

# Site Improvement Plan

## Ingleborough Complex

Site Improvement Plans (SIPs) have been developed for each Natura 2000 site in England as part of the Improvement Programme for England's Natura 2000 sites (IPENS). Natura 2000 sites is the combined term for sites designated as Special Areas of Conservation (SAC) and Special Protected Areas (SPA). This work has been financially supported by LIFE, a financial instrument of the European Community.

The plan provides a high level overview of the issues (both current and predicted) affecting the condition of the Natura 2000 features on the site(s) and outlines the priority measures required to improve the condition of the features. It does not cover issues where remedial actions are already in place or ongoing management activities which are required for maintenance.

The SIP consists of three parts: a Summary table, which sets out the priority Issues and Measures; a detailed Actions table, which sets out who needs to do what, when and how much it is estimated to cost; and a set of tables containing contextual information and links.

Once this current programme ends, it is anticipated that Natural England and others, working with landowners and managers, will all play a role in delivering the priority measures to improve the condition of the features on these sites.

The SIPs are based on Natural England's current evidence and knowledge. The SIPs are not legal documents, they are live documents that will be updated to reflect changes in our evidence/knowledge and as actions get underway. The information in the SIPs will be used to update England's contribution to the UK's Prioritised Action Framework (PAF).

The SIPs are not formal consultation documents, but if you have any comments about the SIP or would like more information please email us at [IPENSLIFEProject@naturalengland.org.uk](mailto:IPENSLIFEProject@naturalengland.org.uk), or contact Natural England's Responsible Officer for the site via our enquiry service 0300 060 3900, or [enquiries@naturalengland.org.uk](mailto:enquiries@naturalengland.org.uk)

**This Site Improvement Plan covers the following Natura 2000 site(s)**

**UK0012782    Ingleborough Complex SAC**

## Site description

Ingleborough is situated in the south west of the Yorkshire Dales and is Britain's finest karst area with the characteristic limestone landforms having been produced largely under glacial conditions. It is particularly noted for extensive dry stone pavements, dry valleys and gorges, shakeholes and sinkholes. There is a wide range of vegetation types associated not only with the mixed basic and acidic solid geology and drift but the transition from lowland to upland based on its geographical location and range of altitudes. Where limestone occurs at the surface, there is often extensive calcareous grassland whilst elsewhere blanket-bog occurs over gritstone or drift. Where flushing occurs the bogs become floristically richer.

Ingleborough has the most extensive series of limestone pavements in the UK, mostly at moderate altitudes but locally montane, (300-640 m). Pavements range from ungrazed and wooded, (Colt Park Wood), through cattle-only regimes to common land intensively grazed by sheep. Ingleborough has the only large stands of juniper on limestone at high altitude in the UK. The scrub is of the relatively species-poor type typical of these situations.

Spring-fed flush fens are extensive across Ingleborough, commonly associated with calcareous grassland types, but also found amidst acid grasslands and heathland communities. They are often species-rich communities, in which rare or locally distributed species are frequent. Locally there is a herb-rich marsh grassland.

Crevice communities occur on the extensive limestone scars characteristic of the area. The flora has a mix of northern and southern species, reflecting the range of altitudes and aspects over which the habitat occurs.

## Plan Summary

*This table shows the prioritised issues for the site(s), the features they affect, the proposed measures to address the issues and the delivery bodies whose involvement is required to deliver the measures. The list of delivery bodies will include those who have agreed to the actions as well as those where discussions over their role in delivering the actions is on-going.*

Priority & Issue	Pressure or Threat	Feature(s) affected	Measure	Delivery Bodies
1 Hydrological changes	Pressure	H7130 Blanket bogs	Restore hydrology and reverse the effects of erosion	Natural England, Yorkshire Peat Partnership, River Ribble Trust, River Lune Trust
2 Air Pollution: impact of atmospheric nitrogen deposition	Pressure	H5130 Juniper on heaths or calcareous grasslands, H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H6410 Purple moor-grass meadows, H7130 Blanket bogs, H7220 Hard-water springs depositing lime, H7230 Calcium-rich springwater-fed fens, H8210 Plants in crevices in base-rich rocks, H8240 Limestone pavements, H9180 Mixed woodland on base-rich soils associated with rocky slopes	Control and reduce effects of Nitrogen deposition.	Not yet determined

3	Overgrazing	Pressure/ Threat	H5130 Juniper on heaths or calcareous grasslands, H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H6410 Purple moor-grass meadows, H7130 Blanket bogs, H7220 Hard-water springs depositing lime, H7230 Calcium-rich springwater-fed fens, H8210 Plants in crevices in base-rich rocks, H8240 Limestone pavements, H9180 Mixed woodland on base-rich soils associated with rocky slopes	Control and reverse the effects of overgrazing	Defra, Natural England, Yorkshire Dales National Park Authority, Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership
4	Disease	Pressure	H5130 Juniper on heaths or calcareous grasslands	Implement biosecurity and disease control measures	Defra, Forestry Commission, Natural England, Volunteers, Yorkshire Dales National Park Authority, Butterfly Conservation, National Nature Reserve (NNR), Food and Environment Research Agency (FERA), Moughton Commoners, Millennium Seed Bank Partnership, Yorkshire Naturalists Union
5	Change in land management	Threat	H5130 Juniper on heaths or calcareous grasslands, H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H6410 Purple moor-grass meadows, H7130 Blanket bogs, H7220 Hard-water springs depositing lime, H7230 Calcium-rich springwater-fed fens, H8210 Plants in crevices in base-rich rocks, H8240 Limestone pavements, H9180 Mixed woodland on base-rich soils associated with rocky slopes	Review of consents and encouragement of land managers to enter land into NELMS	Natural England, Yorkshire Dales National Park Authority
6	Disease	Threat	H9180 Mixed woodland on base-rich soils associated with rocky slopes	Monitor for disease outbreak and mitigate effects	Forestry Commission, Natural England, Yorkshire Dales National Park Authority, British Bryological Society, Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership

7	Invasive species	Pressure/ Threat	H5130 Juniper on heaths or calcareous grasslands, H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H6410 Purple moor-grass meadows, H7130 Blanket bogs, H7220 Hard-water springs depositing lime, H7230 Calcium-rich springwater-fed fens, H8240 Limestone pavements, H9180 Mixed woodland on base-rich soils associated with rocky slopes	Investigate impacts, encourage control measures and adjust grazing regimes	Natural England
8	Undergrazing	Pressure/ Threat	H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites), H6410 Purple moor-grass meadows	Agree priority features for management at unit level	Natural England
9	Drainage	Pressure/ Threat	H7220 Hard-water springs depositing lime, H7230 Calcium-rich springwater-fed fens	Investigate impacts and remedy as appropriate	Environment Agency, Highways Agency, Natural England, Yorkshire Dales National Park Authority, Landowner(s), Council for Northern Caving Clubs, Caving club(s), Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership
10	Deer	Pressure/ Threat	H8240 Limestone pavements, H9180 Mixed woodland on base-rich soils associated with rocky slopes	Manage deer populations	Natural England, Yorkshire Dales National Park Authority
11	Climate change	Pressure/ Threat	H5130 Juniper on heaths or calcareous grasslands, H8210 Plants in crevices in base-rich rocks, H8240 Limestone pavements	Monitor for effects and if possible seek mitigation	Defra, Natural England, Volunteers, Local conservation group
12	Forestry and woodland management	Pressure	H8240 Limestone pavements	Negotiate with landowner for selective felling of larch	Forest Services, Forestry Commission, Natural England, Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership
13	Disease	Threat	H7130 Blanket bogs	Monitor for disease outbreak and mitigate effects	Defra, Forestry Commission, Natural England, Food and Environment Research Agency (FERA)
14	Invasive species	Pressure/ Threat	H7130 Blanket bogs	Monitor for infestations and mitigate effects	Natural England

15	Hydrological changes	Threat	H7220 Hard-water springs depositing lime, H7230 Calcium-rich springwater-fed fens	Work with local caving clubs to ensure digs avoid sensitive features	Natural England, Landowner(s), Council for Northern Caving Clubs, Caving club(s), Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership
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## Issues and Actions

*This table outlines the prioritised issues that are currently impacting or threatening the condition of the features, and the outstanding actions required to address them. It also shows, where possible, the estimated cost of the action and the delivery bodies whose involvement will be required to implement the action. Lead delivery bodies will be responsible for coordinating the implementation of the action, but not necessarily funding it. Delivery partners will need to support the lead delivery body in implementing the action. In the process of developing the SIPs Natural England has approached the delivery bodies to seek agreement on the actions and their roles in delivering them, although in some cases these discussions have not yet been concluded. Other interested parties, including landowners and managers, will be involved as the detailed actions are agreed and delivered. Funding options are indicated as potential (but not necessarily agreed or secured) sources to fund the actions.*

### 1 Hydrological changes

Gripping of bogs has adversely affected the hydrology and species composition of bogs and led to some erosion of the feature.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>1A</b>	Map the extent of remaining grips, gullies, bare peat and active erosion on Ingleborough not covered by existing projects.	Not yet determined	2014-18	Investigation / Research / Monitoring	Staff time	Natural England	Yorkshire Peat Partnership, River Ribble Trust
<b>1B</b>	Undertake grip and gully blocking, plus revegetation of bare peat.	£250,000	2015-25	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	Rural Development Programme (RDPE), Water Framework Directive (WFD), New Environmental Land Management Scheme (NELMS)	Yorkshire Wildlife Trust	Natural England, Yorkshire Peat Partnership, River Ribble Trust, River Lune Trust

## 2 Air Pollution: impact of atmospheric nitrogen deposition

Nitrogen deposition exceeds site relevant critical loads, for all notified features by varying degrees with habitats with the lowest thresholds like Blanket Bog probably worst affected. Likely effects are reductions in bryophytes within wetland habitats, changes in species composition generally, increased plant growth and the favouring of more competitive species. Deposition on woodland habitats appears far higher, possibly due to the greater structure and 'scrubbing' though the basic modelling may obscure effects at higher altitude where habitat is more often cloud-bound (bogs over 600 metres asl are generally in poorer condition than those lower on the fell). Greatest inputs according to APIS are from UK Agriculture (mainly at distance) and European Imports.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
2A	Control, reduce and ameliorate atmospheric nitrogen impacts	Not yet determined	2014-20	Site Nitrogen Action Plan	Not yet determined	Not yet determined	Not yet determined

## 3 Overgrazing

There is a general lack of tree, shrub and emergent grike vegetation across much of the site and especially the southern half. This is as a result of both current and very long-term historic stocking levels, and unrestricted grazing on relevant parts of the site.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
3A	Review affected limestone pavements to confirm areas worst affected by overgrazing.	Not yet determined	2014-15	Advice	n/a	Natural England	Yorkshire Dales National Park Authority, English Heritage

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
3B	Reduce grazing pressure to sustainable levels where vegetation suppression is occurring.	Not yet determined	2015-25	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	New Environmental Land Management Scheme (NELMS)	Natural England	Defra, Yorkshire Dales National Park Authority

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
3C	Review the influence of RDPE funding on grazing to ensure that the correct grazing regimes are in place across the site.	Not yet determined	2014	Investigation / Research / Monitoring	Developer, SSSI funding, Research project	Natural England	n/a

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>3D</b>	Review extant grazing consents to secure long term grazing management.	Not yet determined	2014-16	Regulation: Application of Habitats or Birds Directives / Habitat Regulations	Natural England, Staff time	Natural England	n/a
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>3E</b>	Source funding or more particularly the staff resource to implement outcomes of reviews of existing grazing consents.	Staff time	2015-20	Regulation: Compulsory Withdraw/Modify Notice/Consent	Natural England, Staff time	Natural England	n/a
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>3F</b>	Seek planning permissions for fencing on commons, LPO etc to allow the development of trees, scrubs and non-woody emergent vegetation, particularly on the southern part of Ingleborough, Scales Moor and Kingsdale.	£200 per item, plus other costs	2016-30	Regulation: S194 Approval For Fencing Of Common	Not yet determined	Natural England	Defra, Yorkshire Dales National Park Authority, Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>3G</b>	Seek funding sources outside of ERDP for limestone pavement fencing and restoration works.	£2,000 - £10,000 per item	2016-25	Mechanism not identified / develop mechanism	Not yet determined	Natural England	Yorkshire Dales National Park Authority, Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership



## 4 Disease

Juniper on the site has been affected by the newly discovered fatal fungal disease *Phytophthora austrocedrae*. The scale of the impact is unknown, but at best it will reduce the extent of the feature and at worst it will destroy it completely. Currently there are no known cure or containment measures beyond basic site biosecurity.

Action	Action description	Cost estimate	Timescale	Mechanism	Funding option	Delivery lead body	Delivery partner(s)
4A	Implement biosecurity and disease control measures.	Staff time	2013-14	Regulation: Issue Appropriate Notice/Consent	Forestry Commission, Conservation body, National Park Authority	Forestry Commission	Natural England, National Nature Reserve (NNR), Food and Environment Research Agency (FERA), Moughton Commoners
4B	Make Juniper stands more robust by diversifying the genetic mix.	Not yet determined	2015-25	Mechanism not identified / develop mechanism	Not yet determined	Forestry Commission	Natural England, Yorkshire Dales National Park Authority, Millennium Seed Bank Partnership
4C	Make Juniper stands more robust by diversifying the genetic mix.	Not yet determined	2015-25	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	New Environmental Land Management Scheme (NELMS)	Natural England	Forestry Commission, Yorkshire Dales National Park Authority

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>4D</b>	Collect seed and store within seedbank for restocking.	£2,000	2015 onwards	Existing Local Project	Natural England (NNR running costs), National Park Authority	Forestry Commission	Defra, Food and Environment Research Agency (FERA), Millennium Seed Bank Partnership, Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>4E</b>	Create ark populations of juniper elsewhere on the site.	Not yet determined	2015-25	Habitat creation / restoration strategy: Creation of new habitat	Not yet determined	Natural England	Volunteers, Yorkshire Dales National Park Authority, Food and Environment Research Agency (FERA), Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>4F</b>	Undertake further research on mechanisms of spread, control and genetic variation within host/pathogen as part of a UK-wide exercise.	Not yet determined	2014-20	Investigation / Research / Monitoring	Defra, Forestry Commission, Academic institution(s), Food & Environment Research Agency (FERA)	Forestry Commission	Defra, Natural England, Food and Environment Research Agency (FERA)

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>4G</b>	Monitor the spread of <i>Phytophthora austrocedrae</i> across the site, every two years.	£1,600	2014-20	Investigation / Research / Monitoring	Not yet determined	Natural England	Food and Environment Research Agency (FERA)

## 5 Change in land management

There is a risk of land dropping out of agri-environment schemes at the end of current agreements (or at break clause) due to either attractiveness of payments or complicated nature of the new scheme. This leads to the related risk that land use may intensify, especially where past, outdated consents were not time limited so would come back into use. There is also the risk of land abandonment particularly on parcels which are smaller or difficult to manage, or on rough ground, due to practicalities of management.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>5A</b>	Review existing consents.	Not yet determined	2014-16	Regulation: Application of Habitats or Birds Directives / Habitat Regulations	Not yet determined, Staff time	Natural England	n/a

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>5B</b>	Encourage the entry of land into NELMS and any subsequent schemes.	Not yet determined	2015 onwards	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	England Rural Development Programme (ERDP)	Natural England	Yorkshire Dales National Park Authority

## 6 Disease

*Chalara* Ash Die-Back is a potential threat to ash, one of the few large native tree species found within the SAC woodland and Limestone Pavement features. With confirmed cases of the disease both to east and west and no effective control beyond basic biosecurity it is probably only matter of time before it occurs on site. Potential loss of the main native tree species will adversely affect condition.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>6A</b>	Monitor for evidence of disease outbreak of <i>Chalara</i> (Ash Die-back).	Not yet determined	2015-20	Investigation / Research / Monitoring	Not yet determined	Forestry Commission	Natural England, Yorkshire Dales National Park Authority, British Bryological Society, Local conservation group, Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>6B</b>	Implement biosecurity and disease control measures.	Not yet determined	2014 onwards	Bio-security plan	Not yet determined	Forestry Commission	Natural England, Volunteers, Yorkshire Dales National Park Authority, Statutory Nature Conservation Body (SNCB) Statutory Nature Conservation Body (SNCB)

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>6C</b>	Make Ash Woodland stands more robust by diversifying both the genetic and species mix.	Not yet determined	2015 onwards	Habitat creation / restoration strategy: Habitat restoration	Natural England (NNR running costs), New Environmental Land Management Scheme (NELMS), Forestry Commission, Other stakeholder(s) contributions	Forestry Commission	Natural England, Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>6D</b>	Make Ash Woodland stands more robust by diversifying both the genetic and species mix.	Not yet determined	2015 onwards	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	New Environmental Land Management Scheme (NELMS)	Natural England	Forestry Commission, Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership

## 7 Invasive species

Rabbits are at least a periodic if not permanent grazing and/or burrowing problem on grassland/bog and scrub/woodland habitats. We are unable to apply measures through Agri-Environment beyond removing equivalent numbers of livestock as rabbits are deemed covered by the Vermin Act therefore control measures cannot be paid for.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>7A</b>	Investigate the relative impacts of rabbit grazing on key habitats.	£10,000-£20,000	2015-20	Investigation / Research / Monitoring	SSSI funding	Natural England	n/a

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>7B</b>	Encourage the control of rabbits to deliver habitat objectives.	Not yet determined	2014 onwards	Advice	Natural England	Natural England	Not yet determined
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>7C</b>	Where rabbits are impacting features under agri-environment, negotiate appropriate agreements to ensure that farmers reduce stock numbers accordingly.	Not yet determined	2014 onwards	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	Natural England	Natural England	Not yet determined

## 8 Undergrazing

Larger or more complex management units often support multiple notified features each with its own optimal management requirements. As a consequence either the scarcest habitat(s) must be prioritised to the detriment of others or some agreed level of compromise arrived at where conditions remain short of perfect. Examples would be that to get tree cover and emergent vegetation on limestone pavement short of fencing or cattle only grazing (most farms are sheep only or primarily sheep), grassland habitats will be undergrazed. Where cattle can be used flushes may get poached as the animals seek drinking water.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>8A</b>	Agree site and possibly unit specific targets on the priority of individual features and monitoring standards to apply, especially where each may have conflicting requirements.	Not yet determined	2015-20	Advice: Review Conservation Objectives	Natural England, Staff time	Natural England	

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>8B</b>	Negotiate with landowners/managers for more appropriate levels of grazing for notified interest feature(s).	Not yet determined	2014 onwards	Advice: Negotiation	Natural England, Staff time	Natural England	Yorkshire Dales National Park Authority, Voluntary conservation organisation(s)
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>8C</b>	Seek to place land under appropriate management within NELMS or that scheme's future successor.	from £40/ha per year upwards depending on options, plus capital works	2015-30	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	Rural Development Programme (RDPE), New Environmental Land Management Scheme (NELMS)	Natural England	Yorkshire Dales National Park Authority, Local land agent(s), FEP surveyor(s)

## 9 Drainage

Drainage systems are seen as a generic negative issue within wetlands, usually quite rightly. However, some on Ingleborough SAC long pre-date the site designation. Without further research it is unclear whether these have compromised areas of notified feature or if the feature has evolved alongside or even because of them. For example the existence of flush/mire habitat instead of a shallow lake, or the grazing prevented silting up into carr. The effects of manipulating and blocking such drains are also unclear: simply blocking the drains will result in inundation communities or a possible shallow lake. On other parts of the site water has been extracted for stock or human consumption. Further internal work is required to determine whether some locations should be regarded as exempt or outside monitoring as a consequence and where such activities are damaging. Unconsented drainage always remains a potential future threat.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>9A</b>	Investigate the existing underground stone drain system at Norber Bowl and their influence on the current vegetation. Undertake a stratigraphic/ fossil survey to determine the historic development and changes of vegetation here over time. Predict the likely effects of different manipulations of site water regime to determine the most appropriate to maintain and enhance the notified vegetation.	£5,000	2015-25	Investigation / Research / Monitoring	SSSI funding	Natural England	n/a
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>9B</b>	Fund appropriate measures to address drainage issues where these prove more complex, demanding or costly than that which is set within the HLS planned for this year.	Not yet determined	2014 onwards	Rural Development Programme for England (RDPE): Environmental Stewardship Higher Level Scheme (HLS)	England Rural Development Programme (ERDP)	Natural England	Defra
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>9C</b>	Investigate responsibilities of the landowner and Highways Agency regarding drainage of flushes from the site passing under the B6255 .Ingleton to Hawes road, south west of Chapel-le-Dale.	Not yet determined	2015-17	Advice: Other	Not yet determined	Natural England	Highways Agency, Yorkshire Dales National Park Authority, Landowner(s)



<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>9D</b>	Enforce SSSI Regulations in the event of future drainage incidents.	Not yet determined	2014 onwards	Advice: Negotiation	Not yet determined	Natural England	n/a

## 10 Deer

Deer browsing is causing lack of regeneration in woods and establishment of trees/scrub and emergent vegetation on Limestone Pavement

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>10A</b>	Investigate/ monitor deer populations in area and level of impact on features.	£8,000	2014-20	Investigation / Research / Monitoring	SSSI funding	Natural England	Yorkshire Dales National Park Authority

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>10B</b>	Manage deer populations especially around ash and other woodlands, limestone pavement and juniper areas.	Not yet determined	2015-30	Mechanism not identified / develop mechanism	Not yet determined	Local partnership	Yorkshire Dales National Park Authority

## 11 Climate change

Climate change may be leading to the loss of key species associated with the more upland and montane elements of calcareous rocky slopes and limestone pavement. Ingleborough has examples through the lowland/upland transition but over time only the former may remain. Certain key species cannot retreat as the habitat is fixed to the limestone band at circa 650 metres. There is no higher niche and only the north west aspect ameliorates any warming. The historic 'lowest altitude site in England' for Purple Saxifrage in Crummackdale appears lost, which is possible evidence that calcareous rocky slope habitat is affected.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>11A</b>	Review likely climate change impacts and identify appropriate adaptive actions.	Not yet determined	2015-21	Investigation / Research / Monitoring	Not yet determined	Natural England	n/a

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>11B</b>	Initiate monitoring to determine the degree to which this is occurring.	Not yet determined	2016-35	Investigation / Research / Monitoring	Not yet determined	Natural England	Volunteers, Local conservation group
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>11C</b>	Implement or introduce refugia, mitigation or seedbanks to conserve vulnerable species	Not yet determined	2020-30	Mechanism not identified / develop mechanism	Not yet determined	Defra	Natural England, Volunteers, Local conservation group

## 12 Forestry and woodland management

Post 1850 historic planting of larch and other non-native tree species on several limestone pavements, is an ongoing issue at Howrake Rocks. Other problematic species which are present in the location include scots pine, sycamore, beech and hornbeam.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>12A</b>	Seek agreement with landowner to remove non-native tree species from wooded pavement.	Not yet determined	2014-20	Advice: Negotiation	Not yet determined	Natural England	Forestry Commission
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>12B</b>	Implement agreement with landowner to remove non-native tree species from wooded pavement.	£20,000	2020-25	Rural Development Programme for England (RDPE): Common Agricultural Policy 2014-20 (New Environmental Land Management Scheme)	New Environmental Land Management Scheme (NELMS)	Natural England	Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>12C</b>	Felling Licence to cover actions 12A and 12B.	Not yet determined	2020-25	Regulation: Felling Licence	Landowner(s)	Forest Services	Natural England
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>12D</b>	Option to seek direct purchase of land and bring it under direct NNR control, should the above approaches fail.	£10,000	2021-26	Land / Tenancy Acquisition: Land Acquisition	Natural England	Natural England	n/a

### 13 Disease

The potential spread of *Phytophthora* species which infect *Vaccinium* and/ or other dwarf shrub species onto the site is a concern. This is a potential threat mainly to the blanket bog community through reduction or loss of one or more dwarf shrub species which are usually present as part of this habitat.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>13A</b>	Monitor the dwarf shrub community on bogs/wet heath for <i>Phytophthora</i> die-back	Not yet determined	2014-25	Investigation / Research / Monitoring	Natural England, Statutory partner budget	Natural England	Defra, Forestry Commission, Food and Environment Research Agency (FERA)
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>13B</b>	Implement biosecurity and disease control measures	Not yet determined	2014	Bio-security plan	Core budget	Forestry Commission	Defra, Natural England

## 14 Invasive species

The larval stage of the heather beetle browses heather causing die back or death of individual plants reducing or removing one indicator species and thereby affecting condition. Heather extent has been affected recently on part of the site and there is the potential for this to spread and occur elsewhere and in the future. There is no real effective control beyond natural cycles of parasitism as damage to heather has usually occurred by the time outbreak is spotted. By then the larvae are dropping into the ground layers ready to pupate.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>14A</b>	Monitor impacts of heather beetle damage to see if combined with other pressures there are more detrimental impacts on the dwarf shrub component of bog vegetation.	Not yet determined	2014-25	Investigation / Research / Monitoring	Natural England	Natural England	n/a
<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>14B</b>	Remedial actions if large-scale, and/or repeated heather beetle impacts the habitat in conjunction with other threats and pressures.	Not yet determined	2020-30	Mechanism not identified / develop mechanism	Not yet determined	Natural England	n/a

## 15 Hydrological changes

Exploratory digs relating to caving can result in changes to local hydrology.

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>15A</b>	Work with local caving clubs to raise awareness of potential impact of caving in sensitive areas.	Not yet determined	2014-30	Advice: Negotiation	Not yet determined	Natural England	Landowner(s), Council for Northern Caving Clubs, Caving club(s), Yorkshire Dales Millennium Trust, Ingleborough Dales Landscape Partnership

<i>Action</i>	<i>Action description</i>	<i>Cost estimate</i>	<i>Timescale</i>	<i>Mechanism</i>	<i>Funding option</i>	<i>Delivery lead body</i>	<i>Delivery partner(s)</i>
<b>15B</b>	Prevent caving exploratory digs in sensitive locations.	Not yet determined	2014-30	Mechanism not identified / develop mechanism	Not yet determined	Natural England	Council for Northern Caving Clubs

## Site details

The tables in this section contain site-relevant contextual information and links

### Qualifying features

#UK Special responsibility

#### Ingleborough Complex SAC

H8240# Limestone pavements

H5130 Juniperus communis formations on heaths or calcareous grasslands

H6210# Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

H7220# Petrifying springs with tufa formation (*Cratoneurion*)

H7130# Blanket bogs

H7230 Alkaline fens

H6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

H9180# *Tilio-Acerion* forests of slopes, screes and ravines

H8210 Calcareous rocky slopes with chasmophytic vegetation

### Site location and links

#### Ingleborough Complex SAC

Area (ha) **5769.28**      Grid reference **SD756739**      [Map link](#)

Local Authorities      North Yorkshire

Site Conservation Objectives      [European Site Conservation Objectives for Ingleborough Complex SAC](#)

European Marine Site conservation advice      [n/a](#)

Regulation 33/35 Package      [n/a](#)

Marine Management Organisation site plan      [n/a](#)

## Water Framework Directive (WFD)

*The Water Framework Directive (WFD) provides the main framework for managing the water environment throughout Europe. Under the WFD a management plan must be developed for each river basin district. The River Basin Management Plans (RBMP) include a summary of the measures needed for water dependent Natura 2000 sites to meet their conservation objectives. For the second round of RBMPs, SIPs are being used to capture the priorities and new measures required for water dependent habitats on Natura 2000 sites. SIP actions for non-water dependent sites/habitats do not form part of the RBMPs and associated consultation.*

### **Ingleborough Complex SAC**

<i>River basin</i>	North West	<a href="#">North West RBMP</a>
<i>WFD Management catchment</i>	Lune, Ribble	
<i>WFD Waterbody ID (Cycle 2 draft)</i>	GB112072071840	

## Overlapping or adjacent protected sites

Site(s) of Special Scientific Interest (SSSI)	
<b>Ingleborough Complex SAC</b>	Whernside SSSI Oxenber & Wharfe Woods SSSI Ingleborough SSSI
National Nature Reserve (NNR)	
<b>Ingleborough Complex SAC</b>	Ingleborough NNR
Ramsar	
<b>Ingleborough Complex SAC</b>	n/a
Special Areas of Conservation (SAC) and Special Protection Areas (SPA)	
<b>Ingleborough Complex SAC</b>	n/a



<i>Version</i>	<i>Date</i>	<i>Comment</i>
0.5	15/10/2014	

[www.naturalengland.org.uk/ipens2000](http://www.naturalengland.org.uk/ipens2000)

