

Bersham Colliery Tip

Preliminary Ecological Appraisal Report

Wrexham County Borough Council

December 2022

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This document has 49 pages including the cover.

Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	Draft for client comment	JC/GW	RB	LMG	SA	08/11/2022
2.0	For issue	GW	RB	LMG	SA	02/12/2022

Client signoff

Client	Wrexham County Borough Council
Project	Bersham Colliery Tip
Job number	5216767.001
Document reference	ATKINS_ENV_ECO_BERSHAM_PEA
Client signature / date	

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Summary

Report purpose	The aims of this report are to: - Identify key ecological constraints to the Proposed Scheme; and - Identify avoidance, mitigation, compensation and enhancement measures.
Proposed Scheme	Bersham Colliery Tip was categorised in accordance with the interim categorisation system for coal tips as devised by the Welsh Government. Following a Coal Authority inspection, Llay has been categorised as Category C. Maintenance and remediation works are required in response to Coal Authority Inspection Reports
Desk studies and field surveys	A desk-study undertaken on 05/09/2022 and a walkover survey of accessible land within and adjacent to the Site on 25/08/2022.
Ecological features	Habitats with suitability for great crested newts and other amphibians, bats, badgers, nesting birds, reptiles, priority invertebrates, otters, water voles, white-clawed crayfish, priority plants, and other priority species are present within the Site. Japanese knotweed has been identified within the Site. Lowland mixed deciduous woodland and open mosaic habitat on previously developed land (both habitats of principal importance for biodiversity in Wales) have been identified within the Site. Ancient woodland, wood-pasture and parkland priority habitat, reedbeds priority habitat, Johnstown Newt Sites Special Area of Conservation (SAC), Stryt Las a'r Hafod Site of Special Scientific Interest (SSSI) and Erddig Estate Local Wildlife Site have been identified within 1 km of the Site and may be affected by the Proposed Scheme.
Avoidance, mitigation and compensation measures	Vegetation clearance should be minimised as far as possible and trees should be protected in line with guidelines provided in BS 5837 Trees in relation to Construction¹. Works should proceed following standard good practice working methods for environmental protection which should adhere to the General Pollution Prevention (GPPs)² and the Construction Industry Research and Information Association (CIRIA)³ C715 Environmental good practice. No night-time working (taken to be 30 minutes prior to sunset until 30 minutes after sunrise) should be undertaken to avoid impacts on nocturnal/crepuscular animals. It is recommended that any excavations are filled or covered overnight to prevent animals becoming entrapped.
Recommendations for further survey	The final scope of the works will determine the additional survey requirements. Additional surveys for the following species may be required: - Great crested newts; - Bats (activity surveys and Preliminary Bat Roost Assessment); - Badger; - Breeding birds; - Widespread reptile species; - Priority invertebrates; - Otters, water voles and white-clawed crayfish; - Priority plants. A Habitats Regulations Assessment screening to determine any impacts on Johnstown Newt Sites SAC should be carried out. Section 28 SSSI Assent may be relation to Stryt Las a'r Hafod SSSI if impacts to the SSSI are considered likely. If works are limited to discrete locations, avoid priority habitats within the Site and will result in limited habitat loss/vegetation clearance, potentially all of these surveys, or at least a number

¹ British Standards Institute (2012) BS 5837:2012 Trees in relation to design, demolition, construction.

² <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/>

³ The CIRIA documents are a series of publications developed by the Construction Industry Research and Information Association. Each document is targeted at a particular type of business or activity and covers environmental good practice to minimise pollution. Particular attention should be given to CIRIA C532 (Control of water pollution from construction sites, 2001). The CIRIA publications also make reference to environmental legal obligations and are available from: http://www.ciria.org/CIRIA/Resources/Resource_overview/Resources/Resource_overview.aspx?hkey=a80608d2-a045-4d72-8bb9-5ecf23f8d761

of them, can be scoped out and the relevant species constraints managed through a Precautionary Method of Working.

Report Validity

In the event of scope or programme changes, or if works do not commence within 12 months of the date of this report, then updates to the surveys may be required to ensure the validity of the data, as per CIEEM guidance⁴.

⁴ CIEEM (2019) Advice Note on the Lifespan of Ecological Reports and Surveys

Introduction

Terms of Reference

- 1.1. Atkins Limited, was commissioned by Wrexham County Borough Council to undertake a preliminary ecological appraisal (PEA) in connection with the proposed remedial works to the Bersham Colliery Tip (hereafter referred to as the Proposed Scheme). The Proposed Scheme is in Rhostyllen, Wrexham, as shown on the Site Location Plan in Appendix A (hereafter referred to as the Site).
- 1.2. This report has been undertaken with reference to current good practice⁵ and provides an initial appraisal of any likely ecological constraints upon designated sites, protected species and other features of ecological interest.
- 1.3. Following the principles of the mitigation hierarchy and British Standard (BS) 42020:2013⁶, this report also identifies the need for measures to avoid, mitigate or compensate for damage and disturbance to habitats and species. Opportunities to provide biodiversity enhancements in accordance with local, regional and national biodiversity planning strategies are also identified where relevant. Furthermore, it identifies recommendations for further ecological surveys that may be required to establish the presence or likely absence of ecological features within and adjoining the Proposed Scheme.
- 1.4. This report is intended to inform design development, site layout and/or site investigations. In addition, it provides the indicative scope for further ecological surveys and/or ecological impact assessment. This report is not intended to support a planning application

The Site

- 1.5. The Site is located south of Croesfoel Industrial Estate, off Colliery Road, Rhostyllen, Wrexham (central Ordnance Survey National Grid Reference [OSNGR]: SJ 3123 4816). Glanyrafon Brook runs along the northern boundary, Colliery Road forms the eastern boundary, the A483 forms the western boundary and the Shrewsbury-Chester Railway Line forms the southern boundary. The wider landscape includes arable fields to the east, west and south and Rhostyllen is located to the north.
- 1.6. The Site is approximately 14.5 ha and comprises the colliery tip. The habitats within the Site predominantly comprise mature and pioneer semi-natural broadleaved woodland, and ephemeral/short perennial vegetation colonising the coal mine spoil.

The Proposed Scheme

- 1.7. Bersham Colliery Tip was categorised in accordance with the interim categorisation system for coal tips as devised by the Welsh Government. Following a Coal Authority inspection Llay has been categorised as Category C.
- 1.8. The details of the Proposed Scheme have not been finalised. However, it is likely that these will include drainage improvements and the installation of signage and fencing in order to prevent trespass. When full details of the Proposed Scheme are available, this PEA Report will require updating.

Scope of the Assessment

- 1.9. This report presents ecological information obtained during the following:
 - A desk study undertaken on 05/09/2022; and
 - A walkover survey of accessible land within and adjacent to the Site on 25/08/2022.
- 1.10. The walkover survey and identification of potential ecological constraints was based on the condition of the Site and its immediate surrounds encountered at the time of the walkover survey, and information about the Proposed Scheme available at the time. If information on the Proposed Scheme should change, the Site may need to be re-visited to establish if there are any further ecological constraints arising from changes to the design.

⁵ CIEEM (2017) Guidelines for preliminary ecological appraisal. 2nd Edition.

⁶ British Standard (2013) BS 42020:2013 Biodiversity - code of practice for planning and development

2. Methods

Desk Study

- 2.1. The geographical area for obtaining ecological data through desk studies has been determined using best practice guidance (as detailed in 2.10) and professional judgement. Baseline data has been gathered from a range of sources through data requests, consultation, and using online resources as outlined below. This included data gathering in relation to statutory and non-statutory designated sites for nature conservation and protected and priority species⁷. The study areas used for the data gathering are detailed in Table 2-1. The desk study was undertaken on 05/09/2022. For species records collected, only those within 10 years of the data collection date have been considered within the assessment.
- 2.2. The following online resources were accessed:
- Multi-Agency Geographic Information for the Countryside (MAGIC)⁸ website;
 - The Woodland Trust's Ancient Tree Inventory⁹; and
 - Lle: A Geo-portal for Wales¹⁰.
- 2.3. Ordnance Survey maps and the Grid Reference Finder website (<https://gridreferencefinder.com/>) were used to identify the presence of water bodies within 500 m of the Site boundary, in order to establish if the land within and immediately surrounding the Site could be used as terrestrial habitat for great crested newts. This species typically uses suitable terrestrial habitat up to 500 m from a breeding pond¹¹. However, there is a notable decrease in great crested newt abundance beyond a distance of 250 m from a breeding pond¹².
- 2.4. Cofnod was contacted to request records of protected and priority species and habitats, statutory and non-statutory designated sites for nature conservation and invasive non-native plant species (INNPS).

Table 2-1 - Data Search Areas

Data Type	Search Area – Distance from Site Boundary
Statutory designated sites for nature conservation	2 km
Non-statutory designated sites for nature conservation	1 km
Irreplaceable habitats including ancient woodland and ancient/veteran trees	1 km
Priority habitats and protected/priority species	1 km (extended to 2 km for bats ¹³)

- 2.5. A review of national and local planning policy relevant to the Proposed Scheme was undertaken as part of the data gathering. The following policy documents were subject to review:
- Future Wales: The National Plan 2040¹⁴;
 - Wrexham Unitary Development Plan 1996-2011¹⁵;
 - Wrexham County Borough Council – Local Planning Guidance Note No. 32 – Biodiversity and Development¹⁶.

⁷ These are defined in CIEEM (2017) Guidelines for Preliminary Ecological Appraisal 2nd Edition

⁸ [MAGIC \(defra.gov.uk\)](https://magic.defra.gov.uk/)

⁹ [Ancient Tree Inventory - Woodland Trust](https://www.ancient-trees.org/)

¹⁰ <http://lle.gov.wales/catalogue?lang=en&Text=&C=2009&Page=&INSPIRE=False>

¹¹ English Nature (2004). Great Crested Newt Mitigation Licences

¹² English Nature (2004). An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt (ENRR576) <http://publications.naturalengland.org.uk/publication/134002>

¹³ As per good practice guidance (Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.)

¹⁴ <https://gov.wales/future-wales-national-plan-2040-0>

¹⁵ <https://www.wrexham.gov.uk/sites/default/files/2020-05/udp-statement.pdf>

¹⁶ <https://www.wrexham.gov.uk/sites/default/files/2020-05/lpg-32e.pdf>

Field Surveys

- 2.6. The geographical area for undertaking ecological field surveys has been determined using the current survey guidance, professional judgement and the zones of influence, which have been determined based on likely effects arising from the Proposed Scheme.

Surveyor Competencies

- 2.7. All the surveys were led by surveyors who have been assessed to be at least of capable experience in extended Phase 1 habitat survey following the Chartered Institute of Ecology and Environmental Management (CIEEM) competency framework¹⁷.

Extended Phase 1 Habitat Survey

- 2.8. An ecological walkover survey of areas within and adjacent to the Site, including land up to 50 m from the Site boundary where access was allowed (the Survey Area), was undertaken on 25/08/2022 using the extended Phase 1 habitat survey methodology¹⁸ as guidance. The walkover survey recorded information on the habitats within the Survey Area and also included a search for evidence of the presence of, and the potential of each habitat to support, protected and priority species as recommended by CIEEM¹⁹.
- 2.9. All land within the Survey Area was surveyed according to CIEEM guidance. Vascular plant names recorded during this survey follows Stace²⁰.
- 2.10. This survey method comprised mapping habitats present according to the JNCC Phase 1 habitat survey methodology¹⁸, with target notes (TNs) used to record specific details on the plant species composition of the habitats, current management and quality. TNs were also used to record features of ecological importance (e.g. ponds, complex habitat mosaics). In addition, the survey comprised assessing the suitability of the habitats present for, and recording any activity of the following species (in line with current guidance):
- Amphibians (terrestrial and aquatic habitats), including an assessment of aquatic habitat for its suitability to support great crested newts using the Habitat Suitability Index (HSI) assessment²¹;
 - Bats²²;
 - Badger²³;
 - Breeding and wintering birds²⁴;
 - Priority plants²⁵;
 - Reptiles²⁶;
 - Priority invertebrates²⁷;
 - Water vole²⁸, otter^{29,30} and white-clawed crayfish³¹; and
 - Other priority species.

¹⁷ <https://www.cieem.net/competency-framework>

¹⁸ Joint Nature Conservation Committee (2010) Handbook for Phase 1 habitat survey - a technique for environmental audit.

¹⁹ CIEEM (2017) Guidelines for preliminary ecological appraisal. 2nd Edition.

²⁰ Stace (2019) New Flora of the British Isles 4th edition

²¹ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000) Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*) Herpetological Journal 10 (4), 143-155 (2000).

²² Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London

²³ Harris S., Cresswell P. and Jefferies D. (1989) *Surveying badgers*. Mammal Society – No9.

²⁴ Bird Survey & Assessment Steering Group. (2022). *Bird Survey Guidelines for assessing ecological impacts*, v.0.1.7. Available at: <https://birdsurveyguidelines.org> [Accessed: 21/10/2022].

²⁵ At the present time there is no current survey guidance for priority plants.

²⁶ Froglife (1999) Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife advice sheet 10

²⁷ As relevant to the location, identified through the desk study

²⁸ Dean, M. et al The Water Vole Mitigation Handbook (2016). Mammal Society.

²⁹ Chanin and Smith (2003). *Monitoring the otter Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No 10. Peterborough, English Nature.

³⁰ Liles G. (2003). *Otter Breeding Sites. Conservation and Management*. Conserving Natura 2000 Rivers Conservation Techniques Series No. 5. English Nature, Peterborough.

³¹ Peay S. (2003) Monitoring the White-clawed Crayfish *Austropotamobius pallipes* Conserving Nature 2000 Rivers Monitoring Series No. 1. English Nature, Peterborough.

- 2.11. Evidence of the presence of the following invasive species was recorded where seen:
- Evidence of animal species as listed on the Invasive Alien Species (Enforcement and Permitting) Order 2019, Chinese mitten crab, red swamp crayfish, signal crayfish, spiny cheek crayfish, muntjac deer, ruddy duck, Egyptian goose and grey squirrel.
 - Evidence of the presence of the following invasive species: Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, Himalayan balsam, rhododendron, New Zealand pigmy weed, Virginia creeper, variegated yellow archangel, and cotoneaster. These are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and subject to strict legal control.
 - In addition to those listed above, evidence of plant species as listed on the Invasive Alien Species (Enforcement and Permitting) Order 2019: Nuttall's waterweed, Chilean rhubarb, floating pennywort, curly waterweed and parrot's feather, fanwort, water hyacinth and floating water primrose.

Limitations

- 2.12. This section identifies any limitations to the surveys or assessment and provides an explanation as to the effect of these on the appraisal.
- 2.13. Access was restricted to stable areas of the colliery tip due to health and safety concerns; steep slopes and areas of loose coal mine spoil were avoided. As such, a precautionary approach has been taken in the assessment.
- 2.14. The field survey was restricted to land within the Site only. However, given that the Site is immediately surrounded by Croesfoel Industrial Estate and major linear transport infrastructure, this is not considered to present a limitation to the results of this appraisal.
- 2.15. The search for waterbodies within 500 m of the Site was undertaken by using Ordnance Survey plans and aerial photographs only. These sources may not show all waterbodies within 500 m of the Site boundary and, therefore, some waterbodies may not have been identified.
- 2.16. The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The extended Phase 1 habitat survey checked for the presence of Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, Himalayan balsam, rhododendron, New Zealand pigmyweed, Virginia creeper, variegated yellow archangel, and cotoneaster species. Other invasive species, in particular those associated with aquatic habitats, may not have been recorded.
- 2.17. It was beyond the scope of this initial appraisal to record cryptic taxa of protected or priority species (including some species of plants, invertebrates and fungi). These groups require specialist survey. Given the presence of priority habitats at the Site it is considered possible that assemblages of such taxa may be present, therefore a precautionary approach has been taken in this appraisal.
- 2.18. The desk study reviewed the Woodland Trust's Ancient Tree Inventory. This provides records of ancient and veteran trees but is not an exhaustive list and other ancient and veteran trees may be present in the area. The walkover survey aimed to identify such features and as such this is not considered a constraint.
- 2.19. Cofnod records are not exhaustive, and the absence of records does not demonstrate the absence of species.
- 2.20. Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. The ecological surveys undertaken to support this PEA have not therefore produced a complete list of plants and animals and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. The above limitation has been addressed through taking the precautionary approach within the appraisal.

3. Results

Statutory and Non-Statutory Designated Sites for Nature Conservation

- 3.1. Table 3-1 details the statutory and non-statutory designated sites for nature conservation identified through the desk study. These are shown on the Statutory Designated Sites Plan and Non-statutory Designated Sites Plan in **Appendix B**. A summary of relevant legislation relating to designated sites for nature conservation is provided in **Appendix D**.

Table 3-1 - Statutory Designated Sites for Nature Conservation within 2 km³² of the Site and Non-Statutory Designated Sites for Nature Conservation within 1 km³³ of the Site

Site name	Designation	Location of Designated Site ³⁴	Features of Interest ³⁵
Johnstown Newt Sites	Special Area of Conservation (SAC)	530 m south	Three post-industrial sites where coal and clay have been extracted. The population of great crested newts is one of the largest known in Great Britain.
Stryt Las a'r Hafod	Site of Special Scientific Interest (SSSI)	530 m south	This site is of special interest for its amphibians, particularly its population of great crested newts. The waterbodies at Stryt Las and Hafod support one of the largest known breeding populations of great crested newts in Great Britain. This SSSI is also designated as the Johnstown Newt Sites SAC.
North East Wales	Important Invertebrate Area (IIA)	530 m south	IIAs are nationally or internationally significant places for the conservation of invertebrates and the habitats upon which they rely.
Erddig Estate	Local Wildlife Site (LWS)	673 m east	National Trust estate with woodlands, semi-improved neutral grasslands and marshes.
Crematorium	LWS	800 m west	Two hay meadows which are herb-rich semi-improved neutral grassland. There are also two ponds.

- 3.2. The Johnstown Newt Sites SAC and Stryt Las a'r Hafod SSSI have no direct hydrological connectivity to the Site and are located over 500 m from the Site. Given the distance from the Site and the A483 dual carriageway that acts as a barrier between the Site and the SAC/SSSI, it is considered unlikely that localised changes in air quality as a result of construction related dust pollution will negatively impact the SAC/SSSI. There is some connectivity to the Site along the railway which may be suitable for amphibian movement. Therefore, the works may impact the qualifying feature of the SAC/SSSI and recommendations are provided in Section 4.
- 3.3. The North East Wales IIA is separated from the Site by the A483 dual carriageway and, therefore, there is no habitat connectivity between the IIA and the Site. There is no hydrological connectivity between the Site and the IIA, and the Site is of sufficient distance from the IIA for any localised changes in air quality resulting from construction related dust pollution to impact the IIA. Therefore, no likely impacts are anticipated, and this site is not considered further in this report.
- 3.4. The Crematorium LWS is located adjacent to Pentre-bychan Brook. This watercourse flows into Glanrafon Brook, which forms the northern boundary of the Site. However, as the Site is downstream of the Wildlife Site, no water quality impacts are anticipated to the LWS. The Site is a sufficient distance from the LWS for any localised changes in air quality resulting from construction

³² This is the zone of influence for statutory designated sites.

³³ This is the zone of influence for non-statutory designated sites.

³⁴ Where designated sites are situated outside of the Site boundary, the distance and direction is given to the closest point that the designated site is from the Site.

³⁵ including qualifying features of internationally designated sites and reasons for designation for SSSIs.

related dust pollution to be a likely impact to the LWS. Therefore, it is not considered further in this report.

- 3.5. Erddig Estate LWS has hydrological connectivity to the Site via Glanyrafon Brook. The Site is located upstream of the LWS and, therefore, there is potential for potential water quality impacts to the LWS as a result of the Proposed Scheme, for example pollution from fuel runoff and sediment runoff. Recommendations are provided in Section 4. The LWS is a sufficient distance from the Site, it is not anticipated that local changes in air quality as a result of construction related dust pollution will result in impacts on the LWS.

Irreplaceable Habitats

Ancient Woodland and Ancient/Veteran Trees

- 3.6. Table 3-2 details the locations of ancient woodland identified through the desk study. A summary of relevant legislation relating to protected habitats is provided in **Appendix D**.

Table 3-2 - Ancient Woodland within 1 km³⁶ of the Site

Ancient woodland Name	Location of Ancient Woodland ³⁷
Unknown	244 m east
Unknown	716 m north
Haford Wood	910 m east

- 3.7. Both the unnamed woodland and Haford Wood are connected to the Site via Glanyrafon Brook. Therefore, there is potential for water pollution to impact these woodlands and recommendations are provided in Section 4. The woodlands are a sufficient distance away from the Site that localised changes in air quality would be unlikely to impact the habitats.
- 3.8. There are two parcels of wood-pasture and parkland priority habitat within 1 km of the Site, one is approximately 640 m to the west of the Site and the other is approximately 800 m east of the Site. The western parcel has no connectivity to the Site. By definition, this habitat type has ancient and veteran trees present. The parcel to the east has connectivity via Glanyrafon Brook. Therefore there is potential for water pollution, for example from fuel and sediment runoff, to impact these woodlands and recommendations are provided in Section 4. The areas of habitat are located a sufficient distance away from the Site that is considered unlikely that they would be impacted by localised changes in air quality as a result of construction related dust pollution.
- 3.9. No ancient or veteran trees were recorded during the field survey. There is one ancient and one notable tree within 1 km of the Site. One ancient ash tree is located 467 m northeast of the Site and one notable oak tree is located 1 km west of the Site. Given the distance of these trees from the Site and absence of connectivity, it is considered unlikely they will be impacted by the Proposed Scheme. Ancient and notable trees are not discussed further in this report.
- 3.10. No other irreplaceable habitats were identified within 1 km of the Site.

Off-Site Priority Habitats

- 3.11. Priority habitats within 1 km of the Site, identified through desk study, are detailed in Table 3-3 below. A summary of relevant legislation relating to protected habitats is provided in **Appendix D**.

Table 3-3 – Off-Site Priority Habitats within 1 km³⁸ of the Site

Priority Habitat Type	Location	Connectivity to the Site
Reedbeds ³⁹ (recorded as the Phase 1 habitat type F1- swamp, it is assumed on a precautionary basis that this habitat conforms to the reedbed priority habitat type).	There are two parcels, one is approximately 900 m, southeast and the other is approximately 760 m north.	The parcel of priority habitat to the north of the Site lacks connectivity. The parcel of priority habitat to the southeast of the Site

³⁶ This is the zone of influence for ancient woodland.

³⁷ Where ancient woodlands are situated outside of the Application Site boundary, the distance and direction is given to the closest point that the ancient woodland from is the Application Site.

³⁸ This is the zone of influence for ancient woodland.

³⁹ The data source is from Phase 1 Habitat Survey of Wales 1979-1997 digital data.

		has connectivity via Glanyrafon Brook. Both areas of habitat are located a sufficient distance away from the Site that is considered unlikely that they would be impacted by localised changes in air quality.
Traditional orchards.	There are six parcels located to the south, east, north and west of the Site. The closest is approximately 170 m west of the Site.	There is no hydrological connectivity from the Site to any parcel of traditional orchard. The closest parcel is separated from the Site by the A483. The areas of habitat are located a sufficient distance away from the Site that is considered unlikely that they would be impacted by localised changes in air quality.
Open mosaic habitat on previously developed land	There are three parcels of the open mosaic habitat type, all located to the south of the Site. The closest parcel is approximately 600 m south of the Site.	There is no hydrological connectivity from the Site to any of these habitat parcels. The areas of habitat are located a sufficient distance away from the Site that is considered unlikely that they would be impacted by localised changes in air quality.

3.12. Given the absence of connectivity from the Site, and the distance of the Site, to the traditional orchard or open mosaic habitats, it is considered that the Scheme will not impact these off-site priority habitats and these habitats are not discussed further in this report.

3.13. Given the hydrological connectivity to the reedbeds habitat, there is potential for this priority habitat to be affected by water quality impacts, such as fuel and sediment runoff, resulting from the Proposed Scheme. Therefore, recommendations are provided in Section 4.

On-site Habitats

3.14. The habitats within the Site are predominantly semi-natural broadleaved woodland, including mature areas which qualify as lowland mixed deciduous woodland priority habitat and areas of disturbed land with ephemeral/short perennial vegetation associated with coal mine spoil, some of which qualifies as open mosaic habitat on previously developed land priority habitat⁴⁰. Smaller areas of tall ruderal vegetation, dense scrub and bare ground are also present. The Extended Phase 1 Habitat Survey Plan and On-site Priority Habitats Plan in **Appendix C** show the results of the extended Phase 1 habitat survey. A summary of relevant legislation relating to protected and priority habitats is provided in **Appendix D**.

Open Mosaic Habitat on Previously Developed Land

3.15. There are areas within the Site (see the On-Site Priority Habitats Plan provided in **Appendix C**) which are considered to conform to 'Open Mosaic Habitat on Previously Developed Land', a habitat type listed under Section 7 of the Environment (Wales) Act 2016 as a habitat of principal importance in Wales⁴¹. This is primary successional vegetation that develops on sites with a known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use. It is dominated by early successional communities, including annuals, mosses and lichens, ruderals, inundation species and open grassland, in a spatial mosaic with unvegetated, loose and bare substrate.

3.16. The early successional communities, in this case, have developed on the tipped coal mine spoil, which has resulted in extreme substrate conditions that limit plant growth (and maintain the early successional stage) and favour stress-tolerant plant species. The spoil at Bersham has also

⁴⁰ Under Section 7 of the Environment (Wales) Act 2016.

⁴¹ <https://www.biodiversitywales.org.uk/Environment-Wales-Act>

resulted in the presence of plant species indicative of both acidic substrates (e.g. English stonecrop) and calcareous substrates (e.g. yellow-wort and weld).

- 3.17. A high proportion of species characteristic⁴² of 'Open Mosaic Habitat on Previously Developed Land' were recorded within the primary succession vegetation at the Site, including harebell, common knapweed, common centaury, mouse-ear-hawkweed, hawkweed sp., wild carrot, wild teasel, blue fleabane, common eyebright, perforate St John's-wort, cat'-ear, hard rush, oxeye daisy, common bird's-foot-trefoil, common evening-primrose, bristly oxtongue, ribwort plantain, selfheal and colt's-foot.
- 3.18. Not all areas of the Site supporting ephemeral/short perennial vegetation conformed to this priority habitat type given the compact nature of the substrate, limited plant species present and absence of a habitat mosaic.

Lowland Mixed Deciduous Woodland

- 3.19. The majority of the woodland within the Site is pioneer woodland, consisting primarily of immature silver birch trees with no well-established field layer or understorey present. Other species present include grey willow, bramble, dog-rose, wych elm, sycamore, false oat-grass, common bent, rosebay willowherb and foxglove.
- 3.20. Portions of the woodland within the Site (see the On-site Priority Habitats Plan provided in **Appendix C**) qualify as lowland mixed deciduous woodland, a habitat type listed under Section 7 of the Environment (Wales) Act 2016 as a habitat of principal importance in Wales⁴³. The woodland was dominated by silver birch, with pedunculate oak present throughout. Bramble, bracken, dog-rose, false oat-grass and common bent were present in the field layer, with bank haircap present in the ground layer. The floristics of the woodland conform to the National Vegetation Classification (NVC) community type W10 *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland.
- 3.21. Table 3-4 lists all of the habitats present within the Site and identifies those habitats which are listed as habitats of principal importance in Wales⁴¹. The table also provides details of the area⁴⁴ of each habitat within the Survey Area and the proportion of the Site this makes up. Habitats are mapped on the Extended Phase 1 Habitat Survey Plan (Figure 3 in **Appendix C**) Priority habitats within the Site are mapped on the On-site Priority Habitats Plan in **Appendix C**.
- 3.22. No habitats listed on Annex 1⁴⁵ of the Habitats Directive were present within the Site.

Table 3-4 - Habitat Types within the Site

Habitat Type	Location of Habitat	Area of Habitat		Priority Habitat Y/N
		Area (ha)	% of Site	
Semi-natural broadleaved woodland	Within the Site	8.7	65%	Y – see the On-Site Priority Habitats Plan provided in Appendix C
Tall ruderal	Within the Site	0.1	1%	N
Bare ground	Within the Site	0.5	4%	N
Ephemeral/short perennial	Within the Site	3.1	24%	Y – see the On-Site Priority Habitats Plan provided in Appendix C
Dense scrub	Within the Site	0.7	6%	N

- 3.23. As priority habitats have been recorded on Site and may be impacted by the Scheme recommendations are provided in Section 4.

⁴² <https://data.jncc.gov.uk/data/a81bf2a7-b637-4497-a8be-03bd50d4290d/UKBAP-BAPHabitats-40-OMH-2010.pdf>

⁴³ <https://www.biodiversitywales.org.uk/Environment-Wales-Act>

⁴⁴ All areas were measured in QGIS.

⁴⁵ <http://jncc.defra.gov.uk/page-1523>

Protected and Priority Species

- 3.24. Evidence of protected and priority species, or habitats with the potential to support protected and priority species are indicated on the Extended Phase 1 Habitat Survey Plan provided in **Appendix C**, with specific features highlighted by TNs on the plan. TN descriptions are also provided in **Appendix C**. A summary of relevant legislation relating to protected species is provided in **Appendix D**.

Amphibians

- 3.25. Cofnod provided 11 amphibian records within 1 km of the Site, comprising of great crested newts (GCN), common frogs and common toads. The closest record was a GCN record 51 m west of the Site.
- 3.26. Johnstown Newt Sites SAC and Stryt Las a'r Hafod SSSI are 530 m east of the Site. These sites are designated for their populations of GCN.
- 3.27. The desk study identified five ponds within 500 m of the Site. One pond is separated from the Site by a flowing watercourse. The remaining four ponds have connectivity to the Site via suitable terrestrial habitat including hedgerow, grassland, vegetated railway embankment and wooded areas. Of the ponds with connectivity to the Site, one is located 65 m east, two are located 200 m south and one is located 290 m south of the Site.
- 3.28. Suitable terrestrial habitat for GCN is present within the Site, comprising scrub, tall ruderal vegetation and semi-natural broadleaved woodland.
- 3.29. As suitable habitat for GCN and other amphibians is present on the Site, and as amphibians (including GCN) have been recorded within the study area, amphibians may pose a constraint to the Proposed Scheme and recommendations are provided in Section 4.

Bats

- 3.30. Cofnod provided 310 bat records within 2 km of the Site, comprising of *Myotis* sp., Daubenton's bat, noctule, common pipistrelle, soprano pipistrelle, long-eared bat sp., brown long-eared bat, whiskered bat, Natterer's bat and Brandt's bat. The closest records are seven records within the Site. The next closest record is a pipistrelle bat species record located 148 m west of the Site. The closest roost record was 1.9 km away; common pipistrelle, soprano pipistrelle and a *Myotis* sp. were recorded at the roost.
- 3.31. Areas of mature woodland were identified to contain trees of an age and size which may have potential roost features for bats.
- 3.32. The habitats within the Site have moderate suitability for foraging and commuting bats. The railway corridor, connected areas of woodland and Glanyrafon Brook provide connectivity to the wider landscape.
- 3.33. As potential roosting, foraging and commuting habitat for bats has been recorded within the Site, this species group may pose a constraint to the Proposed Scheme and recommendations are provided in Section 4.

Badgers

- 3.34. Cofnod provided 7 badger records within 1 km of the Site. The closest record was located 4 m north of the Site. No records of badger setts were returned.
- 3.35. The semi-natural broadleaved woodland within the Site and surrounding fields provide suitable sett building, commuting and foraging habitat for badgers.
- 3.36. No evidence of badgers was recorded during the field survey. However, as suitable habitat for badgers has been recorded within the Site this species may pose a constraint to the Proposed Scheme and recommendations are provided Section 4.

Birds

- 3.37. Cofnod provided 17 records of bird species within 1 km of the Site. The closest record was a hobby record located 14 m west of the Site.
- 3.38. The Site offers bird nesting opportunities within areas of woodland and scrub. The ephemeral/short perennial vegetation also provides ground nesting opportunities.

- 3.39. As suitable nesting habitat for birds has been recorded within the Site, this species group may pose a constraint to the Proposed Scheme and recommendations are provided Section 4.

Widespread Species of Reptiles

- 3.40. Cofnod provided no records of reptiles within 1 km of the Site.
- 3.41. Areas of broadleaved woodland, scrub and ephemeral/short perennial vegetation within the Site offer suitable basking, commuting and foraging habitat for widespread species of reptile. Potential refugia were also recorded within the Site (see TN 14 and 15 in **Appendix C**).
- 3.42. As suitable habitat for widespread species of reptile has been recorded within the Site, this species group may pose a constraint to the Proposed Scheme and recommendations are provided Section 4.

Priority Invertebrates

- 3.43. Cofnod provided 10 priority invertebrate records within 1 km of the Site. The closest records were six records within the Site. These included buff-tailed bumblebee, red-tailed bumble bee, early colletes, common carder bee, white-tailed bumblebee and small garden bumblebee. The next closest record was a golden-ringed dragonfly record located 17 m north of the Site.
- 3.44. The areas of broadleaved woodland and ephemeral habitats are suitable for priority invertebrates.
- 3.45. As suitable habitat for priority invertebrates have been recorded within the Site, this species group may pose a constraint to the Proposed Scheme and recommendations are provided Section 4.

Otters

- 3.46. Cofnod provided eight otter records within 1 km of the Site. The closest record was located on the north-eastern boundary of the Site on Glanyrafon Brook.
- 3.47. Glanyrafon Brook borders the Site immediately to the north and is suitable for foraging and commuting otters. There may be suitability for holts and resting sites along the brook and within the woodland bordering the brook. The brook was not seen at the time of survey due to access constraints; therefore, suitability for otters is assumed on a precautionary basis.
- 3.48. As suitable habitat for otter has been recorded within the Site, this species may pose a constraint to the Proposed Scheme and recommendations are provided Section 4.

Water vole

- 3.49. Cofnod provided no records of water voles within 1 km of the Site.
- 3.50. Glanyrafon Brook borders the Site immediately to the north and may provide suitable habitat for water vole. The brook was not seen at the time of survey due to access constraints; therefore, suitability for water vole is assumed on a precautionary basis.
- 3.51. As suitable habitat for water vole has been assumed within the Site, this species may pose a constraint to the Proposed Scheme and recommendations are provided Section 4.

White-Clawed Crayfish

- 3.52. Cofnod provided no records of white-clawed crayfish within 1 km of the Site.
- 3.53. Glanyrafon Brook borders the Site immediately to the north. The brook was not seen at the time of survey due to access constraints; therefore suitability for white-clawed crayfish is assumed on a precautionary basis.
- 3.54. As suitable habitat for white-clawed crayfish has been assumed within the Site, this species may pose a constraint to the Proposed Scheme and recommendations are provided Section 4.

Priority Plants

- 3.55. Cofnod provided two priority plant records within 1 km of the Site, records included crosswort and bluebell. The closest record was of crosswort located 635 m northwest of the Site.
- 3.56. The ephemeral/short perennial vegetation and semi-natural broadleaved woodland within the Site have the potential to support priority plants.
- 3.57. As suitable habitat for priority plants has been identified within the Site, priority plants may pose a constraint to the Proposed Scheme. Recommendations are provided Section 4.

Other Priority Species

- 3.58. Cofnod provided 16 other priority species records within 1 km of the Site, comprising hedgehogs, brown hares, and stoats (local biodiversity action plan species only) records. The closest record was a hedgehog record located 151 m north of the Site.
- 3.59. There is no habitat suitability for brown hares within the Site.
- 3.60. The broadleaved woodland and scrub within the Site provide suitable habitat for hedgehogs and stoats and as such these species may pose a constraint to the Proposed Scheme. Recommendations are provided in Section 4 below.

Invasive Non-Native Species

- 3.61. Cofnod returned six invasive non-native species (INNS) records within 1 km of the Site, comprising of Japanese knotweed, harlequin ladybird, American mink and Himalayan balsam. The closest records were of Japanese knotweed and harlequin ladybird record within the Site.
- 3.62.** Japanese knotweed was recorded during the field survey (see TN 1, 5-8, 10, 11 and 16 in **Appendix C**).
- 3.63. As INNS have been identified within the Site, they may pose a constraint to the Proposed Scheme and recommendations are provided in Section 4 below.

4. Constraints, Recommendations and Biodiversity Opportunities

Ecological Constraints and Recommendations Plan

- 4.1. The Ecological Constraints Plan, provided in Table 4-1 below, displays key constraints at the Site, and recommendations with regard to these, including any requirements for further surveys and guidance on when these should take place. The recommendations accord with the guidance set out by Wrexham County Borough Council in relation to biodiversity and development⁴⁶.
- 4.2. The recommendations and survey requirements listed below will be refined and requirements may be altered when the final details of the Proposed Scheme are known. Many of the recommendations have been made on a precautionary basis in the absence of final designs. If the final maintenance and remediation proposals can avoid large-scale and permanent habitat loss, potentially all of these surveys, or at least a number of them, can be scoped out and the relevant species constraints managed through a Precautionary Method of Working.
- 4.3. Specific avoidance and mitigation measures will be determined following further surveys (if required).

Table 4-1 – Ecological Constraints and Recommendations Plan

⁴⁶ <https://www.wrexham.gov.uk/sites/default/files/2020-05/lpg-32e.pdf>

Species or Feature	Constraint	Recommendations	Timing of Further Survey / Actions
Designated Sites for Nature Conservation			
Erddig Estate LWS	Risk of the Scheme causing pollution to the non-statutory designated site.	General mitigation measures should be followed (see below).	During construction of the Proposed Scheme.
Johnstown Newt Sites SAC and Stryt Las a'r Hafod SSSI	Risk of the Scheme impacting mobile qualifying features (GCN) of the SAC and SSSI.	A Habitats Regulations Assessment (HRA) screening assessment should be carried out and a Section 28 SSSI Assent application should be submitted to Natural Resources Wales.	Prior to the Proposed Scheme commencing.
Irreplaceable habitats and off-site priority habitats			
The unnamed ancient woodland to the east of the site, Hafod Wood ancient woodland, wood-pasture and parkland priority habitat and reedbeds priority habitat.	Risk of the works causing pollution to the ancient woodlands and priority habitats.	General mitigation measures should be followed (see below).	During construction of the Proposed Scheme.
On-site priority habitats			
Open mosaic habitat on previously developed land and lowland mixed deciduous woodland.	The works have the potential to result in the loss of priority habitats, or the degradation of priority habitats via pollution as a result of the works.	If the loss of extensive areas of lowland mixed deciduous woodland and open mosaic habitats on previously developed land priority habitats cannot be avoided, further botanical surveys or consultation with Wrexham County Borough Council may be required⁴⁷. Given the extent and location of open mosaic habitat within the Site, it is unlikely that loss of this habitat type will be avoided entirely. Therefore, consideration should be given to how habitats can be reinstated following the works. General mitigation measures should be followed (see below).	If further botanical surveys are required these can be carried out between April and September. General mitigation measures should be adhered to throughout the construction phase.
Priority species and INNPS			

⁴⁷ As a public authority Wrexham County Borough Council has a duty under Section 6 of the Environment (Wales) Act 2016 with regard to maintaining and enhancing biodiversity, including priority habitats listed under Section 7 of this Act.

GCN and other amphibians	The works have the potential to result in the killing or injury of amphibians, including GCN. The works also have the potential to result in the loss of suitable habitat for GCN and amphibians. There are three waterbodies within 500 m of the Site which have connectivity to the Site via suitable terrestrial habitats.	If the loss of extensive areas of habitat cannot be avoided, then it is recommended that a HSI assessment and Environmental DNA (eDNA) survey are undertaken on all waterbodies, with connectivity to the Site, located within 500 m of the Site in order to assess the suitability of waterbodies for GCN and inform the requirement for further surveys. If GCN are present, a Natural Resources Wales mitigation licence may be required along with appropriate mitigation measures. If the scale of the works is minor, there may be potential to carry out the works under a Precautionary Method of Working (PMW) for GCN. General mitigation measures should be followed (see below).	HSI assessments can be carried out at any time of year. eDNA surveys can be undertaken from mid-April to the end of June.
Bats	The works have the potential to result in the loss of foraging and commuting habitat for bats. There is also potential for the works to result in the loss of bat roosts and disturbance to roosting bats.	The loss of mature woodland should be avoided, if this is not possible detailed Preliminary Bat Roost Assessment (PBRA) surveys will be required in order to inform the requirement for further emergence/re-entry surveys. If a bat roost is found, a licence may be required. If large areas of ephemeral habitat and woodland are to be lost permanently, bat activity surveys may be required. General mitigation measures should be followed (see below).	PBRAs can be carried out at any time of year. Emergence/re-entry surveys can be carried out between May and September in line with best practice guidance⁴⁸. Bat activity surveys can be carried out between April and October, with one visit per month in line with best practice guidance⁴⁸.
Badgers	The Site is suitable for sett building, foraging and commuting badgers. The works may result in the disturbance or damage of a badger sett if present.	Badger surveys should be carried out within 30 m of areas impacted by the works once the working areas are known. If the works will result in the disturbance or destruction of a badger sett, the sett may need to be closed under a licence. General mitigation measures should be followed (see below).	Badger surveys can be carried out at any time of year.
Nesting birds	The habitats within the Site are suitable for a range of nesting birds, including ground nesting birds. There is potential for the	If large scale and permanent loss of habitats cannot be avoided, then breeding bird surveys may be required. If habitat loss is temporary and localised, it is recommended that vegetation clearance is kept to a minimum and is undertaken outside of the core nesting bird season, the core nesting bird	Survey can be carried out from March to July, typically consisting of between four and six visits. A PMW will be required for works carried out from March to August.

⁴⁸ Collins, J. (ed.) (2016) Bat Surveys for professional Ecologists: Good practice Guidelines (3rd edn). The Bat Conservation Trust, London.

	works to result in the damage or destruction of nests.	season is generally taken to be between 1st March and 31st August (subject to geographical and seasonal variations). If this cannot be achieved, then vegetation clearance should be undertaken following a PMW with respect to nesting birds. If an active bird nest is found, it must be left in situ with an appropriate buffer of vegetation (species-dependant) until the chicks have fledged or the nest is no longer in use. General mitigation measures should be followed (see below).	
Widespread reptile species	There is suitable habitat for reptiles within the Site, and there is potential for the works to result in the killing or injury of reptiles.	If large scale and permanent loss of habitats is unavoidable, then reptile surveys may be required. If habitat loss is localised or temporary, the works should be carried out under PMW for reptiles. This would include a pre-works check for reptiles. General mitigation measures should be followed (see below).	Reptile surveys can be carried out from March to October, in line with best practice guidance ⁴⁹ .
Priority invertebrates	Habitats within the Site are suitable for priority invertebrates, the works have the potential to result in the loss of suitable habitats and killing of priority invertebrates.	Invertebrate surveys may be required if the loss of extensive areas of suitable invertebrate habitat cannot be avoided. These can be carried out between April and September and will consist of between three and seven visits depending on the results of an initial scoping survey. Should the works be able to minimise significant impacts upon important habitats for priority invertebrates, we are likely able to negate the need for such surveys. General mitigation measures should be followed (see below).	Survey should be carried out between April and September and will consist of between three and seven visits, depending on the results of an initial scoping survey ⁵⁰ .
Otters	There is suitable habitat for otters along Glanyrafon Brook directly adjacent to the Site, and there is suitability for otter holts within the mature woodland within the Site. There is also potential for the works to result in the pollution of Glanyrafon Brook.	If works activity is required within 50 m of Glanyrafon Brook, a survey for otters should be carried out. General mitigation measures should be followed (see below).	Otter surveys can be carried out at any time of year.
Water vole	Glanyrafon Brook which runs adjacent to the Site may be suitable for water vole. If works are required directly adjacent	If works to the bank of Glanyrafon Brook, or within 5 m of the bank of the watercourse cannot be avoided then a water vole habitat suitability assessment will be required.	Water vole surveys involve two visits, one between mid-April and the end of June and a second visit in July to September, inclusive. These visits

⁴⁹ https://www.wildcare.co.uk/media/wysiwyg/pdfs/froglife_advice_sheet_10_-_reptile_surveys.pdf

⁵⁰ <https://cdn.legacy.buglife.org.uk/sites/default/files/Good%20practice%20planning%20-%20surveys.pdf>

	to the brook there is potential for the works to result in the destruction of water vole burrows. There is also potential for the works to result in the pollution of the watercourse.	If the watercourse is considered suitable for water voles, then water vole surveys should be carried out in order to inform mitigation and licencing requirements. General mitigation measures should be followed (see below).	should be taken at least two months apart.
White-clawed crayfish	The brook which runs adjacent to the Site may be suitable for white-clawed crayfish. The works have the potential to result in the pollution of this watercourse.	General mitigation measures should be followed (see below).	During construction of the Proposed Scheme.
Priority plants	The works have the potential to result in the loss of priority plants.	If the loss of extensive areas of lowland mixed deciduous woodland and open mosaic habitats on previously developed land priority habitats cannot be avoided, further botanical surveys or consultation with the local planning authority may be required. General mitigation measures should be followed (see below).	If further botanical surveys are required these can be carried out between April and September. General mitigation measures should be adhered to throughout the construction phase.
Other priority species	The habitats within the Site are suitable for a range of priority species, including hedgehogs.	The general mitigation measures should be followed (see below).	During construction of the Proposed Scheme.
INNPS	Japanese knotweed was recorded within the Site. The works have the potential to cause the spread of INNPS.	Works should be carried out under a PMW for INNPS. This will involve maintaining a 10 m exclusion zone around INNPS at all times. If the risk of spreading INNPS cannot be mitigated by adopting standard biosecurity measures as outlined in documents from the GB non-native species secretariat ⁵¹ a specialist contractor should be sought to advise on management and working practices in order to avoid the spread of INNPS in the wild. The general mitigation measures should be followed (see below).	During construction of the Proposed Scheme.

⁵¹ <https://www.nonnativespecies.org/non-native-species/management-guidance/terrestrial-plants-2/#Impatiensglandulifera>

General Mitigation

- 4.4. Vegetation clearance should be minimised as far as possible.
- 4.5. During construction trees should be protected in line with guidelines provided in BS 5837 Trees in relation to Construction⁵².
- 4.6. Works should proceed following standard good practice working methods for environmental protection which should adhere to the General Pollution Prevention (GPPs)⁵³ and the Construction Industry Research and Information Association (CIRIA)⁵⁴ C715 Environmental good practice. Access and storage of equipment/materials should not be located within vegetated areas. Areas of hardstanding/bare ground should be used for this purpose or, if this is not possible, access and storage areas should be specifically agreed with an ecologist.
- 4.7. No night-time working (taken to be 30 minutes prior to sunset until 30 minutes after sunrise) should be undertaken to avoid impacts on wildlife, including badgers and bats. If night-time working is required, this should be discussed with an ecologist prior to commencement to establish what mitigation measures are required.
- 4.8. It is recommended that any excavations are filled or covered overnight to prevent animals becoming entrapped. Where excavations cannot be filled or covered overnight, a plank of wood (or similar) should be placed into the excavation at an angle that provides a means of escape.
- 4.9. If any protected species or evidence of legally protected species, or any INNPS, are unexpectedly encountered at any point during the works, all works should cease, and an ecologist should be contacted for further advice on how to proceed.

Biodiversity Opportunities

- 4.10. It is understood there are potential plans for complete removal of the tip under existing planning permission; therefore, this appraisal has not considered any biodiversity opportunities.

⁵² British Standards Institute (2012) BS 5837:2012 Trees in relation to design, demolition, construction.

⁵³ <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/>

⁵⁴ CIRIA (2006), CIRIA C648 Control of water pollution from linear construction projects Technical guidance. London.

5. Conclusion

- 5.1. Habitats with suitability for GCN and other amphibians, bats, badgers, nesting birds, widespread reptile species, priority invertebrates, otters, water voles, white-clawed crayfish, priority plants, and other priority species are present within the Site. Japanese knotweed (an INNPS) has been identified within the Site.
- 5.2. Lowland mixed deciduous woodland and open mosaic habitat on previously developed land, both habitats of principal importance in Wales, have been identified within the Site.
- 5.3. Ancient woodland, wood-pasture and parkland priority habitat and reedbeds priority habitat and Erddig Estate Wildlife Site are located within 1 km of the Site and may be impacted by the works.
- 5.4. Johnstown Newt Sites SAC and Stryt Las a'r Hafod SSSI are designated for their populations of GCN. These populations may be impacted by the Scheme and, therefore, a HRA screening assessment should be carried out and a Section 28H SSSI Assent application should be prepared and submitted once details of the required works are known.
- 5.5. Mitigation measures and recommendations for further survey have been provided to ensure that there will not be any adverse impacts to these designated sites, irreplaceable habitats, protected and priority species or habitats and to ensure INNPS are not spread during construction of the Proposed Scheme.
- 5.6. In order to limit impacts on protected and priority species and habitats, vegetation clearance should be minimised as far as possible.
- 5.7. The recommendations and survey requirements will be refined, and requirements may be altered when the full details of the Proposed Scheme are known.

Report Validity

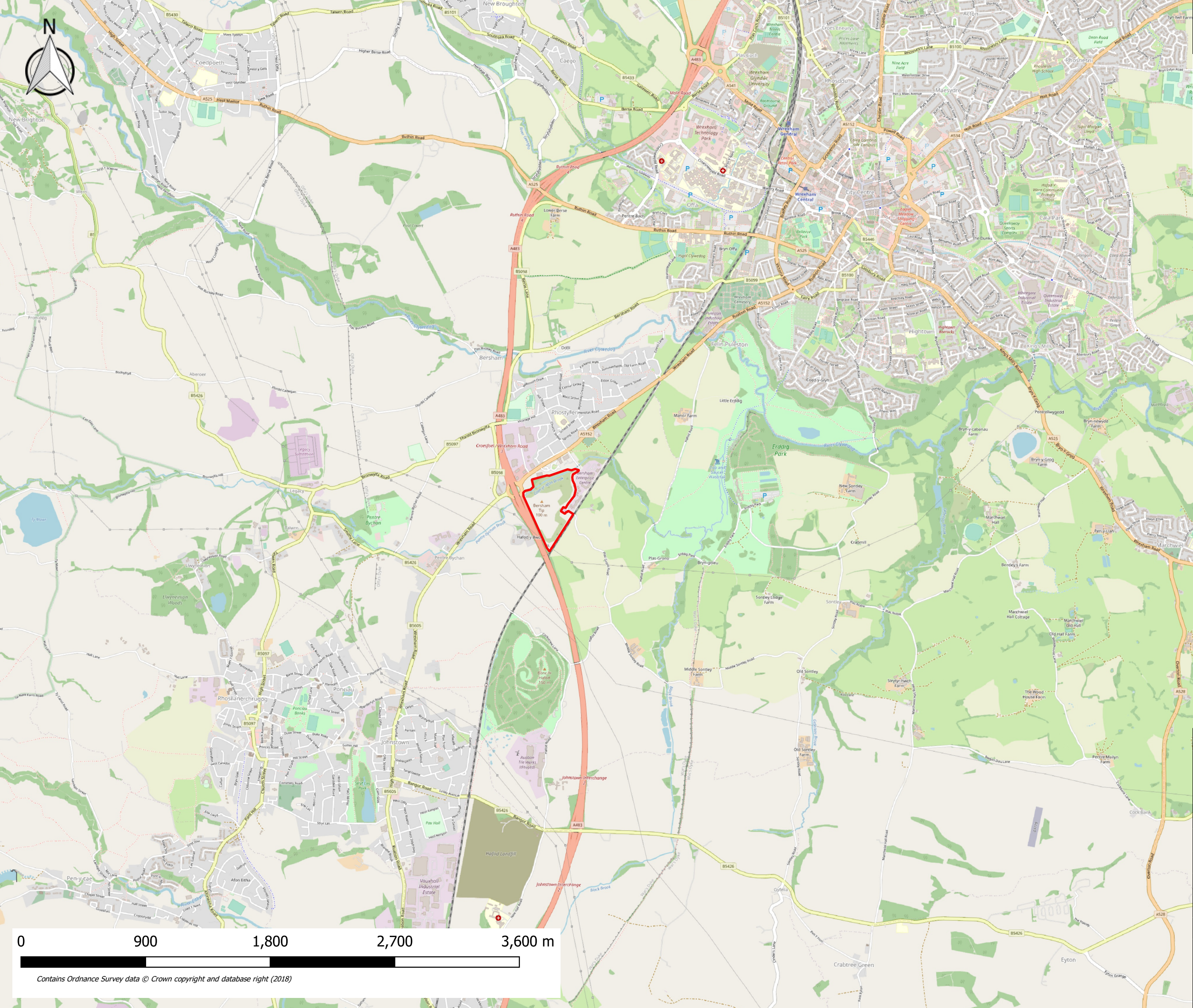
- 5.8. In the event of scope or programme changes or if works do not commence within 12 months of the date of this report, then updates to the surveys may be required to ensure the validity of the data, as per CIEEM guidance⁵⁵.

⁵⁵ CIEEM (2019) Advice Note on the Lifespan of Ecological Reports and Surveys

Appendices



Appendix A. Site Location Plan



 Bersham colliery tip

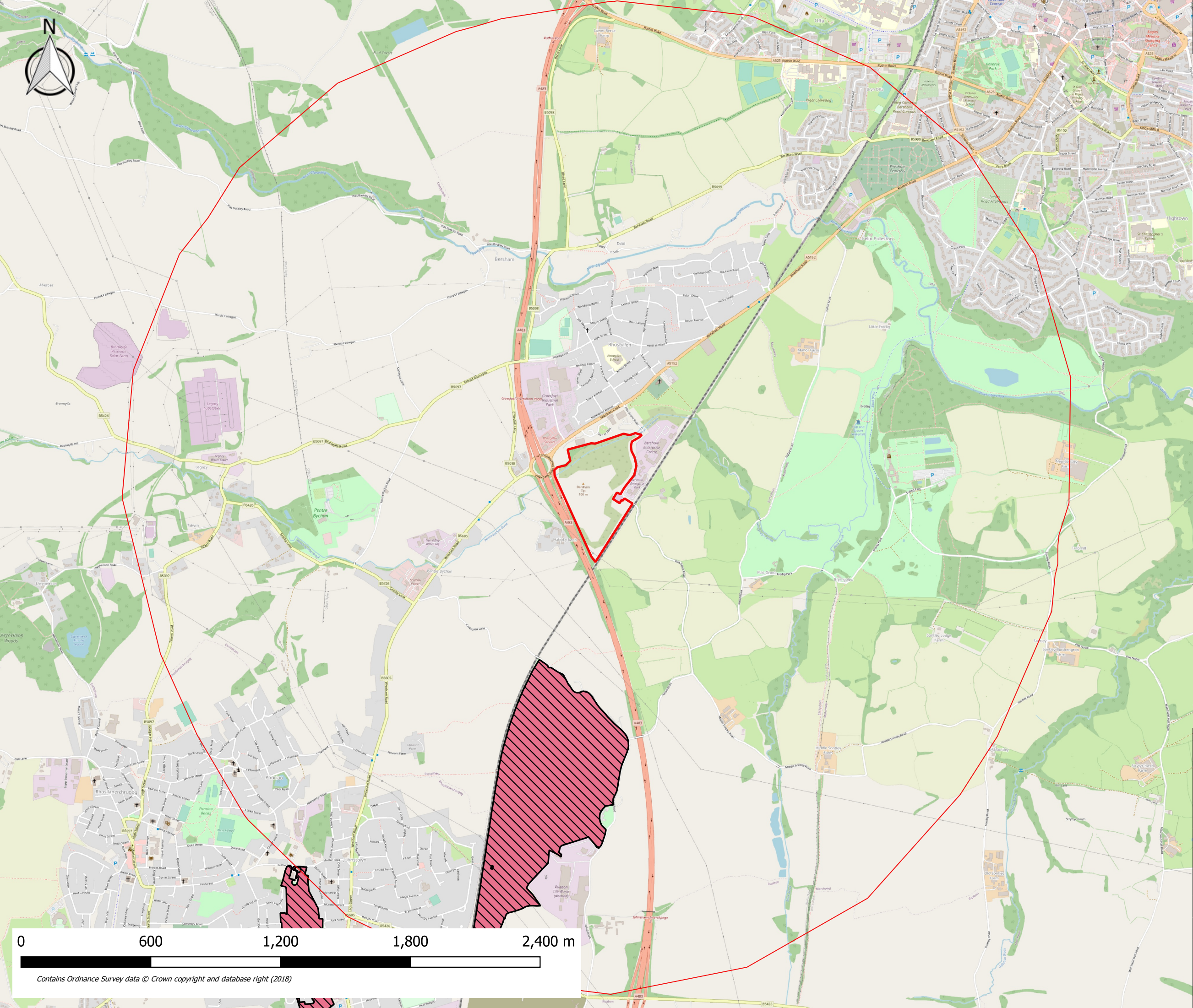
Atkins Limited © Chadwick House Birchwood Park Warrington England WA3 6AE			
Project: Bersham Colliery Tip			
Client: Wrexham County Borough Council			
Title: Site Location Plan			
Drawing number: Figure 1			
Original scale			1:25,000
PAGE 1/1			
Drawn by: GW	Checked by: RB	Reviewed by: LMG	Approved by: LMG
Date: Oct 22	Date: Oct 22	Date: Oct 22	Date: Oct 22

Appendix B. Statutory and Non-Statutory Designated Sites Plan

Statutory Designated Sites Plan

- 2 km Buffer
- Site boundary
- Stryt Las a'r Hafod Site of Special Scientific Interest
- Johnstown Newt Sites Special Area of Conservation

Atkins Limited © Chadwick House Birchwood Park Warrington England WA3 6AE			
Project: Bersham Colliery Tip			
Client: Wrexham County Borough Council			
Title: Statutory Designated Sites Plan			
Drawing number: Figure 1			
Original scale		1:16,000	
PAGE 1/1			
Drawn by: GW	Checked by: RB	Reviewed by: LMG	Approved by: LMG
Date: Oct 22	Date: Oct 22	Date: Oct 22	Date: Oct 22



Non-Statutory Designated Sites Plan



ATKINS

Member of the SNC-Lavalin Group

-  1 km Buffer
-  Site boundary
-  Important Invertebrate Areas
-  Local Wildlife Sites

Crematorium

Erd dig Estate

0 300 600 900 1,200 m

Contains Ordnance Survey data © Crown copyright and database right (2018)

Atkins Limited © Chadwick House Birchwood Park Warrington England WA3 6AE			
Project: Bersham Colliery Tip			
Client: Wrexham County Borough Council			
Title: Non-statutory Designated Sites Plan			
Drawing number: Figure 2			
Original scale			1:10,000
PAGE 1/1			
Drawn by: GW	Checked by: RB	Reviewed by: LMG	Approved by: LMG
Date: Oct 22	Date: Oct 22	Date: Oct 22	Date: Oct 22

Appendix C. Extended Phase 1 Habitat Plan, On-Site Priority Habitat Plan, Target Notes and Plant Species List

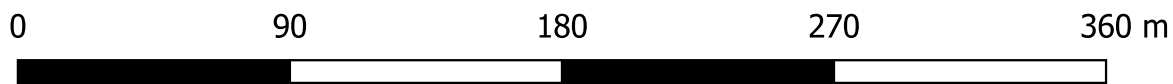
Extended Phase 1 Habitat Plan



- Site Boundary
- Target notes
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense
- A3.1 - Broadleaved woodland - scattered trees
- C3.1 - Other tall herb and fern - ruderal
- J1.3 - Cultivated/disturbed land - ephemeral/short perennial
- J4 - Bare ground

Google Satellite

Atkins Limited © Chadwick House Birchwood Park Warrington England WA3 6AE			
Project: Bersham Colliery Tip			
Client: Wrexham Country Borough Council			
Title: Extended Phase 1 Habitat Survey Plan			
Drawing number: Figure 3			
Original scale			1:2,500
PAGE 1/1			
Drawn by: GW	Checked by: RB	Reviewed by: LMG	Approved by: LMG
Date: Oct 22	Date: Oct 22	Date: Oct 22	Date: Oct 22



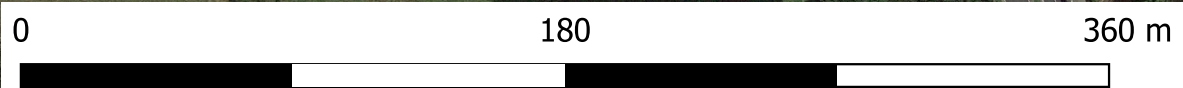
On-Site Priority Habitats Plan



-  Site boundary
-  Open mosaic habitat on previously developed land
-  Lowland mixed deciduous woodland

Google Satellite

Atkins Limited © Chadwick House Birchwood Park Warrington England WA3 6AE			
Project: Bersham Colliery Tip			
Client: Wrexham County Borough Council			
Title: On-Site Priority Habitats			
Drawing number: Figure 4			
Original scale			1:2,500
PAGE 1/1			
Drawn by: GW	Checked by: RB	Reviewed by: LMG	Approved by: LMG
Date: Oct 22	Date: Oct 22	Date: Oct 22	Date: Oct 22



Target Notes

Table C-1 – Summary of Target Notes

Target note	Description	Photograph
1	Japanese knotweed	
2	Open mosaic habitat on previously developed land (priority habitat)	
3	Immature, pioneer birch woodland present throughout the Site	

4	Lowland mixed deciduous woodland (priority habitat)	
5	Japanese knotweed	
6	Japanese knotweed	

7	Japanese knotweed	
8	Japanese knotweed	
9	Mature trees within the lowland mixed deciduous woodland have the potential to support potential roost features for bats	No photograph.
10	Japanese knotweed	

11	Japanese knotweed	
12	Ephemeral vegetation within the Site (non-priority)	
13	Deadwood, suitable for invertebrates, amphibians and reptiles to use	

14	Deadwood, suitable for invertebrates, amphibians and reptiles to use	
15	Open mosaic priority habitat on previously developed land (priority habitat)	
16	Japanese knotweed	

17

Open mosaic priority habitat on previously developed land (priority habitat)



Plant Species List

Scientific	English
<i>Alchemilla mollis</i>	Soft Lady's-mantle
<i>Hieracium</i> sect. <i>Hieracium</i>	Hawkweed sp.
<i>Erigeron acris</i>	Blue fleabane
<i>Reseda luteola</i>	Weld
<i>Chamaenerion angustifolium</i>	Rosebay willowherb
<i>Rubus fruticosus</i> agg.	Bramble
<i>Cirsium arvense</i>	Creeping thistle
<i>Centaurea nigra</i>	Common knapweed
<i>Melilotus altissimus</i>	Tall melliot
<i>Medicago lupulina</i>	Black medick
<i>Juncus inflexus</i>	Hard rush
<i>Potentilla reptans</i>	Creeping cinquefoil
<i>Ranunculus repens</i>	Creeping buttercup
<i>Tussilago farfara</i>	Colt's-foot
<i>Crataegus monogyna</i>	Hawthorn
<i>Heracleum mantegazzianum</i>	Hogweed
<i>Arrhenatherum elatius</i>	False-oat grass
<i>Dactylis glomerata</i>	Cocks-foot
<i>Agrostis stolonifera</i>	Creeping bent
<i>Agrostis capillaris</i>	Common bent
<i>Jacobaea vulgaris</i>	Common ragwort
<i>Salix</i> sp.	Willow sp.
<i>Plantago lanceolata</i>	Ribwort plantain
<i>Betula pendula</i>	Silver birch
<i>Lathyrus pratensis</i>	Meadow vetchling
<i>Fraxinus excelsior</i>	Ash
<i>Hypericum perforatum</i>	Perforate St John's-wort
<i>Achillea millefolium</i>	Yarrow
<i>Vicia cracca</i>	Tufted vetch
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Trifolium pratense</i>	Red clover
<i>Dipsacus fullonum</i>	Wild teasel
<i>Rumex crispus</i>	Curled dock
<i>Blackstonia perfoliata</i>	Yellow-wort
<i>Fallopia japonica</i>	Japanese knotweed
<i>Ulmus glabra</i>	Wych elm
<i>Rosa canina</i>	Dog rose
<i>Acer pseudoplatanus</i>	Sycamore
<i>Quercus robur</i>	Pedunculate oak
<i>Clematis vitalba</i>	Traveller's-joy
<i>Salix cinerea</i>	Grey willow
<i>Digitalis</i>	Foxglove
<i>Prunella vulgaris</i>	Selfheal

<i>Lotus corniculatus</i>	Common bird's-foot-trefoil
<i>Pilosella officinarum</i>	Mouse-ear-hawkweed
<i>Festuca rubra</i>	Red fescue
<i>Tripleurospermum inodorum</i>	Scentless mayweed
<i>Hypochaeris radicata</i>	Cat's-ear
<i>Malva moschata</i>	Musk mallow
<i>Crepis</i> sp.	Hawk's-beard sp.
<i>Sedum anglicum</i>	English stonecrop
<i>Teucrium scorodonia</i>	Wood sage
<i>Taraxacum</i> sp.	Dandelion sp.
<i>Centaureum erythraea</i>	Common centaury
<i>Cladonia portentosa</i>	a lichen
<i>Ulex europaeus</i>	Gorse
<i>Corylus avellana</i>	Hazel
<i>Hedera helix</i>	Ivy

Appendix D. Summary of Relevant Legislation

Species	Legislation	Offences	Licensing procedures and guidance
Bats <i>European protected species</i>	Conservation of Habitats and Species Regulations 2017 (as amended) Reg 43	Deliberately ⁵⁶ capture, injure or kill a bat; deliberate disturbance ⁵⁷ of bats; or damage or destroy a breeding site or resting place used by a bat. [The protection of bat roosts is considered to apply regardless of whether bats are present.]	A licence in respect of development is required from Natural Resources Wales (NRW). Guidance documents: <i>Bat Mitigation Guidelines</i> (English Nature 2004) <i>Bat Workers Manual</i> (JNCC 2004)
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb ⁵⁸ a bat in such a place.	Licence from NRW is required for surveys (scientific purposes) that would involve disturbance of bats or entering a known or suspected roost site.
Badger	Protection of Badgers Act 1992	Wilfully kill, injure or take a badger; or intentionally or recklessly damage, destroy or obstruct access to a badger sett or disturb a badger in its sett. [It is not illegal to carry out disturbance activities in the vicinity of setts that are not occupied.]	Where required, licences for development activities involving disturbance or sett interference or closure are issued by the Welsh Government and Natural Resources Wales. Licences for activities involving watercourse maintenance, drainage works or flood defences are issued under a separate process. Licences are normally not granted from December to June inclusive because cubs may be present within setts.
Birds	Wildlife and Countryside Act 1981 (as amended) S.1	Intentionally kill, injure or take any wild bird; intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; intentionally take or destroy the nest or eggs of any wild bird. Intentionally or recklessly disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a	No licences are available to disturb any birds in regard to development. Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development. General licences are available in respect of 'pest species' but only for certain very specific purposes e.g. public health, public safety, air safety.

⁵⁶ Deliberate capture or killing is taken to include "accepting the possibility" of such capture or killing

⁵⁷ Deliberate disturbance of animals includes in particular any disturbance which is likely a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species to which they belong.

⁵⁸ Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2017 (as amended) remain an offence under the Wildlife and Countryside Act 1981 (as amended) although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

		species [e.g. most birds of prey, kingfisher, barn owl, black redstart, little ringed plover].	
Great crested newt <i>European protected species</i>	Conservation of Habitats and Species Regulations 2017 (as amended) Reg 43	Deliberately capture, injure or kill a great crested newt; deliberate disturbance of a great crested newt; deliberately take or destroy its eggs; or damage or destroy a breeding site or resting place used by a great crested newt.	Licences issued for development by Natural Resources Wales. Guidance documents: <i>Great Crested Newt Mitigation Guidelines</i> (English Nature 2001)
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a great crested newt in such a place.	Licences issued for science (survey), education and conservation by Natural Resources Wales.
Natterjack toad Sand lizard Smooth snake <i>European protected species</i>	Conservation of Habitats and Species Regulations 2017 (as amended) Reg 43	Deliberately capture, injure or kill it; deliberate disturbance of it; deliberately take or destroy its eggs; or damage or destroy a breeding site or resting place used by it.	Licences issued for development by Natural Resources Wales.
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb ⁵⁸ it in such a place.	A licence is required from Natural Resources Wales for surveying and handling.
Adder Common lizard Grass snake Slow worm	Wildlife and Countryside Act 1981 (as amended) S.9(1) and S.9(5)	Intentionally kill or injure any common reptile species.	No licence is required in Wales. However an assessment for the potential of a site to support reptiles should be undertaken prior to any development works which have potential to affect these animals.
Plants <i>European protected species</i>	Conservation of Habitats and Species Regulations 2017 (as amended) Reg 47	Deliberately pick, collect, cut, uproot or destroy a wild plant of a European protected species (Schedule 5).	Licences can be issued for science, education and conservation and also in respect of a development if it is of overriding public interest. Licences can also be issued for destructive survey methods for floating water plantain, where non-destructive methods are insufficient to determine presence.
Plants <i>Nationally protected species</i>	Wildlife and Countryside Act 1981 (as amended) S.13 (Schedule 8)	Intentionally pick, uproot or destroy any wild plant on Schedule 8	No licence is required for survey. Licences can be issued by Natural Resources Wales for specific purposes only, such as science and education or conservation purposes. There is no provision for licensing the above actions for development operations under the Wildlife & Countryside Act 1981 (as amended). S.
Plants <i>Invasive species e.g.</i>	Wildlife and Countryside Act 1981 (as amended) S.14	It is illegal to plant or otherwise cause these species to grow in the wild.	Any contaminated soil or plant material is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with section 34 of the Environmental Protection Act 1990.

Japanese knotweed,
hybrid knotweed,
giant knotweed,
giant hogweed,
rhododendron,
Himalayan balsam

Guidance documents:
The Knotweed Code of Practice (Environment Agency, 2013 version 3)
Managing Invasive Non-native Plants (Environment Agency 2010)

Site Designation	Legislation	Protection	Guidance
Special Area of Conservation (SAC) Special Protection Area (SPA) Wetland of International Importance (Ramsar site)	Conservation of Habitats and Species Regulations 2017 (as amended) Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (the Ramsar Convention).	Assessment of the implications of plans and projects is effected through Part 6 of the Conservation of Habitats and Species Regulations 2017 (in particular Regs 61 – 69). The legislation for the Site of Special Scientific Interest which will underpin each designation also applies. These sites are given protection through policies in the Local Development Plan.	Formal Appropriate Assessment is required to be undertaken by the competent authority before undertaking, or giving consent, permission or other authorisation for a plan or project which is likely to have a significant effect on such a site. Guidance documents: Technical Advice Note 5, Nature Conservation and Planning (WAG 2009).
Site of Special Scientific Interest (SSSI)	Wildlife and Countryside Act 1981 (as amended)	It is an offence to carry out or permit to be carried out any potentially damaging operation. SSSIs are given protection through policies in the Local Development Plan.	Owners, occupiers, public bodies and statutory undertakers must give notice and obtain the appropriate consent under S.28 before undertaking operations likely to damage a SSSI. S.28G places a duty on all public bodies to further the conservation and enhancement of SSSIs. Guidance documents: Technical Advice Note 5, Nature Conservation and Planning (WAG 2009).
National Nature Reserve (NNR)	Wildlife and Countryside Act 1981 (as amended) S35 National Parks and Access to the Countryside Act 1949 S.16-29	NNRs are underpinned by SSSIs and therefore NNR protection is in line with SSSIs protection above.	NNR Guidance is as above for SSSIs.

Local Nature Reserve (LNR)	National Parks and Access to the Countryside Act 1949 S.21	LNRs are given protection through policies in the Local Development Plan.	LNRs are generally owned and managed by local authorities. Development proposals that would potentially affect a LNR would need to provide a detailed justification for the work, an assessment of likely impacts, together with proposals for mitigation and restoration of habitats lost or damaged. Guidance documents: Technical Advice Note 5, Nature Conservation and Planning (WAG 2009).
Local Sites (e.g. County Wildlife Sites, Sites of Importance for Nature Conservation)	There is no statutory designation for local sites.	Local sites are given protection through policies in the Local Development Plan.	Development proposals that would potentially affect a local site would need to provide a detailed justification for the work, an assessment of likely impacts, together with proposals for mitigation and restoration of habitats lost or damaged. Guidance documents: Technical Advice Note 5, Nature Conservation and Planning (WAG 2009).

Habitats & Species	Legislation	Guidance
Species and Habitats of Principal Importance for the Conservation of Biodiversity	Environment (Wales) Act 2016 Natural Environment & Rural Communities Act 2006 S.42	S.6 places a duty on public authorities to ' <i>seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales</i> '. In so doing, public authorities must have regard to habitats and species listed in accordance with S.7 of the Act, which requires Welsh Ministers to publish and maintain lists of species and habitats in Wales that are regarded as being of 'principal importance' for the purpose of maintaining and enhancing its biodiversity. Until the Welsh Ministers have published this list, defer to the list published in accordance with S.42 of the NERC Act 2006. This list can be found on the Wales Biodiversity Partnership website. Ecological impact assessments should include an assessment of the likely impacts to these S.7/S.42 habitats and species.
Biodiversity Action Plan (BAP) Habitats & Species	No specific legislation, unless it is also a species or habitat of principal importance as described above.	The UK Biodiversity Action Plan (BAP) is the UK's initiative to maintain and enhance biodiversity in response to the Convention on Biological Diversity signed in 1992. The UK BAP, as updated by the UK Biodiversity Partnership in 2007, was used to draw up the 'Section 42 List for Wales'. The UK BAP has been succeeded by the UK Post-2010 Biodiversity Framework in 2012, due to a change in government strategy by all UK countries, focussing on managing the environment as a whole rather than dealing with different aspects of biodiversity and environment separately (JNCC& Defra 2012). However, the UK BAP list of priority habitats and species continue to be regarded as conservation priorities in the UK Post-2010 Biodiversity Framework.

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