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

2019-2024

Conservation status assessment for the habitat:

H91E0 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

Wales

For further information please contact:

Natural Resources Wales, Welsh Government Offices, Cathays Park, King Edward VII Avenue, Cardiff, CF10 3NQ. https://naturalresources.wales

JNCC, Quay House, 2 East Station Road, Fletton Quays, Peterborough, PE2 8YY. https://jncc.gov.uk

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

This document should be cited as:

Natural Resources Wales and JNCC. (2026). Conservation status assessment for the habitat: H91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*).

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: Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)
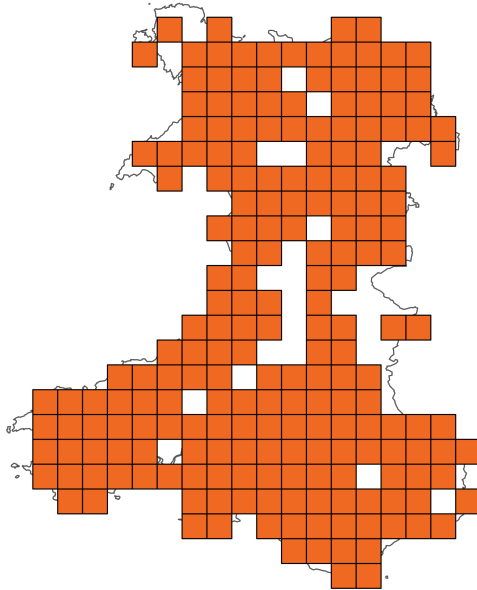
Distribution Map	Range Map

Figure 1: Wales distribution and range map for H91E0 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*). 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 H91E0 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*). 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	H91E0 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

2. Maps

2.1 Year or period	2006-2011
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)	20,596.31
4.2 Short-term trend; Period	2013-2024
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	2006-2011
5.2 Surface area (km²)	
a) Minimum	
b) Maximum	
c) Best single value	30
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	
5.11 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	
5.12 Long-term trend; Method used	
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	0.22
aii) Maximum	0.22

Area not in good condition

bi) Minimum	4.79
bii) Maximum	4.79

Area where condition is unknown

ci) Minimum	24.9
cii) Maximum	24.9
6.2 Condition of habitat; Method used	Based mainly on extrapolation from a limited amount of 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
PA21: Active abstraction of water for agriculture	Ongoing and likely to be in the future	High (H)
PA01: Conversion into agricultural land (excluding drainage and burning)	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)
PJ14: Other climate related changes in abiotic conditions	Ongoing and likely to be in the future	Medium (M)
PF01: Conversion from other land uses to built-up areas	Ongoing and likely to be in the future	Medium (M)
PK03: Mixed source air pollution, air-borne pollutants	Ongoing and likely to be in the future	Medium (M)
PK01: Mixed source pollution to surface and ground waters (limnic and terrestrial)	Ongoing and likely to be in the future	Medium (M)
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) |
| MI06: Controlling and eradicating plant and animal diseases, pathogens and pests | 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	Positive - increasing <=1% (one percent or less) per year on average
ci) Structure and functions	Very negative - important deterioration

9.1b Future prospects of parameters

aii) Range	Good
bii) Area	Poor
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	4.35
11.2 Type of estimate	Best estimate
11.3 Habitat area inside the network; Method used	Complete survey or a statistically robust estimate
11.4 Short-term trend of habitat area within the network; Direction	Unknown

11.5 Short-term trend of habitat area within the network; Method used	Complete survey or a statistically robust estimate
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	Based mainly on extrapolation from a limited amount of data

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

Blackstock T. H., Howe E. A., Stevens J. P., Burrows C. R. & Jones P. S. 2010. Habitats of Wales. A comprehensive field survey 1979–1997. University of Wales Press, Cardiff.

Dargie, T. and Dargie, J. 1998. An inventory and conservation review of coastal grazing marsh and floodplain habitats in Wales. Stage 1, inventory. CCW Science Report, 274.

Environment Agency 2004. Flood Zones for England. Issued by Flood Mapping Programme, Environment Agency, Rio House, Bristol.

Forestry Commission 2011. National Forest Inventory Woodland Area Statistics: Wales: https://cdn.forestresearch.gov.uk/2022/02/nfi_wales_woodland_area_stats_2010_final.pdf

Forestry Commission 2018a. Top tree diseases Phytophthora alni. https://www.forestry.gov.uk/palni [Accessed 21/06/18]

Forestry Commission, 2018b. Chalara dieback of ash (Hymenoscyphus fraxineus). https://www.forestry.gov.uk/ashdieback/ [Accessed 21/06/18]

Guest, D. 2012. Assessing pressures and threats for Article 17 reporting based on information in CCW's Actions Database. CCW Staff Guidance Note.

JNCC 2017. Habitat account – Forests. 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) http://jncc.defra.gov.uk/ProtectedSites/SACselection/habitat.asp?FeatureIntCode=H91E0 [Accessed 21/06/18]

Latham, J. 2000. Estimates of areas of woodland HSP types and HSD Annex 1 habitats in Wales. Unpublished CCW staff report.

Latham, J. 2001. National Vegetation Classification of woodland in Wales: a summary of survey results 1985-2000. CCW Natural Science Report, 01/7/1, CCW, Bangor.

Latham, J. 2003. Woodlands. In: Priority habitats of Wales: a technical guide. Jones, P.S., Blackstock, T.H., Burrows, C.R. and Howe, E.A. (Eds). Countryside Council for Wales, Bangor.

Latham, J. & Rothwell, J. 2012. Estimates of the area and distribution of woodland Annex 1 types in Wales based on GIS analyses. CCW Staff Report, CCW Bangor.

Latham, J., Sherry, J. and Rothwell, J. 2013. Ecological connectivity and biodiversity prioritisation in the terrestrial environment of Wales. CCW Staff Science Report No. 13/3/3. Countryside Council for Wales, Bangor.

Natural Resources Wales (NRW). 2013. Supporting documentation for the Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012 Conservation status assessment for Habitat: H91E0: Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion Incanae, Salicion albae) Available from: https://webarchive.nationalarchives.gov.uk/ukgwa/20180804112811mp_/http://jncc.defra.gov.uk/pdf/Article17Consult_20131010/H91E0_WALES.pdf

Natural Resources Wales (NRW). 2018. SAC and SPA Monitoring Programme Results 2013-2018. Available from: https://www.data.gov.uk/dataset/45ee3877-d89e-48e1-a581-a60d055c70c0/special-areas-of-conservation-sac-and-special-protection-areas-spa-monitoring-program-2013-20181 [Accessed 19/0618)]

Natural Resources Wales (NRW) 2019. Supporting documentation for the Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018. Conservation status assessment for Habitat: H91E0: Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion Incanae, Salicion albae). Available from: https://jncc.gov.uk/jncc-assets/Art17/H91E0-WA-Habitats-Directive-Art17-2019.pdf

Peterken, G.F. & Hughes, F.M.R. 1995. Restoration of floodplain forests in Britain. Forestry 63 (3): 187-202.

Rowe EC, Sawicka K, Hina NS, Carnell E, Martín Hernandez C, Vieno M, Tomlinson S, & Jones L (2023) Air Pollution Trends Report 2023: Critical load and critical level exceedances in the UK. Report to Defra under Contract AQ0849, UKCEH project 07617. https://uk-air.defra.gov.uk/library/reports?report_id=1130

Watts, K., Griffiths, M., Quine, C., Ray, D. & Humphrey, J.W. 2005. Towards a Woodland Habitat Network for Wales. CCW Science Report 686, CCW Bangor.

Welsh Government 2024. Planning Policy Wales. Ed 12, https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf

Welsh Government 2017. Natural Resources Policy. https://www.gov.wales/natural-resources-policy [Accessed 21/06/18]

Main pressures

7.2 Sources of information

No sources of information

14. Explanatory Notes

Field label	Note
2.1: Year or period	An extensive analysis of the range and extent of H91E0 alluvial forests in Wales was carried out in 2012. No new information has become available to significantly 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 confidence in the analysis. For these reasons the figures and analysis for 2012 are reproduced here.

The 10km square distribution for H91EO has been derived by overlaying base maps of 'Broadleaved" and 'Mixed predominantly Broadleaved" woodland from Forestry Commission's national forest inventory (NFI) (Forestry Commission, 2011) with a grazing marsh and floodplain habitats inventory (Dargie & Dargie, 1998) and the Environment Agency's floodmaps (Environment Agency, 2004). The baseline data on woodland distribution was therefore derived from the analysis of 2006 aerial photography on which the NFI maps are based. |
4.3: Short-term trend; Direction	See 4.11
4.11: Change and reason for change in surface area of range	The distribution of alluvial forest in Wales has not been re-assessed for the current report and 10 km squares from which it has been reported are unchanged.
5.4: Surface area; Method used	Estimates based on GIS analysis of woodland cover, topography and flooding potential. 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 area values. See section 2.3 and Latham and Rothwell (2012) for a fuller description.
5.6: Short-term trend; Direction	There is insufficient evidence against which to assess recent trends in the overall extent of this highly fragmented habitat in Wales.

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 errors in the total extent figures 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 structure and function is based on the results of Common Standards Monitoring visits at 13 SACs out of 11 SACs where the habitat occurs as a feature (NRW, 2018). This is the only information comprehensively available across a sample of the resource, though there is now limited data on this woodland type as a SSSI feature. Most recent assessment dates ranged from 2013 to 2022, with the majority carried out after 2015.
	Only 2/11 (15.4%) were classified as Favourable at most recent assessment. 9/11 (69.2%) were classified as Unfavourable. Reasons for Unfavourable condition varied and were a mix of quite specific issues, such presence of non-native species, fly tipping and over-grazing and less well-defined concerns about regeneration, lack of old trees, nutrient inputs (both atmospheric and groundwater) and structure.
	However, at the larger scale of functional units within floodplains, there are serious concerns that are not immediately apparent at a site based level of assessment. Alluvial forests by their nature are linked to the dynamics of rivers, with cycles of regeneration, structure and composition linked to the long-term movement of rivers (Peterken and Hughes, 1995); they naturally would also be far more extensive on floodplains, occupying the full range of soils types including free-draining, predominantly dry and fertile soils. In reality, most rivers are constrained, and fragments of alluvial forest are static in location and on a biased selection of wetter soils with little scope for long term natural dynamics.
6.3: Short-term trend of habitat area in good condition; Period	For the 11 sites where there has been reassessment between 2013 and 2017 (NRW, 2018), three have changed condition (representing 88.4 ha, c. 20% of total SAC area).

	However, the extent to which this is due to real change, or refinement of conservation objectives and methodology is unclear.
6.4: Short-term trend of habitat area in good condition; Direction	Two sites have been assessed as having changed condition from Favourable to Unfavourable (86.6 ha) and one site from Unfavourable to Favourable (1.8 ha) during this period. However, it is unclear whether this is due to real change, or refinement of conservation objectives and methodology. The changes to Unfavourable relate to an increase in INNS in one case, and a one-off loss of habitat in another so it is not possible to suggest trends.
7.1: Characterisation of pressures	Pressures: Several of the pressures identified as impacting on alluvial forest relate to the loss of the dynamic natural processes and separation from the hydrological systems that characterise the habitat, notably PA21 'Active abstraction of water for agriculture'. Closely connected are PA01, PF01, PD06 and PE01, relating to loss/prevention of restoration of the habitat and its functional context because of agriculture, built development and infrastructure. Habitat loss may be relatively minor in terms of absolute area, but may affect many small, ecologically connected areas that are unprotected by any particular mechanism, or that may be young seral stages of the habitat that are considered scrub in the public-eye rather than woodland and accordingly afforded lesser value. Development pressure may be especially high at urban fringes on land that supports the habitat. However, Planning Policy Wales Ed 12 affords ancient woodland irreplaceable habitat status and may help protect areas of ancient H91E0 from development. Non-ancient stands however, may not. PJ14 'Other climate related changes in biotic conditions' is intimately linked to these pressures, included here 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.

PI02 invasive non-native species are also a particular concern for alluvial forests as they are vulnerable to colonisation by water borne dispersal, e.g. of Himalayan balsam Impatiens glandulifera and Japanese knotweed Fallopia japonica.

PK01 mixed source pollution to surface and ground waters is important in alluvial forest, often relating to agricultural inputs. Air pollution PK03 is likely to be universal for alluvial forests, although the impacts on this naturally relatively high nutrient status habitat may be less than in other woodland types.

PI04 tree pathogens are currently considered to have a relatively low impact on alluvial forest. The major component alder Alnus glutinosa is affected and often killed by the pathogen Phyophthora alni (Forestry Commission, 2018a). Although it is present in many alluvial situations has not yet had the major impacts in Wales feared at its discovery in the 1990s. Ash Fraxinus excelsior is also an important component of the habitat and is becoming seriously affected by Chalara dieback (Hymenoscyphus fraxineus). As of June 2018, the disease has been confirmed within 79.6% of 10km squares in Wales (Forestry Commission, 2018b). This is a minimum distribution as it reflects sampling rather than actual distribution.

Low pressures identified include PI03 deer browsing and issues relating to inappropriate woodland management PB04/PB06 which is generally less of an issue in alluvial forests which, by their nature, are both well suited to low intervention management systems and often difficult and unattractive to manage; occasionally there is a benefit from coppicing, and manipulation of canopy composition to remove non-native tree species. PF06 is included to cover

fly-tipping, which can locally have an impact on woodland condition.) Re-introduction of Beaver (Castor fiber) in the future, may have a positive effect on the extent of H91EO, but this is difficult to predict.

Method used – pressures: Mainly based on expert judgement and other data

The assessment here is based on the submission from 2012, but reconsidered using expert judgement and updated accordingly for 2018.

The data held in the "Actions Database' were used to provide a basis for quantifying pressures/threats relating to alluvial forests. The "Actions Database' provides information on pressures within the protected sites series, this was then matched to an 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.

Threats:

Most of the pressures identified above can be expected to remain as threats. Loss to agriculture and built development, or more often lack of opportunities for woodland expansion around alluvial forest because of competition with other land uses is a very serious threat affecting the habitat's long-term condition and cannot be expected to get better soon. Alluvial woodland is a highly fragmented habitat in Wales, and the effects of low connectivity may be expected to intensify with climate change and the need for species to adjust their ranges in the landscape.

Tree pathogens may be expected to have an increasingly serious impact on the habitat, with the two major canopy components ash and alder being affected by diseases. The loss of ash trees is and will have a major impact on the composition and ecological functioning of the habitat.

Deer are at present only a very localised problem in alluvial forest sites in Wales, but the experience in England and Scotland suggests that they are potentially a serious threat for the future. Native (roe deer Capreolus capreolus) or long naturalised species (fallow deer Dama dama) are most likely to be involved, although increasingly non-native species, particularly muntjac Muntiacus reevesi may be present. Re-introductions of Beaver (Castor fiber) into parts of Wales will potentially increase the available extent of H91E0.

Method used – threats: Expert opinion

The pressures identified above were used as a basis for threats, but additional information and expert opinion used to extrapolate to possible future impacts, and also 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 functions of existing stands of alluvial forest habitat. 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	MA15: Manage drainage and irrigation operations and infrastructures in agriculture. This measure relates to activities to reinstate natural processes on floodplains to reconnect floodplain forests to their natural hydrological

regimes. The measure may be carried out specifically for the benefit of floodplain forests, or perhaps more often for the benefit of ecosystem services such as flood management using the principle of Nature Based Solutions. As such it may be increasingly supported by policy such as WG's Natural Resources Policy (Welsh Government, 2017).

MB08: Restoration of Annex I forest habitats. This measure is critical for alluvial forests as their area is highly diminished and fragmented. Locations for habitat restoration are limited because the land they would naturally occur on is often highly productive and valuable for agriculture or desirable for built development.

MI03: Management, control or eradication of other invasive alien species. INNS are widespread problem in alluvial forests, and they are easily invaded by species with waterborne propagules.

MJ02: Implement climate change adaptation measures. This relates to the broad need to develop the resilience of the alluvial forest 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).

MK01: Reduce impact of mixed source pollution. This relates to activities to reduce the impacts of both water and aerial pollution on the habitat, at local, catchment, and national scales.

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 tree

pathogens. We are not currently able to use this conservation measure for internal UK reporting and for that purpose have considered the measures to be covered under the definition of MI03: Management, control or eradication of other invasive alien species.

MI05: Management of problematic native species. This relates to the development and contribution to deer management plans and activities.

MB05 Adapt/change forest management and exploitation practices

MB06 Stop forest management and exploitation practices

MB02 Maintain existing traditional forest management and exploitation practices

MB03 Reinstate forest management and exploitation practices

These measures relate to different aspects of the need to have appropriate management across the alluvial forest resource to benefit the full-range of its dependent biodiversity, putting the right management in the right place. This means both active interventions where they promote structural diversity and other benefits, as well as minimum intervention where natural processes are operating well.

ME01: Reduce impact of transport operation and infrastructure. Relates to work to minimise impacts of new developments through appropriate planning, design and mitigation.

9.1:Future trends and prospects of parameters	Range: The habitat is already widespread throughout Wales, although of low area and highly fragmented. The range might be expected to increase marginally.

Area:

Whilst attrition of small areas of alluvial forest can be expected to continue, there is also a good chance that new areas of alluvial forest will be established both for their biodiversity value and because they provide a number of ecosystem services, especially in relation to flood mitigation. As such they help deliver Nature Based Solutions, which for example is an objective within WG's Natural Resources Policy (Welsh Government, 2017). The Woodland Creation and Planning Service new planting programme has potential to contribute positively to this as does the Sustainable Farm Scheme

Structure and function:

There are both positive and negative factors in operation with many uncertainties for the future, so it is not possible to form a confident opinion over which will generally prevail or whether structure and function will remain stable overall.

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 poor; 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	NVC maps exist for the majority of woodland SACs in Wales; surveys are described in Latham (2001) and digitised for GIS analysis (held on NRW GIS system). Areas of alluvial forest 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 and refined with topographic assessments to re-assess the total area of alluvial forest included on SACs beyond that originally recorded as a feature.
11.4: Short-term trend of habitat area within the network; Direction	For the 13 sites the that have been reassessed between 2015 and 2020, 2 have changed condition (representing 88.4 ha and c. 20% of total SAC area). However, it is unclear whether this is due to real change, or refinement of conservation objectives and methodology.
11.5: Short-term trend of habitat area within the network; Method used	Two sites have been assessed as having changed condition from Favourable to Unfavourable (86.6 ha) and one site from Unfavourable to Favourable (1.8 ha) during this period. However, it is unclear whether this is due to real change (except in one case relating to unconsented works), or refinement of conservation objectives and methodology and it is not possible to suggest trends.
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.