Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A

2019-2024

Conservation status assessment for the habitat:

H91D0 - Bog woodland

Wales

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This report was produced by JNCC in collaboration with Natural Resources Wales.

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Important note - Please read

- The information in this document represents Wales Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural Resources Wales, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the habitat are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this habitat (section 11 National Site Network coverage for Annex I habitats).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the JNCC website.

Assessment Summary: Bog woodland
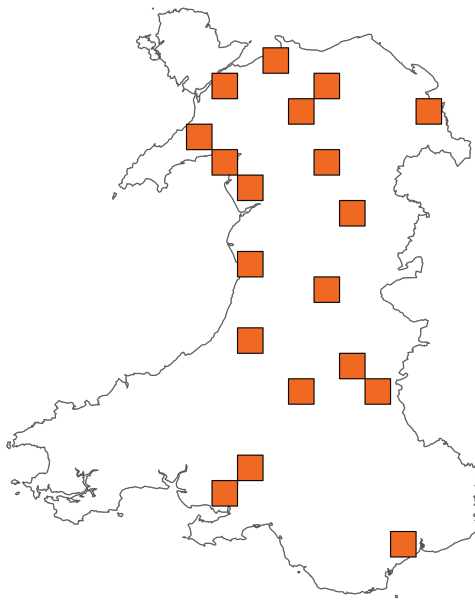
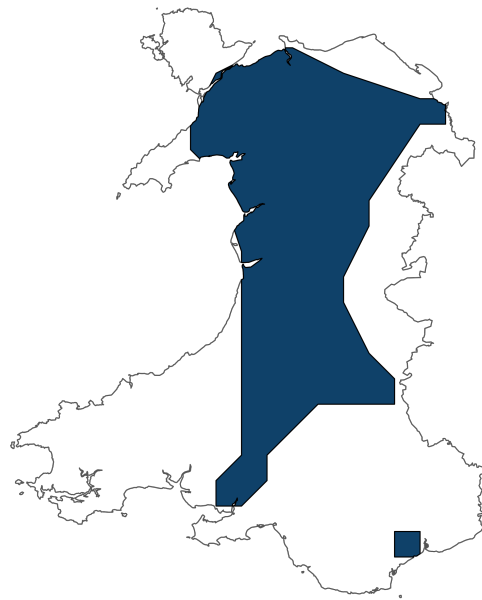| Distribution Map	Range Map

Figure 1: Wales distribution and range map for H91D0 - Bog woodland. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available habitat records within the current reporting period.

Table 1: Table summarising the conservation status for H91D0 - Bog woodland. Overall conservation status for habitat is based on assessments of range, area covered by habitat, structure and functions, and future prospects.

Overall Conservation Status (see section 10)

Unfavourable-bad (U2)

Breakdown of Overall Conservation Status

Range (see section 4)	**Favourable (FV)**
Area covered by habitat (see section 5)	**Unfavourable-inadequate (U1)**
Structure and functions (see section 6)	**Unknown (XX)**
Future prospects (see section 9)	**Unfavourable-bad (U2)**

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Habitat code	H91D0 - Bog woodland

2. Maps

2.1 Year or period	1985-2012
2.2 Distribution map	Yes
2.3 Distribution map; Method used	Based mainly on extrapolation from a limited amount of data

2.4 Additional information

No additional information

Biogeographical Level

3. Biogeographical and marine regions

3.1 Biogeographical or marine region where the habitat occurs   ATL

3.2 Sources of information

See section 13 References

4. Range

4.1 Surface area (km²)	8,617.86
4.2 Short-term trend; Period	2014-2024
4.3 Short-term trend; Direction	Stable

4.4 Short-term trend; Magnitude

a) Estimated minimum

b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
4.5 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
4.6 Long-term trend; Period	
4.7 Long-term trend; Direction	
4.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	
4.9 Long-term trend; Method used	
4.10 Favourable Reference Range (FRR)	
a) Area (km²)	
b) Pre-defined increment	Current range is less than 2% smaller than the FRR
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate
4.11 Change and reason for change in surface area of range	
a) Change	No
b) Genuine change	
c) Improved knowledge or more accurate data	

d) Different method

e) No information

f) Other reason

g) Main reason

4.12 Additional information

No additional information

5. Area covered by habitat

5.1 Year or period	1985-2012
5.2 Surface area (km²)	
a) Minimum	
b) Maximum	
c) Best single value	1.5
5.3 Type of estimate	Best estimate
5.4 Surface area; Method used	Based mainly on extrapolation from a limited amount of data
5.5 Short-term trend; Period	
5.6 Short-term trend; Direction	Unknown
5.7 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
5.8 Short-term trend; Method used	Insufficient or no data available
5.9 Long-term trend; Period	

5.10 Long-term trend; Direction	Unknown
5.11 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	
5.12 Long-term trend; Method used	Based mainly on extrapolation from a limited amount of data
5.13 Favourable Reference Area (FRA)	
a) Area (km²)	
b) Pre-defined increment	Current area is between 2% and 10% smaller than the FRA
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate
5.14 Change and reason for change in surface area of range	
a) Change	No
b) Genuine change	
c) Improved knowledge or more accurate data	
d) Different method	
e) No information	
f) Other reason	
g) Main reason	

5.15 Additional information

No additional information

6. Structure and functions

6.1 Condition of habitat (km²)

Area in good condition

ai) Minimum	0.06
aii) Maximum	0.06

Area not in good condition

bi) Minimum	0.06
bii) Maximum	0.06

Area where condition is unknown

ci) Minimum	1.38
cii) Maximum	1.38
6.2 Condition of habitat; Method used	Based mainly on expert opinion with very limited data
6.3 Short-term trend of habitat area in good condition; Period	
6.4 Short-term trend of habitat area in good condition; Direction	Unknown
6.5 Short-term trend of habitat area in good condition; Method used	Insufficient or no data available

6.6 Typical species

Has the list of typical species changed in comparison to the previous reporting period?	No
6.7 Typical species; Method used	

6.8 Additional information

Typical species were not used directly in the assessment of conservation status for habitat structure and function as a comprehensive list of typical species for each habitat was not available. However, the status of typical species was considered when the

condition of individual sites was assessed using Common Standards Monitoring Guidance. Common Standards Monitoring (CSM) data was used to assess the area of habitat in 'good' and 'not good' condition (field 6.1). Species were a component of the attributes assessed under CSM. Therefore, an assessment of species is considered to have formed part of the reporting under field 6.1 which supported the Habitats Structure and Function assessment (field 10.3).

7. Main pressures

7.1 Characterisation of pressures

Table 2: Pressures affecting the habitat, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PK03: Mixed source air pollution, air-borne pollutants	Ongoing and likely to be in the future	High (H)
PK04: Atmospheric N-deposition	Ongoing and likely to be in the future	High (H)
PI02: Other invasive alien species (other than species of Union concern)	Ongoing and likely to be in the future	High (H)
PA22: Drainage for use as agricultural land	Ongoing and likely to be in the future	High (H)
PJ14: Other climate related changes in abiotic conditions	Ongoing and likely to be in the future	Medium (M)
PA08: Extensive grazing or undergrazing by livestock	Only in future	Medium (M)
PA07: Intensive grazing or overgrazing by livestock	Only in future	Medium (M)
PK01: Mixed source pollution to surface and ground waters (limnic and terrestrial)	Only in future	Medium (M)
PJ03: Changes in precipitation regimes due to climate change	Only in future	High (H)
PI04: Plant and animal diseases, pathogens and pests	Only in future	Medium (M)

PI03: Problematic native species	Only in future	Medium (M)

7.2 Sources of information

See section 13 References

7.3 Additional information

No additional information

8. Conservation measures

8.1: Status of measures

a) Are measures needed?	Yes
b) Indicate the status of measures	Measures identified and taken
8.2 Main purpose of the measures taken	Maintain the current range, surface area or structure and functions of the habitat type
8.3 Location of the measures taken	Both inside and outside National Site Network
8.4 Response to measures	Medium-term results (within the next two reporting periods, 2025–2036)

8.5 List of main conservation measures

Table 3: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/ immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
MA13: Manage agricultural drainage and water abstraction (incl. the restoration of drained or hydrologically altered habitats)	High (H)
MB08: Restoration of Annex I forest habitats (incl. re-establish and improvement)	High (H)
MI03: Management, control or eradication of other invasive alien species	High (H)
MJ02: Implement climate change adaptation measures	Medium (M)

MK01: Reduce impact of mixed source pollution	Medium (M)
MA11: Reduce/eliminate air pollution from agricultural activities	Medium (M)
MC09: Manage/reduce/eliminate air pollution from resource exploitation and energy production	Medium (M)

8.6 Additional information

No additional information

9. Future prospects

9.1a Future trends of parameters

ai) Range — Positive - increasing <=1% (one percent or less) per year on average

bi) Area — Unknown

ci) Structure and functions — Very negative - important deterioration

9.1b Future prospects of parameters

aii) Range — Good

bii) Area — Unknown

cii) Structure and functions — Bad

9.2 Additional information

No additional information

10. Conclusions

10.1 Range — Favourable (FV)

10.2 Area — Unfavourable-inadequate (U1)

10.3 Specific structure and functions (incl. typical species) — Unknown (XX)

10.4 Future prospects — Unfavourable-bad (U2)

10.5 Overall assessment of Conservation Status

Unfavourable-bad (U2)

10.6 Overall trend in Conservation Status

Unknown

10.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

10.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

10.8 Additional information

No additional information

11. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex I habitat types

11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network (km²)

a) Minimum	
b) Maximum	
c) Best single value	0.15
11.2 Type of estimate	Best estimate
11.3 Habitat area inside the network; Method used	Based mainly on expert opinion with very limited data
11.4 Short-term trend of habitat area within the network; Direction	Uncertain

11.5 Short-term trend of habitat area within the network; Method used	Based mainly on expert opinion with very limited data
11.6 Short-term trend of habitat area in good condition within the network; Direction	Unknown
11.7 Short-term trend of habitat area in good condition within the network; Method used	Insufficient or no data available

11.8 Additional information

No additional information

12. Complementary information

12.1 Justification of percentage thresholds for trends

No justification information

12.2 Other relevant information

No other relevant information

13. References

Biogeographical and marine regions

3.2 Sources of information

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Welsh Government. 2023. The Agriculture (Wales) Act 2023. Available from: https://www.gov.wales/agriculture-wales-act-2023

Welsh Government. 2024a. The Clean Air Plan for Wales 2024. Available from: https://www.gov.wales/clean-air-plan-wales-healthy-air-healthy-wales

Welsh Government. 2024b. The Environment (Air Quality and Soundscapes) (Wales) Act 2024. Available from: https://www.legislation.gov.uk/asc/2024/2/contents

Main pressures

7.2 Sources of information

No sources of information

14. Explanatory Notes

Field label	Note
2.1: Year or period	An analysis of the range and extent of likely H91D0 Bog woodland in Wales was carried out in 2012 from relevant vegetation legacy surveys (NRW, 2013). No new information has become available to significantly or confidently update this analysis, and there is also no reason to expect that the range and extent of the habitat has changed significantly since 2012; any changes are likely to be trivial in comparison to the uncertainty associated with the results of the analysis. For these reasons the figures and analysis for 2012 are reproduced here.
2.3: Distribution map; Method used	1985 – 2012 (Analysis as for 2012; see section 2.1). 91D0 Bog woodland has a fragmentary occurrence in Wales and is poorly quantified. Strictly, it comprises only woodland that occurs on ombrogenous active bogs (with often a very loose canopy) and without detriment to bog species. A greater understanding is required on the hydrological requirements of this rare woodland type to see if it is confined to ombrogenous conditions or can occur on groundwater affected situations. It is presumed currently to occur on WETMEC 1 ombrogenous peats (Environment Agency, 2009), but also on WETMEC 2 peats where the bog surface is ombrogenous but the overall water tables are governed by groundwater influences. It remains to be seen whether bog woodland also occurs on WETMEC 3 ground-water fed peats. It excludes invasion of bogs by trees following changes such as drainage or burning. It equates best to W4c (the rare, Sphagnum sub-community) but also has affinities to W2b (Sphagnum sub-community) and W3 (JNCC, 2017). None of these communities are well known in Wales. Latham (2001) includes only 15 records of W4c, with a total area of only 20ha. W2b has only 6 records

with a total of 22ha, but it is uncertain how well this fits the bog woodland type and these records are cautiously included . W3 has been recorded a handful of times, but it is uncertain how well these examples actually fit the NVC community and so it is prudent not make the leap to considering them also to be bog woodland.

Bog woodland is not recorded on CCW Phase 1 Habitat mapping as different semi-natural broadleaved types are not distinguished (Blackstock, et al. 2010). Attempts were made to identify it by selecting bog habitats with 'scattered trees' codes, but no likely examples were found. JNCC SAC features lists records 83 ha of bog woodland on 7 SACs in Wales. However, the origin of these figures isn't clear and not supported by survey data on known sites. It seems likely that a proportion of this area has been recorded in error through the confusion with other woodland types (e.g. W4a and W4b, which are far more common (Latham, 2001)). Existing records for bog woodland sites are not numerous, but widespread, occurring throughout north and mid Wales, present in southeast Wales, but absent from the southwest. However, the total number is too few to confidently draw conclusions on actual range. Although the habitat clearly is uncommon, other small examples are likely to exist. There is no obvious mechanistic way to estimate total area of bog woodland in Wales. Latham (2000) estimated a total of 126ha by extrapolation by area of W4c, with a range of 50-100ha. This excluded W2b and some additional tiny areas of W4c have since been identified , so the total may be somewhat higher. Based on expert opinion, a cautious figure of 150ha is suggested, with a range of 100-200 ha.

4.11: Change and reason for change in surface area of range	The distribution of Bog woodland in Wales has not been re-assessed for the current report and 10 km squares from which it has been reported are unchanged.
5.1: Year or period	Total evidence range 1985-2012. Base area figures from NFI used in the analysis are from 2006 (aerial photography derived, published under NFI 2011), some assumptions on

	proportions used in calculations derive from surveys accumulated from 1985 – 2000.
5.2: Surface area	The area figures have been derived from analysis of the proportional representation of probable H91D0 within relevant vegetation surveys, across Wales. The scope of this analysis did not allow for a formal statistical treatment of errors, and some expert judgement has been used to derive pragmatic range values. Also see comments in section 2.3
5.4: Surface area; Method used	The area figures have been derived from analysis of the proportional representation of probable H91D0 within relevant vegetation surveys, across Wales. The scope of this analysis did not allow for a formal statistical treatment of errors, and some expert judgement has been used to derive pragmatic range values. Also see comments in section 2.3
5.8: Short-term trend; Method used	There is no evidence available to judge short-term trends in the total area of this habitat. The total extent figures are derived from data with a wide time base, and their confidence errors are likely to be very much larger than any figures for ad hoc changes that may be reported.
6.2: Condition of habitat; Method used	Assessment of previous reporting rounds structure and function is based on the results of Common Standards Monitoring visits at two sites, 50% of sites where the habitat occurs as a feature (NRW, 2018), most recently assessed in 2007 and 2014. (Note that this excludes the wetland at Cors Caron included in error as bog woodland – this is secondary birch woodland resulting from tree invasion following partial drainage of the bog surface). Recent figures indicate that all areas of bog woodland also exceed targets for airborne nitrogen, but no data was available for previous reporting rounds so no comparison can be made.
6.3: Short-term trend of habitat area in good condition; Period	No sites have been reassessed between 2013 and 2024, so no conclusions can be made regarding any short-term trends in condition. However the country-wide increases in impact of N-deposition are having a negative impact and were noted in 2015. New figures re-enforce this with all

	bog areas of bog woodland exceeding atmospheric nitrogen targets.
6.4: Short-term trend of habitat area in good condition; Direction	No sites have been reassessed between 2013 and 2024, so no conclusions can be made regarding any short-term trends in condition. However the country-wide increases in impact of N-deposition must be having an increasing negative impact on bog woodland.
7.1: Characterisation of pressures	Pressures: Five pressures are suggested as High or Medium. PK03 Air pollution and PK04 Atmospheric N-deposition appears to be a universal pressure, with all stands in areas where the Critical Load for nitrogen is exceeded coupled with more local impacts from agricultural activities. The impacts of nitrogen deposition and other forms of air pollution are poorly recorded in site monitoring and poorly reflected in NRW's Actions Database, but it is rated as high because of its comprehensive impact and because bryophyte species are critical to this habitat and are likely to be especially sensitive to air pollution impacts. Though nitrogen levels are falling, but so have SO_2 levels and this has led to an increased negative affect of nitrogen pollution on all habitats in Wales as the mediating effect of acidity from the SO_2 has fallen. PI02 Invasive non-native species are a widespread problem, especially Rhododendron ponticum which may colonise and have serious impacts on bog habitats. PA22 relating to water levels and drainage is likely to be a significant pressure on bog woodland. Bog woodland on sites where National Peatland Action Programme has carried out restoration works should be more robust and resilient. PJ03 'Other climate related changes in biotic conditions' has been included as a catch-all for the complex of

interactions relating to long-term habitat loss, fragmentation, reduction of permeability of the matrix leading to reduced ecological connectivity, combined with the additional pressures of climate change that may require habitat range adaptation. They also interact with many of the specific climate change pressures that have been listed. These impacts are hard to quantify but likely to be ongoing, but as mentioned above, sites where NPAP have restored favourable water tables, then any stands of bog woodland should now be more resilient to changes in climate.

Other pressures identified as Low are:

PA08, which involves insufficient grazing and PA07 which relates to over-grazing. This apparently contradictory situation comes about because an intermediate level of grazing is likely to be required to provide suitable conditions for both rare species (bryophytes and lichens) and for tree regeneration, and this is hard to achieve practically. Ideally management should be considered (and coordinated) across a series of sites which collectively provide all required conditions, but not necessarily at the same time in the same place.

PK01 mixed source pollution to surface and ground waters is likely to be an issue for Bog woodland in some situations, and important because of the high water-dependency of the habitat.

A further possible pressure on Bog woodland that does not seem to be accommodated in the EU codes is the inadvertent damage or destruction of habitat through the removal of trees perceived as 'invasive scrub' during conservation projects to restore open wetland sites. Though this is more likely to occur in woodland stands on mire surfaces due to anthropogenic factors such as draining and increasing levels of nitrogen pollution, which are not included within the definition of bog woodland

Method used – pressures

The assessment was based on the submission for 2012, reconsidered using expert knowledge updated accordingly for 2024. The data held in the 'Actions Database' were used to provide a basis for quantifying pressures/threats relating to Bog woodland, coupled with expert judgement on the severity of these pressures/threats (at a generic level) to give an overall evaluation of the pressure/threat level (for more details see Guest, 2012). For woodland, the Actions Database does not list Annex 1 habitats on SSSIs, so this analysis is based primarily on issues recorded on SACs, informed where possible by knowledge of the habitat on SSSIs elsewhere. Bog woodland has only been recorded on two management units in Wales, so these do not provide a complete basis for assessing threats. Issues raised however, are probably widely relevant.

Threats:

All the pressures identified above can be expected to remain as threats.

PI02 invasive species may well increase in abundance and additional species become a problem, possibly encouraged by climate change, although awareness of the problem is good and management is widespread.

P104 tree pathogens and PI03 deer browsing are not currently known to be a pressure within Bog woodland but pose a significant threat to all woodland types.

PJ02 'droughts and decreases in precipitation due to climate change' are not currently known to affect the Bog woodland resource but have the potential for serious future impacts through climate change. This will have lessened on sites where positive water level management has been undertaken, creating more resilient water table regimes and

	mediating the effects of any potential climate change. Method used – threats: Expert opinion The pressures identified in pressures were used as a basis for threats, but additional information and expert opinion used to extrapolate to possible future impacts, and to identify large scale issues such as those of climate change that are not evident on a site reporting basis.
8.1: Status of measures	While the majority of most important measures have been identified and taken, in reality some identified measures have not yet been taken while other interventions are needed but the mechanisms have not been resolved.
8.2: Main purpose of the measures taken	The majority of the most important measures currently being undertaken are focused on maintaining the structure and hydrological functions of existing stands of Bog woodland. However, several are also aimed at restoring the structure and functions both on individual sites and to the resource as a whole.
8.5: List of main conservation measures	MB08 Restoration of Annex I forest habitats. This measure is critical for Bog woodland which are both highly fragmented and localised, as well as often overlooked and poorly understood. Opportunities for restoration may arise particularly during projects to restore active peatlands following drainage and planting with conifer crops. To do this it is also vital to ensure Bog woodland is recognised as an important habitat in its own right. The forest to bog restoration being carried out on areas of afforested deep peat, by the National Peatland Action Programme may facilitate this MK01 Reduce impact of mixed source pollution. MA11: Reduce/eliminate air pollution from agricultural activities MC09: Manage/reduce/eliminate air pollution from resource

exploitation and energy production

The impacts are probably high and significant on this habitat, but not clear what actions may be done locally to reduce deposition levels in addition to national current regulation of air pollution, hence the Medium ranking assigned here. However, data indicates that both levels of N and SO2 are declining (CEH Trends report), but the mediating affect of SO2 has also correspondingly reduced. So now the effect of N-pollution is more pronounced and visible across Wales. It will take a while for levels of N to reduce sufficiently for its effects on both habitat and species to visibly reduce.

There are various air quality strategies and initiatives in place to protect and enhance biodiversity. Air quality limit values set out in the Air Quality Strategy (AQS) are transposed into national legislation by the Air Quality Standards Regulations 2010. Nitrogen deposition continues to impact semi-natural habitats in Wales. These regulations are not habitat-specific, however with introduction of The Environment (Air Quality and Soundscapes) (Wales) Act 2024 in Wales, brings in new national targets for air quality pollutants, with the potential of directly influencing habitat protection.

This key legislative advancement requires mandatory targets for fine particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$) to be established by February 2027, including new powers for Welsh Ministers to set pollutant-specific targets in future years (e.g., ammonia, nitrogen dioxide) linked to biodiversity outcomes, potentially enabling future habitat-sensitive thresholds.

Welsh Government have also introduced The Agriculture (Wales) Act in 2023. It aims to establish a framework of Sustainable Land Management (SLM) objectives to underpin agricultural support, including the Sustainable Farming Scheme (SFS). The Act provides Welsh Ministers

with the power to provide support (financial or otherwise) for or in connection with 15 purposes, including 'Improving air quality'. Welsh Government published a consultation on the SFS which closed in March 2024. Welsh Ministers will not be making final scheme design decisions until further stakeholder work is undertaken.

MI03 Management, control or eradication of other invasive alien species.

INNS are a problem in Bog woodland with potential for much greater impact, Rhododendron ponticum being a concern and requiring coordinated management programmes at a landscape scale.

MA13 Manage agricultural drainage and water abstraction

This relates to the restoration of appropriate hydrological conditions for Bog woodland, for example raising water tables through managing drains or LIFE Project restoration management. NPAP restoration work also should be included here.

MJ02 Implement climate change adaptation measures.

This relates to the broad need to develop the resilience of the Bog woodland resource beyond the individual site level, planning large scale ecological networks that provide functional connectivity for relevant species between protected sites that allows both mitigation for long-term habitat loss and fragmentation and the capacity for climate change adaptation (e.g. Watts et al., 2005; Latham et al., 2013). The Raised Bog LIFE project will potentially have contributed positively to this as will be NPAP.

Low ranking conservation measures:

MA05/MA06 These two measures relate to developing appropriate grazing regimes that deliver spatial and

temporal variation in grazing intensity across the resource to accommodate the ecological requirements of both tree regeneration and the characteristic and rare species of the habitat; this measure will often to relevant to H91A0 Old sessile oakwood habitat which Bog woodland often occurs in association.

MI06 Controlling and eradicating plant and animal diseases, pathogens and pests. This primarily relates to vigilance and the development of management and contingency plans to address the impacts of plant pathogens such as Phyophthora species.

MI05 Management of problematic native species - the management of deer and their impacts. The long-term objective is to have populations of deer present at levels appropriate to the local ecology of sites. allowing them to deliver a positive ecosystem function.

| 9.1:Future trends and prospects of parameters | Range:

Bog woodland has a wide range in Wales, although the total area is very restricted due to habitat requirements. With suitable restoration initiatives there is the potential to increase the habitat's range.

Area:

The potential area of Bog woodland is limited by suitable establishment sites and competition for restoration to other semi-natural habitats on peatland. There are also fundamental unknowns about the ecology of the habitat in Wales and the potential for establishing functional examples of the habitat. A general increase in woodland cover looks likely in Wales as it is supported by WG policy, but this is unlikely to be relevant to Bog woodland as policies preclude planting on peat. However, re-establishment of lagg woodland on raised bog sites could have a positive outcome for this habitat. The forest to bog restoration facilitated by NPAP will contribute to this as will |

the future outcomes of the raised Bog LIFE project.

Structure & function:

There are a number of negative factors which may increasingly affect Bog woodland. Its ecology is any case poorly understood in the Welsh context and it is not possible to predict trends with any confidence.

The Future prospects for Structure and functions takes into account that at least 25% of the habitat area is expected to be in unfavourable (not good) condition in c.2035 due to nutrient N critical load exceedance, unless additional measures are taken to reduce N deposition impacts.

10.1: Range	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is stable; and (ii) the current Range surface area is approximately equal to the Favourable Reference Range.
10.2: Area	Conclusion on Area reached because:(i) the short-term trend direction in Area is unknown; (ii) the current Area is not more than 10% below the Favourable Reference Area and iii) there has been no significant change in distribution pattern within range
10.3: Specific structure and functions	Conclusion on Structure and function reached because the condition of the habitat is unknown as over 75% of the habitat has 'unknown' condition.
10.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are good; (ii) the Future prospects for Area covered by habitat are unknown; and (iii) the Future prospects for Structure and function are bad.
10.5: Overall assessment of Conservation Status	Overall assessment of Conservation Status is Unfavourable-bad because one or more of the conclusions are Unfavourable-bad.
11.3: Surface area of the habitat type inside the network; Method used	Bog woodland is poorly understood and defined in Wales. NVC surveys provide some information on the resources but are unlikely to have comprehensively mapped all Bog woodland reliably. Surveys are described in Latham (2001)

	and digitised by GIS analysis (held on NRW GIS system). Areas of Bog woodland have previously been calculated for inclusion on JNCC's data forms: values for each of these for which the habitat is listed as a feature (grades A-D) were compiled, but then compared with habitat maps to re-assess the total area of Bog woodland included on SACs rather than that originally mapped as a feature. A greater understanding is required on the hydrological requirements of this rare woodland type to see if it is confined to ombrogenous conditions or can occur on groundwater affected situations. It is presumed currently to occur on WETMEC 1 ombrogenous peats (Environment Agency, 2009), but also on WETMEC 2 peats where the bog surface is ombrogenous but the overall water tables are governed by groundwater influences. It remains to be seen whether bog woodland also occurs on WETMEC 3 ground-water fed peats.
11.4: Short-term trend of habitat area within the network; Direction	Two sites were assesses as being negatively impacted by airborne pollutants in 2015. No sites have been reassessed between 2019 and 2024, but it is assumed that airborne pollution is still negatively affecting all habitats in Wales as target levels for nitrogen are 100% exceeded. Data from CEH Trends Report indicate that greater areas of Wales are currently being more heavily impacted by atmospheric nitrogen
5.13: Favourable Reference Area (FRA)	The UK-level FRV for surface area was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current habitat extent and trends.
4.10: Favourable Reference Range (FRR)	The UK-level FRV for range was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent

reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current distribution and trends.