

Report Title	Proposed Barn Conversion, Plasmodyn-bach, Minera, Wrexham – Bat Emergence Survey
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Quality Assurance**Survey/ Assessment Work Schedule**

Survey/Assessment Type	Surveyors/ Author	Date
Bat emergence (dusk) survey	Stan Irwin	23/05/17 & 19/06/17

Review Schedule

Issue	Date	Author	Reviewed by	Approved by
1.0	28/07/17	Stan Irwin	Max Ellison	Max Ellison

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The evaluation and assessment provided in this report is specific to the iteration of the proposal detailed in Section 2. It would no longer be valid should the layout be changed in anyway, should the report be used for a different proposal at the same site or should it be used a maximum of 12 months after the date of issue.

CONTENTS

1	INTRODUCTION.....	4
2	PROPOSED DEVELOPMENT	4
3	SURVEY METHODOLOGY	5
4	SURVEY CONSTRAINTS	5
5	SURVEY RESULTS.....	6
5.1	DUSK EMERGENCE SURVEY.....	6
5.2	INCIDENTAL RECORDS	6
6	CONCLUSIONS/ IMPACT ASSESSMENT	8
7	RECOMMENDATIONS.....	8
7.1	BATS	8
7.2	BIRDS	13
APPENDIX 1 – LEGISLATION.....		14
	BATS	14

1 INTRODUCTION

Marches Ecology was commissioned by Mr. R. Owens to undertake a bat emergence survey at an existing barn at Plasmostyn-bach, Minera Road, Minera, Wrexham (Approximate OS Grid Ref. SJ 280 527). The existing barn is proposed for conversion to residential use. This report is provided as supporting information to a planning application.

The bat emergence survey was undertaken further to completion of a Preliminary (bat) Roost Assessment reported as follows:

- Marches Ecology (2017). *Proposed Barn Conversion, Plasmostyn-bach, Minera, Wrexham – Preliminary Roost Assessment*. Report prepared on behalf of Mr. R. Owens.

This report should be read in conjunction with the PRA. With regards bats the PRA concluded that *'As a Brown Long Eared bat was recorded roosting in the barn, bat droppings were recorded and as the surrounding habitat is of high potential value for foraging it is recommended that further dusk/ dawn surveys are undertaken to provide information in support of any planning application and prior to any work being undertaken on the structure. The barn is classified as a confirmed hibernation roost for Brown Long Eared bat and with low-moderate bat roost potential for other roost purposes and other species.'* This report provides the results of two dusk (emergence) survey visits and outlines mitigation requirements/ enhancements.

Legislation relevant to bats is summarised in *Appendix 1* at the end of this report.

2 PROPOSED DEVELOPMENT

The existing redundant barn is proposed for conversion to a residential dwelling. The proposals are illustrated on a number of plans entitled *'Proposed Conversion of Redundant Barn to Dwelling at Plas Mostyn Bach, Minera Road, Minera'*, drawing no's 542/1/2/3/4 & 6, variously dated Dec 2016 and July 2017. No further details have been made available. The plans indicate that a single tree is to be removed as part of the proposals.

3 SURVEY METHODOLOGY

The PRA classified the barn as offering moderate potential in accordance with the current best practice guidelines (Collins 2016¹). Table 7.3 of Collins (2016, *op. cit.*) states that for moderate roost suitability 'two separate survey visits' should be undertaken, comprising 'one dusk emergence and a separate dawn re-entry survey'. However elsewhere this guidance states the following:

'The guidance should be interpreted and adapted on a case-by-case basis, according to the expert judgement of those involved. There is no substitute for knowledge and experience in survey planning, methodology and interpretation of findings, and these guidelines are intended to support these. Where examples are given they are descriptive rather than prescriptive.'

Taking the above into consideration two dusk emergence surveys were conducted at the barn by two surveyors; the survey protocol was determined by Mr S. Irwin who undertook the daytime PRA.

The adopted survey protocol was based on extensive experience, consideration of the character of the building/ species that can be anticipated as being present at the barn or in the locality, and how complex the building structure is. It was concluded that the barn is an uncomplicated structure which presents no problems for dusk observations. If it had been more complex and/ or if it was not possible to view some external aspects of the building, a dawn survey visit would have been proposed. It should also be noted that as dawn temperatures, particularly in rural locations, are usually lower than at dusk, and where a site is more likely to be used by individual/ small numbers of bats (as is the case here), and there are no survey constraints, then dawn surveys are of no more value than dusk surveys.

The dusk survey visits were completed on 23rd May 2017 and 19th June 2017. The survey was led by Mr H. Green who is a highly experienced bat surveyor and holder of a Class 2 Natural England Bat Survey Licence (CLS-14227). He is also an accredited agent on the Natural Resources Wales bat licence of Mr S. Irwin (Licence no. 73156:OTH:CSAB:2016). Mr M. Smith, who is also an experienced, but unlicensed, bat surveyor, assisted.

During each of the survey visits, the surveyors were positioned to allow unrestricted views of the areas of roost potential and potential access/ ingress points as identified in the PRA. The surveys were aided with Anabat electronic detectors to locate and record the high frequency calls that are emitted by bats. Echolocation calls were then analysed with computer software to verify field observations.

A single *Acer pseudoplatanus* (Sycamore) tree located adjacent to the barn is to be removed as part of the conversion proposals. This tree was subject to a ground-level assessment for bats prior to one of the emergence surveys.

Incidental observations were also made for nesting birds during the survey visits.

4 SURVEY CONSTRAINTS

No survey constraints were recorded.

¹ Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition)*. The Bat Conservation Trust, London.

5 SURVEY RESULTS

5.1 Dusk emergence survey

Table 1 provides the weather conditions on each of the dusk survey visits, and Table 2 provides the results.

Table 1 – Weather Conditions

Visit	Date	Sunset time	Start temperature	End temperature	General weather conditions
1	23.05.17	21:16 hrs	16.0°C	13.0°C	Dry, light breeze, 5% cloud cover.
2	19.06.17	21:42 hrs	20.1°C	17.7°C	Dry, light breeze, 90% cloud cover.

Table 2 – Results

Visit	Date	Results
1	23.05.17	No emerging bats from the barn. 21:46 hrs: Common Pipistrelle (<i>Pipistrellus pipistrellus</i>) heard but no visual identification. 21:47 hrs: Common Pipistrelle passing. 21:55 hrs: Common Pipistrelle passing. 22:03-22:45 hrs: Common and Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>) constant foraging around the site. Foraging activity was frequent throughout the duration of the survey.
2	19.06.17	No emerging bats from the barn. 22:15 hrs: A single Common Pipistrelle commuting across the site from a southerly direction. 22:30 hrs: A single Common Pipistrelle commuting across the site from a southerly direction. No foraging activity recorded around the site.

The Sycamore tree that is to be removed does not provide any bat roost potential.

5.2 Incidental Records

A single House Sparrow (*Passer domesticus*) was seen to enter a wall cavity to the rear of the barn during one of the survey visits. It is feasible that this location could be used for nesting. The Sycamore tree could also be utilised.

Site Photographs



Location of hibernating Brown Long-eared Bat (*Plecotus auritus*) recorded during PRA.

6 CONCLUSIONS/ IMPACT ASSESSMENT

The dusk surveys did not record any bats emerging from the barn. In addition foraging around the site was inconsistent. However, the barn could be used at other times than the survey dates for purposes such as a transitional or day/ night roost. This has been confirmed by the presence of a single hibernating Brown Long-eared bat during the PRA in March 2017.

Without the implementation of mitigation, the proposed barn conversion could result in the following impacts on bats:

- Short-term impacts such as the disturbance of an individual/ small number of Brown Long-eared bats during dismantling of the roost features. If an ecologist was not present then contractors may not be fully conversant with the types of places that bats can access and utilise.
- Long-term impacts such as the loss of a place used as a hibernacula and probable day/ night roost by an individual/ small number of Brown Long-eared bats.

Both impacts are deemed to be low (at a site/ local scale).

There will be no long-term impacts such as habitat fragmentation and isolation as no foraging or commuting habitat will be lost as a result of the proposals, nor will new roosts (to be installed as part of mitigation proposals) be at any further distance from foraging places.

The conversion of the building is an essential part of the owner's plans for the site but it is acknowledged that the presence of bats needs to be addressed from both a legal and conservation perspective.

7 RECOMMENDATIONS

7.1 Bats

Introduction

The presence of a single hibernating Brown Long-eared bat at Plasmostyn-bach barn will require a Natural Resources Wales (NRW) 'development' licence to be obtained for the works to legally proceed. Such a licence is required where bat/s or their roost/place of rest/shelter will be affected by a proposal. As part of the application mitigation for the loss of a roost, in this case mitigation for a single hibernating Brown Long-eared bat, will need to be addressed. Before a licence application can be submitted all planning issues including obtaining consent and any pre-commencement planning conditions related to bats should be resolved. Notwithstanding the granting of a licence works that would affect a roost cannot take place if a maternity colony is in occupation.

The following is a summary of the mitigation that will form part of the licence application to NRW. It is subject to approval as part of the licence application process. The mitigation is designed, as far as possible, to replicate the existing feature at which a hibernating Brown Long-eared bat was located during the PRA, *i.e.* in a timber door lintel. In addition the mitigation will also compensate for the loss of crevice/ cavity situations that are present within the barn and which will be lost as part of the proposed conversion.

Although external lighting associated with the proposal may be slightly greater than which currently exists, it is to be directed away from the installed mitigation.

Mitigation

Installation and removal of 'receptor bat box'

To ensure that bats are not left without a roost while the conversion work takes place, a 1FF Schwegler bat box² (or similar) will be installed on the adjacent retained agricultural outbuilding (*Figure 1*). This will act as a 'receptor bat box' if a bat/s has to be captured during the roost dismantling process. Following the installation of the permanent roost provision this 1FF box will be removed with associated inspection for bats by the NRW bat licensed ecologist. If bat/s for which the licence has been granted is/ are present it/ they will be relocated to the mitigation bat box on the north elevation of the converted barn (refer below).

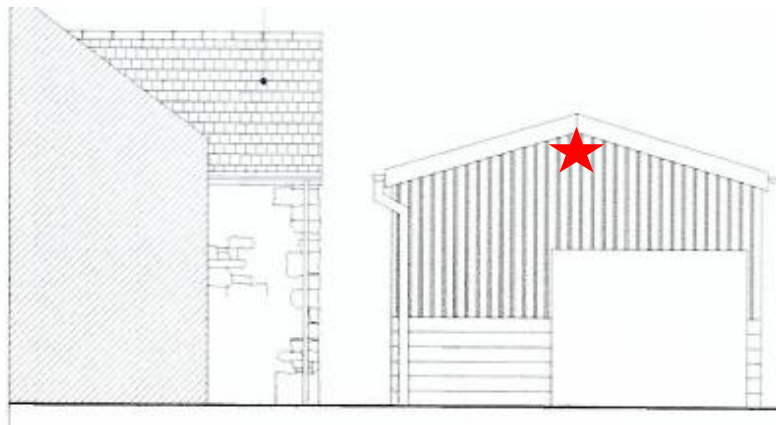


Figure 1 – Location of 'receptor bat box' on retained agricultural outbuilding.

Capture and exclusion

Further to the receipt of the licence, and prior to any work being undertaken, the contractor will provide a safe means of access to allow an NRW bat licensed ecologist to investigate the presence/ absence of bats. Due to the number of potential bat roost locations exclusion of all such features may not be practical. However, where utilised, this process will comprise a standard one-way exclusion device which will be left in place for 3 consecutive nights characterised by temperatures no less than 8°C. Following exclusion, if implemented, the ecologist will in addition thoroughly investigate the features which have/ may be used by bats – this will include endoscopic examinations wherever opportunities for bats exist (especially within the internal/ external stonework).

Further to exclusion/ endoscope investigation as detailed above the NRW bat licensed ecologist will supervise the careful dismantling of any remaining places identified as offering roost potential.

In the event of bat/s being present it/ they will be removed by the licensed ecologist, placed in a secure box with soft tissue and immediately transferred into the 'receptor bat box' (as described above).

² E.g. <http://www.nhbs.com/title/158636/1ff-schwegler-bat-box-with-built-in-wooden-rear-panel>

Working protocol

- All work is to be undertaken when bats are not likely to be in hibernation (approximately March-October) unless it can be conclusively established by the NRW bat licenced ecologist that hibernating bats are absent.
- An NRW bat licenced ecologist is to provide an induction/ tool-box talk to all contractors on possible bat presence.
- NRW licence to be kept on site for the duration of the work.
- In the unlikely event that bats are found when the NRW bat licenced ecologist is not present, then the work will immediately cease, the bat/s afforded shelter, and the ecologist contacted for further advice. Contractors are not to touch, handle bats or cause them to move in anyway.

Roost provision

Roost provision will be dedicated for bats and will be permanent. Two types of roost will be provided, as follows:

- 1) Reclaimed timber lintel or section of rough sawn timber to dimensions of 150 mm wide x 150 mm deep x 300 mm long to be located on the east facing rear elevation under the soffit board (*Figure 2*). The underside of this feature is to include 3 No. 25mm diameter holes drilled to a depth of 100 mm (*Figure 3*).

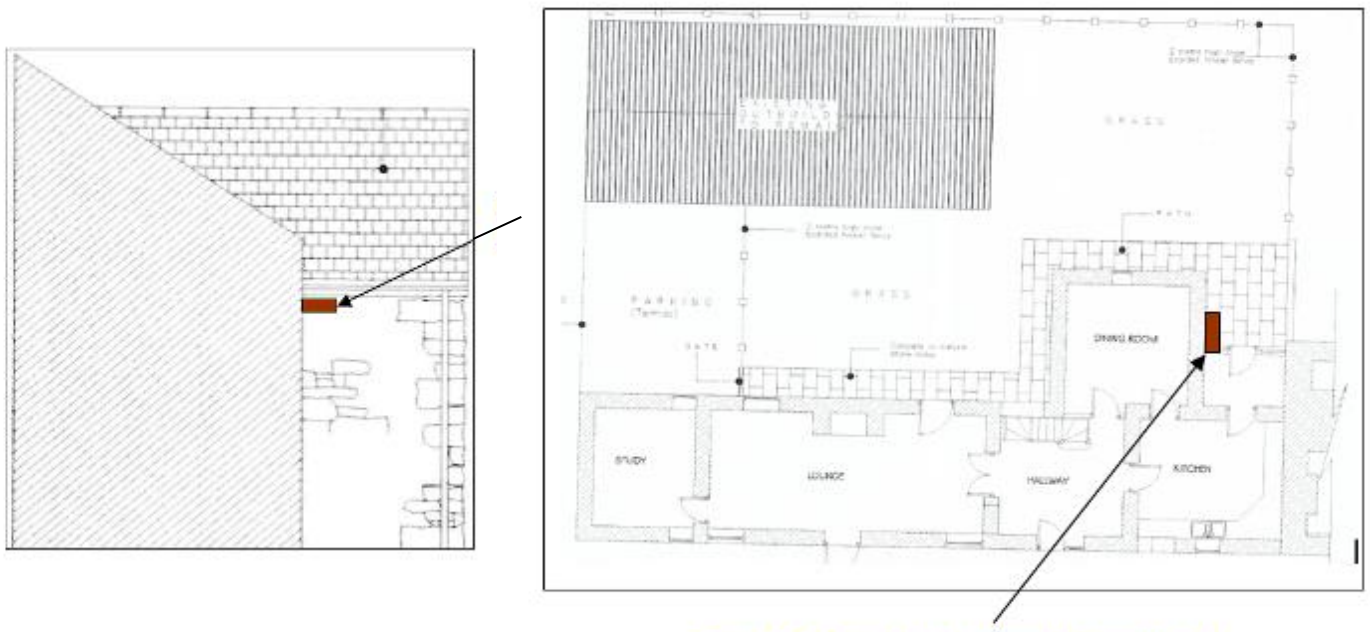


Figure 2 – Location of hibernation opportunity, superimposed on (LHS) proposed side elevation and (RHS) proposed site layout plans.



Figure 3 – Detail of hibernation opportunity, LHS showing front face and RHS the underside with 3 No. holes.

- 2) 1 No. Segovia Build-in WoodStone® Bat Box³ (Figure 4). This is designed to be built into a wall with the entrance face at the front remaining exposed and visible. It is to be located on the converted building at the north elevation (Figures 5 and 6). This integrated bat box will provide opportunities for use during anytime of the year.



Figure 4 – Segovia Build-in WoodStone® Bat Box.

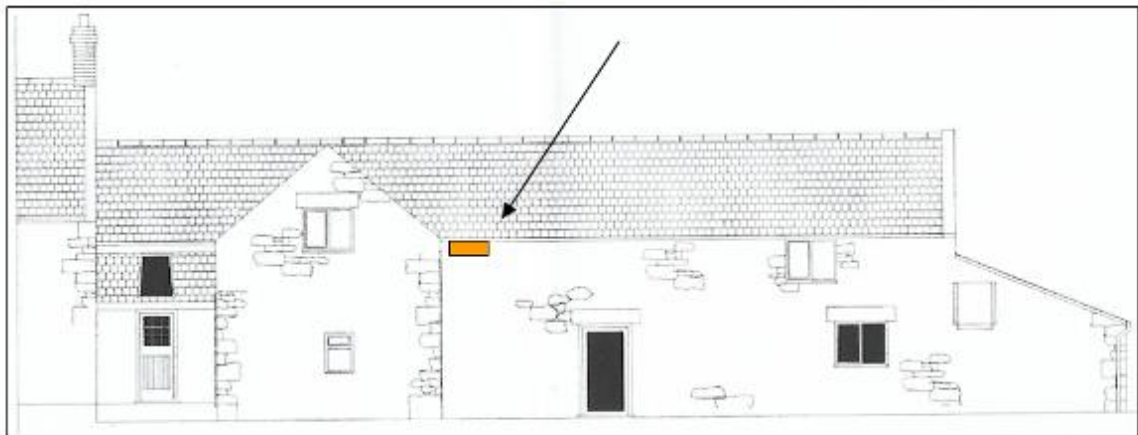


Figure 5 – Location of Segovia Build-in WoodStone® Bat Box, superimposed on proposed rear elevation plan.

³ E.g. <https://www.birdfood.co.uk/segovia-build-in-woodstone-bat-box.html>

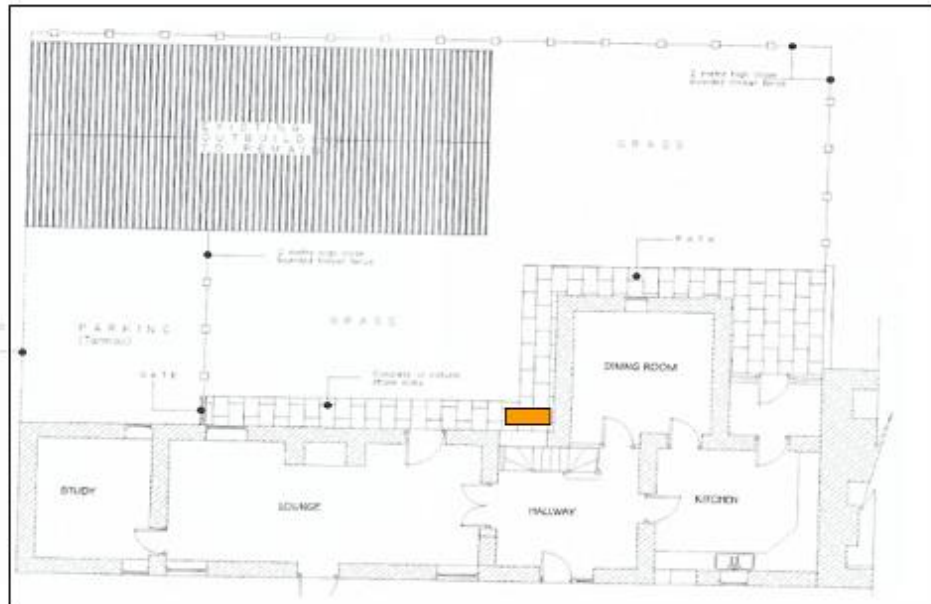


Figure 6 – Location of Segovia Build-in WoodStone® Bat Box, superimposed on proposed site layout plan.

Roofing Felt

As bat/s are known to utilise the barn there is a likelihood that they may seek out roost potential between roof slates/ tiles following the conversion. Modern breathable roofing membranes have been responsible for the entanglement and subsequent death of bats though the potential impacts of this are still being investigated at the present time. The fine claws of bats can also fray the material which can result in loss of performance. As such the conversion is to utilise traditional bituminous roofing underfelt only that does not contain polypropylene filaments (e.g. Bitumen felt type 1F, which is hessian reinforced)⁴.

Timber Treatment Chemicals

Chemicals used for timber treatment and insecticide pest control in roofs can be toxic to bats that roost within that roof. However, there are timber treatment/ pest control products available that are suitable for use in bat roosts⁵.

Timber can be pressure pre-treated, but should any new roofing timbers which bats are able to access require chemical treatment they should not be treated with a solvent based preservative after installation. Rather they should be treated in accordance with the advice provided in the Natural England Technical Information Note TIN092 (Natural England 2013a⁶) and Technical Information Note TIN146 (Natural England 2013b⁷). Retained existing timbers should also only be treated, if required, in accordance with TIN092/ TIN146.

⁴ http://www.bats.org.uk/news.php/254/bats_and_breathable_roofing_membranes_update_of_findings_%20

⁵ http://www.bats.org.uk/pages/treating_flies_vermin_in_roof.html

⁶ Natural England (2013a). *Bat Roosts and Timber Treatment Products*. Natural England Technical Information Note TIN092: Second Edition 04 February 2013.

⁷ Natural England (2013b). *Bat Roosts and Insecticide Pest Control Products*. Natural England Technical Information Note TIN146: First Edition 25 February 2013.

Lighting

Any installed lighting is to be directed away from bat mitigation features. It should be designed in conjunction with advice from the NRW bat licenced ecologist.

7.2 Birds

Possible nesting House Sparrow was recorded during one of the dusk survey visits. In addition two old Swallow (*Hirundo rustica*) nests were recorded within the barn during the PRA. The PRA noted that *'while it may be difficult to provide opportunities for Swallows within the converted barn the proposal does present an opportunity to enhance the building for other species of conservation interest. The converted barn should incorporate nest-boxes/ nesting features for birds.'*

It would be appropriate to incorporate 4 No. of either Schwegler Brick Box No.24⁸/ EcoSurv Sparrow⁹ nest-boxes, or 2 No. of 1SP Schwegler Sparrow Terrace¹⁰ into the design (to be built into/ affixed externally to the converted barn on the north-east and or east elevations). These nest-boxes should be installed more than 2 m above ground level and at least 1 m apart.

Reference should also be made to the PRA (Marches Ecology 2017, *op. cit.*) with regards timing of works/ legislation with regards nesting birds.

⁸ <http://www.nhbs.com/title/173236/schwegler-brick-nest-boxes>

⁹ <http://www.ecosurv.co.uk/product/bird-box-range>

¹⁰ <http://www.nhbs.com/title/174850/1sp-schwegler-sparrow-terrace>

APPENDIX 1 – LEGISLATION

Bats

All species of British bat are listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended)¹¹, and receive full protection under *Section 9*. They are also listed as European Protected Species on *Schedule 2* of *The Conservation of Habitats and Species Regulations 2010* (as amended)¹² which gives them full protection under *Regulation 40(1)*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the *CRoW Act 2000*)¹³.

Under the above legislation it is an offence to intentionally or recklessly:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;
- damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- disturb such a species whilst using any place of shelter or protection; or
- sell or attempt to sell any such species.

All species of British bat are also protected under *Schedule 6* of the *Wildlife and Countryside Act 1981* (as amended). This protection relates specifically to trapping and direct pursuit of the species.

Several species of bat are included on *Section 7* of the *Environment Act 2016*¹⁴.

¹¹ HMSO (1981). *The Wildlife and Countryside Act 1981*. HMSO, London.

¹² HMSO (2010). *The Conservation of Habitats and Species Regulations 2010*. HMSO, London.

HMSO (2012). *The Conservation of Habitats and Species (Amendment) Regulations 2012*. HMSO, London.

¹³ HMSO (2000). *The Countryside and Rights of Way Act 2000*. HMSO, London.

¹⁴ HMSO (2016). *The Environment Act (Wales) 2016*. HMSO, London.