European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

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 the species:

S1014 - Narrow-mouthed whorl snail (*Vertigo angustior*)

UNITED KINGDOM

IMPORTANT NOTE - PLEASE READ

- The information in this document represents the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the species are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level 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 species (section 12 Natura 2000 coverage for Annex II species).
- The UK-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK**
1.2 Species code	**1014**
1.3 Species scientific name	**Vertigo angustior**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Narrow-mouthed whorl snail

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1994-2018
2.3 Distribution map	Yes
2.4 Distribution map Method used	Complete survey or a statistically robust estimate
2.5 Additional maps	No

3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	No	
3.2 Which of the measures in Art. 14 have been taken?	a) regulations regarding access to property	No
	b) temporary or local prohibition of the taking of specimens in the wild and exploitation	No
	c) regulation of the periods and/or methods of taking specimens	No
	d) application of hunting and fishing rules which take account of the conservation of such populations	No
	e) establishment of a system of licences for taking specimens or of quotas	No
	f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	No
	g) breeding in captivity of animal species as well as artificial propagation of plant species	No
	h) other measures	No

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)						
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	No	No

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Atlantic (ATL)

4.2 Sources of information

England
Abrehart, T.R . Article 17 Survey Population & Condition Assessment of Vertigo angustior and Vertigo geyeri at three sites in north Norfolk. 2016, Abrehart Ecology. Report to Natural England.
Abrehart, T.R . Survey for Vertigo angustior in the Deben, Alde-Ore and Blyth Estuaries in light of the winter flooding 2013/14. November 2014. Abrehart Ecology. Report for Natural England.
Abrehart, T.R and Jackson, R.L. 2014. Survey of the aquatic invertebrate assemblage of Snape marshes and the presence of Narrow-mouthed whorl snail (Vertigo angustior) on Snape sea wall. An ecological survey including floral and faunal observations undertaken for the Environment Agency by Abrehart Ecology.
Abrehart T.R. 2014. Annex A: SAC status reporting on Vertigo moulinsiana in Norfolk and Sufolk 2014. An ecological survey including vegetation and invertebrates observations undertaken for Natural England by Abrehart Ecology. Extra Abrehart Data from EA and local authority contracts, with records retained on his database.
Improvement Programme for England's Natura 2000 Sites (IPENS) Site Improvement Plan: Norfolk Valley Fens. Natural England. 2014.
Killeen. I.J. A condition assessment of Vertigo angustior at Gait barrows, Cumbria. Report to Natural England. 2018
Cousins, M and Rowson, B (2017) Vertigo angustior DNA sequencing. Mollusc World, Nov 2017, Issue 45.
Thomas Spencer, Susan M.Brooks, Ben R.Evans, James A.Tempest & Iris Moller 2015. Southern North Sea storm surge event of 5 December 2013: Water levels,

waves and coastal impacts.Earth-Science Reviews Volume 146, July 2015, Pages 120-145.
Scotland
Killeen, I., M. Willing & E. Moorkens. 2018a. Monitoring of Vertigo snail features at sites in Scotland: Vertigo angustior. Scottish Natural Heritage report.
Killeen, I.J. 2013a. Whorl snails (Vertigo spp.) surveillance in Scotland: A condition assessment of the narrow-mouthed whorl snail Vertigo angustior in Aberdeenshire. Scottish Natural Heritage report.
Marriott, R.W. & Colville, B. 2011. Monitoring the Narrow mouthed whorl snail Vertigo angustior at White Port SSSI, Kircudbrightshire. Scottish Natural Heritage report.
Littlewood, N.A. & Stockan, J.A. 2012. Surveillance of priority terrestrial invertebrates in Scotland. SNH report.
Moorkens, E.A. & Killeen, I.J. 2011. Monitoring and Condition Assessment of Populations of Vertigo geyeri, Vertigo angustior and Vertigo moulinsiana in Ireland. Irish Wildlife Manuals, No. 55. National Parks and Wildlife Service, Department of Arts, Heritage and Gaeltacht, Dublin, Ireland.
MIDAS - Management Information on Designated Areas in Scotland (SNH)
Killeen, I.J & Colville, B. 2000. Survey for the whorl snail Vertigo angustior on the Solway coast. Scottish Natural Heritage Report.
Moorkens, E., Killeen, I. & Seddon, M. 2012. Vertigo angustior. The IUCN Red List of Threatened Species 2012: e.T22935A16658012.
Pokryszko, B.M. 1990. The Vertiginidae of Poland (Gastropoda: Pulmonata: Pupiloidea) - a systematic monograph. Annales Zoologici 43: 133-257.
Pokryszko B.M. 1987. On the aphally in the Vertiginidae (Gastropoda: Pulmonata: Orthurethra). Journal of
Conchology 32, 365-376.
Wales
Fowles, A.P. 2013. European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) 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 Species: S1014 - Narrow-mouthed whorl snail (Vertigo angustior).
Fowles, A. & Guest, D. 2006. Narrow-mouthed whorl snail Vertigo angustior at Whiteford Burrows. In: Monitoring nature conservation in cultural habitats: a practical guide and case studies. Eds. C. Hurford & M. Schneider, pp. 259-270. Dordrecht, Springer.
Harper, J. 2007. Survey of Pembrey Forest, Carmarthenshire, for the narrow-mouthed whorl snail Vertigo angustior. Unpublished report. Countryside Council for Wales.
Harper, J. 2014. Surveillance of the narrow-mouthed whorl snail Vertigo angustior at Pembrey, Carmarthen Bay Dunes SAC. NRW Evidence Report 10. Natural Resources Wales.
Holyoak, D.T. & Willing, M.J. 1999. Survey for Vertigo angustior at selected localities in West Glamorgan. CCW Contract Science. 222. Countryside Council for Wales.
Killeen, I.J. 1993. The distribution and ecology of the snail Vertigo angustior at Oxwich and Whiteford Burrows NNRs, Gower, South Wales. CCW Contract Science. 20. Countryside Council for Wales.
Preece, R.C. & Willing, M.J. 1984. Vertigo angustior living near its type locality in south Wales. Journal of Conchology, 31: 340.
Wilkinson, K. 2006. Vertigo angustior: Monitoring of Whiteford Burrows, part of

Carmarthen Bay Dunes SAC. Unpublished report. Countryside Council for Wales.
Wilkinson, K. 2012. Vertigo angustior Carmarthen Bay Dunes SAC monitoring - Monitoring Round 2007 to 2013. Unpublished report. Countryside Council for Wales.
Wilkinson, K. in prep. Carmarthen Bay SAC monitoring report Vertigo angustior - Monitoring Round 2013 to 2018. Unpublished report. Natural Resources Wales.
Willing, M.S. 1997. A preliminary survey of areas in the vicinity of Pembroke for populations of the Red Data molluscs Vertigo angustior and Pseudamnicola confusa. Unpublished report. Countryside Council for Wales.
N.Ireland
Anderson, R.A. (1996). Species inventory for Northern Ireland. Land and Freshwater Molluscs. Environment and Heritage Service, Research and Development Series.
Anderson, R., Long, M.P., Telfer, M.G., Mantell, A., Hart, A. (2017). Survey Report: Annex II species of Vertigo within Northern Ireland. Allen and Mellon Environmental, unpublished report.
Anderson, R., Long, M.P. (2016). Prospects and Requirements for Article 17 Reporting Round 2013-2018 on Vertigo geyeri, Vertigo angustior and Vertigo moulinsiana. Unpublished report.
Holyoak, G.A. (2003). Survey of rare Vertigo land-snail species in Northern Ireland, 2003. Unpublished report to the Environment and Heritage Service, Belfast.
Holyoak, G.A. (2005). Widespread occurrence of Vertigo geyeri (Gastropoda: Vertiginidae) in north and west Ireland. Irish Naturalists' Journal 28: 141-150.
Kerney, M.P. (1976). Atlas of the Non-marine Mollusca of the British Isles. Concological Society of Great Britain and Ireland.
Kerney, M. P., 1999 Atlas of Land and Freshwater Molluscs of Britain and Ireland. Harley Books.
Moorkens, E.A. & Killeen, I.J. (2011) Monitoring and Condition Assessment of Populations of Vertigo geyeri, Vertigo angustior and Vertigo moulinsiana in Ireland. Irish Wildlife Manuals, No. 55. National Parks and Wildlife Service, Department of Arts, Heritage and Gaeltacht, Dublin, Ireland.
Ross, H.C.G (1984). Catalogue of the Land and Freshwater Mollusca of the British Isles in the Ulster Museum. Ulster Museum, Belfast, Publication No. 251.

5. Range

5.1 Surface area (km²)	1815.89	
5.2 Short-term trend Period	2007-2018	
5.3 Short-term trend Direction	Decreasing (-)	
5.4 Short-term trend Magnitude	a) Minimum	b) Maximum
5.5 Short-term trend Method used	Complete survey or a statistically robust estimate	
5.6 Long-term trend Period		
5.7 Long-term trend Direction		
5.8 Long-term trend Magnitude	a) Minimum	b) Maximum
5.9 Long-term trend Method used		
5.10 Favourable reference range	a) Area (km²)	
	b) Operator	More than (>)
	c) Unknown	
	d) Method	The FRR has changed since 2013. An FRR operator has

been used because it has not been possible to calculate the exact FRR value, partly because some of the distribution data used in 2013 is not available for use in the 2019 reporting. The FRR is considered to be no more than 10% above the current Range area, because the species range has declined since 2013. See the 2019 Article 17 UK Approach document for further information.

5.11 Change and reason for change in surface area of range	Genuine change Improved knowledge/more accurate data Use of different method	
	The change is mainly due to:	Genuine change
5.12 Additional information	The short term trend direction is considered most likely to be 'decreasing <=1% (one percent or less) per year on average', based on the reported declines in Scotland. The current range surface area calculation does not represent the real range surface area. It is not clear from the reported information what the exact genuine decline has been since 2013 in the number of occupied 10x10 km squares. This is due to change in availability of underpinning mapping data compared to 2013. Quantifying the extent of the genuine decline versus that resulting from reduced data availability is not possible.	

6. Population

6.1 Year or period	2005-2018	
6.2 Population size (in reporting unit)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	51
6.3 Type of estimate	Best estimate	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	number of map 10x10 km grid cells (grids10x10)
	b) Minimum	
	c) Maximum	
	d) Best single value	
6.5 Type of estimate		
6.6 Population size Method used	Complete survey or a statistically robust estimate	
6.7 Short-term trend Period	2005-2018	
6.8 Short-term trend Direction	Decreasing (-)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data	
6.11 Long-term trend Period		
6.12 Long-term trend Direction		

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

6.13 Long-term trend Magnitude	a) Minimum b) Maximum c) Confidence interval	
6.14 Long-term trend Method used		
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size	63 with unit number of map 1x1 km grid cells (grids1x1)
	b) Operator	
	c) Unknown	
	d) Method	The FRP is the same as in 2013. The value is considered to be large enough to support a viable population and no less than when the Habitats Directive came into force in the UK. For further information see the 2019 Article 17 UK Approach document.
6.16 Change and reason for change in population size	Genuine change Use of different method	
	The change is mainly due to:	Genuine change
6.17 Additional information	The short term trend direction is considered most likely to be 'decreasing by 1% per year or less', based on reported genuine declines in Wales, Scotland and England. It is not clear from the reported information what the exact genuine decline has been since 2013 in the number of occupied 1x1 km grids (partly because some of the population information used in 2013 is not available for use in the 2019 reporting). The FRP is considered to be no more than 25% above the current population.	

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (for long-term survival)?	Unknown
	b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)?	Unknown
7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on extrapolation from a limited amount of data	
7.3 Short-term trend Period	2005-2018	
7.4 Short-term trend Direction	Decreasing (-)	
7.5 Short-term trend Method used	Complete survey or a statistically robust estimate	
7.6 Long-term trend Period		
7.7 Long-term trend Direction		
7.8 Long-term trend Method used		
7.9 Additional information		

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Intensive grazing or overgrazing by livestock (A09)	M

Extensive grazing or undergrazing by livestock (A10)	M
Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)	M
Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (L02)	M
Flooding (natural processes) (M08)	H
Sea-level and wave exposure changes due to climate change (N04)	H

Threat	Ranking
Intensive grazing or overgrazing by livestock (A09)	M
Extensive grazing or undergrazing by livestock (A10)	M
Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)	H
Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (L02)	M
Flooding (natural processes) (M08)	H
Sea-level and wave exposure changes due to climate change (N04)	H
Change of habitat location, size, and / or quality due to climate change (N05)	M

8.2 Sources of information

8.3 Additional information

9. Conservation measures

9.1 Status of measures	a) Are measures needed?	Yes
	b) Indicate the status of measures	Measures identified and taken
9.2 Main purpose of the measures taken		Maintain the current range, population and/or habitat for the species
9.3 Location of the measures taken		Both inside and outside Natura 2000
9.4 Response to the measures		Medium-term results (within the next two reporting periods, 2019-2030)

9.5 List of main conservation measures

Adapt mowing, grazing and other equivalent agricultural activities (CA05)
Manage changes in hydrological and coastal systems and regimes for construction and development (CF10)

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes (CL01)

Adopt climate change mitigation measures (CN01)

9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters

a) Range	Poor
b) Population	Poor
c) Habitat of the species	Poor

10.2 Additional information

Future trend of Range is Negative - decreasing <=1% (one percent or less) per year on average; Future trend of Population is Negative - decreasing <=1% (one percent or less) per year on average; and Future trend of Habitat for the species is Negative - slight/moderate deterioration. For further information on how future trends inform the Future prospects conclusion see the 2019 Article 17 UK Approach document.

11. Conclusions

11.1. Range	Unfavourable - Inadequate (U1)
11.2. Population	Unfavourable - Inadequate (U1)
11.3. Habitat for the species	Unknown (XX)
11.4. Future prospects	Unfavourable - Inadequate (U1)
11.5 Overall assessment of Conservation Status	Unfavourable - Inadequate (U1)
11.6 Overall trend in Conservation Status	Deteriorating (-)

11.7 Change and reasons for change in conservation status and conservation status trend

a) Overall assessment of conservation status

No change

The change is mainly due to:

b) Overall trend in conservation status

Genuine change

The change is mainly due to: Genuine change

11.8 Additional information

Conclusion on Range reached because: the short-term trend direction in Range surface area is decreasing by 1% per year or less; and (ii) the current Range surface area is not more than 10% below the Favourable Reference Range.

Conclusion on Population reached because: (i) the short-term trend direction in Population size is decreasing by 1% per year or less; and (ii) the current Population size is not more than 25% below the Favourable Reference Population.

Conclusion on Habitat for the species reached because: (i) the area of occupied and unoccupied habitat is unknown and (ii) the habitat quality is unknown for the long-term survival of the species; and (iii) the short-term trend in area of habitat is decreasing.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

Conclusion on Future prospects reached because: (i) the Future prospects for Range are poor; (ii) the Future prospects for Population are poor; and (iii) the Future prospects for Habitat for the species are poor.

Overall assessment of Conservation Status is Unfavourable-inadequate because three of the conclusion conclusions are Unfavourable-inadequate and one is Unknown.

Overall trend in Conservation Status is based on the combination of the short-term trends for Range – decreasing, Population – decreasing, and Habitat for the species – decreasing.

The Overall trend in Conservation Status has changed between 2013 and 2019 because the Range trend has changed from stable to decreasing, the Population trend has changed from stable to decreasing and the Habitat for the species trend has changed from stable to decreasing.

12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	14
12.2 Type of estimate		Best estimate
12.3 Population size inside the network Method used		Based mainly on extrapolation from a limited amount of data
12.4 Short-term trend of population size within the network Direction		Decreasing (-)
12.5 Short-term trend of population size within the network Method used		Based mainly on extrapolation from a limited amount of data
12.6 Additional information		

13. Complementary information

13.1 Justification of % thresholds for trends
13.2 Trans-boundary assessment
13.3 Other relevant Information

Distribution Map

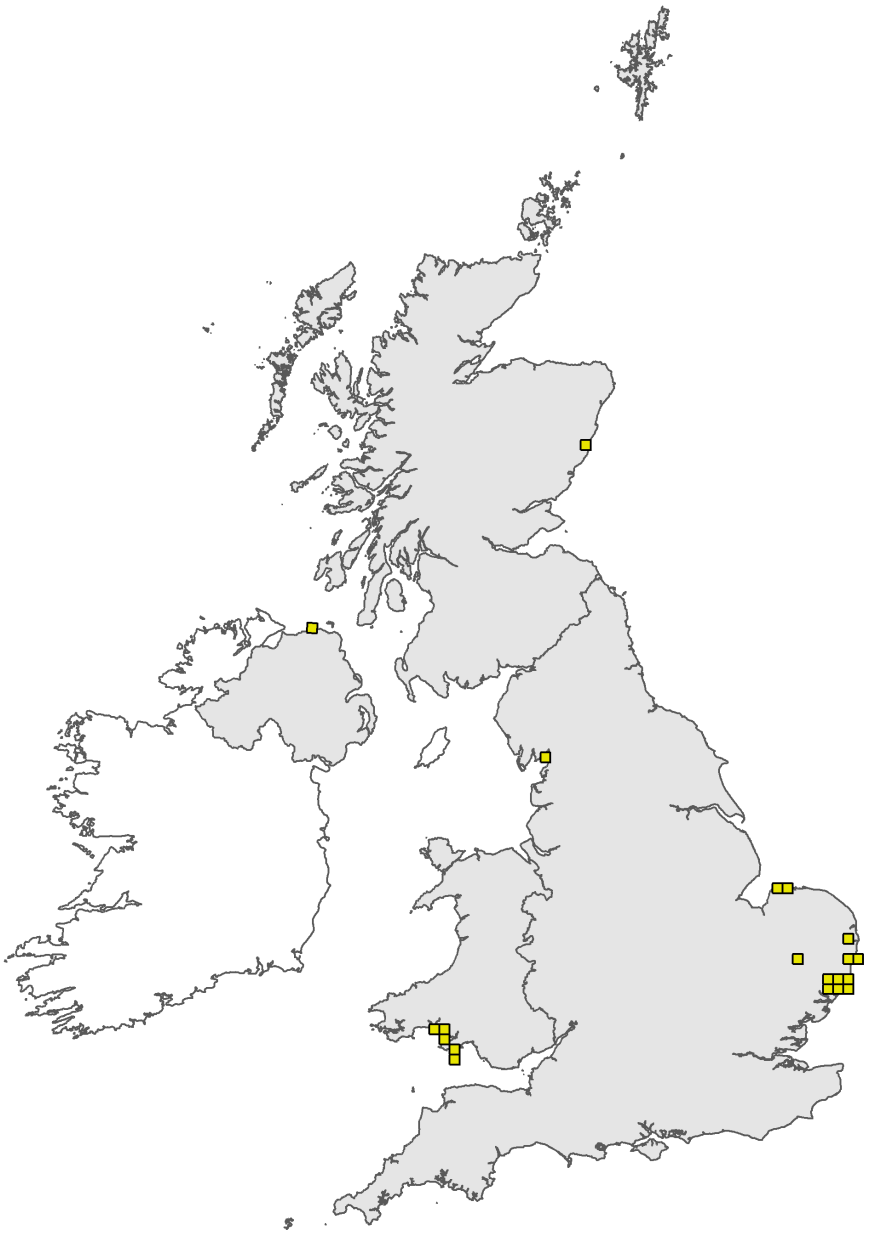

Figure 1: UK distribution map for S1014 - Narrow-mouthed whorl snail (*Vertigo angustior*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

Range Map

Figure 2: UK range map for S1014 - Narrow-mouthed whorl snail (*Vertigo angustior*). 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 range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 20km. For further details see the 2019 Article 17 UK Approach document.