions to tackle the factors that affect salmon throughout their whole life cycle, including water quality and flow issues, barriers to migration and impacts in the marine environment, as well as further reducing exploitation by salmon fisheries see <http://bit.ly/Salmon5PointApproach> for further details.

iii. Flora

Map 7.1.6 shows the relative diversity of vascular plant species as recorded to 2 x 2 km tetrads between 1974 and 1997, it shows wide range of diversity in results, factors that could be contributing to this include altitude variation, the range of underlying geology and habitat types, and land management.

In 1997 'A Flora for Cumbria' by Geoffrey Halliday marked a watershed in knowledge of the county's flora, with 1,373 non critically endangered species recorded in Cumbria indicating an impressive range of habitats in this northern location. This data was collected by volunteers (volunteer effort is not mapped). Whilst it is 21 years since it contributed to the Botanical Society of the British Isles (BSBI) Atlas of British Flora in 2002 (2nd edition), a 3rd edition of this Atlas is expected in 2020. This revised data will enable the provision of:

- Maps for both native and introduced taxa.
- Maps displaying species frequency and distribution at various scales.
- Analysis of changes to the State of the Park.

For details of interesting plants and habitats see <http://www.cumbriabotany.co.uk/cumbrian-landscape-and-flora>

LOST (Looking Out for the Small Things) is a current Plant Life project (running until 2020) mapping Atlantic Woodland habitats and lichen and bryophyte indicator species. It aims to produce lichen and bryophyte species richness heat maps and map those against environmental factors to identify any correspondence. The Lake District National Park is one of the remaining strongholds within the UK for SSSI Atlantic Woodlands, a habitat of high conservation importance that is globally rare and some consider it to be more threatened than tropical rainforest. The special combination of environmental factors within these areas supports rare and threatened lichens, bryophytes and ferns that are confined to this habitat. With their sensitivity to changes in the surrounding environment, these species are an effective tool to make inferences on the quality of the habitat in which they are found. The LOST project is seeking to increase awareness of these important species grouping outside designated sites to help inform woodland and land management decisions.

iv. Invasive Non Native Species

Current key invasive species present in the National Park include: Giant Hogweed, Himalayan Balsam, Japanese Knotweed, New Zealand Pigmy weed, American Signal Crayfish, *Phytophthora austrocedrae* (*affects Juniper*), Chalarra, American Skunk Cabbage.

During the last five year period:

- Invasive species have not increased in number.
- There is a lot more engagement and awareness on invasive species than previously.
- There are a lot more local action groups.
- There is a lot less funding and reliance is on volunteers but no funding for coordination.

The highest risk area is Windermere. This is due to the following characteristics, which individually increase risk when combined in Windermere, because of the nature of the catchment: slow moving water, nutrient rich, relatively shallow, connectivity to other water bodies, high levels of use, multiple access points, multiple activities and organised events.

Until recently the Park and Cumbria benefited from the Cumbria Freshwater Invasive Non-Native Species (CFINNS) project, a county-wide, multi-catchment project for freshwater and riparian invasive non-native species (INNS). The Initiative's vision is to achieve a sustainable county-wide management framework that will prevent the introduction of, or detect, control and/or eradicate specified INNS throughout Cumbria. The CFINNS Initiative aims to promote awareness and management of Freshwater INNS from promoting biosecurity to training volunteers and co-ordinating removal of certain species. This programme is currently unfunded. For further information see <http://cfinns.scrt.co.uk>.

Current issues are controlling the spread of what we already have e.g. keeping *Crassula* from entering Wastwarer, Buttermere and Crummock Water; and prevention of new invasive species coming in. High visitor numbers and increased recreational use of both

aquatic environments and the fells (both increasing in the last five years) mean this is a higher risk than before. High volume of protected sites and warming water also heighten the risk (See also section 4.2.7, 'Damage, threats and pressures on habitats).

v. Potential Indicator Species

During the preparation of the 2018 State of the Park Report the following species were identified as potential indicator species worthy of further research in order to provide more detailed information about issues of global concern such as Climate Change, impacts of land management practices, recovery from historic pressures (e.g. plant collection), how well programmes to support recovery or natural population expansion are faring, as well as the health of habitats and ecosystems:

- Freshwater - Arctic Charr, Atlantic Salmon, Freshwater Pearl Mussel
- Top Predators - Golden Eagle, Osprey, Pine Marten
- Invertebrates - Mountain Ringlet
- Birds - Breeding waders and wetland birds (plus Golden eagle and Osprey)
- Plants - Arctic Alpines.

In determining indicator species those identified as part of the developing 'Back on Our Map' project may be interesting. Working to restore species to the distinctive lowland fells and coast of south Cumbria. The University of Cumbria, working with local communities, the Forestry Commission, Natural England and Cumbria Wildlife Trust aims to both examine the feasibility of restoring and in some cases working to restore species of plants, animals, birds and invertebrates which are missing from sites in the region which are extinct or declining in number. The species being considered as part of this project are:

- Small blue butterfly
- Duke of Burgundy butterfly
- Pine Marten (feasibility only)
- Hazel dormouse
- Green-winged orchid
- Goldilocks aster
- Spiked speedwell
- Corncrake (feasibility only)

- Aspen
- Maidenhair fern
- Oblong-leaved and great sundew

For info see <https://www.cumbria.ac.uk/business/projects/south-cumbria-species-restoration>

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
SQ19	Status of priority species	Being established by Cumbria Local Nature Partnership. LDNPP Breakthrough Action 2 (2018)	Further research required	-	-	288 priority species within (or impacted by activities within) the Park with legal protection or of conservation concern have been identified.	2018 list of priority species legally protected or of conservation concern under Conservation of Habitats and Species Regulations 2017 European Protected Species, Wildlife and Countryside Act 1981, NERC Act Section 41 – Species of Principal Importance (Priority Species), IUCN Global RED lists (endangered, near threatened vulnerable and data deficient). This list is available from LDNPA. Status of species still to be developed.

c. The water environment

i. Water based Natura 2000 sites

The baseline data for condition of existing water-based Natura 2000 sites (VO3) is dated 2018, meaning there is currently no trend to report. A variety of issues such as overgrazing, complex river modification, pollution and the impact of invasive species prevent improvements, however, water quality is favourable in one location, Buttermere. For further information on the condition of existing water based Natura 2000 sites and reasons for unfavourable condition see section 4.2.6 and 4.2.6.a.

ii. Water quality

The quality of the Lake District's water environment is generally good with the overall Water Framework Directive classification of 37% of waterbodies (SQ21) achieving 'good' status in 2016, down from 39% in 2013 (see map 4.1.3); both significantly better than the national average of 20-22% 'good'. WFD classification is assessed every three years; the next classification will be produced in 2019. The percentage of individual elements achieving good will be significantly higher because WFD classification uses a 'one out all out' approach, where the overall classification is that of the lowest quality element. An example where a 'sub-metric' demonstrates significantly better performance is hydrological regimes (VO4) which measures flow conditions in a water body. In 2013 84% of Lake District water bodies hydrological regimes (VO4) were in 'good' or 'better' condition, in 2016 conditions had improved to 96%. The WFD metric measures physico-chemical elements - dissolved oxygen, ammonia, pH and phosphate, hydrological regime; and biological elements - fish, invertebrates, macrophytes and diatoms. The objective is for waterbodies to achieve Good Ecological Status (which represents a slight variation from natural conditions) currently by 2021. Further WFD information can be found on the Environment Agency's [Catchment Data Explorer](#).




Although 37% of Lake District waterbodies are achieving 'good' status only 4% of SSSI rivers in the National Park are recorded as being in favourable condition, and 42% of SSSI lakes are favourable many are considered under threat.

The Lakes Tour has collected data on 20 of the major lakes and tarns in the Lake District in 1984, 1991, 1995, 2000, 2005 and 2010. It therefore gives a long run of data which is essential to be able to tell whether observed trends are due to short term phenomena such as weather conditions or whether they are likely to have longer term causes. This data shows continued declines in the condition of most of the 20 lakes studied. As freshwaters are subject to the cumulative impacts of activities in their catchments this demonstrates the importance of adopting a catchment based approach (see section 4.2.5 for further details).

iii. Bathing Waters

Water quality (E.coli and Intestinal enterococci levels) is assessed, under the Bathing Water Directive, at designated sites on a weekly basis from May to September by the Environment Agency. Daily pollution risk forecasts may be issued when necessary. Annual ratings classify each site as 'excellent', 'good', 'sufficient' or 'poor' based on measurements taken over a period of up to four years. In 2018 all 5 of the Park's Bathing Waters (VO5) remained at 'excellent', maintaining the 100% at highest standard achieved in 2015. In addition to the unusually dry weather during the sampling period in 2018 this result reflects the efforts and interventions of projects. These include Windermere Reflections which aimed to improve water quality at a catchment scale. As well as United Utilities' significant investment in infrastructure improvement projects since the early 1990's (e.g. upgrading the sewerage network to reduced discharges from storm overflows, upgrading Grasmere, Ambleside, Windermere and Keswick WwTWs). Measures to reduce diffuse pollution from agriculture will also contribute to improvements in bathing water quality. Whilst our bathing waters are of the highest standard there is a need to

remain vigilant particularly with regard to wastewater discharges and diffuse pollution from agriculture. Further information about Bathing Waters can be found on the Environment Agency's [Bathing Water Explorer](#).

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO3	Condition of existing water based Natura 2000 sites	Favourable = 1,285.73 ha; Unfavourable Recovering = 465.72 ha; Unfavourable No Change = 1,240.96 ha; Declining = 310.98 ha. (2018).	Increasing	No trend data	High	Favourable = 1,285.73 ha; Unfavourable Recovering = 465.72 ha; Unfavourable No Change = 1,240.96 ha; Declining = 310.98 ha. (2018) See section 4.2.6 tables for further details.	Doesn't include water related features such as mires as not possible to separate these elements out of available data. SSSIs with freshwater SAC.
SQ21	Condition of waterbodies (lakes, tarns, rivers)	39% 'good' or better status (2013) (revision to the way data collected and reported 2018)	Improving		High	37% See map 4.1.3, (2016 data)	Water Framework Directive classification, assessed every 3 years, due in 2019. Objective to achieve Good Ecological Status. Classification 'one out all out' approach, overall classification is that of lowest quality element.
VO4	Status of water body hydrological regime	84% 'good' or 'better' status (2015)	Increasing		High	96% (2016)	This forms part of the Water Framework Directive assessment, identifying whether flow conditions in a water body are sufficient to support meeting 'Good Ecological Status'. Key pressures on flow conditions include abstraction for water supply and hydropower schemes.
VO5	Status of bathing waters	100% of bathing waters are at or above Sufficient status (2015)	No decrease		High	100% of bathing waters are at or above Sufficient status (2018)	Bathing Water Directive classification results. 100% of the 5 Bathing Waters achieve 'Excellent' classification the highest category – Windermere Millerground

							landing, Rayrigg Meadow, Felfoot and Lakeside YMCA; and Silecroft.
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d. Trees and woodlands

The total area of woodland cover (VO6) within the LDNP has increased from 28,281 ha in 2014 to 29,792 ha in 2018 (including 484ha in extension area). This equates to 13% woodland cover. Some 30% of the woodland is under Forestry Commission ownership or management (National Forest Inventory LDNP report 2018).

Broadleaved species account for 64% of woodland cover in the LDNP and conifer species account for 36%. Oak is the most commonly occurring of the broadleaved species when assessed by stocked area (30%) or standing volume (45%). Birch is the most frequently occurring when assessed by number of trees (27%). Sitka spruce is the most commonly occurring of the conifer species whether assessed by stocked area (48%), standing volume (43%) or number of trees (56%).

Some 33% of standing coniferous volume is beyond the age of maximum mean annual increment. Some 51% of conifer sections show evidence of thinning. Overall 50% of standing broadleaved volume is beyond the age of maximum mean annual increment. Some 24% of broadleaved sections show evidence of thinning. Regeneration with pest resistant species is required particularly of parkland trees and in upland limestone, farmland and low fell landscapes.

The Lake District National Park National Forest Inventory statistics report produced by the Forestry Commission can be found here: <https://www.forestresearch.gov.uk/tools-and-resources/national-forest-inventory/how-our-woodlands-might-change-over-time-8211-nfi-forecast-reports/nfi-forecasts-customised-reports/>.

i. Extent of Ancient Semi Natural woodland




The ‘treescape’ of the National Park is of huge importance visually, culturally and ecologically. The Park is a ‘hotspot’ for ancient trees which are particularly valuable for birds, insects, mosses and lichens. The extent of ancient semi-natural woodland (SQ22) is presented in map 4.1.4 which shows ancient semi-natural woodland and plantations on ancient woodland sites (SQ22a). The overall area of woodland has remained constant at 9,989 ha, and both Ancient and semi natural woodland and plantations on ancient woodland sub components have also remained constant.

ii. Woodland in Forestry Commission Woodland Management and Countryside Stewardship Schemes (SQ23)

This has increased from 8% of woodlands being under such management arrangement in 2014 to 43% (with the increase due to changes in available grants and increased uptake over time. However a recommendation to change the calculation methodology, so that it aligns with that used by Forestry Commission across England making it repeatable and comparable in future years, takes the 2018 reportable figure to 75%. This compares favourably with an overall 58% woodland in active management in England. This new figure is

made up of the following measures: managed Defence Estates 0%, managed felling licence applications 2.4%, managed forestry / CS grants 43%, and Public Forest Estate managed by Forest Enterprise 29.7% (2017/18).

See section 4.2.7.c for a qualitative report on threats to our woodlands and how we respond them (VO7).

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO6	The area of woodland	28,281 ha (2014)	Increasing		High	29,792ha (2018)	Source Forestry Commission: National Forest Inventory
*SQ22	Extent of Ancient Semi-Natural Woodland. (<i>The physical remains of past woodland industries (Tangible); Surviving local traditions of woodland management</i>)	Ancient & Semi-Natural Woodland (ASNW) 6,656ha (2013)	No loss		High	6,656ha (2018) See map 4.1.4	Source Forestry Commission: National Forest Inventory
SQ22a	Plantations on Ancient Woodland Sites.	Ancient Replanted Woodland (PAWS) 3,333ha (2013)	Increased PAWS restoration	No change	High	3,333ha (2018) See map 4.1.4	Source Forestry Commission: National Forest Inventory
SQ23	Woodland in Forestry Commission Woodland Management and Countryside Stewardship Schemes	8% (2014)	Increasing		High	43% (based on 2014 methodology) but 75% (based on preferred methodology – see comments) The percentage of woodland in active management in the LDNP is 75% (2017/18).	Source: Forestry Commission England Managed Woodland Headline Performance Indicator. Increase due to change in available grants and uptake since 2014. 2017/18 figure is made up of: managed Defence Estates 0%, managed felling licence applications 2.4%, managed forestry / CS grants 43%, and Public Forest Estate managed by Forest Enterprise 29.7%.

e. Damage, threats and pressures to Habitats

See section 4.2.7 for a summary of the main current threats to Priority Habitats (geological sites are not 'priority habitats' but are included as there is nowhere else to report their condition). The information presented is drawn (primarily) from Natural England's designated sites system including published Site Improvement Plans for European designated sites. This records current sources of damage to the features for which they are designated and also threats to their future condition. These sources of damage and threats apply widely throughout the National Park and therefore also affect priority habitats outside of SACs. They will have a greater impact outside of SACs and SSSIs because there are fewer mechanisms for regulation. Action has already been undertaken by many farmers, landowners and land managers to reduce these threats. More needs to be done if we are to have "bigger, better more and joined habitats" as recommended in the Lawton Review and detailed in the Government's 25 Year Environment Plan. Site Improvement plans can be found at: <http://publications.naturalengland.org.uk/category/6329101765836800>

Pressures to water quality (SQ21) and a qualitative report on threats to our woodlands and how we respond them (VO7) can be found in section 4.2.7. Reasons for unfavourable status of water based Natura 2000 sites (VO3) are reported in section 4.2.6.a.

f. Climate Change – resilience, water quantity - drought and flood risk, and carbon

Climate change is a universal pressure on and threat to the Lake District, its environment, economy and communities. It is a theme that requires further research to more fully understand the impacts related to flooding events, drought and overall water management

Increases in temperature in water environments, particularly the lakes, can lead to increased algal productivity and have an adverse impact on fish species (including Artic charr and Vendace, see above) and local economy (e.g. cancellation of the Great North Swim in 2010 with an estimated loss of approximately £1.5 million to the local economy). See section 4.2.7.a.i., for more information.

Changing weather patterns and intensity of rainfall has a significant impact both on the natural environment, local communities and infrastructure, particularly within 'flashy' or quick to react catchments. Whilst in the Lake District we may typically think about the need to manage water in terms of reducing flood risk, summer 2018 was a prolonged demonstration of the need to manage water level resources in both high and low flow conditions, throughout our lakes and rivers and ground water aquifers.

i. Extreme weather – managing water quantity

The highest rainfall for any 24-hour period in the UK is 341.4mm from 4th Dec to 5th Dec 2015 at Honister Pass. Previous to this the daily record was held by Seathwaite where 314mm of rain fell between 19th and 20th November 2009. Thirlmere holds the UK record for the 2 day total with 405.0 mm from 4th and 5th of December 2015. Seathwaite previously held this record with 395.6mm from 18th and 19th November 2009. In the North West the estimated increase in average winter rainfall is 4% by the 2020s and 16% by 2080.

In 2005 over 2,500 properties were affected by the floods, and in 2009 2,239 properties flooded as well as 110 farms which were impacted. Storm Desmond flooded 7,080 properties in December 2015 (4,852 properties not including Carlisle) and 1,029 businesses. At the peak of the Desmond flooding, there were an estimated 17,911 customers without electricity. Across Cumbria, Public Rights of Way both in and out of the Park were affected. In total 429 Public Rights of Way bridges and 267 paths covering 576km were damaged, with combined repair and reinstatement costs estimated to be in the region of £7.9m. Around 600 farming businesses across Allerdale, Carlisle, Eden, Copeland and South Lakeland experienced some degree of impact, either directly from flooding or from water run-off. The best estimate of economic damages for the winter 2015 floods in Cumbria is £175 million.

Drought impacted the lakes from July 2009 to June 2010. Nine of the twelve months experienced lower than normal rainfall with winter and spring rainfall levels the lowest seen since 1929. This saw the depletion of water stored in Lake District reservoirs, an important supply for the North West's water provision, and resulted in water-use restrictions in 2010. The other three months during this period were incredibly wet, consistent with predictions for drier summers and more intense rainfall events. In summer 2018 drought impacted all aspects of life including habitats and reliant species, domestic and commercial water supply, hydropower, and farms with supplementary feed normally reserved for winter having to be used in summer to enhance available grazing. Consideration should be given to the identification of additional indicators to monitor the range of water quantity as well as its impact. A 5% reduction in summer rainfall is estimated by the 2020s and 21% reduction by 2080 which, combined with increased temperatures, could result in more droughts in the North West. Water shortages, particularly in the summer, could become more frequent.

Ambleside and Keswick seem to have had very similar annual, average temperatures from 1981-2010 (13°C as max. temp and 5.8°C as a min. temp for both). On a yearly average 2,005mm annual rainfall is experienced in Ambleside, compared with Keswick which experiences 1,521 mm. The maximum temperatures recorded in Cumbria are 33.3°C recorded at Newton Reigny near Penrith on 20th July 1901 and July 1876.

ii. Properties at risk of Flooding

Two sets of data provide an indication of the risk to property from flood within the Park. Unfortunately due to 'data refresh cycles' these two data sets do not provide a consistent figure and numbers can vary from year to year making long term monitoring challenging. Until this data is reviewed these figures do not reflect changes in numbers of properties protected by new schemes within defended areas.

The Environment Agency's National Flood Risk Assessment (2017) identified 3,371 properties in the Park within a risk area, classified as follows:

- 421 properties at 'High' risk = greater than or equal to 1 in 30 (3.3%) chance of flooding in any given year.

- 2,067 properties at 'Medium' risk = less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year.
- 883 properties at 'Low' risk = less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year.

The number of properties identified within the Park in Flood Zones 2 and 3 (VO2) is currently assessed as 3,809 properties. Of these:

- 1,901 properties are within Flood Zone 3 (i.e. 1 in 100 year risk of flooding or 1% chance of flooding in any year).
- 1,908 properties are outside Flood Zone 3, but within Flood Zone 2 (i.e. between 1 in 100 and 1 in 1000 year risk of flooding or between 1% and 0.1% chance of flooding in any year).

Recent remodelling has resulted in increases to the extent of Flood Risk Zones. Until the National Flood Risk Assessment (NaFRA) is updated, the additional 438 properties at risk of flooding do not have a NaFRA risk rating. This will be rectified as new NaFRA modelling 'catches up' with Flood Zones changes.

iii. Flood Warning Areas and properties included

Flood Warning Areas are geographical areas where flooding can be expected and where a Flood Warning Service is in place.

- There are currently 24 flood warning areas within the Park, 18 fluvial and 6 tidal. Additionally the Environment Agency is developing flood warning services for Grasmere, Ambleside and Coniston to be launched in 2019/20.
- There are currently 3,445 properties within flood warning areas in the Park (1,603 in fluvial flood warning areas and 1,842 in tidal flood warning areas).
- There is a 47.6% sign up rate to receive flood warnings in the 18 fluvial flood warning areas (763 customers out of 1,603 properties). A percentage sign up rate for the 6 tidal areas is not available due to issues with slicing the data to the National Park boundary.

Flood Action Groups and Community Involvement - within the Park 18 Community Groups, both formal and informal, are being supported to varying degrees to ensure they have Community Emergency Plans or other measures in place. These aim to increase community safety and resilience in the event of flooding, of the groups established some are more active than others.

iv. Carbon

With Carbon budget saving figures (VO42) being cumulatively reported year on year, whilst positive, it is unsurprising that savings continue to increase. However, as at 2018 the Partnership has not yet met the 1% year on year carbon saving target set in 2010, see below:



	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
Annual Target tCO₂e (year on year 1% annual reductions)	23,000	46,000	69,000	92,000	115,000	138,000	161,000	250,934
Actual Total Annual Saving tCO₂e (cumulative)	8,375	16,844	30,192	46,970	58,803	66,551	93,655	107,778



It is important to note that the Carbon Budget was re-baselined in 2017. The original baseline was 2,300,000 CO₂e. The new baseline has now increased to 3,136,680 CO₂e. It was initially felt that a continuous set of figures remained useful. However, this makes ongoing comparisons flawed and it is recommended that in future savings are calculated against the post 2017 baseline figure.

Carbon budget savings from land management (VO1) were recorded as 7,692 tonnes in 2013/4. The total for the LDNP including the extension area in 2017/18 is 1,778 tonnes (14 tonnes hay meadow restoration (see section 4.2.4.a for hay meadow case study), 833 tonnes peatland restoration, 147 tonnes scrub creation, and 784 tonnes woodland creation) taking the cumulative total of carbon savings from land management to 107,778 tonnes.

To assess the mitigation impact of land management, habitat creation and restoration on Climate Change (VO8a), the Partnership has collected a range of data that shows woodland creation (177.52ha), scrubland creation (2,233ha) and peat restoration (4,074.06ha) have substantially increased the capability of the landscape to sequester carbon.

Through future research the Partnership will look to improve options for reliably assessing the contribution land management including habitat creation or restoration makes to enabling adaption (rather than mitigation) to Climate Change (VO8b).

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO42	Carbon budget savings	46,970 tonnes (2013/4)	Increasing		Reasonable with caveat regarding 2017 re-baselining (see comments)	107,778 tonnes cumulative figure (14,123 tonnes 2017/18 plus carry forward of previous year's savings)	The Carbon Budget managed by LDNPA on behalf of the LDNPP was re-baselined in 2017. Pre 2017 the baseline was 2,300,000 CO ₂ e post baseline 3,136,680 CO ₂ e this makes ongoing comparisons flawed. In future the 2017 baseline figure needs to be used to assess savings.
VO1	Carbon budget savings from land management	7,692 tonnes cumulative (2013/4)	Increasing	but see  comments	Reasonable	19,676 tonnes cumulative (2017/18) (1,778 tonnes (14 tonnes hay meadow restoration, 833 tonnes peatland restoration, 147 tonnes scrub creation, and 784 tonnes woodland creation) (2017/18))	Overall cumulative savings are increasing but year on year the amount of savings being delivered looks to be decreasing. 2017/18 savings are down on the 2016/17 2000 tonnes of savings. High levels of savings in previous years are in part due to improvements in methodology i.e. counting things hadn't counted before, also in part due to available grants for relevant land management activities e.g. tree planting. However, it must be recognised that only half the target set is currently being achieved.
VO2	The number of properties in Flood Zones 2 and 3	New Indicator 3,809 (2018)	Increasing	-	High	3,809 (2018)	From Environment Agency
VO7	Qualitative report on threats to our woodlands and how we respond them.	n/a	n/a	-	High	See Qualitative Report – section 4.2.7 (2018).	From Forestry Commission
VO8	Land management which through habitat creation or restoration mitigates Climate Change: via the following 3 indicators;						

Indicat or Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO8i)	• New Woodland Creation (excludes restocking)	New Indicator 102.44ha (2013/14)	Increasing	Variable most recently 	High	177.52ha (2017/8)	From Forestry Commission administered Countryside Stewardship grants, plus 0.4ha of planting from Rusland Horizons. Previous years taken from internal LDNPA Woodland Creation report (collation of FC and CS figures with other sources). Variable figures in previous years in part due to changes in available grants and take up levels – 25.19ha (2014/2015), 45.63ha (2015/16).
VO8ii)	• New Scrubland creation	New Indicator 2,282.85ha	Increasing	-	High	2,282.85ha (2017)	2,233ha recorded at HLS scheme peak 2105, HLS HC17 exact area subject to RPA mapping changes; and 49.85ha Countryside Stewardship
VO8iii)	• Peatland creation	0 (2015)	Increasing		Reasonable	See SQ20 – 4,967.37 ha (2018)	From Cumbria Peat Partnership

3.2 Prosperous economy

3.2.1 Unique farming heritage and concentration of common land

Indicators SQ7- SQ13 relate both to the Cultural Landscape and Prosperous economy, the data accompanying the following description can be found in section 3.1.2.

Common land area (SQ7) has increased by 1,752ha due to the National Park Boundary extension in 2016 to 66,252ha. We have identified the number of farms with fell going flocks (SQ9) as 472, although updated data is required to ensure this remains an accurate figure. From 2013 to 2016 the total number of commercial farm holdings (SQ10) has increased slightly from 1,083 to 1,162; With increases in all but the smallest (<5ha) farm holdings which have dropped from 79 (2013) to 65 (2016) (SQ11). The total farmed area (SQ12) has increased. The increase in permanent grassland from 77,142ha to 101,102ha is an unresolved anomaly without explanation.



Reporting progress in farming, forestry and land management is hampered by the lack of up to date data specifically on Lake District farms (as opposed to data on all grazing livestock farms in England's Less Favoured Areas (LFA). However, we can infer changes by looking at data on all England and all North West farms classified as "grazing livestock (Less Favoured Areas)". The latest year for which there is data (2016/17 and 2017/18) shows a sharp increase in net farm business income (VO12) and net farm income in England's LFA hill farms. This has been driven by two factors: an upturn in livestock prices and an increase in the value of farm support payments (in both cases largely as a result of the depreciation of sterling since the EU referendum vote in June 2016).





We have data for the first time for number of businesses taking up RDPE schemes (VO9), and the value of those schemes (VO10).

The proportion of the National Park in environmental land management schemes (VO11) has reduced between 2014 and 2018 from 70% to 60%. It should be noted that during this time many agreements under the old schemes will have come to an end and the new Countryside Stewardship Scheme has proved more targeted and challenging to enter which may account for the reduction. A participation of 60% is well above that seen in other parts of the country.

VO14 illustrates just how exposed farmers are to changes in support payments and the whole EU exit process with the percentage output on Lake District Farms from CAP payments amounting to 57% of total output (compared to 35% countrywide). Given that the output figure is £86,899 this gives a support figure of £49,532, only £4,833 lower than the net farm income of the business. It is even more sobering when compared to the net farm income of £9,594 in 2012, when support will have been a little lower or broadly similar.

There has been a small increase in the number of people employed in farming. The latest data suggest that overall employment in land based industries (agriculture and forestry) (VO15) increased slightly between 2013 and 2016. This is due to an increase in agricultural employment of which the majority (around three quarters) is part-time and casual employment.

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO9	Number of eligible businesses taking up the 4 RDPE strands (LEADER, agri-environment, LEP and Countryside Productivity Scheme)	0 (2015) not collected	Increasing		Reasonable	Environmental Stewardship 774, Countryside Stewardship: 100 (inc. woodland schemes) (2018); other RDPE applications & agreements 2014 to September 2018. Countryside Productivity 46; Farm Recovery Fund 184; LEADER 32; Growth Fund 2.	Natural England Monitoring Environmental Outcomes in Protected Landscapes (MEOPL) (31 March 2018) - Environmental & Countryside Stewardship data. Other RDPE: Rural Payments Agency (5 July 2018). First time this data has been collected, so is a baseline. The current Rural Development Programme for England (RDPE) runs until December 2020
VO10	Value of investment the 4 RDPE strands (LEADER, agri-environment, LEP and Countryside Productivity Scheme)	0 (2015) not collected	Increasing		Reasonable	Environmental Stewardship £11,033,609, Countryside Stewardship £323,060 (inc. woodland schemes) (2018); other RDPE applications 2014 - July 2018; Countryside Productivity £352,333; Farm Recovery Fund £2,135,446; LEADER: £652,339; Growth Fund: £172,657	Natural England Monitoring Environmental Outcomes in Protected Landscapes (MEOPL) (31 March 2018) - Environmental & Countryside Stewardship data. Other RDPE: Rural Payments Agency (5 July 2018). First time data collected and reported, so is a baseline. Current Rural Development Programme for England (RDPE) runs until December 2020. Agri-environment and woodland schemes are a significant value in the LDNP, over £11m per year.

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO11	Proportion of land in Environmental Land Management Schemes	70% (2014)	No significant change		Reasonable	60% (2018)	Natural England Monitoring Environmental Outcomes in Protected Landscapes (MEOPL) (31 March 2018). % of total area of Park in agri-environment schemes has fallen significantly from 74% in 2011 to 70% in 2014 and 60% in 2018.
*VO12	Net farm income. (<i>The continuing vitality of the farming system</i>)	£9,594 (2012)	Increasing		Reasonable	£54,365 (2016/17 FBS year)	Defra Farm Business Survey (Newcastle University August 2018) Snapshots of farm economic performance have limited value and can vary greatly from year to year. Data based on a small number of sample farms, then weighted for all LDNP farms and averaged. Individual farm performances have a very wide range. Average Net Farm Income figure for LDNP farms compares favourably with the average figure for all English Less Favoured Area grazing livestock farms of £16,615.
VO13	Profit from diversification out of agriculture (£ per farm)	£2,583 (2012)	Increasing		Reasonable	£2,101 (2016/17 FBS year)	Defra Farm Business Survey (Newcastle University August 2018)
VO14	The value of agricultural output	£89,719 (2012)	Increasing		Reasonable	£86,899 (2016/17 FBS year)	Defra Farm Business Survey (Newcastle University August 2018) The value of agricultural output is higher on LDNP farms than the average for all English Less

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
							Favourable Area grazing farms (£70,200), but elsewhere a lower percentage of total output (LDNP 40% countrywide 61%). Basic Payment Scheme and Agri-environment schemes are a larger proportion of total output value for LDNP farms (LDNP 57% countrywide 35%).
*VO15	Number of people employed in Farming and Forestry. (see VO12)	2,691 (2,491 farming, 200 forestry) (2013)	No decrease	Not like with like	Reasonable but farming only and not a complete picture.	2,635 (Dec 2017) <u>Farming only</u>	2016 data published in the Defra June Survey Of Agriculture and Horticulture (December 2017) Forestry employment figures not available. Does not measure non-employed (e.g. family) labour on farms.
*VO16	Average age of farmers. (See VO12).	55yrs (2013) (nationally - no local figure)	Decreasing		Reasonable but only a national figure.	59 yrs (nationally - no local figure)	Does not tell us about the multi-generational nature of the age structure in farming. The age recorded will be that of the person the business is registered to. Seeking improved indication through research framework.

3.2.2 The visitor economy

According to STEAM data 2017 was one of the record years for tourism. The number of visitors (SQ31) has increased from 15.5 million (2013) to 19.17 million in (2017), making the Lake District the most visited place in England outside of London. Over half (56%) of all day visitors, and a third (33%) of all visitors were from the North West.

Whilst high visitor numbers are beneficial to the economy there is some question as to the National Park's capacity to deal with this level of visitors and the impacts that this has on infrastructure, services and the environment. Whilst programmes such as Fix the Fells are working to repair the resulting impact of erosion on upland paths, and programmes such as Windermere Reflections and successors seek to reduce the impact of adventure activities and events (including the spread of non-native invasive species) there is a need to

better understand and manage both visitor movement around the Park; as well as its associated environmental impacts, both direct and indirect.

Overnight visitors tend to make a greater economic contribution relative to their environmental impact. Visitors staying one or more nights (VO17) increased by 1%, however the average length of stay overall (VO18) reduced slightly from 5.8 nights to 5.34 nights.

The data suggests that the growth in visitor numbers has been stronger in the peak rather than the off peak months. However, if we exclude March and October which are impacted by school holiday periods and dates, there has been no discernible change in the share of the peak / off-peak visits (VO20).

There has been a slight (1%) decrease in visits to Lake District show case areas (VO19).

Currently 18% of visitors were visiting Cumbria for the first time, an increasing trend, with 17% of first time visitors coming from the South East, (South East visitors made up 11% of all visitors).

Cumbria is currently attracting a declining market share (13%) of 16-34 year olds. This age group makes up 25.6% of the UK population, and Cumbria is underperforming against the national average and against competitors:

- England wide - 28% of trips are taken by the 16-34 year olds.
- Wales – 25% of trips are taken by the 16-34 year olds.
- Scotland – 24% of trips are taken by the 16-34 year olds.
- Cornwall – 16% of trips are taken by the 16-34 year olds.
- Cumbria – 13% of trips are taken by the 16-34 year olds, declining from 15% in 2006.

a. A source of artistic inspiration

Nearly a third of all visits are to cultural attractions (SQ28), which remain popular, although the proportion has decreased slightly from 31% (2013) to 29% (2017). This may be due to the increase in overall visitors to the Lake District, resulting in a smaller proportion of visits.

- The definition of a cultural attraction for the purposes of SQ28 is an attraction relating to culture tourism, concerned with culture, specifically the lifestyle of local people, their history, art, architecture, religion(s), and other elements that helped shape their way of life. Within VisitBritain / Cumbria Tourism’s ‘Survey of Visits to Visitor Attractions - Visitor Attractions Monitor’ the following are ‘cultural attractions’: *Rheged, World of Beatrix Potter, Honister Slate Mine, Theatre by the Lake, Sizergh Castle, Hilltop, Wray Castle, Muncaster Castle, Lowther Castle and Gardens, Dove Cottage and The Wordsworth Museum, Blackwell Arts and Crafts, Beatrix Potter Gallery, Allen Bank, Townend, Mirehouse, Ruskin Museum (Brantwood), Stott Park Bobbin Mill, Keswick Museum and Art Gallery, Threlkeld Quarry and Mining Museum, Askham Hall and Gardens.*

Cumbria Tourism Survey is now asking visitors to indicate their awareness, or otherwise, that the Lake District National Park is a World Heritage Site. In 2017 68% of visitors were aware. There is the opportunity to add ‘visitor awareness of the Lake District’s World Heritage Site status’ as an additional indicator.

b. A long tradition of tourism and outdoor activities

Physical scenery and landscape attracts 56% of visitors to Cumbria. Despite this though the percentage of visitors partaking in activities experiencing the landscape and environment (SQ32) has decreased by 2% during the last five years. Whilst those taking part in adventurous activities (SQ34) has coincidentally increased by 2%. Visitors partaking in cultural activities (SQ33) has remained static, for the same period at 27%.

A significant amount, 74.4% of the public rights of way network remains easy to use by the general public (SQ35), although that proportion has decreased, from 78.2% due to the 2016 National Park extension taking in a previously less well maintained public rights of way network. 15% of visitors had a dog or dogs with them.





- Within Cumbria Tourism Visitor Survey the following are defined as ‘landscape and environment’ activities (SQ32): *visiting the countryside, short walks – up to 2 miles, long walks – more than 2 miles, touring around / sightseeing by car, visiting beaches / the coast, Lake cruises / motor boat cruising, bird watching / field study / nature study / wildlife watching, and photography.*
- Within Cumbria Tourism Visitor Survey the following are defined as ‘adventurous’ activities (SQ34): *short walks – up to 2 miles, long walks – more than 2 miles, Lake cruises / motor boat cruising, indoor swimming, outdoor swimming, visiting a theme park or activities park, cycling, sailing / yachting / canoeing / speed boating / rowing, mountain biking, horse riding / pony trekking, water sports, golfing (not mini-golf), watching any sport / sporting event, rock climbing / mountaineering / abseiling / caving / potholing, fishing, and tennis.*




- Within Cumbria Tourism Visitor Survey the following are defined as ‘cultural activities’ (SQ33): *visiting towns / villages; touring around / sightseeing by car; visiting pubs; visiting restaurants; shopping; visiting heritage attractions; lake cruises / motor boat cruising; visiting art galleries, artistic / cultural exhibits, museums; visiting gardens; visiting other types of visitor attractions; watching performing arts; attending an event; watching any sport / sporting event; and photography.*



c. Opportunities for quiet enjoyment


The status of tranquillity (SQ36) is presented in map 4.1.5. There are now well known links between health and wellbeing and visits to protected landscapes. Encouragingly, given the increase in visits, the proportion of visitors who feel health and wellbeing benefits (SQ37) has increased from:

- 85% of visitors feeling physically better in 2015 to 93% in 2018.
- 80% of visitors feeling either ‘very much so’ or ‘quite a lot better’ mentally whilst visiting the Lake District in 2015 to 94% in 2018.

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO17	Percentage of visitors who stay one or more nights	16.5% (2013)	Increasing		High	17.5% (2017)	STEAM Report Cumbria Tourism
VO18	Average length of stay	5.8 nights	Increasing		High	5.34 nights (2017)	2018 Cumbria Tourism Visitor Survey
VO19	Proportion of visitors to attractions in showcase areas	76% (2014)	Increasing		High	75% (2017)	Attractions Survey – Cumbria Tourism
VO20	Proportion of visitors in off season months (October to March)	36% (2013)	Increasing		High	34% (2017)	STEAM Report Cumbria Tourism

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
SQ28	Proportion of visits that are to cultural attractions	32% (2014)	Increasing		As defined High	29% (2017)	From VisitBritain - Survey of Visits to Visitor Attractions; Cumbria Tourism - Visitor Attractions Monitor. For definition of 'cultural attraction' used see 3.2.2 above.
SQ31	Number of visitors.	15.5 million (2013)	No significant change		High	19.17million (2017)	STEAM Report Cumbria Tourism
NEW	% of visitors aged 16 to 34 years	New Indicator 15% (2006)	Increasing		High	Cumbria – 13% (2017)	2018 Cumbria Visitor Survey Cumbria is underperforming in this market against the national average and against competitors, our market share is declining.
*SQ32	Visitors partaking in activities which involve experiencing the landscape and environment. <i>(The value, perception and enjoyment of this quality in the English Lake District - The perception & enjoyment of a largely open landscape).</i>	31% (2012)	Increasing proportion of total number of visitors	No Change	High	31% (2017)	2018 Cumbria Visitor Survey
*SQ33	Visitors partaking in cultural	27% (2012)	Increasing proportion	No Change	High	27% (2017)	2018 Cumbria Visitor Survey

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
	activities. (<i>Key literary associations with the Landscape, and Key artistic associations with Landscape</i>)						
*SQ34	Visitors partaking in adventure activities. (<i>Key associations with climbing and the outdoor movement. Surviving landscape which inspired early climbing, outdoors recreation and the early outdoor holiday movement</i>)	9% (2012)	Increasing proportion		High	11% (2017)	2018 Cumbria Visitor Survey
SQ35	% of total length of footpaths and other rights of way that are easy to use by the general public.	78.2% (2015)	Increasing		High	74.4% (2017/8)	Annual Monitoring Report, Lake District National Park Authority




Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
*SQ36	Status of tranquillity. (<i>Tranquillity of the fells, valleys and lakes gives a sense of space</i>).	Map (Fig. 41 (Partnership Plan))	No decrease	-	Data not updated since 2006	See map 4.1.4	Campaign for the Protection of Rural England.
*SQ37	Visitors who feel health and wellbeing benefits. (<i>The value of landscape for restoring the human spirit; The intrinsic value of scenic and cultural landscape which transcends traditional notions of property, Tranquillity of the fells, valleys and lakes gives a sense of space and freedom</i>)	felt physically better 85%; felt mentally better 80% (2015)	Increasing		High	felt physically better 93%; felt mentally better 94% (2017)	2018 Cumbria Visitor Survey






3.2.3 Underpinning a prosperous economy

The Partnership Plan's strategies aim to help the economy prosper and ensure the Lake District is a good place to start and run a business. Strategies support necessary infrastructure, access to skills and measurement of business start-ups. A summary of progress can be described as:

- In terms of provision of infrastructure progress is generally positive. In common with the rest of Cumbria, and indeed the UK, there has been considerable progress in increasing coverage of superfast broadband. The percentage of premises with access to superfast broadband (VO21) at reasonable speeds has more than doubled from 40% in 2015 to 84% in 2018. However the Park (along with other rural areas) is still lagging behind Cumbria as a whole (currently at 92% coverage) which in turn is slightly below the UK average. Work is still required to fully identify mobile phone 'not spots' (VO22) after the DCMS project closed before completion of the work. Local scale renewable energy generation (VO23) has almost tripled from 13 megawatts in 2015 to 36.7 megawatts in 2018.
- Data suggests that there has been reasonable progress in ensuring a continuing supply of employment land (VO25 and VO26) and in the creation of new employment space within Rural Service Centres (VO31). However, although there has been the creation of net new employment space (VO27) this has fallen below the Local Plan target.
- The Lake District population continues to have an ageing demographic, with the estimated proportion of people of working age (16 to 64 years old) (VO28) living in the Lake District falling from 24,812 people in 2011 to around 23,300 in 2017. These falls are similar to those experienced in Cumbria as a whole but are from a lower base. Between 2001 and 2017 the proportion of the population aged 65+ years old living in the Park increased from 21.7% to 29% (compared to 18% in England as a whole).
- Businesses in the Park are facing increasing challenges recruiting skilled staff. The reported scale of skills gaps (VO29) increased by 4% in the last five years. In addition to the challenge of affordable workers' housing and poor transport links this makes recruiting and retaining a stable workforce increasingly challenging. Whilst these are clearly issues shared with wider Cumbria they are considerably more acute in the National Park. Work carried out for the new Cumbria Local Industrial Strategy identified a potential future labour supply gap across all of Cumbria of several tens of thousands of workers which will make it even harder to recruit into the National Park.
- Although the impact of EU exit is unclear the hospitality and retail sectors in the Lake District have been particularly reliant on migrant labour from the EU. There is a strong potential that any future migration restrictions could impact local businesses particularly those operating in the service industry sector.

- There is no up-to-date information on the business start-up rate (VO30) in the Lake District. Data collected for the Local Plan review suggests that the stock of businesses in the Lake District has remained more or less static. At a Cumbria level work on the Local Industrial Strategy (LIS) has identified a lack of entrepreneurialism and low rates of business start-ups as a Cumbria wide issue. This is likely also to be the case in the National Park.
- Public transport services to Rural Service Centres (VO32) by bus train and boat are presented in section 4.2.8.

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO21	Percentage of premises with access to superfast broadband	39.7% (2015)	Increasing		High	84% Fibre Live - 10Mbps (of which 83.7% is Superfast Live 24Mbps - Nov 2018).	BT Openreach Fibre Live = access to at least 10Mbps through fibre infrastructure. Cumbria County Council consider 24Mbps 'superfast'. Superfast is subset of the fibre live figures.
VO22	Number of DCMS identified mobile phone 'not spots' (areas where people cannot access mobile services)	18 (2015)	None	-	Research required	Not available	Government project not completed; currently no alternative data available.
VO23	The generation capacity of local scale renewable energy generation schemes	13 megawatts (estimate) (2013/14)	Increasing		High	36.7 megawatts (estimate) (2017/18)	Annual Monitoring Report, Lake District National Park Authority
VO25	Amount of available employment land (to meet Local Plan requirements)	8.5ha (2013/14)	No significant change		High	9.5ha (2017/18)	Annual Monitoring Report, Lake District National Park Authority




Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO26	Percentage of allocated employment land partially or fully completed	9% (2013/14)	Increasing		High	9% (2017/18)	Annual Monitoring Report, Lake District National Park Authority
VO27	Net creation of employment floor space (to meet Local Plan requirements)	1,758 m ² (2015)	No decrease		High	2,650 m ² (2017/18)	Annual Monitoring Report, Lake District National Park Authority
VO28	The working age population	61% or 24,812 people (2011)	No decrease		High	59 % (2011)	Cumbria Intelligence Observatory, Cumbria County Council. Based on custom build Lake District area of KS102EW data set.
VO29	The number of businesses that report skills gaps	10% (2013)	Decreasing		High	14 % (2015/16)	Cumbria Business Survey, Cumbria Intelligence Observatory, Cumbria County Council, & Cumbria LEP Local Industrial Strategy development
VO30	The number of new businesses	380 (2013)	Increasing	-	New data source required	Not available	Previously Cumbria Business Survey, Cumbria Intelligence Observatory, Cumbria County Council but no longer available
VO31	Net annual creation of employment floor space within Rural Service Centres (to meet Local Plan requirements)	211 m ² (2015)	No decrease		High	454 m ² (2017/18)	Annual Monitoring Report, Lake District National Park Authority
VO32	Public transport services to Rural Service Centres	See Appendix 12 (Partnership Plan)	Increasing	-	High	See section 4.2.8 - daily public bus and train transport, and boat services (2018)	Cumbria County Council


3.3 World Class Visitor Experience

3.3.1 Visitor satisfaction and access to information

Visitor experience and satisfaction has improved during the last five years across a range of indicators that measure satisfaction with the public realm and amenities encountered (VO37), accommodation across a range of types (VO35) and an overall experience with 98% of visitors reporting this as 'good or very good' (VO33).

This is complemented by an increase in the percentage of visitors who were able to access the information they required for their visit (VO38). From 58% saying it was very easy in 2015 to 75% in 2018. Over that period all visitor responses (100%) said they were able to access the information required for their visit.

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO33	Visitors rating of their experience as 'good' or 'very good'	94% (2012)	100%		High	98% (2017)	2018 Cumbria Visitor Survey
VO35	Satisfaction by accommodation type (Serviced, Self-catering, Caravan & Camping, Hostels) in Cumbria rated as 'good' or 'very good'	95% serviced; 94% caravan and camping; 100% hostels (2015)	100%		High	96% for serviced; 97% for self-catering; 97% for caravan and camping; 100% for hostels (2017)	2018 Cumbria Visitor Survey
VO37	Visitor satisfaction with the quality of the public realm and amenities	74% (2015)	Increasing		High	77% (2017)	2018 Cumbria Visitor Survey


Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO38	The percentage of visitors who were able to access the information they required for their visit	100%, very easy 58% (2015)	Increasing		High	100%, very easy 75% (2017)	2018 Cumbria Visitor Survey


3.3.2 Visitor spend and visitor giving

Data suggests that although the number of staying visitors has increased in real terms the average spend per day, and so per visit, has been falling. There are likely to be a number of factors influencing this, possibly including the squeeze on UK households' real disposable income. Overseas visitors spend an average of £810.76 per party per trip, compared to UK visitors who spend £659.15 per party per trip. The average number of visitors in a party has increased to 3.86 people (from 3.09 in 2015).

Spending on local produce has increased. Data shows that in 2015 66% of visitors consumed local produce and 73% purchased local products (VO34). In 2018 this increased to 92% and 89% respectively.



Whilst we are not yet achieving our targets, visitor giving (VO36) in the Lake District this has increased from £102,148 (2015) to £136,783 (2017/18) or can be expressed as 0.007 pence donated per visitor (at 19.17 million visitors). With new and innovative contribution collection technologies in development these figures provide useful baselines against which to measure future increases.

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO34	% of visitors consuming and purchasing local produce	66% consuming 73% purchasing (2015)	Increasing		High	92% consuming local produce, 89% purchasing local produce (2017)	2018 Cumbria Visitor Survey

VO36	Amount of money collected per visitor head from voluntary contributions to Lake District Foundation inc. funds contributed to Fix the Fells.	£102,148 raised / 17.32mill = 0.006p / head (2105)	Increasing		High – but see notes	£136,783 raised / 19.17mill = 0.007p / head (2017/18)	Lake District Foundation. In future an expansion of this indicator to capture funds given by visitors to support other conservation activities e.g. through National Trust appeals would give a fuller picture of the contribution this sort of funding makes to the Park.
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3.3.3 Visitor travel



Most visitors (89%) arrive to the Lake District in a private motor vehicle (VO39), an increase of 6% since 2015. Encouragingly the percentage of visitors whose main mode of transport during their visit is private motor vehicle (VO40) has reduced from 85% (2006) to 72% in 2017. 10% of staying visitors used GoLakes to find out about visiting Cumbria.

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO39	% of visitors whose main mode of transport to the Lake District is private motor vehicle	86% (2012)	Decreasing		High	89% (2017)	2018 Cumbria Visitor Survey
VO40	% of visitors whose main mode of transport during their visit is private motor vehicle	85% (2006)	Decreasing		High	72% (2017)	2018 Cumbria Visitor Survey

3.4 Vibrant Communities

3.4.1 Access to services and employment

Lake District rural service centres, such as Coniston, Keswick and Windermere, are generally thriving and maintaining a core of four to six services (VO43). They have a strong feeling of vibrancy and prosperity, particularly in the larger settlements and offer a good retail mix alongside community facilities. Changes to external factors with an economic or social impact, for example, EU-Exit could soon have an impact on the vitality and vibrancy of a place. Key services are maintained in 11 of the 13 rural service settlements and the 19 of the 21 villages. The number of doctors' surgeries (VO44) has improved slightly with 2 new surgeries. It should be noted that whilst the basic services have largely been maintained, there are concerning trends on housing provision and ageing demographics/supply of labour.



Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO43	Maintain the number of settlements in the National Park with 4, 5 or 6 services from convenience store, meeting place, primary school, public house, post office, doctors surgery	11 Rural Service Centres with at least 6 different services; 17 villages with at least 4 different services (2013/14)	All 13 Rural Service Centres have at least 6 different services and all 21 villages have at least 4 different services		High	11 Rural Service Centres with at least 6 different services; 19 villages with at least 4 different services (2017/18)	Annual Monitoring Report, Lake District National Park Authority
VO44	The number of doctors surgeries	11 (2013/14)	No decrease		High	13 (2017/18)	Annual Monitoring Report, Lake District National Park Authority
VO45	The number of people of work age claiming job seekers allowance	0.4% compared to 2.4% in the North West (2014)	Decreasing	-	New or equivalent data source / indicator required	Not available	Cumbria Intelligence Observatory, Cumbria County Council



3.4.2 Housing

The greatest issue of concern to the maintenance of vibrant communities in the Lake District is that of access to affordable housing (VO47). Between April 2011 and March 2016, 384 new houses (77 per annum) were built against a target of 300 (VO46), providing new housing to meet local need including affordable housing, agricultural workers dwellings, 'tied accommodation' to support local businesses, and homes for those with a local need.

With 87% of the existing housing stock currently unfettered, permanent occupancy restrictions (VO49) on 98% of all new homes were approved in 2018. This is considered necessary to ensure they are not lost to the second homes market. The affordability ratio (of income to house price) has ranged between from 10:1 up to 12:1. The need for more affordable homes remains acute.

There is immense pressure on the existing housing stock in many areas of the National Park. This issue is due in part to those buying second homes or homes to be used for holiday letting purposes. It is generally recognised that if the percentage of second homes is more than 20% this appears to affect the sustainability of a community. According to the 2011 Census approximately 24% of all dwellings in the National Park are used as a second home and or holiday let. Using information provided by the District Councils Revenues and Benefits department, at a Parish scale, the picture looks even more concerning with the percentage of properties not used as permanent residencies ranging from 30.98% to 59.45%, see section 4.2.9, for further details.




Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO46	Number of housing completions to meet local needs (to meet Local Plan requirements)	77 (2013/14)	No decrease		High	93 (2017/18)	Annual Monitoring Report, Lake District National Park Authority
VO47	Proportion of all new housing that is affordable	54% (2013/14)	Increasing		High	18% (2017/18)	Annual Monitoring Report, Lake District National Park Authority. Whilst officially affordable there is still a disparity between a significant proportion of the local

							population and the cost of housing.
VO48	Maintain a supply of available housing land (to meet Local Plan requirements)	9.97ha (2013/14)	No significant change		High	7.94 ha (2017/18)	Annual Monitoring Report, Lake District National Park Authority
VO49	% of new dwellings approved with a permanent occupancy restriction	97% (2013/14)	Increasing		High	98% (2017/18)	Annual Monitoring Report, Lake District National Park Authority
NEW	% of properties dwellings in the National Park used as a second home and/or holiday let	New Indicator	Decreasing	-	High	Approximately 24%	2011 Census, to be repeated in 2021.
NEW	% of properties not used for permanent residential use by Parish	New indicator	Decreasing	-	High	Various by Parish see section 4.2.9	Information provided by the District Councils Revenues and Benefits department to Lake District Local Plan Review Housing Evidence and Main Issues Paper - July 2017.

3.4.3 Community plans and green spaces

There are 40 Parishes with emerging or adopted Community Led Plans (VO41) within or partially within the National Park. The National Park is currently supporting two Neighbourhood Plans (VO41a) developed by Matterdale Parish and Coniston Parishes.

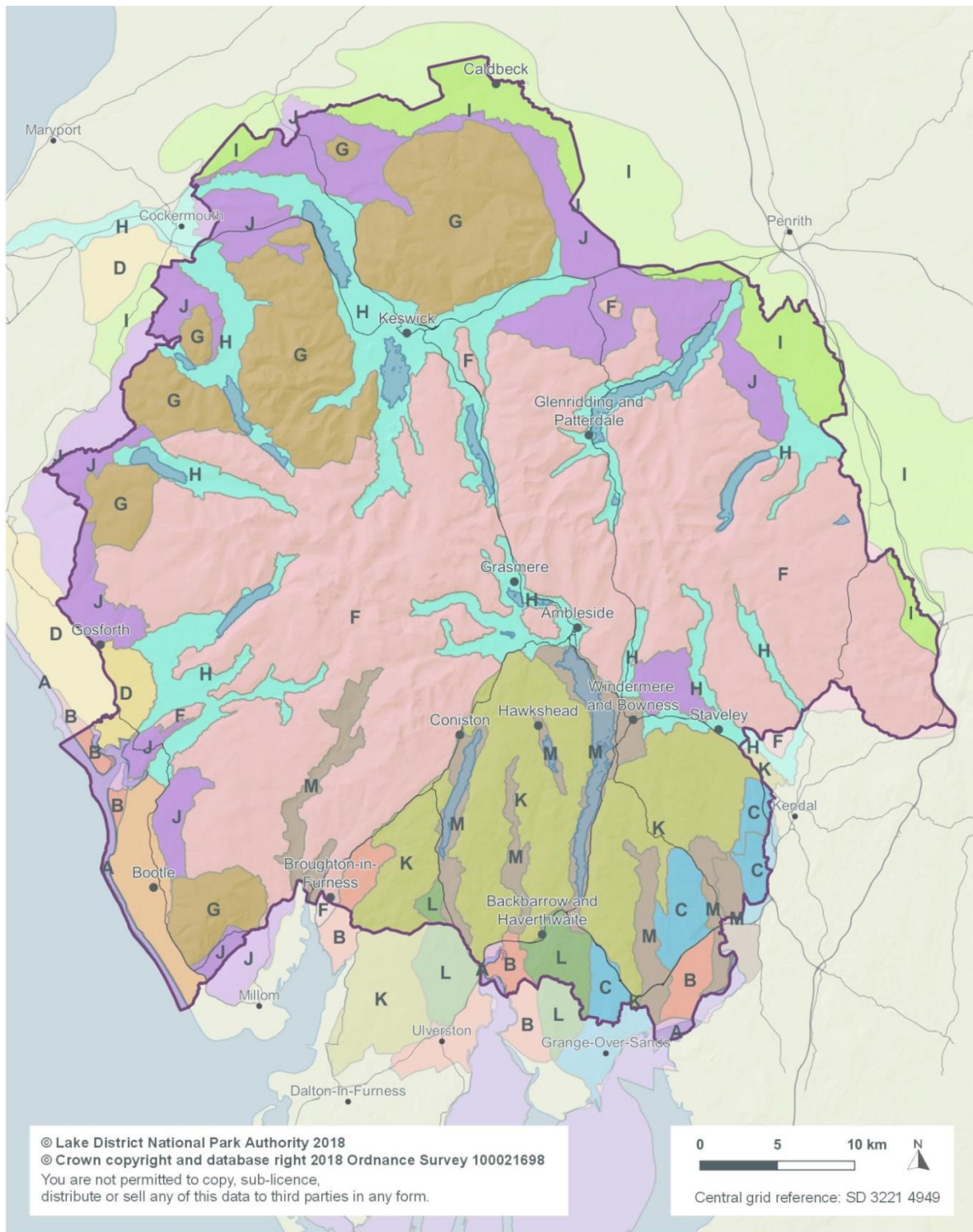
Reassuringly, the 252.78 ha of Recreation and Local Green Spaces as designated in the Local Plan (VO50) has not changed from 2015 to 2018

Indicator Ref	Indicator	Baseline	Ideal Status	Trend	Confidence in validity of data	2018 or most recent data	Comments
VO41	Number of parishes with emerging or adopted Community Led Plans or Neighbourhood Plans	29 (2015)	Increasing		Reasonable	40 (2018)	Action with Communities in Cumbria, and LDNPA
VO41a	Number of Neighbourhood Plans	0 (2015)	To be determined		High	2 (2018)	LDNPA Local Plan topic paper
VO50	Area of Recreation and Local Green Spaces as designated in the Local Plan	252.78 ha (2015)	No decrease		High	252.78 ha (2017/18)	Annual Monitoring Report, Lake District National Park Authority

4 Monitoring framework mapped data

This presents the data that cannot be presented in tabular or text form above.

4.1.1 Landscape Character Area Types SQ1

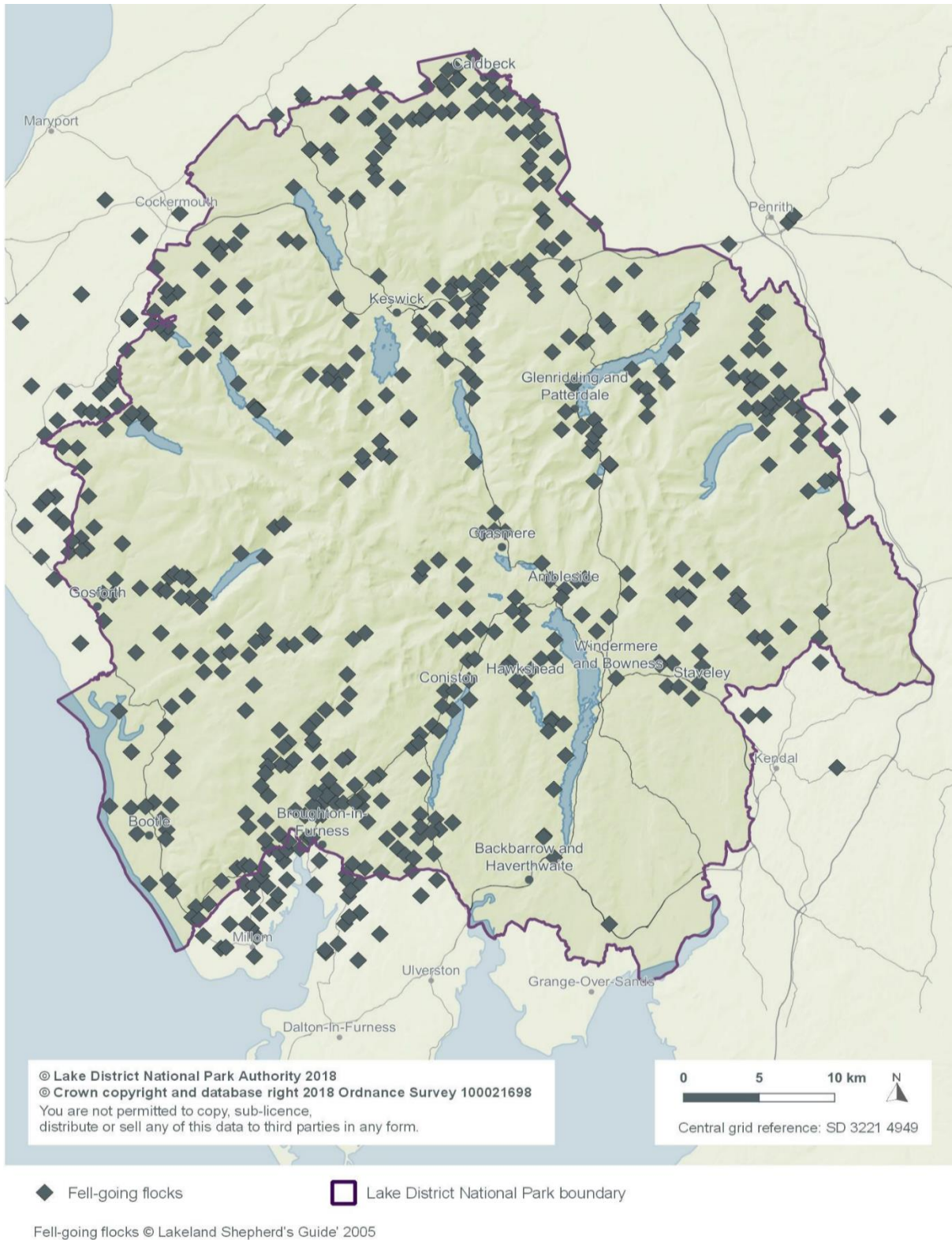


Lake District Landscape Character Types (A-M)

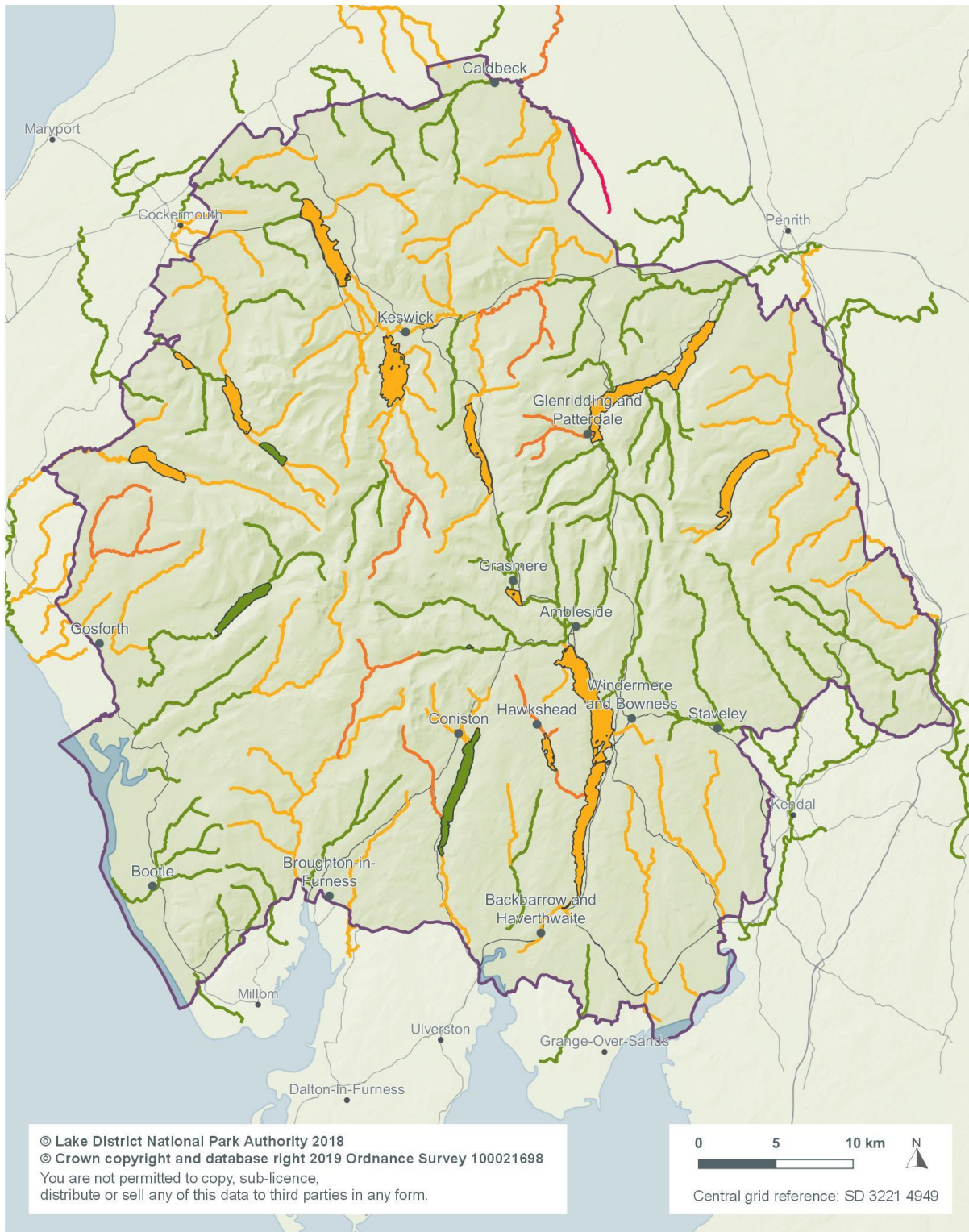
- | | | | |
|---|--|---|---|
| A Estuary and Marsh | D Lowland | H Upland Valley | L Low Fell Fringe |
| B Coastal Margins | E Coastal Sandstone | I Upland Limestone Farmland | M Lowland Valley |
| C Coastal Limestone | F Rugged/Craggy Volcanic High Fell | J High Fell Fringe | |
| | G Rugged Angular Slate High Fell | K Low Fell | |

Draft Landscape Character Assessment © Lake District National Park Authority 2018

4.1.2 Fell-going Flocks SQ9



4.1.3 Condition of waterbodies – WFD water quality SQ21



Lakes and Tarns - Ecological Status

- High
- Good
- Moderate

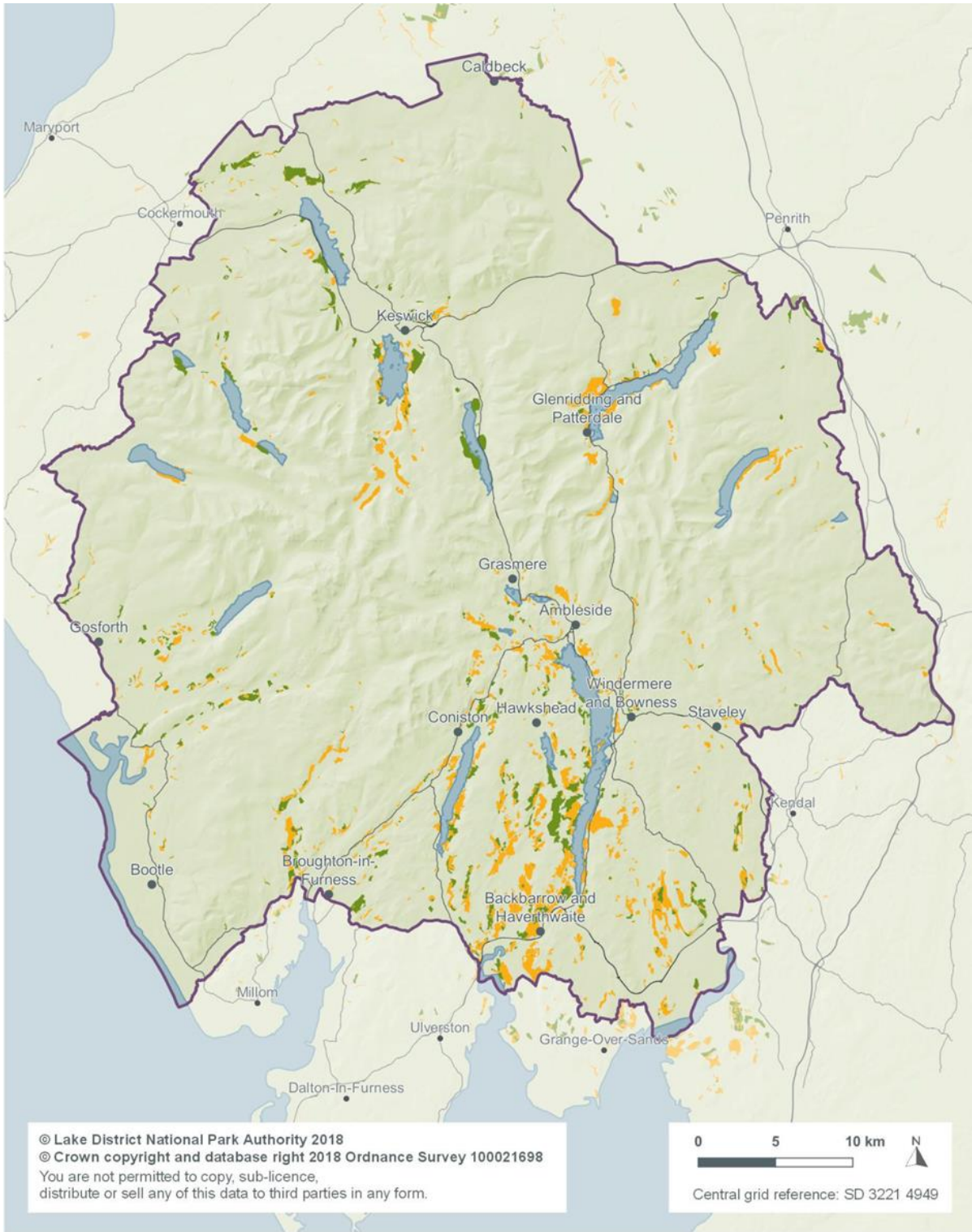
Rivers - Ecological Status

- Good
- Moderate
- Poor
- Bad

Lake District National Park boundary

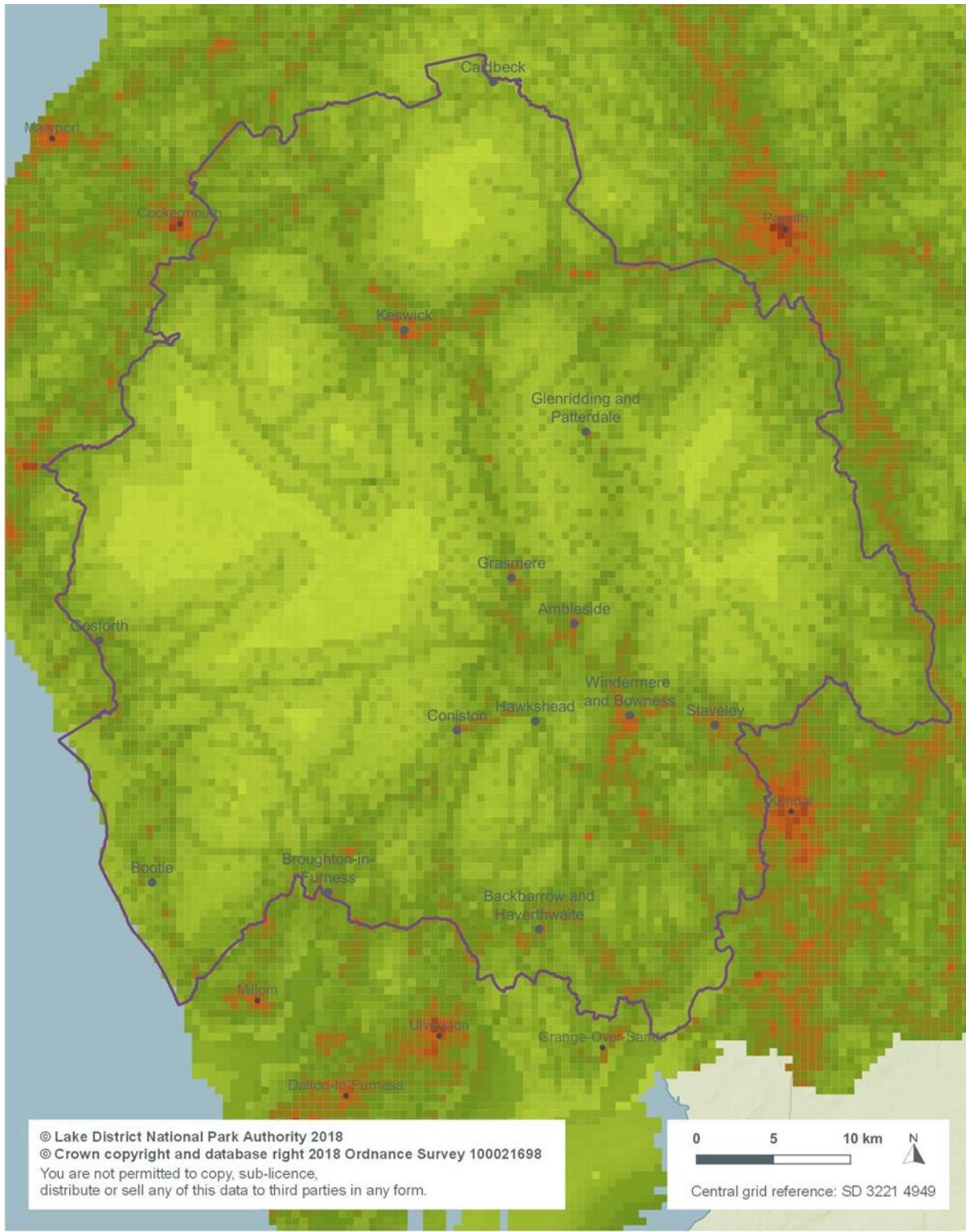
Water quality data
 (Water Framework Directive 2016)
 © Environment Agency 2018

4.1.4 Area of Ancient Semi Natural Woodland and replanted Ancient Semi-Natural Woodland SQ22 and SQ22a

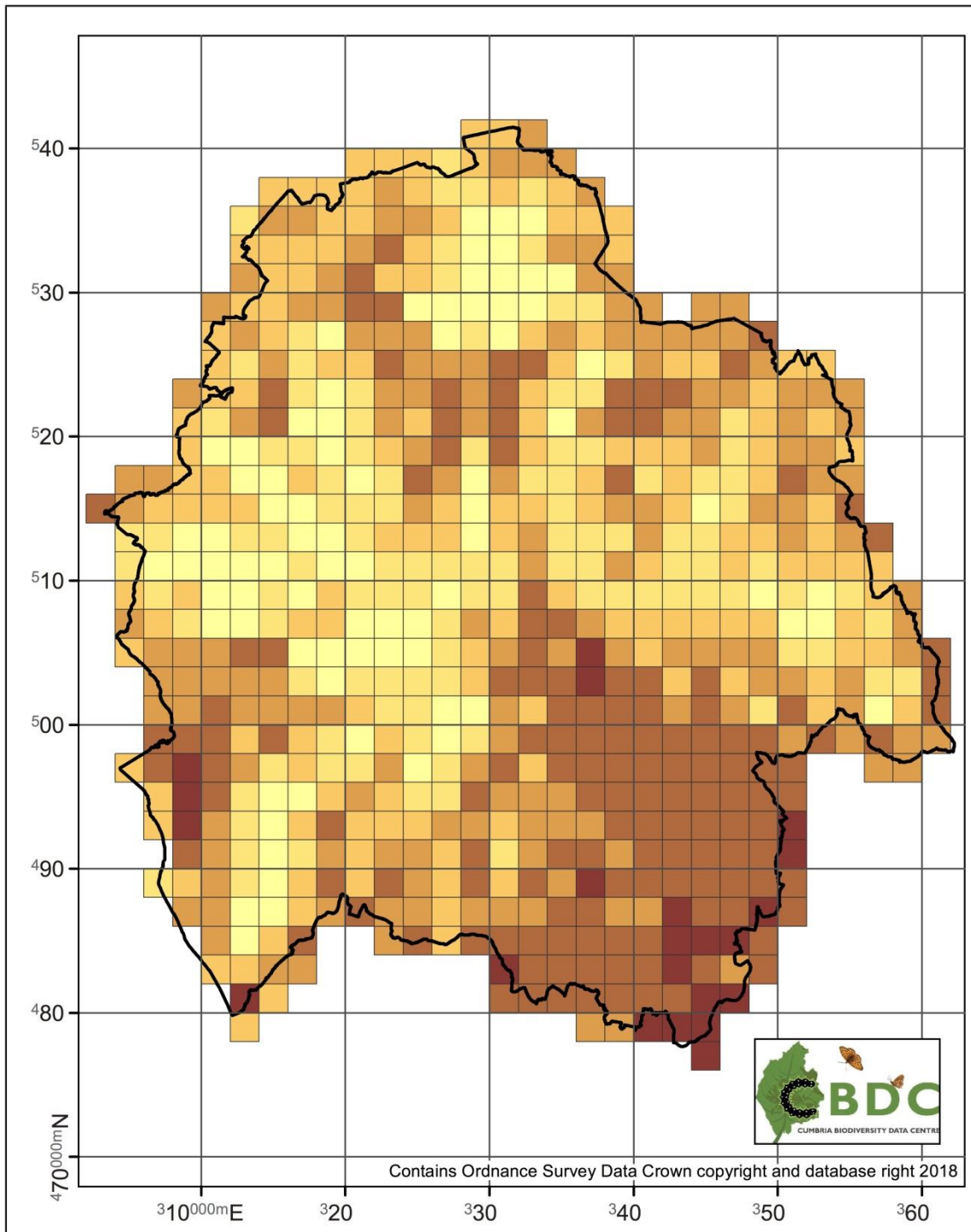


- Lake District National Park boundary
 - Ancient Semi-Natural Woodland
 - Replanted Ancient Woodland
- Ancient Woodland Inventory © Natural England 2018 copyright.

4.1.4 Tranquillity Map SQ36



4.1.5 Flora of Cumbria diversity of vascular plant species



<p>Flora of Cumbria Group 1974-1997 Records</p>	<p>Count of Records Per Tetrad</p> <table border="0"> <tr> <td>52 - 127</td> <td>249 - 300</td> </tr> <tr> <td>128 - 192</td> <td>301 - 372</td> </tr> <tr> <td>193 - 248</td> <td>373 - 510</td> </tr> </table>	52 - 127	249 - 300	128 - 192	301 - 372	193 - 248	373 - 510
52 - 127	249 - 300						
128 - 192	301 - 372						
193 - 248	373 - 510						
<p>Map was produced for LDNP State of the Park Plan Cumbria Biodiversity Data Centre - www.cbdc.org.uk</p>							

4.2 Monitoring framework tabulated and text data

4.2.1 Landscape Character Assessment SQ1

The Landscape Character Assessment (LCA) has been revised and approved by the LDNP Partnership's Landscape Monitoring Group. The document will be undergoing a consultation process in line with the Local Plan review timescale with a view to being adopted as a Supplementary Planning Document (SPD). New maps have been created of the Areas of Distinctive Character (ADCs) and Landscape Character Types (LCTs) to include the 2016 extension area. The LCA now applies to the entire Park. The table of landscape condition below (quoted in the WHS Nomination document) has been reviewed against the revised LCA and updated where appropriate. The revised map (map 3.2.1) and this condition table are draft until public consultation has been completed and the revised LCA is accepted as a supplementary planning document. As stated in the introduction we recognise that this summary table does not strongly represent descriptors of the condition of World Heritage Site Outstanding Universal Value for the Lake District. This will be addressed through the Partnership's developing landscape monitoring approach, and the Partnership's World Heritage Site Steering and Technical Advisory Groups to meet World Heritage Site monitoring requirements and inform the development of the next management plan.

Landscape Character Assessment – Summary of Condition

Character type	Overall condition	Summary of condition
A – Estuary and Marsh Landscape Character Type	Good	The condition of the Estuary and Marsh Landscape Character Type is generally good. The closely grazed, fine sward saltmarshes, mudflats, remnant hedges and other habitats enrich the ecological condition of this landscape. There are some elements showing signs of decline in places, including the loss of some hedgerows, set back from the coastline.
B – Coastal Margins Landscape Character Type	Moderate	The overall condition of the Coastal Margins Landscape Character Type is considered to be moderate. The semi-natural vegetation within this landscape is occasionally grazed or mown, contributing to ecological diversity. There is, however, evidence of decline within this landscape, where cobble stone banks have been replaced by wire fences, leading to a loss of traditional vernacular landscape pattern. Run down industrial buildings or dilapidated agricultural buildings are also detractors. Decline in the condition and extent of hedgerows within this landscape is also evident, particularly on the coastal moorlands, where they are tending to become overgrown or gappy. There is also evidence that the edges of some of the moorlands are drying out due to drainage.
C – Coastal Limestone	Good	The overall condition of the Coastal Limestone Landscape Character Type is considered to be good.

Character type	Overall condition	Summary of condition
Landscape Character Type		The historic pattern of fields bounded by stone walls is generally intact, although in places, neglect and loss of field boundaries is evident. The patchwork of semi-improved pasture, semi-natural woodland (with pockets of limestone heath and juniper scrub) and limestone pavements contribute to good ecological condition overall, though some species rich pastures are declining owing to lack of mixed grazing.
D – Lowland Landscape Character Type	Good	The overall condition of the Lowland Landscape Character Type is considered to be good. Most landscape features are generally well managed. Patches of unmanaged woodland are, however, visible and there is also evidence of neglected stone walls and loss of hedgerows, which have been replaced by fences.
E – Coastal Sandstone Landscape Character Type	Moderate to good	The overall condition of the Coastal Sandstone Landscape Character Type is considered to be moderate to good. The rolling pasture fields are generally in moderate ecological condition, however, there is evidence of the loss of traditional hedgebanks that delineate field boundaries. This has led to a weakened landscape pattern.
F – Rugged/ Craggy Volcanic High Fell Landscape Character Type	Poor to moderate	The overall condition of the Rugged/ Craggy Volcanic High Fell Landscape Character Type is considered to be poor to moderate, due mainly to historic overgrazing of montane heathland habitats and blanket bogs. The condition, composition and structure of these habitats is, however, beginning to change with lower stocking rates and grazing levels increasing white moor grass, natural scrub and woodland regeneration. Much of the remaining semi-natural woodland has a poor age structure and suffers from grazing, preventing regeneration. Scrub is starting to develop in some areas of fell, often in enclosed areas, where grazing pressure has been reduced within this Landscape Character Type. In places, lack of stone wall management and replacement with fences is a visual detractor. Upland path erosion is also increasingly a visual detractor despite efforts to restore the worst affected areas.
G – Rugged/ Angular Slate High Fell Landscape Character Type	Poor to moderate	The overall condition of the Rugged/ Angular Slate High Fell is considered to be poor to moderate, though improving. As a result of historic overgrazing, the condition of acid grassland, blanket bog and rough grassland is generally poor though recovery is beginning as a result of recent reductions in grazing.

Character type	Overall condition	Summary of condition
		The condition, composition and structure of these habitats is, however, beginning to change with lower stocking rates and grazing levels leading to improved mosaics of upland vegetation. In places, lack of stone wall management, and replacement with fences is a visual detractor. Upland path erosion is also a visual detractor. There is generally good survival of historic and archaeological features.
H – Upland Valley Landscape Character Type	Good	The overall condition of the Upland Valley Landscape Character Type is considered to be good, with high water quality within most lakes, rivers and waterbodies, rich biodiversity in the largely intact hedgerow network and patchwork of woodlands, and a strong archaeological record. There are, however, some elements of declining condition: some hedgerows, hay meadows, walls, pollards, mature trees and vernacular buildings are in poor condition and evidence of a gradual loss of traditional management is apparent.
I – Upland Limestone Farmland Landscape Character Type	Good to moderate	The overall condition of the Upland Limestone Farmland Landscape Character Type is considered to be good to moderate, resulting from the rich ecological condition of herb-rich calcareous grassland and woodland habitats, becks, rivers and mires and the survival of historic estate features. Woodland and clumps of trees are generally well managed, and there is an intact hedgerow and wall network. There are some elements showing signs of decline in places, particularly the loss and poor maintenance of occasional hedgerows and replanting of historic parkland with conifers. Much of the remaining parkland is in moderate condition with key features lacking maintenance and a lack of replanting of parkland trees.
J – High Fell Fringe Landscape Character Type	Good	The overall condition of the High Fell Fringe Landscape Character Type is considered to be generally good. There are relatively few sites important for their ecological habitats in this type as it is predominantly improved agricultural land, but there are numerous sites of historical and archaeological interest, including prehistoric funerary cairns, field systems, hut circles, stone circles and Roman forts. The stone walls and hedgerow network are generally well maintained. However, there is some evidence of the loss and poor maintenance of some hedgerows and loss of field boundary trees. The limited areas of parkland and

Character type	Overall condition	Summary of condition
		designed landscapes in this type are generally in good condition.
K – Low Fell Landscape Character Type	Good	The overall condition of the Low Fell Landscape Character Type is considered to be good. There is rich biodiversity within the large areas of semi-natural and coniferous woodland (much of which is on ancient woodland sites) and patchwork of rough grassland, semi-improved pasture, small broadleaved and coniferous copses, rock outcrops, heathland, tarns and becks, small wetlands, mires and bracken. The landscape pattern of dry stone walls (with a predominance of local limestone and slate) is strong. Parkland and designed landscapes are generally in good condition though there is a need to plan for long term replacement of trees. In places, there is evidence of decline of stone walls and occasional loss of hedgerow field boundaries.
L – Low Fell Fringe Landscape Character Type	Good	The overall condition of the Low Fell Fringe Landscape Character Type is considered to be good. Full hedgerows or intact stone walls often frame fields, and pockets of woodland, scrub and mosses enrich the ecology and visual interest of this Landscape Character Type. There are some elements showing signs of decline in some places, particularly the loss or poor maintenance of stone wall and hedgerow field boundaries. Overall, however, there is a predominantly intact landscape pattern throughout this Landscape Character Type.
M – Lowland Valley Landscape Character Type	Good	The overall condition of the Lowland Valley Landscape Character Type is considered to be good, with its high water quality (within numerous rivers, streams and lakes) and rich biodiversity in woodland and other habitats. The largely intact, strong pattern of hedgerows and stone walls delineating field boundaries and mature, well maintained parkland landscapes further contribute to the predominantly good condition of landscapes within this Landscape Character Type. Occasionally there is evidence of decline in the management of stone walls and hedgerows.

4.2.2 Landscape Change SQ2

The LDNPP Landscape Monitoring Working Group is commissioning an options appraisal and recommendations report for the development of a future Landscape Monitoring approach that, where appropriate, incorporates the monitoring requirements of World Heritage Site (WHS) status (where the English Lake District's Outstanding

Universal Values are landscape based). This will entirely be consistent with the national approach for monitoring by National Character Area.

4.2.3 Condition of SSSIs SQ18

RAG summary of the collated data.

- Red: <50% in the condition category in 2017
- Amber: 50-75% in the condition category in 2017
- Green: >75% in the condition category in 2017

It should be noted that up until 2010, Natural England recorded units as ‘unfavourable recovering’ if there was an agreement or other plan in place that was expected to deliver recovering condition. However, for such units to continue to be recorded as ‘recovering’, actual recovery of features needs to be observed on site. As units are reassessed, recorded condition of some are likely to alter. Favourable condition tables for sites have also been developed and refined, resulting in better quality assessments over time as earlier assessments may have missed key habitat attributes. The Common Standards for Monitoring suggest that ‘all parts of all SSSIs should be assessed at least once every 6 years’. Natural England is not currently meeting this standard due to budget restraints.

Category	Broad Habitat	Description	total area of units assigned to habitat type (ha)	High confidence data		Lower confidence data ⁱ	
				% in Favourable Condition		% in Favourable Condition plus % in Unfavourable Recovering Condition	
				2013	2017	2013	2017
Upland	Bogs	blanket bog	6323	55.9	26.4	96.6	70.7
	Calcareous grassland	on limestone or other mineral-rich soils	150	42.3	21.3	100.0	53.3
	Dwarf shrub heath	heather and bilberry heaths and wet heaths	20359	4.2	6.3	97.5	93.1
	Fen, marsh and swamp	upland flushes, fens and swamps	104	100	100	100.0	100.0
	Rock	rock and scree habitats	1081	16.7	16.8	92.9	98.3
	Montane habitats	low growing vegetation on mountain tops	1363	7.7	7.7	98.8	98.8
Lowland/ Inbye	Bogs	raised bogs	951	10.3	10	67.1	59.8
	Calcareous grassland	on limestone or other mineral-rich soils	407	1.5	1.5	95.6	95.6
	Fen, marsh and swamp	lowland fens, purple moor-grass and rush pasture, reedbeds	707	57.1	60.3	84.1	88.8
	Neutral grasslands	mostly hay meadows	314	53.6	54.5	81.6	85.0
Woodland	Broadleaved, mixed and	semi-natural woodlands	2812	26.6	24.4	79.9	80.0

Category	Broad Habitat	Description	total area of units assigned to habitat type (ha)	High confidence data		Lower confidence data ⁱ	
				% in Favourable Condition		% in Favourable Condition plus % in Unfavourable Recovering Condition	
				2013	2017	2013	2017
	yew woodland						
Freshwater	Rivers and streams		413	4.2	4.1	58.2	59.1
	Lakes and tarns		3320	42.1	42.1	65.7	57.0
Coastal	Littoral sediment	intertidal shingle, gravel, sand and mud	1550	99.7	99.7	100.0	100.0
	Supralittoral sediment	shingle and sand dunes above high water mark	396	9.9	10.9	32.7	49.2
Geological	Earth heritage	geological and geomorphological sites	1855	95.2	95.5	95.3	95.6

SSSI Assessment Explained

All SSSIs are designated for particular features - habitats, species (or assemblages of species) or geological features. An SSSI might have one or many features. Each SSSI is divided into geographical units for assessment purposes. A standard methodology, applied throughout the UK (Common Standards) based on generic guidance for each feature (see <http://jncc.defra.gov.uk/page-2199>) is used to assess SSSI condition. The generic guidance suggests targets for each SSSI feature which are then refined for each site, with site-specific targets are recorded in a 'Favourable Condition Table'. All features of each geographical unit of an SSSI are assessed against the targets defined in the Favourable Condition Table and recorded as being in one of the following condition categories:

- **Favourable – maintained** - when all of its targets are being met.
- **Unfavourable – recovering** – if after damage it has begun to show, or is continuing to show, a trend towards favourable condition.
- **Unfavourable - no change** – if retained in a more-or-less steady state with repeated or continuing damage but neither declining nor recovering. In rare cases, an interest feature might not be able to regain its original condition following a damaging activity, but a new stable state might be achieved.
- **Unfavourable – declining** – this may be as a consequence of a damaging activity but where recovery is possible and may occur spontaneously or if suitable management input is made.

An overall category is then assigned to the unit (which may contain several features). For a unit to be recorded as favourable, all of the features within it must be in favourable condition.

4.2.4 Case Studies

4.2.4.a Case Study – Hay Meadows

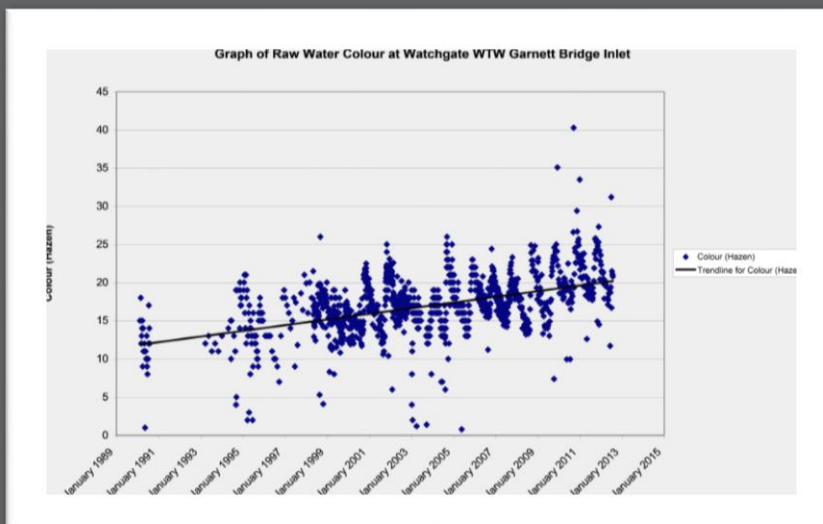
Species-rich hay meadows are classified as neutral grasslands, in the last 50 years the UK has lost 97% of this priority habitat with less than 15,000ha remaining. The latest estimate for the amount of priority habitat species-rich hay meadows in the National Park is a little over 350ha an increase of only 1% since the 1950s.



Approximately 90% of these sites are found within protected and monitored Sites of Special Scientific Interest (SSSI). This makes it easier to gauge how these meadows are doing in terms of their condition and ensuring their management is appropriate and secure. The other 10% of priority habitat hay meadows are recorded outside SSSIs, and whilst these are usually part of an agri-environment scheme such as Countryside Stewardship they do not have the same levels of protection or monitoring. During the last five years agri-environment schemes and bespoke projects such as Cumbria Wildlife Trust's Meadow Life have restored or created nearly 200ha of hay meadows in the Lake District National Park and adjoining areas. If this 200ha was to be added to the Priority Habitats Inventory there would be approximately 550ha (the actual figure likely to be higher) of hay meadows within the Park. If this remains as a permanent change this could be a major contribution to biodiversity particularly as nectar sources for insects and habitat for birds. It is potentially an important addition to the stock of natural assets in the Lake District and is also culturally important. Little monitoring has been carried out to test whether this restoration and subsequent management has been successful and whether the habitat is progressing towards priority habitat type quality. Baseline surveys and post restoration monitoring is undertaken by trained volunteers from Cumbria Wildlife Trust, but due to the scale of the task and lack of resources it can sometimes literally be decades between assessments. This lack of monitoring resource is a widespread issue resulting in poor habitat condition information, and a real challenge in assessing the health of the environment. If successful this sort of restoration is vital to creating a coherent and resilient ecological network as envisaged in the Lawton review and the Nature Recovery Network outlined in the Government's 25 Year Environment Plan. Perhaps these aspirations offer the opportunity to more fully take stock of our spectacular landscape, wildlife and cultural heritage.

4.2.4.b Case Study – Degraded peat impacts both climate and water quality

United Utilities Lake District catchments contain large amounts of stored carbon within both deep (>0.5m) and shallow (<0.5m) peat soils. Much of this peat is over-laid by non-peat forming vegetation such



as acid grassland rather than peat forming vegetation, such as sphagnum mosses. This compromises the hydrology of the peat soils leading to increased drying in summer and elevated levels of 'colour' in the water supply in the autumn and winter months as the ground becomes wetter. Highly coloured water is caused by the presence of coloured Dissolved Organic Carbon (DOC), in other words the water catchment's degraded and eroded upland peat. A key reason for the predominance of acid grassland is likely to be high levels of grazing which suppresses peat forming vegetation growth and promotes none peat forming vegetation such as the acid grassland species. The combination of grazing and erosion of peat by livestock, with climate change's increasingly extreme weather patterns, and visitor pressure is resulting in loss of this key habitat, decrease in carbon sequestration and deteriorating raw water quality. The figure above shows the steady rising trend in raw water colour at the Watchgate WTW intake from 1990 to 2012. There has also been increased seasonal variability and higher peak levels with high colour events tending to occur during autumn.

4.2.4.c Case Study – Extreme weather impacts on soil

Extreme weather events affecting the Lake District, such as Storm Desmond in December 2015, are projected to increase both in frequency and magnitude as a consequence of predicted climate change. The impacts of extreme flood events on settlements and infrastructure is well documented, but far less is known on how such events impact soil and sediment transfer in the upland catchments of the Lake District. It can take hundreds to thousands of years for soils to develop, accelerated soil loss through erosion during extreme events may have a significant impact on the essential ecosystem services provided by this resource. The transfer of soil during extreme events also impacts upon water quality, and transfers carbon from being locked away in the soil store to being readily available for transfer to the atmosphere, impacting on greenhouse gas mitigation measures.

The first UK study of the impact of an extreme event on geomorphology and sediment transfer has been reported from St Johns Beck by Joyce et al. (2018). Focusing on the impact of Storm Desmond on the floodplain area of the 12km² catchment below Thirlmere Reservoir. Joyce et al. estimate that ca. 6500 tonnes of sediment was mobilised within the channel during the storm, and that in total ca. 6% of the soil and sediment mobilised during the storm was lost from the catchment as a result (see Figure 1). The impacts of the storm on wider sediment and hillslope transport remain unquantified, but it is clear that significant localised erosion and mass-movement of sediment and soil occurred during this single event.

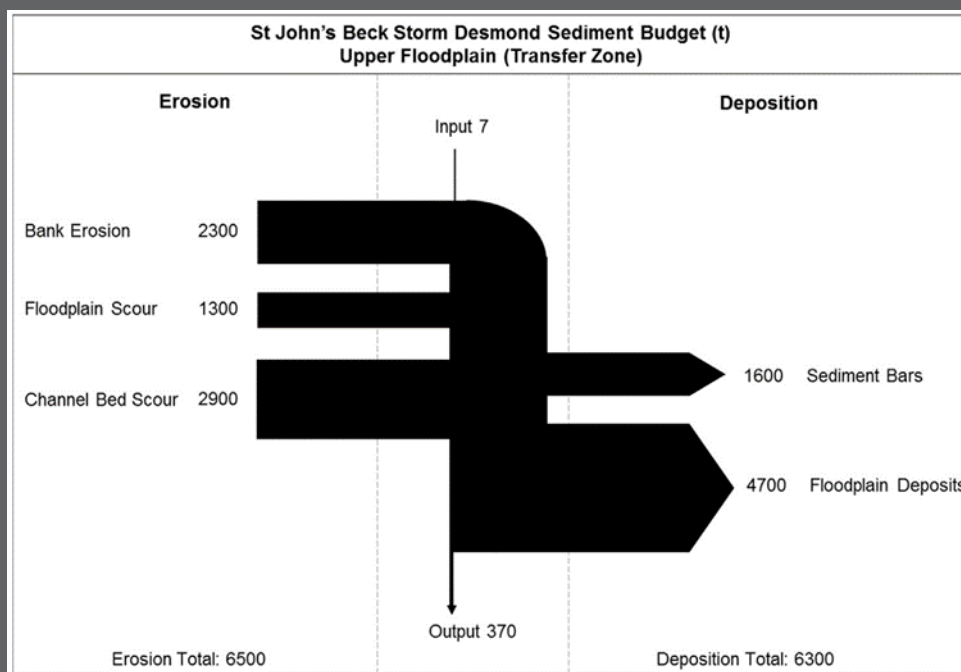


Figure 1: Estimated sediment budget from the upper floodplain area of St Johns Beck (from Joyce et al., 2018)

Of particular concern is the vulnerability of shallow peat, which blankets much of the higher ground of the Lake District. Peatlands are the most important soil store for carbon. Shallow peatlands, where the surface peat layer is less than 40cm deep, are vulnerable to drying out in summer conditions. The surface desiccates and cracks becoming more readily erodible, particularly during intense rainfall events. Whilst anecdotal evidence suggests that erosion of such shallow upland peats in the Lake District is increasing, there is currently no systematic monitoring of this carbon store.

(Joyce, H. M., Hardy, R. J., Warburton, J., & Large, A. R. G. (2018). Sediment continuity through the upland sediment cascade: geomorphic response of an upland river to an extreme flood event. *Geomorphology*, 317, 45–61).

4.2.5 A survey of the status of the lakes of the English Lake District: The Lakes Tour 2015

The data presented here is a partial representation of some key trends in a number of the indicators that were measured between 1984 and 2015. More detailed data and analysis can be found in the full report *Maberly et al, Centre for Ecology and Hydrology and Environment Agency report to United Utilities, April 2016*.

Summary data is presented here on just 3 of the many indicators measured:

- **Total Phosphorous:** the biological productivity of the major English Lakes is primarily controlled by the availability of phosphorous. Therefore changes in phosphorous levels (resulting from agricultural fertilizers and manures and also from sewage) have major impacts on lake biology.
- **Chlorophyll a:** concentrations of Chlorophyll a give an estimation of phytoplankton biomass (algae and other tiny organisms that float in the water column and make their food by photosynthesis). Phytoplankton are sensitive and responsive to ecological conditions in lakes including nutrients and temperature.
- **Secchi depth:** is a measure of water transparency. Generally speaking, greater transparency means a cleaner lake. Reduced Secchi depths are associated with higher phytoplankton levels and also higher levels of particulate material washed in from catchments or re-suspended within the lake.

		Improvement means reduction in Phosphorous levels	Improvement means reduction in Chlorophyll a levels	Improvement means greater Secchi depth
Lake	Characteristics	Total Phosphorous	Chlorophyll a	Secchi depth
Bassenthwaite	Large and shallow, short retention time	Slight improvement since 2000	Slight improvement since 2000	Slight improvement since 2000
Blelham Tarn	Small lake with relatively intensively managed catchment	Variable	Deterioration since 2000	Stable (but poor)
Brothers Water	Small lake with fairly high altitude catchment	Stable	Stable	Stable
Buttermere	Moderate sized lake, naturally nutrient poor	Stable	Stable	Small but steady deterioration since 1995
Coniston	Large lake	Stable	Stable	Deterioration from 1984-2000
Crummock Water	Moderate sized lake fed from Buttermere and Loweswater	Stable	Stable	Stable
		But problem with oxygen depletion at depth		
Derwent Water	Relatively shallow	Stable	Stable	Deterioration from 1980 onwards

		Improvement means reduction in Phosphorous levels	Improvement means reduction in Chlorophyll a levels	Improvement means greater Secchi depth
Elterwater	Small lake with short retention time	Peak in 1995 but overall improvement 1984-2015	Peak in 2005 followed by some recovery	Stable but poor
Ennerdale Water	Moderate sized lake	Slight deterioration	Slight deterioration to 2010 followed by some recovery	Deterioration to 2010 followed by some recovery
Esthwaite Water	Small to moderate sized	Deterioration to 1995 followed by recovery	Deterioration to 1995 followed by recovery	Slight improvement
Grasmere	Fairly small lake with short retention time	Slight deterioration since 2010	Improvement since 2010	Slight deterioration since 2010
Haweswater	Large reservoir	Stable	Stable	Stable
Loughrigg Tarn	Small lake but with relatively long retention time	Improvement since 1991	Variable	Stable
Loweswater	Moderate to small lake with relatively long retention time	Deterioration to 2000 with some subsequent recovery	Deterioration to 2005, some recovery since 2010	Some recovery since 2010
Rydal Water	Small lake fed from Grasmere	Deterioration to 1990, slow recovery since	Variable	Variable
Thirlmere	Moderate sized reservoir	Deterioration from 1985	Deterioration since 1985	Deterioration since 1985
Ullswater	Large lake	Stable	Stable	Stable
Wastwater	Fairly large and very deep lake	Stable	Stable	Deterioration since 1985
Windermere North Basin	Large and deep lake	Slight improvement	Deterioration 1995-2010 followed by some recovery	Stable
Windermere South Basin	Smaller and shallower than North Basin	Improvement	Stable	Stable

4.2.6 Condition of existing water based Natura 2000 sites (VO3)

	Area of whole SSSI	main interest	Names of Freshwater features (where not obvious)	Area of units for freshwater features that are entirely or partly within LDNP	Favourable	Unfavourable Recovering	Unfavourable No Change	Declining
ARMBOTH FELLS	2346.32	UPLAND	Dock Tarn, Blea Tarn	9.68	9.68			
BASSENTHWAITE LAKE	673.24	FRESHWATER		521.41			521.41	
BUTTERMERE	93.07	FRESHWATER		93.25	93.25			
HELVELLYN & FAIRFIELD	2487.52	UPLAND	Red Tarn, Grisedale Tarn	20.56	20.56			
RIVER DERWENT & TRIBUTARIES	1249.65	FRESHWATER	Includes Derwentwater	1156.04	274.42	223.36	658.26	
RIVER EDEN & TRIBUTARIES	2485.74	FRESHWATER	Includes Ullswater	1035.23	884.71	105.46	45.06	
RIVER EHEN	24.39	FRESHWATER		23.78				23.78
SCAFELL PIKES	1117.05	UPLAND	Sprinkling Tarn, Styhead Tarn	96.66		96.66		
SCOUT AND CUNSWICK SCARS	375.38	GRASSLAND	Cunswick Tarn	1.36			1.36	
SKIDDAW GROUP	10385.2	UPLAND	Scales Tarn, Bowscales Tarn	4.1	2.74	1.36		
WAST WATER	298.28	FRESHWATER		287.2				287.2
RIVER KENT & TRIBUTARIES	109.12	FRESHWATER		57.04	0.37	38.88	14.87	
					1285.73	465.72	1240.96	310.98

Data extracted from Natural England's Designated Sites System (units are hectares 'ha')

a. Reasons for unfavourable status of freshwater SACs

	Area classified as 'unfavourable no change' + 'declining' (ha)	Invasive species			Management of bankside vegetation	Modification of channel or banks	Water Quality	
		Signal crayfish	Crassula	Others			Nutrients	Sediment
ARMBOTH FELLS	0							
BASSENTHWAITE LAKE	521.41		X	X			X	X
BUTTERMERE	0							
HELVELLYN & FAIRFIELD	0							
RIVER DERWENT & TRIBUTARIES	658.26	X	X	X	X	X		X
RIVER EDEN & TRIBUTARIES (inc. Ullswater)	45.06*	X		X		X	X	X
RIVER EHEN	23.78				X	X	X	X
SCAFELL PIKES	0							
SCOUT AND CUNSWICK SCARS	1.36						X	
SKIDDAW GROUP	0							
WAST WATER	287.2						X	X
RIVER KENT & TRIBUTARIES	14.87			X	X	X	X	X

* Note that Ullswater (884ha) is very close to being unfavourable due to nutrient pollution

See also 'Damage and Threats and Pressures' below for further explanation of these issues.

4.2.7 Damage Threats and Pressures to habitats

a. Damage and threats to Priority Habitats

The summary matrix below is intended to capture the main current threats rather than all theoretical possibilities (e.g. fertilizer application would damage all of these habitats but it is only recorded as a threat on habitats where this is most likely to happen). Geological sites are not 'priority habitats' but are included here as there is nowhere else to report on these sites. This information is drawn (primarily) from Natural England's published Site Improvement Plans for European designated sites which record current sources of damage to the features for which they are designated and also threats to their future condition. These sources of damage and threats apply widely throughout the National Park and therefore also affect priority habitats outside of SACs. Where without the regulatory mechanisms for SACs and SSSIs they will have greater impact. Action has already been undertaken by many farmers, landowners and other parties to reduce these threats, but more needs to be done if we are to have "bigger, better more and joined habitats" as recommended in the Lawton Review and detailed in the Government's 25 Year Environment Plan. Site Improvement plans can be found at:

<http://publications.naturalengland.org.uk/category/6329101765836800>

Key: Blue Global threats impact all habitat types

Red Main 'on site' threats for that habitat

Black Other 'on site' threats

Habitats with lowest proportion of area recorded as favourable	Figures from 2017 MEOP data			Threats which are the main threat for the greatest number of habitats																								
	Area in SSSIs within LDNP (ha)	% Favourable within SSSIs	% Favourable + Recovering within SSSIs	Air pollution (atmospheric nitrogen deposition)	Climate change	Grazing (too much or wrong time of year)	fertilizer use	Excessive drainage	Invasive species	Undergrazing or lack of suitable grazing animals (e.g. Cattle)	Unsustainable populations	Excessive scrub development	Water Pollution (N & P). Diffuse and point source	Sedimentation	Weirs, Dams and artificial banks	Water abstraction	Deer	Public access	Managed burning	Disease	Lack of traditional hay meadow management	Compaction	Lack of woodland management	Herbicides	Fisheries management (including shellfish)	Mineral collecting	Dumping of rubbish or other materials	
Lowland calcareous grassland	407	1.5	95.6	X	X	X	X			X		X						X										
Rivers and streams	413	4.1	59.1	X	X	X	X	X	X				X	X	X	X										X		
Dry Heath	20359	6.3	93.1	X	X	X			X								X	X		X								
Montane	1363	7.7	98.8	X	X	X					X							X										

Raised bogs	951	10	59.8	x	x			x	x			x															
Shingle and sand dunes	396	10.9	49.2	x	x				x	x		x															
Upland rock	1081	16.3	98.3	x	x								x														
Upland calcareous grassland	150	21.3	53.3	x	x	x												x	x								
Semi natural woodlands	2812	24.4	80	x	x	x			x									x	x			x					
Blanket bog	6323	26.4	70.7	x	x	x			x									x	x	x							
Lakes and tarns	3320	42.1	57	x	x	x	x	x	x				x	x	x	x											x
Neutral grassland	314	54.5	85	x	x	x	x		x	x												x	x			x	
Lowland fen, marsh and swamp	707	60.3	88.8	x	x			x	x	x			x						x								
Intertidal sediment	1550	99.7	100	x	x																						x
Upland fen, marsh and swamp	104	100	100	x	x	x			x	x																	
Geological	1855	95.5	95.6								x		x														

i. Air Pollution

The deposition of atmospheric pollutants are having effects on habitats and making mitigation and reduction of local impacts even more important. Information on air pollution can be found on the Air Pollution Information System (www.apis.ac.uk). This gives local levels of key pollutants and also 'critical loads' for specific habitats. The critical load is the amount of deposition of a pollutant that a given habitat is thought to be able to tolerate without suffering damage. Critical loads are being exceeded for many Lake District habitats. Of most concern is the amount of nitrogen deposition, which is associated with high levels of rainfall. The impacts of excess nitrogen are explained below (fertilizer use) but it must be remembered that these impacts are exacerbated by the continual addition of atmospheric pollution. In addition, atmospheric nitrogen reaches habitats that would otherwise be free from the effects of fertilizers, manures and sewage, such as habitats high in the fells.

ii. Climate Change

The most recent climate change predictions for the Lake District can be found at:

<https://www.metoffice.gov.uk/research/collaboration/ukcp>. As described in section 3.1.5 the climate in the Lake District is expected, on average, to become warmer and wetter in winter and hotter and drier in summer.

Species which tolerate cold temperatures & winter drought (such as mountain top vegetation, arctic-alpines or fish such as Arctic Charr) may be out-competed or their altitudinal range contract. Species which are temperature controlled (such as bracken) may expand. Peatlands may be lost through reduced rainfall totals. Freshwater habitats will be affected by low flows, poor water quality and greater fluctuation in levels. Freshwater habitats may also be affected by increased sedimentation arising from more storm associated erosion. Farming practices are likely to change with new climate conditions e.g. longer growing seasons. Changing demands on the industry will have knock-on effects upon biodiversity.

Some simple general principles for conserving biodiversity in a changing climate area set out in 'Conserving Biodiversity in a Changing Climate: guidance on building capacity to adapt' (Defra, 2007) which can be found at:

<https://webarchive.nationalarchives.gov.uk/20110303153641/http://www.ukbap.org.uk/Library/BRIG/CBCCGuidance.pdf>

iii. 'On Site' Threats

The top 'on-site' threats to Lake District Habitats (i.e. those that occur and should in theory be possible to regulate at local level) are (in order of the number of SACs where these are recorded):

- Grazing – too much or wrong time of year.
- Fertilizer Use.
- Water pollution – Nitrogen and Phosphorus, diffuse and point source.
- Sedimentation.
- Excessive drainage.
- Invasive Species.
- Under grazing or lack of suitable grazing animals (e.g. cattle).
- Weirs, Dams and artificial banks- factors constraining natural river function.
- Water Abstraction.
- Unsustainable populations.
- Deer.

- Public access.
- Disease.

iv. Grazing – too much or wrong time of year

Huge areas of the Lake District National Park have been used for grazing animals for many centuries. It is not therefore surprising that this is the biggest single factor that has affected its biodiversity. The effects of agricultural subsidies in the latter half of the 20th Century were particularly damaging, encouraging a shift away from extensive mixed grazing towards intensive grazing of sheep. High densities of sheep damaged habitats such as heaths, scrub, woodlands and wetlands. Some habitats are particularly vulnerable to grazing at certain times of year for example heavy spring grazing in hay meadows removes many flowering plants, whereas in heaths the dwarf shrubs (heathers) are particularly susceptible to damage from winter grazing. Although grazing densities have decreased since the start of this century (particularly on SSSIs) overall they are not back to the levels present before the subsidies were introduced. This is still a major constraint on the extent and quality of most habitats. However, grazing is not always a bad thing, some habitats require a certain amount (see under grazing, below).

v. Fertilizer Use

20th Century agriculture introduced artificial fertilizers. In nature, a lack of key nutrients, often nitrogen and phosphorus, limits plant growth. Increasing their availability shifts the advantage from diverse slow-growing, stress-tolerating plants to a few fast-growing, competitive ones. This in turn means that habitats are fundamentally altered and many species are lost. This is the main factor behind the much quoted loss of 97% of species-rich grasslands in England and Wales between 1932 and 1984 (Fuller 1987). Due to the key role of these nutrients in the functioning of ecosystems, as much attention should be given to the nitrogen and phosphorus cycles as is given to water and carbon cycles. For further explanation see: “Something in the air, soil and water: nitrogen, phosphorus and British wildlife” by John Hopkins. British Wildlife Vol 29, no. 4, April 2018.

It should be noted that fertilizer use is also linked to intensive grazing. Fertilizer is applied in order to increase productivity in order to enable higher densities of grazing animals to be supported.

vi. Water pollution – Nitrogen and Phosphorus, diffuse and point source

When fertilizers run off the land and end up in water, they feed algae which then shade out aquatic plants and deplete oxygen levels when they start to decay. This kills off the characteristic plants and animals, including invertebrates and fish. The same applies to other sources of nitrogen and phosphorus which include manures (particularly slurry) and sewage. In recent years, many sewage treatment plants have been improved but problems remain from many individual septic tanks and developments (such as hotels and campsites).

vii. Sedimentation

Rivers naturally contain sediment but human activity can release excessive quantities which then alter the characteristics of river and lake beds. It can completely smother fish eggs which need to be able to absorb oxygen to develop and have adverse impacts on crucial invertebrate life. Activities that can release sediment include heavy grazing that removes protective vegetation and poaches up soil, ploughing, poor management of paths, tracks and ditches, some forestry practices (particularly clear felling) and any engineering or development that involves excavation or removal of vegetation.

The presence of robust rough vegetation helps prevent sedimentation as it can act as a filter, catching the sediment as well as helping to hold the soil together through providing cover and also binding it with its roots. If rivers are allowed to function naturally, being able to spread out onto floodplains and having bends and backwaters with slow flow, this will allow sediment to settle out rather than being flushed through main channels and collecting in lakes.

viii. Excessive drainage

Wetland habitats are damaged or destroyed when they are drained. This may happen from deliberate drainage of the wetland or accidentally when adjacent land is drained and there is hydrological connectivity.

ix. Invasive Species

Invasive plant species damage habitats primarily through choking out the native flora. Habitats affected are unlikely to support the same range of animal species as the original flora. Terrestrial species include Japanese knotweed, Himalayan balsam and Rhododendron. The worst aquatic species is *Crassula helmsii* which has become dominant in several lakes and washes up on the shores in thick rotting mats. However, several lakes are still free of *Crassula* (Wastwater, Buttermere and Crummock Water).

Invasive animal species such as signal crayfish compete with the native crayfish for shelter and food and can carry a plague which kills the natives. Grey squirrels out-compete Red squirrels and also cause disease problems. Ruffe (a coarse fish) are known to predate on Vendace eggs. See also section 3.1.4 b.iv.

x. Under grazing or lack of suitable grazing animals (e.g. cattle)

Some of the more productive habitats (i.e. those growing at lower altitudes and on better soils) are dependent on a certain amount of grazing to prevent succession to coarse vegetation and ultimately scrub and woodland. This applies to species-rich grasslands, some heaths and some wetlands. Often the species of grazing animal is important, for example cattle or ponies are better than sheep at tackling coarse vegetation and venturing into wetlands. Low levels of physical disturbance (i.e. breaking up closed grass swards) can also be important and again large animals such as cattle and ponies are better at this than sheep.

xi. Weirs, Dams and artificial banks- factors constraining natural river function

A naturally functioning river will have a great variety of microhabitats within it. Shallow and deep, fast and slow flowing, riffles and pools and different sizes of sediment particles (silt / sand / gravel / cobbles / boulders). This range of conditions means it will suit a wide range of aquatic plants and animals. It will also be well connected with its floodplain, allowing fine sediment to drop before they reach main channels or lakes (see sediment vii above).

Physical modifications constrain the natural functioning of rivers and reduce habitat diversity e.g. a canalised river usually has uniform flow of water, is of uniform depth and has uniform sediment type. Inappropriate gravel removal and dredging can reduce habitat diversity and, by removing well-armoured sections of riverbeds, can cause instability and erosion of riverbeds and banks. Weirs and dams also constrain how the river is able to function, and larger ones may present barriers to migratory fish, preventing them from reaching potential spawning grounds.

Naturally functioning rivers may also provide significant benefits for slowing floodwater. Poor management can increase risk of flooding and erosion downstream.

xii. Water Abstraction

Water abstraction, whether for drinking water, industrial or agricultural use or for hydro-electric schemes can have detrimental impacts on aquatic or wetland habitats. Careful regulation of these activities is in place and requires frequent review as demands change (see also 4.2.7iii)

xiii. Unsustainable populations

When any species population falls to a very low level it becomes less likely to survive because of inbreeding. This can be exacerbated by chance events (e.g. floods) killing a high proportion of the population, and the low probability of any of the small number of offspring surviving to adulthood. For example, if a plant only produces a few seeds, the chance of any of them landing in a suitable microhabitat to be able to grow and survive can be very low indeed. In these circumstances, it may be worth putting efforts into artificially boosting populations in the hope that they will then become self-sustaining. This applies to populations of some of the arctic-alpine plants that were impacted by Victorian plant collectors as well as the high density of sheep present in the late 20th Century.

xiv. Deer

Red deer and roe deer are common in the Lake District. Muntjac are present on the fringes of Morecambe Bay and could easily reach the Lake District in future. Roe deer are territorial and spend most of their time in woodland. Red deer roam over large areas and may be in woodlands or open habitat. Muntjac are another woodland species and they breed prolifically all year round. With no natural predators, deer numbers can rapidly build to levels where their browsing activity prevents tree and shrub regeneration. This is a major threat to

woodlands which if not able to naturally regenerate will die out. It is also detrimental to the mix of habitats on the fells, where trees and shrubs are important for bird and invertebrate life. See also section 4.2.7c.

xv. Public access

There are four main ways in which public access can affect priority habitats. Firstly through disturbance, the presence of people and their dogs can reduce the value of habitats for species such as birds and mammals e.g. otters. Secondly through trampling damage and associated erosion. This can affect any habitat but is perhaps most significant in the fells and in wetland habitats. In the fells, thin soils, slow rates of plant growth and susceptibility to subsequent water erosion can lead to rapid escalation of any problems. Wetlands are fragile and rapidly lose vegetation, leading to widening and braiding of paths. Although path maintenance and repair can be a key way of reducing such damage, any works have to be designed with great care. Thirdly potential sources of damage associated with public access are proposals for completely new paths which, if inappropriately sited or associated with inappropriate drainage, can result in direct habitat loss and disruption to water flows. The fourth is the potential for people (pets and equipment) to transport diseases and invasive non-native species between sites. This is a particular issue for lakes, for example movement of people and equipment from lakes infested with *Crassula* to those which are still free of it is a serious risk.

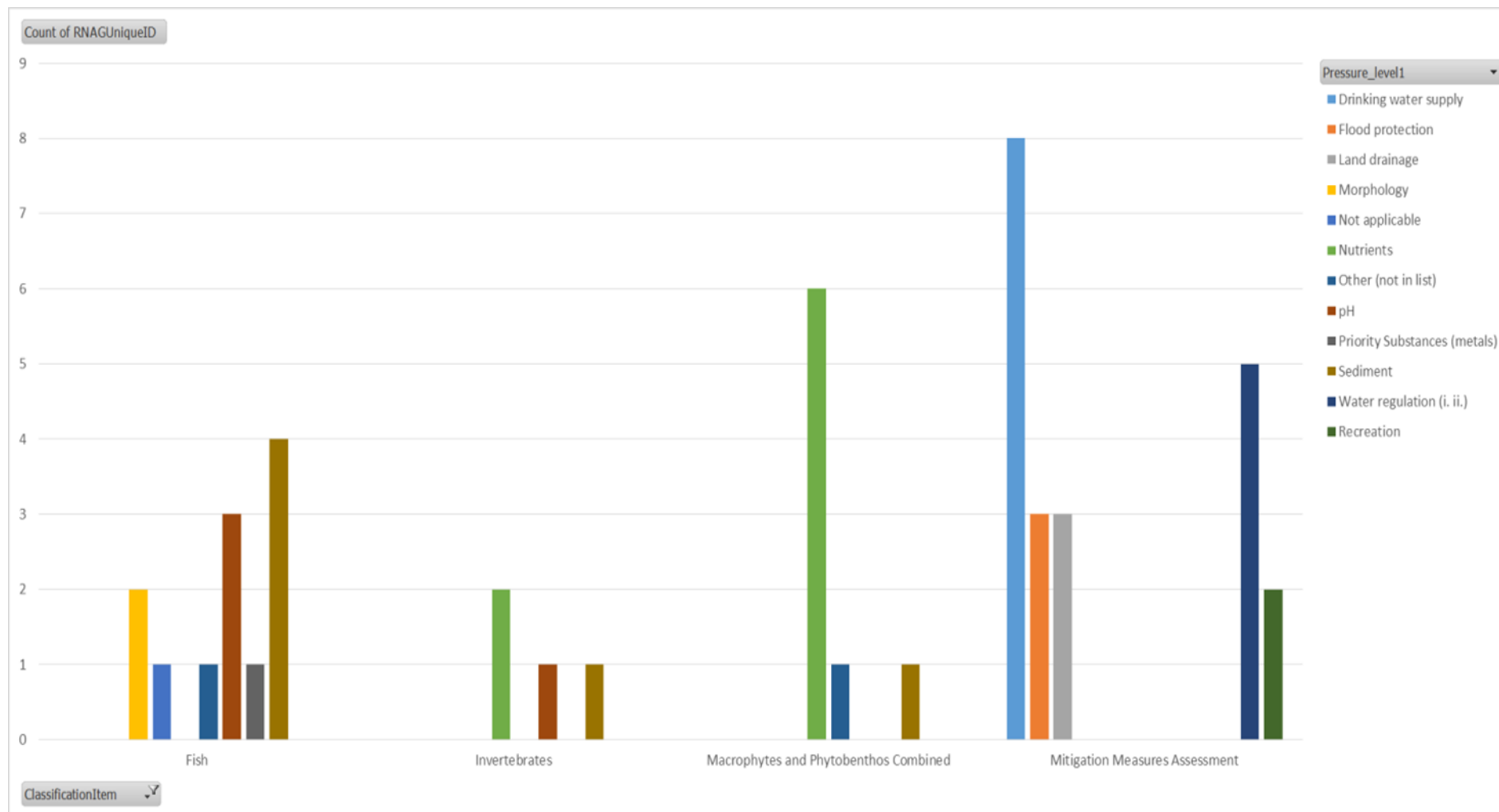
xvi. Disease

When humans move plants, animals and other materials around the world the risk of spreading diseases increases. Of most concern at present are various tree diseases, including ash die-back, sudden oak death, larch disease and *Phytophthora austrocedri* which affects juniper. Ash die back in particular will have major landscape and ecology impacts in the Lake District in the next few years. It is inevitable that many ash trees will die and we are yet to see how many will prove to have any level of resistance. Ash trees are one of the commonest woodland species and there are many open grown field ash trees which help provide crucial links between adjacent patches of habitat. These field trees have often been pollarded, this prolongs their life, makes them an important cultural / historical feature, and because they also provide long habitat continuity they are important for many rare species of mosses, lichens, fungi and invertebrates.

Introduced animals, such as signal crayfish and grey squirrels, can also carry diseases which have devastating consequences for native species which are related to the original hosts but do not possess the same resistance to the new diseases. See also section 4.2.7a.

b. Pressures on the water environment

There are a range of pressures on the water environment which influence the condition of 63% of our waterbodies (2016) that are not achieving good status. The graph below illustrates these pressures as nutrients, water supply, water regulation, sediment and pH pressures. They particularly impact upon fish, invertebrates and macrophytes.



i. Wastewater discharges

These can come from water industry wastewater treatment works (WwTW) serving towns and villages, or hotels, private houses. The main effect is to increase levels of nutrients - primarily phosphorus, which can cause algal blooms and lead to eutrophication.

ii. Diffuse pollution from forestry, farming and other land management activities

Whilst farming is not as intensive here in the Lake District as in other parts of the UK, diffuse pollution does occur, arising from the spreading of slurry to land, as well as discharges and drainage from farm buildings and yards. Diffuse pollution increases nutrients and sediment (from soil loss) in the water environment and increases ammonia levels which can be toxic to fish. Farm regulations, advisory services and agri-environment schemes such as Countryside Stewardship and Catchment Sensitive Farming aim to improve farm management and reduce pollution. Much has been done, but more is required. New 'Basic Rules for Water' have recently come into force, requiring compliance with good practice to prevent pollution and protect soils. These elements will need to be reflected in the new land management scheme to be put in place under the forthcoming Agriculture Bill.

iii. Abstraction for drinking or other water supply

The Lake District is an important source of drinking water, reservoirs like Haweswater and Thirlmere form part of the integrated zone which provides water to much of north-west England. Abstraction from other lakes and rivers, and groundwater sources, provides further water supply. Over abstraction can reduce river flows, which affects the movement of fish species, and impoundment of water behind dams can reduce the hydromorphological processes that are needed for a river to function properly for example reducing the movement of fine gravels that are required for fish to spawn. Whether for drinking water, industrial or agricultural use, or for hydro-electric schemes abstraction can have detrimental impacts on aquatic or wetland habitats. Careful regulation of these activities is in place and requires frequent review as demands change. All abstraction areas where water is intended for human consumption are designated Drinking Water Protected Areas (DWPAs) under the Water Framework Directive. The Environment Agency (EA) monitors, reports compliance and coordinates measures to prevent deterioration in water quality. Where water quality is shown to be deteriorating due to man-made activities a Safeguard Zone (SgZ) may be established. This non statutory designation can be used to target mitigation measures, advice and incentive schemes for landowners and managers as well as regulatory inspections and enforcement, for example Thirlmere and Haweswater are both Safeguard Zones (SgZ's). Where continued deterioration in raw water quality is identified, and targeted regulatory and voluntary measures are failing, the EA may seek to designate a Water Protection Zone (WPZ). This is a statutory designation that allows the EA to enforce mitigation measures. Changes in rainfall patterns and periods of drought like that experienced in 2018 demonstrate the pressure of abstractions on the Lake District and the need for careful management of water supplies.

iv. Chemicals

The widespread use of chemicals across society is such that wastewater discharges contain a range of chemicals from domestic and industrial use, together with medicines and pharmaceuticals. Investigations into chemical pollution are ongoing, together with research into wastewater treatment and regulation to reduce chemical use at source.

v. Historic Mining Activity

The Lake District has a legacy of metals mining particularly in Coniston and Glenridding. This legacy continues to pose a threat to the water environment from metals pollution, arising from spoil heaps and flooded mine workings. Projects have already been delivered to control these discharges, for example at Force Crag mine near Keswick where more work is scheduled.

vi. Climate change

As discussed above (4.2.7.a.ii)

c. Qualitative report on threats to our woodlands and how we respond them VO7

There are a range of threats to the existing Lake District National Park woodlands, the main threats considered here are:

- Tree Health;
- Climate Change;
- Deer, Grey Squirrels, Sheep and other livestock.

Some 30% of woodlands in the Park are actively managed by the Forestry Commission. Of the remaining private woodlands approximately 8% receive woodland management or woodland creation scheme grant payments. Forest Services work with the Partnership to regulate and incentivise woodland practice in line with the UK Forest Standard to help protect and improve resilience (bring more woodland into management and increase diversity) of the woodlands within the National Park.

i. Tree Health

Trees and woodlands are facing increasing plant health threats due to:

- **International Trade** – the import of pests and diseases with trees and plants from outside the UK.
- **Change of use** – our familiar Lakes landscape is partly characterised by historically worked woodlands i.e. broadleaved trees and ‘scrub’ managed for hard wood timber and small woods. Many worked woodlands are not currently managed in this way, allowing natural processes to determine the way a woodland appears and evolves, and what proportion of the wood is young, mature and deadwood - standing and fallen, and how much is naturally occurring glades. Foresters believe that we can strengthen protection, minimise impact and enhance the ability of trees to resist pests and disease by managing woodlands well. Forest Services look to work with Partners to bring more woodland into management and increase woodland diversity.
- **Disease**
 - Chalara, ash die-back, is caused by the fungus *Hymenoscyphus fraxineus* which kills most, but not all trees affected by it. Ash currently accounts for 5.4% of native woodland cover in the Park.
 - *Phytophthora austrocedri* affects juniper, one of our rarest native trees, supporting a specialised group of insects, fungi and lichens, as well as goldcrest, and provides winter cover for black grouse. The disease often kills the tree.
 - *Phytophthora ramorum* is a fungal-like pathogen with a wide host range, it mostly affects non-native trees larch and Rhododendron. It has killed millions of larch trees in the UK. Disease control includes the removal of infected material or herbicide stem injections, to prevent spores developing from diseased timber. Larch comprises 10.5% woodland cover and this disease is a significant threat to the productivity of the LDNP.

ii. Climate change

Warmer weather, drier summers and wetter winters will affect all vegetation in the UK, including woodlands. Appropriate choices in timber forests of species and origin, diversity in species and structure, and effective stand management may all help to build resilience. These measures will also develop the management flexibility required for timber forests to thrive in a changing environment. The Forestry Commission and LDNPA are working on a joint Accord including guidance on species choice for increased resilience to climate change over coming rotations.

iii. Browsing animals

Roe and red deer are present in significant numbers within the Park, and are a problem both when looking to establish new trees and woods, and when managing for the biodiversity and other interests of existing woodlands. This is being addressed by the Deer Initiative and deer management plans as part of woodland management plans.

Where sheep and livestock grazing is not adequately excluded or managed there is a significant threat to woodland and trees. They graze young trees, and shelter in woodlands in bad weather, creating bare soils. This can start to be addressed through agri-environment schemes.

Grey squirrels can reduce timber quality, value and yield by bark stripping. Grey squirrels are not thought to threaten tree establishment or woodland sustainability; they do prevent the establishment of quality hardwood timber trees.

4.2.8 Public transport to rural service centres VO32

a. Daily Public Transport Services to Rural Service Centres

Rural Service Centre	Service Type	Destination	Winter Service	Summer Service	Sundays Service
Ambleside	Bus	Kendal (Lancaster)	Hourly	Half hourly	2 hourly (winter) Hourly (summer)
	Bus	Keswick	Hourly	Half hourly	2 hourly (winter) Hourly (summer)
	Bus	Coniston	6 buses a day	Hourly	4 trips (winter) / Hourly (summer)
Backbarrow/ Haverthwaite	Bus	Barrow	Hourly	Hourly	4 trips a day
	Bus	Kendal	Hourly	Hourly	4 trips a day
	Bus	Windermere	5 trips a day	5 trips a day	3 trips a day
Bootle	Train	Whitehaven (Carlisle) rail	12 trains a day	12 trains a day	5 trains a day
	Train	Barrow (Lancaster)	12 trains a day	12 trains a day	5 trains a day
Bowness	Bus	Windermere (Ambleside)	Hourly	Every 20 / 30 minutes	Hourly (winter) / every 20-30 (summer)
Windermere	Train	Oxenholme (Kendal)	18 journeys / day	18 journeys / day	13 journeys / day
	Bus	Kendal (Lancaster)	Hourly	Half hourly	2 hourly (winter); Hourly (summer)
	Bus	Keswick	Hourly	Half hourly	2 hourly (winter); Hourly (summer)
Broughton in Furness	Bus	Barrow	1 weekdays return trip	1 weekday return trip	None
Caldbeck	Bus	Wigton	Once a week	Once a week	None
	Bus	Carlisle	Once a week	Once a week	None
	Bus	Keswick	None	One trip Daily	None
Coniston	Bus	Ambleside	6 buses a day	Hourly	4 (winter) / Hourly (summer)
	Bus	Ulverston	3 buses / day	3 buses / day	None
Glenridding/ Patterdale	Bus	Penrith	Two Hourly	Hourly	Hourly (summer)
	Bus	Windermere	None	Two Hourly weekend services and in School Holidays	2 hourly (summer)
Gosforth	Bus (Village Wheels)	Egremont (Whitehaven)	3 (2) trips a day	3 (2) trips a day	None + community bus
Grasmere	Bus	Keswick	Hourly	Half hourly	Hourly (Summer)
	Bus	Windermere (Ambleside)	Hourly	Every 20 minutes	Hourly (Winter) / every 20 mins (Summer)
	Bus	Kendal (Lancaster)	Hourly	Half hourly	Hourly (Summer) 2 hourly (Winter)

Rural Service Centre	Service Type	Destination	Winter Service	Summer Service	Sundays Service
Hawkshead	Bus	Ambleside	6 buses a day	Hourly	4 (Winter) / Hourly (Summer)
Keswick	Bus	Kendal (Lancaster)	Hourly	Half hourly	2 hourly (Winter) Hourly (Summer)
	Bus	Workington	Half Hourly	Half Hourly	Hourly
	Bus	Penrith	Hourly	Hourly	1 hourly
Staveley	Train	Windermere / Kendal	14 journeys	14 journeys	10 journeys
	Bus	Kendal (Lancaster)	Hourly	Half hourly	2 hourly (Winter) Hourly (Summer)
	Bus	Keswick	Hourly	Half hourly	2 hourly (Winter) Hourly (Summer)

b. Boat Services to Rural Service Centres

Rural Service Centre(s) served	Boat service	Route	Winter	Summer weekdays	Sundays
Keswick	Keswick Launch	7 stops around Derwentwater	Hourly at weekends	Half hourly	Half hourly
Pooley Bridge, Glenridding	Ullswater Steamers	Pooley Bridge – Howtown - Aira Force - Glenridding	3 journeys per day	9 journeys per day plus additional to Aira Force	9 journeys per day plus additional to Aira Force
Coniston	Coniston Launch	5 stops around Coniston including Brantwood	No Service	11- 12 journeys per day over 2 routes	11 - 12 journeys per day over 2 routes
Coniston	Steam Yacht Gondola	5 stops around Coniston including Brantwood	No service	4-5 journeys per day	4-5 journeys per day

Rural Service Centre(s) served	Boat service	Route	Winter	Summer weekdays	Sundays
Windermere, Ambleside	Windermere Lake Cruises	Various different routes serve Lakeside, Fellfoot, Bowness, Ferry House, Brockhole, Bark Barn, Wray Castle and Ambleside (Waterhead)	The main routes from Ambleside – Bowness – Lakeside run 364 days per year	6 routes running up to every hour	6 routes running up to every hour
Windermere Car Ferry	Cumbria County Council	Ferry Nab to Ferry House	Every 30 minutes	Every 30 minutes	Every 30 minutes

4.2.9 Percentage of properties not used for permanent residential

% of properties not used for permanent residential use by Parish	% Second Homes	% of properties not used for permanent residential
Lakes	17.87%	40.82%
Blawith and Subberthwaite	23.88%	36.57%
Broughton East	21.38%	31.72%
Cartmell Fell	23.96%	34.56%
Claife	18.75%	42.97%
Colton	21.95%	32.51%
Coniston	13.49%	34.92%
Dunnerdale with Seathwaite	27.47%	39.56%
Hawkshead	15.32%	35.84%
Satterthwaite	13.38%	33.12%
Skelwith	25.35%	51.41%
Torver	20.45%	40.91%
Above Derwent	17.50%	36.80%
Borrowdale	20.80%	45.50%
Lorton	16.20%	30.98%
Underskiddaw	17.50%	39.86%
Barton	25.73%	37.5%
Hutton	12.57%	48.42%
Martindale	35.13%	59.45%
Patterdale	27.39%	52.39%

5 Gap analysis and research – a proposed framework

5.1 Introduction

Section 3 of this report (the evidence compendium) reports on the Partnership Plan's Monitoring Framework and additional newly agreed indicators designed to more fully explain the condition of the National Park and progress made by the Partnership in delivering the Plan's strategies.

Since producing the Partnership Plan's Monitoring Framework in 2014/15 the strategic challenges facing the National Park have changed, they are now identified in section 2.2. In some cases this change has highlighted gaps in our understanding of the condition of this special place, and the metrics to help us achieve that. Some of the questions and challenges identified in realising these gaps, have not yet been answered or met. This is due to a combination of a lack of existing data, a lack of time to identify data and explore the answers, as well as insufficient time to succinctly articulate the Partnership's specific research requirements.

Additionally this is the first time the Partnership has sought to draw together such a wide range of data, originally created for uses other than this report and not necessarily aligned to the National Park boundaries, into one document to aid decision making about the future of the place. In producing this report we have identified a number of areas where existing indicators, and or matched data sets, do not sufficiently help us meet our desired level of understanding. In some cases this is because data sets no longer exist or are no longer suitable.

As a result, we have collated a range of questions and challenges that our proposed research framework should look to answer. These have been recorded in a developing research library.

Below we describe the purpose of the research framework, present a model of research engagement and share the developing research library, the contents of which ranges from more fully formed questions and challenges, to named gaps that require further development and shaping.

5.2 Purpose of the Research Framework

The Framework will:

- Help us answer our questions and challenges facing the National Park.
- Identify what information is important for future decision making.
- Identify and define research questions and challenges that address the needs of the National Park.
- Explore and re-assess relevant existing data to find new meaning and interpretations.
- Identify new information for analysis that can be used to support decision making.
- Inspire and develop new research for the benefit of the National Park.
- Provide a practical way in which researchers can inform policy and support outstanding practice for looking after this special place.

5.3 A model of research engagement

We propose to work closely with the University of Cumbria to establish a Partnership Research Sub-Group that will develop and manage our research needs to:

- Further develop and answer the questions, challenges and knowledge gaps identified in this report.
- Support the development of further research questions, the collection and collation of rigorous evidence based answers, to inform decision making required in delivering the Partnership's current Plan as well as shaping policy and actions of future plans.
- Contribute to conserving and enhancing the special qualities of the National Park and relevant attributes of outstanding universal value of the World Heritage Site through research.

In practice the Research Sub-Group will be based at the University's Centre for National Parks and Protected Areas. It will translate the Partnership's practical research needs into:

- Broad Questions for consideration by research councils.
- Specific questions that can be formulated as PhDs and research posts.
- Quick Wins for student data analysis challenges and projects, undergraduate and post graduate dissertations and research placements.
- Innovation challenges for businesses and institutions.

It will also:

- Actively explore and support funding applications for key research opportunities
- Develop and nurture links with a broad range of other relevant bodies and institutions (including other universities).
- Facilitate practitioners and academics working together; ensuring research outputs are made available in Plain English.
- Provide opportunities for knowledge exchange.

5.4 Our current needs – the library of research

Below is our developing information gaps and research needs library, the contents of which were all identified during the development of this report. These needs are arranged thematically and formulated to varying degrees with some being more fully formed questions and others being named gaps that require further development and shaping.

5.4.1 Practical cross cutting issues for improving the Monitoring Framework

Overall we need to identify how best to take forward a natural, social and cultural capital approach in future monitoring so that is best supports policy development (ideally within the 2021–2026 Partnership Plan), and future reporting including the 2023 State of the Park Report. In addition a sustainable effort is required to maintain a mechanism through which the Partnership can support the Lake District National

Park Authority to collaboratively fulfil its statutory requirement to produce a State of the Park report for the National Park on a 5 yearly cycle. These improvements can be described as:

- **Ideal Status** – there is a need to agree an ideal status for the following indicators, for the purpose of monitoring the State of the Park, health of Special Qualities, and where appropriate the condition of the World Heritage Site outstanding universal value. Until established, we cannot be clear as to whether things are trending in the desired direction:
 - SQ8 – the total number of Herdwick flocks.
 - SQ10 – the total number of commercial farm holdings.
 - SQ 11 – Number of holdings by total area size groups,
 - SQ12 – Sustainable use of agricultural land.
 - SQ13 – Sustainable balance of livestock, including traditional breeds.
 - SQ19 – Status of Priority Species.
 - VO22 – Mobile phone ‘not spots’.
 - VO30 – Number of new businesses.
 - VO45 – Number of people claiming job seekers allowance (or equivalent).
- **Updated data required** – Whilst updated data will be required for all indicator data sets for the next State of the Park Report, the following datasets are particularly out of date and in need of updating with validated data:
 - SQ9 – Geographic spread of farms with fell going flocks.
 - SQ36 – Status of tranquillity.
- **Revising and increasing data**
 - SQ29 – Extent of National Trust ownership. This indicator is designed to help us understand the model for protecting cultural landscapes their vulnerability to forces of change and the Lake District as the Birthplace of an innovative Conservation Movement committed to the defence of its landscape and communities; a truer picture would be generated through the addition data reflecting other appropriate ownership, for example Lake District National Park, Forestry Commission, Historic England, Cumbria Wildlife Trust.
 - SQ13 – Sustainable balance of livestock, including local and traditional breeds. A fuller picture would be generated if in addition to cattle, sheep and poultry information regarding the number of individuals or number, size and distribution of fell pony herds were added. This data should be available from The Fell Pony Society.

5.4.2 Spectacular Landscape, Wildlife and Cultural Heritage

a. Climate Change

We have identified and are monitoring three Climate Change mitigation metrics (VO8) but have not identified metrics that measure adaptation and resilience; particularly in relation to land management, habitat creation or restoration. There is a need to rectify this and identify suitable climate change adaptation metrics for the Park. We need to identify and agree meteorological metrics to allow us to monitor changes in weather patterns, particularly relating to extreme weather events, in order that we better understand and manage for their impacts on communities, receptor catchments and water resource management.

b. Habitats & Species

- i. It is a major deficiency that we are currently unable to comprehensibly report on the condition of habitats and species outside protected sites. We know that there have been significant losses over the last 50 years but we have no accurate means of measuring current trends. There is a need to:
 - Identify a sustainable mechanism to comprehensibly identify, monitor and report on the extent (SQ17) and condition of Priority Habitats (SQ16) within the Park.
 - Develop a long term mechanism for monitoring and updating the Priority Habitats Inventory.
 - Identify a sustainable mechanism to comprehensibly identify, monitor and report on the status of Priority Species (SQ19).
- ii. The fundamental importance of soil health to well-functioning, healthy and productive ecosystems is only recently being more widely acknowledged. Examples of soil loss and degradation can often be seen, and whilst there are a number of research projects underway no systematic data has been collected on soil condition in the National Park. Improved understanding of the state of the Parks soils, their resilience, capacity for 'productivity' and ability to provide ecosystem services would be beneficial; Ecological Outcome Verification (EOV) is one potential approach.
- iii. Development of a suite of indicator species to provide insight into the impacts of issues of global concern such as Climate Change, impacts of land management practices, recovery from historic pressures (e.g. plant collection), and how well programmes to support recovery or natural population expansion are faring, as well as the health of habitats and ecosystems. Suggested species are:
 - Freshwater - Arctic Charr, Atlantic Salmon, Freshwater Pearl Mussel
 - Top Predators - Golden Eagle, Osprey, Pine Martin
 - Invertebrates - Mountain Ringlet
 - Birds - Breeding waders and wetland birds (plus Golden eagle and Osprey)
 - Plants - Arctic Alpines

- iv. Examination of the reasons the Golden Eagle is currently locally extinct and identification of actions that support the return of this iconic specie to the Lake District.
- v. Identification of a sustainable means of delivering a comprehensive Park (and Cumbria) wide Salmonid survey and ongoing monitoring as an indicator of healthy river systems and the condition of a key feature of several protected rivers within the Park.
- vi. Understanding and mitigating the impact of plastics, including farm plastics, within the Lake District's environment, particularly water environment.
- vii. There is the opportunity to make more effective use of existing long term data sets including:
 - Lakes Scorecard (which needs a future 'owner' to ensure it is maintained and its use further explored within the context of State of the Park and other work)
 - British Trust for Ornithology Bird Atlas (which offers the opportunity of detailed analysis of changes in the distribution and abundance of breeding bird species)

To ensure that wherever possible short term change is set in the context of longer term trends to provide a richer understanding upon which to make management decisions.
- viii. Further develop and explore remote sensing options and opportunities for habitat mapping and condition assessment.

5.4.3 Prosperous Economy

a. Farming and Land Management

- i. Reporting progress in farming, forestry and land management is hampered by a lack of data specifically for the Lake District (rather than data on all grazing livestock farms in England's Less Favoured Areas). Development of such data sets would improve accuracy of reporting and ensure decisions are made based on locally appropriate data.
- ii. What does a sustainable Nature Recovery Network look like for the Park and Cumbria – what and where? How best to maximise the opportunities of ELMs and other management mechanisms to develop a terrestrial and freshwater network in the National Park, and when can it start to be delivered?
- iii. With changes to the Rural Development Programme and Government support schemes post 2020 a new set of indicators relating to these (yet to be announced) schemes will be required e.g. participation rates (by number and area), value to farm income, outcomes produced.

- iv. Identification of a sustainable means of ascertaining and continue to monitor land values and characteristics for agricultural, and other land, within the Park.
- b. Supplementing existing State of the Park monitoring indicators to increase value with elements that require research (adding qualitative as well as quantitative indicators where possible):**
- SQ7 – Total area of Common land; supplement with:
 - Number of active commoners.
 - Areas of graze able and non-graze able common land.
 - SQ8 - Total Number of Herdwick flocks; supplement with:
 - Numbers Rough Fell and Swaledale flocks.
 - SQ9 – Number and geographic spread of farms with fell-going flocks; supplement with:
 - Number, size and distribution of National Trust ‘Landlord’s flocks.
 - Mervyn Edward’s fell flock survey data, including condition of flocks.
 - Changes in sheep numbers through agri-environment schemes.
 - VO12 – Net Farm Incomes, VO13 – Profit from Diversification, and VO14 – Value of agricultural output. The data source currently used for these indicators is Defra’s Farm Business Survey, supplement with:
 - All England Less Favourable Area grazing farm data from Farm Business Survey, as reference data.
 - Include LDNP Farm Business Survey sample values for farm income from agricultural output, Basic Payment Scheme and Agri-environment scheme.
 - Current farm economics indicator masks the detail of the real picture of farm economics due to different types of farm businesses in the Lake District – given the importance of this sector Newcastle University will be commissioned to produce a ‘state of’ report to include a set of repeatable measurable meaningful indicators to show the underlying detail.
 - VO15 – The number of people employed in farming and forestry, supplement with:
 - Number of non-employed farm labour (e.g. family) and contract labour.

- VO16 – Average age of farmers, a local figure is not currently available for this indicator, instead:
 - Age structure of farm labour.
 - Multi-generational characteristics of farm businesses and issues around succession.

c. Infrastructure

In 2015 DCMS were running project identifying mobile phone ‘not spots’ (i.e. areas in which people cannot access mobile services) (VO22) and generated the baseline figure of 18 locations in the Park. This project was discontinued. Data from this source is no longer available and alternative research is required if this is a metric still felt to be valuable.

d. Business

The number of new businesses (VO30) is something that Cumbria Business Survey has previously recorded. This data is not currently available. It may be worth considering identifying a way of getting this survey repeated if responses to other questions are sought from the business community. There is also a need for a broader range of socio-economic indicators related to the wider business environment in the National Park (see 5.4.5 below).

5.4.4 World Class Visitor Experience

Cumbria Tourism’s annual Cumbria Visitor Survey now includes a question regarding visitors awareness, or not, of the fact that the Lake District is now designated as a World Heritage Site (68% in 2017). Whilst this figure is reported in the text of the report it may be worth considering including this as a new indicator as part of any suite of new indicators relating to World Heritage Site monitoring and reporting requirements.

There is an aspiration to understand the decline in younger visitors to the Lake District, given the declining market share and underperformance with this segment compared to the national average.

5.4.5 Vibrant Communities

It is no longer possible to collect the data for VO45 – the number of people of work age claiming job seekers allowance; consideration should be given to identifying a suitable replacement for this indicator measuring employment / unemployment and social deprivation and poverty.

Business representatives have emphasised the need to identify and fill knowledge gaps on socio-economic and demographic ‘leading indicators’ for example numbers of children in schools, and people in education and skills training as these will have a correlation with future availability of skilled labour across the Park. There is a recognition that where such data exists it may be on a Cumbria wide level rather than the National Park. The most appropriate catchment for such data will need to be determined given that many workers may live outside the Park boundary but work within it.

5.4.6 Knowledge sharing from existing research

The Lake District is rich in research opportunities, at any one time there is a range of on-going research that could be better shared to help answer our questions, address our challenges and inform the design of future delivery work. Collating the emerging knowledge requires coordination, and sharing any output needs to be in non-specialist or lay-man's language so that findings are useful to a wide range of practitioners. Current examples include:

- Copernicus Climate Data Store – modelling Windermere lake surface temperature, to better understand climate change.
- Liverpool, Southampton, Durham, King's College London Universities – Quantifying magnitude and frequency of recent extreme floods using a 600 year lake sediment record from the UK (Bassenthwaite, Buttermere, Brother's Water, Ullswater), to understand flooding frequency and landscape responses.
- Leeds University – The impacts of semi-natural woodland on flooding in the UK, to better understand the role of semi-natural woodland as a component of natural flood management.

End Notes

¹ Data on % of SSSI sites that are in 'unfavourable recovering' condition should be treated with great caution. There is a high degree of certainty that the site is unfavourable but a low degree of certainty that the site is recovering because:

- It is difficult to predict the precise response of a site to changes in management. Subsequent site assessments often reveal that further adjustments in management are required before a site will become favourable.
- Many sites have been classified as 'recovering' due to the existence of plans to secure change but if these plans are not fully implemented, the recovery will not occur.

There are many sites where some initial recovery has been observed following a change in site management but where this recovery has not continued in the longer term, therefore 'green' in the second column is no guarantee that favourable habitat condition will be achieved.
