



LAND OFF CROESNEWYDD ROAD, WREXHAM

ECOLOGICAL SURVEY & ASSESSMENT

PCAJ136/V2/11.12

Submitted to:

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Figure 1 – Site Location Plan

Figure 2 – Habitat Plan

Appendix 1 – Botanical Species List

Appendix 2 – Fauna Species List

Appendix 3 – Photographic Record

1.0 INTRODUCTION

In July 2012, Paul Chester & Associates Ltd. (PCA) was commissioned by Harrow Estates plc to undertake an Ecological Survey and Impact Assessment (EclA) on land off Croesnewydd Road, Wrexham (NGR SJ 318 505).

The site, which covers an area of approximately 3.8 hectares, was granted outline planning permission for 84 residential dwellings in 2010. That decision remains extant and the site has been remediated to create a development platform. However, as a result of the economic downturn the extant planning permission is non-viable and, on this basis, a new application is being prepared for 76 houses within the same development zone. This report is therefore an update of the EclA submitted with the original planning application.

The site was formerly represented by a factory and associated infrastructure such as car parking areas. The factory has been demolished and the site cleared and levelled such that the majority of the survey area comprises of open cleared ground. Other elements of the study area are associated with the wooded stream corridor associated with the Afon Gwenfro which forms the southern boundary of the application area. In terms of other boundaries, the site is bordered to the north by a further extant industrial plot, to the east by Croesnewydd Road and to the west by the A483. A site location plan is provided as Figure 1. Likewise, a series of illustrative photographs are included to illustrate the more detailed description of the site.

This survey represents an update to a number of previous ecological surveys completed at the site. Specific to this, an initial ecological survey was completed in 2005 and fully repeated in 2008 as part of the original planning application. A further updated walkover survey was completed in July 2011 to assist in the preparation of a draft ecological mitigation and management strategy to address one of the planning conditions of the extant outline planning permission.

2.0 SCOPE AND APPROACH TO THE UPDATED SURVEY

2.1 Introduction

The scope and purpose of the updated survey was essentially to re-confirm the continued validity of the previous surveys. Particular attention was paid to re-confirming the current status of key rare and legally protected species.

2.2 Summary of Previous Survey Results

Previous surveys were comprehensive in their coverage. In terms of the results of these surveys, these showed that the site supported a range of habitats typical of a former industrial site with areas of cleared buildings/hardstanding and former lawns/landscaped grounds. In terms of individual species, no nationally rare or scarce; or regionally rare plants were encountered and all species were common or relatively common within the habitats encountered on the site. The most valuable habitat within the site was considered to be that associated with the stream corridor. Whilst not a best-example of the habitat type, the stream corridor was evaluated as being a habitat of high local value. Other habitats on the site were not considered to be of any particular ecological value.

With regard to mammals, no Badger *Meles meles* setts or other confirmed badger field signs were noted during the surveys, with the nearest known setts being within Berse Drelincourt Nature Reserve to the west of the site and on a road embankment to the south of the site. In relation to bats, whilst no specific evidence of roosting was noted, occasional ivy-clad trees along the stream corridor were identified as having roost potential. In addition, habitats associated with the dismantled railway and stream corridor were considered to be of high local importance as both flight and feeding corridors. With regard to Otter *Lutra lutra*, prints of a single individual were identified in bankside mud during the first survey visit in 2008. This represented the only evidence of Otter and the general assessment of the habitat quality concluded that the stream was not capable of supporting Otter on a permanent basis; its value was as a temporary and connecting habitat within the wider territories of the local population. No evidence of other riverine species such as Water Vole *Arvicola terrestris* were noted.

Breeding bird surveys confirmed a typical range of species with the optimum habitat being that associated with the wooded stream corridor of the Afon Gwenfro with a continuation of this habitat along the connected dismantled railway. During the July 2011 updated survey, a breeding pair of the specially protected Little Ringed Plover *Charadrius dubius* was noted in the central open parts of the site.

The amphibian survey established that there were no ponds within the site and no known populations within the wider relevant local area. As such, there was no evidence to suggest that Great Crested Newt *Triturus cristatus* would utilise this site.

With regard to other species, there was no evidence to suggest that the site was of any value to other key species of nature conservation concern, such as reptiles, Hedgehog *Erinaceus europaeus*, Brown Hare *Lepus europaeus* or invertebrates.

2.3 Approach to 2012 Update Survey

The updated ecological survey broadly followed the standard extended phase 1 methodology. This methodology involves surveying the habitats that are present as well as the recording of field signs/evidence indicating the presence/potential presence of species that could constitute a material consideration in planning terms. The final scope of the ecological survey was defined on the basis of the historic surveys and more recent history of the site.

The survey was completed by Mr Paul Chester, Managing Director of PCA Ltd. Mr Chester is an ecologist with more than twenty years professional experience. He has been a member of the Institute of Ecology and Environmental Management since 1994. He has extensive experience in the ecological survey and assessment of sites such as this and was responsible for all of the previously completed surveys for the site.

In terms of survey constraints, a walkover survey such as this provides only a “snapshot” of the conditions prevailing at the time of survey. July is, however, within the main survey period for the majority of species/species-groups. As such, it is considered that the survey results are representative of flora and fauna of the site and that additional survey effort would not materially alter the conclusions of this report.

3.0 APPROACH TO THE ECOLOGICAL IMPACT ASSESSMENT

3.1 Introduction

Following on from the establishment of the baseline ecological conditions, the ecological impacts are identified and assessed in line with guidance published by the Institute of Ecology and Environmental Management (IEEM). This involves an initial process of evaluation, followed by a process of impact identification and assessment. The methodology and approach that has been followed in this assessment is described further below.

3.2 Evaluation

3.2.1 Introduction

Ecological value is established on the basis of the importance of the identified habitats and species. Importance relates to the overall importance of a species or habitat and forms the basis for establishing the value of a discrete population of a particular species or discrete habitat. There are many factors which contribute to such value including extent, naturalness, rarity, fragility and diversity. These, along with other established criteria, have been applied.

An important element of the evaluation process is that of establishing the value of a particular species or habitat within set geographical parameters. Those that have been used in the assessment are typically as follows:

- International (Europe)
- National (United Kingdom)
- Regional (North East Wales i.e. the Watsonian Vice Counties 50 and 51, Flintshire and Debigshire)
- County/Unitary Authority area (Wrexham County Borough Council)
- Local (Croesnewydd Road and its immediate surrounds)
- Site i.e. within zone of influence only (typically the planning application site although, where relevant, a larger area)

In terms of attributing value, whilst clearly the presence of protected sites or species is of fundamental importance, it is also important to identify those habitats and species which are of significance in the local or site-specific context. The identification of such features and species enables best practice to be followed in the detailed design of an individual proposal.

The relative sensitivity of an individual ecological receptor has also been considered and is based upon a number of factors, including the extent of a particular habitat or the size of population of an individual species. Other factors include the fragility of the habitat or species both in terms of its susceptibility to disturbance and its ability to recover following such disturbance.

3.3 Identification and Assessment of Ecological Impacts

Following on from the establishment of the baseline ecological conditions and evaluation, the ecological impacts are considered in line with guidance published by the Institute of Ecology and Environmental Management (IIEEM). These include consideration of the following parameters:

- positive or negative
- magnitude
- extent
- duration
- reversibility
- timing and frequency

Whether a potential impact is significant is determined by quantifying the magnitude of effect of the identified impact on each of the identified ecological receptors. Large scale effects on receptors of high or very high sensitivity and value are likely to represent a significant impact that may be unacceptable in nature conservation terms. Equally, small-scale effects on receptors of low or very low degrees of sensitivity are likely to be below significance thresholds and thereby not a significant constraint to the proposed development.

3.3.1 Defining Significance

Establishing the significance of an identified ecological impact is based upon the consideration of the impact alongside the value of the impacted habitat, species or species-group. Whilst this is not necessarily straightforward, it is summarised in simple terms in the table below:

Value/Importance	Magnitude		
	Substantial	Moderate	Minor
International	Very High	High	Moderate
National	Very High	High	Moderate
Regional	Very High/High	High/Moderate	Moderate/Low
County	High	Moderate	Low
District	High	Moderate	Low
Local	High/Moderate	Low	Very Low

The lowest category of value/importance used in the assessment i.e. “site” has been deliberately excluded from the table. This is because these are impacts which are best treated on a site-specific basis, particularly when considering requirements for mitigation.

3.3.2 Mitigation Requirements

The establishment of mitigation requirements is based upon the consideration of the established ecological value and magnitude of the identified impact, also taking into consideration the duration of the impact, where relevant. Given the complexity of ecological processes, together with relevant legislation and policy guidance, this is not always straightforward. Clearly, adverse impacts on statutory designated sites and species would always require appropriate mitigation. With the advent of other

legislation, for example, the Natural Environment and Rural Communities Act 2006, requirements have been extended beyond legally protected species and encompass biodiversity as a whole. Key documents including UK BAP, local BAP and unitary authority policy in relation to species and habitats therefore also need to be fully considered when defining mitigation requirements. It is also important to consider those impacts which are of significance only in the site context and to seek to reduce these wherever possible. Such site-specific measures strictly fall outside the definition of mitigation but are, nevertheless, something which should routinely be sought as a matter of best practice wherever possible.

3.3.3 Residual Impact Assessment

Following through the ecological impact assessment process, the final element of the process is the re-assessment of the identified significant ecological impacts with any proposed mitigation in place.

4.0 LEGISLATION & POLICY CONSIDERATIONS

4.1 Legislation

The Wildlife and Countryside Act (1981, as amended) provides protection for Britain's flora and fauna. Particular protection is afforded to certain species listed in schedules to the Act although the degree and nature of the protection varies. Schedule 1 of the Wildlife and Countryside Act (Part 4) lists birds which are afforded special protection. This protection is greater than for other birds and includes it being an offence to disturb a bird whilst it is building a nest or is in, on, or near a nest containing eggs or young. It is also an offence to disturb the dependent young of a Schedule 1 species. Schedule 5 lists animals which are afforded special protection. Relevant to development plans, this schedule makes it an offence to damage, destroy or obstruct access to any structure or place which any Schedule 5 animal inhabits. It is also an offence to disturb any such animal while it is occupying a structure or place which it uses for that purpose. For certain species, different levels of protection are afforded. Schedule 8 lists species of plants which are afforded special protection.

Other national legislation includes the Countryside and Rights of Way Act 2000 (CROW Act) which underpins the Government's commitment to the long term conservation of biodiversity in accordance with the Convention on Biological Diversity. More recently, the Natural Environment and Rural Communities Act 2006 was implemented primarily to implement key aspects of the Government's Rural Strategy published in July 2004. Specific to biodiversity conservation, Sections 40, 41 and 42 replace Section 74 of the CROW Act. Section 40 extends to all public authorities the existing Section 74 duty to have regard to biodiversity as far is consistent with the proper exercise of their functions. Section 41 places a duty on the Secretary of State to publish, review and revise lists of living organisms and types of habitat in England that are of principal importance for the purpose of conserving English biodiversity. At the national level, the UK Biodiversity Action Plan (BAP) sets out the broad strategy and targets for conserving and enhancing wild species and habitats over the next twenty years. The UK plan together with the individual action plans therefore provides the framework for the effective delivery of biodiversity conservation at the national level and provides the UK commitment to the Biodiversity Convention. The effective delivery of national priorities, as well as the conservation of species and habitats of value at the local level, is achieved through the implementation of Local Biodiversity Action Plans (LBAPs).

In relation to European legislation, the EC has adopted two Directives in relation to wildlife and nature conservation. In relation to birds, Council Directive 79/409/EEC on the conservation of wild birds provides a framework for the conservation and management of wild birds in Europe. Other habitats and species are protected through Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. This requires Member States to schedule important wildlife sites through the European Community as Special Areas of Conservation (SACs) and give protection to habitats and species listed in the Directive as being threatened or of Community interest. The Habitats Directive was transposed into UK law by the 'Conservation (Natural Habitats, &c.) Regulations 1994'. The Regulations have been amended several times since their introduction and were recently consolidated through the Conservation of Habitats and Species Regulations 2010.

4.2 Policy

4.2.1 National Policy

National policy relating to nature conservation is contained within Technical Advice Note (TAN) 5: Nature Conservation and Planning (2009). This provides advice on development control issues for Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Sites of Special Scientific Interest (SSSIs); the selection and designation of non-statutory nature conservation sites; and the protection of species.

4.2.2 Regional Policy

'Planning Policy Wales' does not provide defined regional planning policy guidance or a sub regional policy context for the preparation of Unitary Development Plans (UDPs). Instead, the Welsh Assembly Government advises local planning authorities to collaborate in setting strategic planning objectives and policies for their areas, and to establish appropriate voluntary working arrangements to achieve this. Specific to North Wales, the North Wales Regional Planning Group (NWRPG), consisting of elected Members of Anglesey, Conwy, Denbighshire, Flintshire, Gwynedd and Wrexham Councils and the Snowdonia National Park Authority was established to achieve these aims. The NWRPG has set out broad guidance for UDP proposals which, in relation to nature conservation, include that policies should be established to: protect or enhance designated sites of nature conservation value; seek the integration and management of local environmental and landscape features, including flora and fauna; take account of, and integrate with, Biodiversity Action Plans; and the protection of key habitats and features should be viewed positively as a valued asset rather than an obstacle to development.

4.2.3 Local Policy

The Wrexham Unitary Development Plan (UDP) 1996-2011 was adopted by Wrexham County Borough Council in February 2005. The Plan supersedes previous adopted development plans, namely the Wrexham Maelor Local Plan: Forward to 2001, the Glyndwr District Local Plan, and the Clwyd Structure Plan: First Alteration. Specific to nature conservation, several policies are potentially relevant to the proposed development. In particular, Policy EC4 requires that development proposals provide for the conservation of trees, woodlands, orchards, hedgerows, wildlife and other natural landscape and water features and include for additional new planting, where appropriate. Policy EC6 deals with biodiversity conservation and particularly the avoidance of development which results in the loss of areas of

identified high nature conservation value, whilst supporting proposals which provide for the enhancement of biodiversity.

4.2.4 Other – Convention on Biological Diversity

The Convention on Biological Diversity was adopted at the Earth Summit in Rio de Janeiro, Brazil in June 1992, and came into force in December 1993. In relation to biodiversity conservation, the Convention called for the development and enforcement of national biodiversity strategies and action plans to identify, conserve and protect existing biological diversity and to enhance it wherever possible. In response to this, the UK Biodiversity Action Plan (BAP) published in 1994, and subsequently reviewed on several occasions, sets out the broad strategy and targets for conserving and enhancing wild species and habitats over a twenty year period. A further report published in December 1995, and also reviewed on several occasions, provides detailed proposals for a large number of species and habitats which require urgent conservation action. The effective delivery of national priorities as well as the conservation of species and habitats of value at the local level is achieved through the implementation of Local Biodiversity Action Plans (LBAPs). The relevant LBAP for the application site is the Wrexham Biodiversity Action Plan. This document sets out local priorities for biodiversity. Of particular relevance to the planning application are those habitats and species which have been identified as local priorities for conservation.

5.0 SURVEY RESULTS

5.1 Statutory and Non-Statutory Sites of Nature Conservation Interest

The study area and its immediate surrounds are not subject to any statutory nature conservation designation.

5.2 Plants/Habitats

5.2.1 Survey Methodology

The botanical survey involved a Phase 1 Habitat Survey together with more detailed description of individual areas, where relevant. These have been fully updated to reflect the current site conditions. A botanical species list is provided as Appendix 1. Likewise, a series of illustrative photographs are provided in Appendix 3.

5.2.2 Survey Results

Area 1

Area 1 (Photographs 1 and 2), which represents the majority of the site, comprises the development platform created following the grant of the extant planning permission. It includes Areas 1, 4, 5, 6 and 7 of the previous reports. In its recently cleared state, the area is largely bare and supports typically less than 3% vegetation cover. Species are characterised by a limited range of early recolonising species. These include species such as American Willowherb *Epilobium ciliatum*, Annual Meadow-grass, Common Chickweed *Stellaria media*, Common Mouse-ear *Cerastium fontanum*, Creeping Buttercup

Ranunculus repens, Creeping Thistle *Cirsium arvense*, Curled Dock *Rumex crispus*, Dandelion *Taraxacum* agg., Hoary Willowherb *Epilobium parviflorum*, Greater Plantain *Plantago major*, Redshank *Persicaria maculosa*, Rosebay Willowherb *Chamerion angustifolium*, Thyme-leaved Speedwell *Veronica serpyllifolia*, Scarlet Pimpernel *Anagallis arvensis* and White Champion *Silene latifolia*.

The edge of the cleared platform has a narrow bund which has a taller ruderal dominated vegetation with species such as Bristle Ox-tongue *Picris echioides*, Cleavers *Galium aparine*, Common Couch *Elytrigia repens*, Common Nettle *Urtica dioica*, Creeping Bent *Agrostis stolonifera*, Creeping Buttercup, Creeping Cinquefoil *Potentilla reptans*, Creeping Thistle, Curled Dock, Great Willowherb *Epilobium hirsutum*, Rough Meadow-grass *Poa trivialis*, Spear Thistle *Cirsium vulgare* and Yorkshire-fog *Holcus lanatus*. The potentially invasive species Indian Balsam *Impatiens glandulifera* is also present, albeit rarely.

Area 2

This is a relatively small area in the western parts of the prepared development platform and incorporates Areas 8 and 9 of the previous reports (see Photograph 3). It supports a similar open pioneer vegetation, albeit with a range of typically taller pioneer and ruderal species. Species associated with this habitat include American Willowherb, Common Ragwort *Senecio jacobaea*, Creeping Thistle, Curled Dock, Redshank, Rosebay Willowherb, Spear Thistle, Weld *Reseda luteola* and White Champion. Rapidly establishing although currently open Bramble *Rubus fruticosus* agg. scrub is also present locally. A single plant of Indian Balsam *Impatiens glandulifera* was also noted. In addition to the taller ruderal species, a similar range of low growing species described for Area 1 are also present.

Area 3

This is a small area of remnant open neutral grassland to the west of cleared development platform (see Photograph 4). Grasses include Common Bent *Agrostis capillaris*, Red Fescue *Festuca rubra* sens. lat. and Yorkshire-fog along with forbs such as Common Mouse-ear *Cerastium fontanum*, Common Ragwort, Common Sorrel *Rumex acetosa*, Creeping Cinquefoil, Creeping Buttercup, Daisy *Bellis perennis*, Ribwort Plantain *Plantago lanceolata* and White Clover *Trifolium repens*. The moss, *Rhytidiadelphus squarrosus*, is locally dominant, whilst occasional taller ruderal species include Common Ragwort, Creeping Thistle, Spear Thistle and Wild Teasel *Dipsacus fullonum*.

Area 4

Area 4 (see Photograph 5) is a scrub/ruderal mosaic habitat towards the western boundary of the site. Its is characterised by a locally abundant invading Blackthorn *Prunus spinosa* scrub. More rarely occurring trees and shubs include occasional Alder *Alnus glutinosa* along with rarely occurring Dog-rose *Rosa canina*, Elder *Sambucus nigra* and Sycamore *Acer pseudoplatanus*. Bramble scrub is also locally prominent. In terms of the species, these include locally dominant patches of species such as Common Nettle, Creeping Thistle and Rosebay Willowherb with locally abundant Great Willowherb and more occasional Cleavers, Cock's-foot *Dactylis glomerata*, Common Ragwort, False Oat-grass *Arrhenatherum elatius*, Hogweed *Heracleum sphondylium* and Yorkshire-fog.

Area 5

Area 5 (see Photographs 6 and 7) refers to the wooded stream corridor associated with the Afon Gwenfro. The stream which bisects the south-west corner of the site, over an approximate 150m section, occurs as a series of pools and riffle sections. The stream is typically 2-3m wide with depths ranging from 0.05-0.2m in riffle sections to in excess of 0.5m in pools. The banks are varied and include shallow sloping sections with exposed mud as well as more occasional steep-sided banks up to 1m in height. The base of the stream typically comprises of small stones/gravel with occasional large cobbles as well as localised siltier sections. The flow is moderate although debris within streamside trees at the time of the surveys indicates that the stream is flashy in character with significant rises in water level at times. The stream corridor is well-wooded throughout with mature trees such as Alder, Aspen *Populus tremula*, Crack-willow *Salix fragilis*, Holly *Ilex aquifolium* and Sycamore *Acer pseudoplatanus*. The structure is variable with a locally well-developed shrub layer which includes younger Alder and Crack-willow along with additional species such as Dog-rose, Elder, Grey Willow *Salix cinerea* and Hawthorn *Crataegus monogyna*. Dogwood *Cornus* sp. is present quite extensively locally. This appears to be a planted variety of Dogwood, probably included within the landscaping of the former factory, which has become quite invasive, resulting in locally extensive cover and associated shading. With regard to the ground flora, this includes a range of typical woodland and streamside vegetation including species such as locally abundant Ramsons *Allium ursinum* and more occasional Bluebell *Hyacinthoides non-scripta*, Broad-leaved Dock *Rumex obtusifolius*, Common Ivy *Hedera helix*, Cow Parsley *Anthriscus sylvestris*, Creeping Buttercup, Daffodil *Narcissus agg.*, Dog's Mercury *Mercurialis perennis*, Ground-ivy *Glechoma hederacea*, Herb-robert *Geranium robertianum*, Lesser Celandine *Ranunculus ficaria* and Red Campion *Silene dioica*. Opposite-leaved Golden-saxifrage *Chrysosplenium oppositifolium* is found locally alongside the stream whilst other streamside and aquatic vegetation includes Fool's Watercress *Apium nodiflorum*, Great Willowherb and Indian Balsam. At the site boundaries, the stream is culverted under both the dismantled railway and A483.

Area 6

Area 6 (see Photograph 8) refers to a narrow band of habitat located between the Afon Gwenfro and the dismantled railway which marks the southern boundary of the application area. The area comprises of dense stands of Indian balsam with more rarely occurring dominant Bramble scrub. Occasional dominant patches of Common Nettle are also present along with abundant Cleavers. Species which are more closely associated with the wall and scrub/woodland edge of the railway include Bluebell, Common Ivy, Herb-robert *Geranium robertianum*, Lords-and-Ladies *Arum maculatum*, Male-fern *Dryopteris filix-mas* and Wood Avens *Geum urbanum*.

Boundary & Other Habitats

Southern Boundary with Dismantled Railway

This refers to the southern boundary of the site which is marked by the dismantled railway (see Photograph 9). The boundary is delineated by a stone wall with an associated semi-defunct fence line above in its western section. In the eastern section, the boundary is marked by a semi-defunct fence. Species which are present along the boundary include Ash *Fraxinus excelsior*, Elder, Hazel *Corylus avellana*, Holly *Ilex aquifolium*, Silver Birch *Betula pendula* and Sycamore. With regard to the dismantled railway line itself, although outside of the site boundary, this is dominated by tall unmanaged Alder to

approximately 10m with occasional Goat Willow *Salix caprea*, Scots Pine *Pinus sylvestris*, Silver Birch and Sycamore. The habitat is uniform and poorly-structured with a limited shrub and ground flora as a result of the high level of shading. Occasional species are present in the understorey and include shrubs such as Dog-rose and ground flora species which include Cleavers, Common Ivy, Common Nettle, Common Ragwort, Creeping Buttercup, Creeping Cinquefoil *Potentilla reptans*, Dog's Mercury, Garlic Mustard *Alliaria petiolata*, Ground-ivy, Indian balsam and Rosebay Willowherb. Areas of open rabbit-grazed grassland are present locally and include additional species such as Common Bird's-foot-Trefoil *Lotus corniculatus*, Common Knapweed *Centaurea nigra*, Dove's-foot Crane's-bill *Geranium molle* and Ribwort Plantain.

Eastern Boundary with Croesnewydd Road

The eastern boundary of the site includes occasional landscape plantings around the site entrance and immediate surrounds (see Photographs 10 and 11). Plantings include species such as Cherry, Corsican Pine *Pinus nigra var. maritima*, Scots Pine, Silver Birch and Sycamore.

Northern Boundary with Adjacent Factory Unit

This is a linear, semi-mature plantation woodland to approximately 5-7m in height and 8m in width, above a small bank immediately outside of the application site on the north-east boundary of the site (see rear of Photograph 2). It is relatively densely planted with a poor structure. Species present include Alder, Ash, Blackthorn, Cherry, European Larch, Hazel, Hawthorn, Norway Maple *Acer platanoides*, Pedunculate Oak *Quercus robur*, Rhododendron *Rhododendron ponticum*, Rowan *Sorbus aucuparia*, Scots Pine, Silver Birch, Swedish Whitebeam *Sorbus intermedia* and Sycamore. The ground flora is sparse and predominantly bare ground with occasional Bramble, Creeping Buttercup and Lesser Celandine.

Western Boundary with A483

Although outside of the site, the site is bordered by the planted embankment of the adjacent A483 (Photograph 18). The embankment has been extensively planted with species such as Beech *Fagus sylvatica*, Elm, Hawthorn, Hazel, Scots Pine and Sycamore. The plantings are now mature and to approximately 8-10m in height. They are dense and unmanaged and, as such, the shrub layer and ground flora are sparse with species such as bramble and common nettle.

5.3 Breeding Birds

5.3.1 Survey Methodology

A walkover survey of the site was undertaken and all species either seen or noted by call were recorded. Particular attention was paid to confirming breeding. This is essentially a repeat of previous walkover surveys for breeding birds.

5.3.2 Survey Results

For the majority of the species, the only potential breeding habitat within the site is associated with the wooded stream corridor. Species recorded from this habitat during the current or previous surveys include Blackbird *Turdus merula*, Blackcap *Sylvia atricapilla*, Blue Tit *Parus caeruleus*, Chaffinch *Fringilla coelebs*, Chiffchaff *Phylloscopus collybita*, Great Tit *Parus major*, Hedge Sparrow *Prunella modularis*, Robin *Erithacus rubecula* and Wren *Troglodytes troglodytes*. In the wider local area, the good quality habitat associated with the stream corridor was found to extend into the adjacent dismantled railway line. Additional species recorded from this habitat and likely to be breeding locally included Bullfinch *Pyrrhula pyrrhula*, Carrion Crow *Corvus corone*, Great Spotted Woodpecker *Dendrocopos major*, Greenfinch *Carduelis chloris*, Pheasant *Phasianus colchicus*, Magpie *Pica pica*, Song Thrush *Turdus philomelos*, Treecreeper *Certhia familiaris*, Willow Warbler *Phylloscopus trochilus* and Woodpigeon *Columba palumbus*.

With regard to the cleared development platform, whilst this is an unsuitable habitat for the majority of species, the updated survey in July 2011 confirmed the presence of a breeding pair of Little Ringed Plover *Charadrius dubius*. This is a species which breeds in open habitats with its typical natural breeding habitat being on exposed riverine shingle banks. In recent decades, the species has increasingly bred in man-made habitats, particularly mineral extraction sites, exposed reservoir banks and sewage farms. Brownfield sites such as this, where there are areas of bare or open ground, is likewise a habitat which is occasionally used. No evidence of Little Ringed Plover was, however, found during this current survey.

5.4 Badger

5.4.1 Survey Methodology

A standard Badger survey was undertaken. The survey involved a detailed walkover survey of the entire site to record evidence of setts as well as field signs such as paths, hairs, latrines etc. The survey was extended into the wider local area to the south and west of the site.

5.4.2 Survey Results

During the course of the survey, no evidence of a sett was found within the boundary of the site. Previous consultation indicated that Badger setts are present within Berse Drelincourt Nature Reserve to the north-west of the site and a road embankment to the south.

With regard to other field signs, animal paths were noted within grassland south of the Afon Gwenfro. Whilst Badgers cannot be totally discounted, no evidence of hairs, latrines etc. was found to confirm this. Likewise, the abundance of rabbits would suggest that these paths are most likely to be associated with this species. Notwithstanding the negative survey results, the occasional use of the peripheral parts of the site by Badger cannot be totally discounted. The cleared development platform does not, however, provide a habitat that would be of any value to Badger.

5.5 Bats

5.5.1 Survey Methodology

The objective of the survey was to re-assess the validity of the previous roost assessment. With no buildings, potential roosting habitat was associated only with peripheral trees. These were assessed on the basis of the presence of features typically associated with tree roosting bats, for example, woodpecker holes, trunk and branch splits, rot holes (cavities) where branches have been removed, frost cracks, hollow sections of trunk, branches or even roots, cavities beneath old root buttresses, beneath loose bark, behind dense ivy, in dense epicormic growth and in bat or bird boxes. With regard to trees favoured by roosting bats, a number of general principles were used in the assessment, in particular, tree species usually favoured by roosting bats are Oak, Ash, Beech, Willow, Elm and Scots pine; trees of less than 30cm diameter and less than 80 years old are least likely to contain roosts; and trees greater than 50cm diameter and more than 120 years old are most likely to contain roosts. With regard to foraging surveys, whilst dusk surveys using ultrasonic bat detectors to determine the nature of any bat activity, and to assist with the identity of bats in the area were previously undertaken, there were not considered to any particular merits in repeating this survey. The previous results are therefore relied upon.

5.5.2 Survey Results

There are no trees within the development platform itself. As such, trees are primarily found along the corridor of the Afon Gwenfro. Occasional trees along this corridor display some ivy-cladding and are considered to offer low potential, particularly as occasionally used summer roosting habitat.

In terms of the previously completed activity survey, all bats observed were Common Pipistrelle *Pipistrellus pipistrellus*. Not surprisingly, activity was concentrated in the southern part of the site, particularly the habitat associated with the dismantled railway line as well as the wooded stream corridor associated with the Afon Gwenfro. During each survey, small numbers of bats were recorded both commuting and feeding along these habitat corridors.

5.6 Otter

5.6.1 Survey Methodology

The Afon Gwenfro was subject to a standard Otter survey. This involved walking both banks of the stream (or the central section) to identify field signs such as spraints, holts, footprints and actual or potential resting sites. Due to access difficulties, the survey was restricted to the section of the stream within the site boundary.

5.6.2 Survey Results

No actual or potential holt sites were identified during this or any of the previous surveys. This current survey likewise yielded no other evidence of Otter activity. With regard to previous surveys, Otter prints were identified on a section of exposed bankside mud approximately 30m upstream of the dismantled railway crossing during the first of the 2008 survey visits.

5.7 Water Vole

5.7.1 Survey Methodology

Concurrent with the Otter survey, the Afon Gwenfro was subject to a standard Water Vole survey. This involved a search for field signs such as direct observations, sounds of the species entering water, latrines, droppings, burrow entrances, cropped “lawns” around tunnel entrances, feeding stations, paths along the waters edge, runs in vegetation and footprints in mud etc.

5.7.2 Survey Results

No evidence of water vole was found during this current or any of the previous the surveys. On the basis of the negative survey results, no further consideration is given to this species.

5.8 Great Crested Newt

5.8.1 Survey Methodology

There is no potential amphibian breeding habitat within the site and therefore the purpose of the survey was to consider the quality of the available terrestrial habitat in relation to known/potential Great Crested Newt ponds in the wider local area.

5.8.2 Survey Results

The initial desk-based study indicted that three ponds were present within a 500m search area from the site. Pond 1 (see Photograph 12), which is adjacent to dismantled railway approximately 80m to the south-east of the site, is a moderate-size (approximately 18m x 18m in extent) and is enclosed by a metal fence which prevents access. Bulrush *Typha latifolia* covers approximately 60% of the pond with other patches of hard rush. There are few other marginals with species such as Common Nettle and Great Willowherb. Alder and more occasional Hawthorn are present around the pond edges whilst dense Bramble scrub is present around approximately 40% of the perimeter. The pond contains abundant rubbish. There are no historical records of Great Crested Newt from this pond which is also known to support a population of fish. This pond is considered to be unsuitable for Great Crested Newt. Pond 2 (see Photograph 13) is a large ornamental pond located approximately 450m to the north-east of the site, within the central section of a business park roundabout. The pond is approximately 40m x 30m in extent with dense stands of Bulrush and Water-lily in open areas. The pond has vertical brickwork around approximately 60% of its perimeter, a stepped viewing area over 15% and the remaining bank comprises short mown grassland. It is suspected that the pond also contains fish. This ornamental pond is considered to be an isolated and generally unsuitable habitat for Great Crested Newt. A third pond, identified during the desk study was subsequently found to be defunct (see Photograph 14).

On the basis of the above pond assessment, there is no evidence that Great Crested Newt is present within a zone which could be considered as relevant to the site. On this basis, no further consideration is given to this species.

5.9 Other Species

No other locally important species, for example, Brown Hare or Hedgehog were noted during the course of the surveys. In relation to reptiles, initial consultation indicated that there is a strong population of Common Lizard *Zootoca vivipara* approximately 700m to the south-east of the site that is associated with the dismantled railway. There is, however, no habitat connectivity between this population and the application site. Irrespective of this, in its cleared state, the development platform represents a hostile habitat for reptiles.

With regard to other species, prints of American Mink *Mustela vison* were also noted in bankside mud during the first of the 2008 survey visits although not during subsequent survey visits. Evidence of Brown Rat *Rattus norvegicus* was also found along the stream.

6.0 EVALUATION

6.1 Plants/Habitats

The site supports a limited range of habitat types. In terms of individual species, no nationally rare or scarce; or regionally rare plants were encountered during the surveys and all species are common or relatively common within the habitats encountered on the site.

With regard to the individual habitat areas, the most valuable habitat is that associated with the stream corridor. Although not a best-example of the habitat type, it is of some maturity and supports a good range of common woodland plants and trees. On this basis it is regarded as being a habitat of high local value, particularly when considering that it also provides the habitat for the majority of fauna utilising the site.

In terms of other parts of the site, the cleared development platform is a predominantly bare habitat which supports a typical range of common pioneer species. It is a habitat of negligible value.

With regard to other habitats, Areas 3 and 4 now comprise of a scrub/ruderal mosaic with rarely occurring neutral grassland and common species and are therefore of no particular value.

6.2 Breeding Birds

The optimum habitat is associated with the wooded stream corridor of the Afon Gwenfro with a continuation of this habitat along the connected dismantled railway. This supports the majority of species that would be expected to occur in such habitats and is of undoubted high local value to the breeding birds.

With regard to the 2011 record of Little Ringed Plover from the clear development area, this is a rare species which is specially protected under Schedule 1 of the Wildlife and Countryside Act (1981, as amended). The most recent available population estimate from the British Trust for Ornithology (BTO) suggested that there were between 1046 to 1181 pairs in the UK in 2007. Whilst the 2011 breeding record is one of high significance, the occasional use of cleared brownfield sites such as this is not unknown. Such habitats essentially replicate the natural habitats used by the species. Sites such as this

are, however, transient in nature and typically suitable as a breeding habitat for only a short period of time.

6.3 Badger

No setts or other confirmed Badger field signs were noted during the survey, with the nearest known setts being within Berse Drelincourt Nature Reserve to the west of the site and on a road embankment to the south of the site. Specific to the site itself, the majority now represents a hostile habitat of no value to Badger. With regard to other parts of the site, whilst no evidence of Badger foraging was noted, the possibility of occasional usage was identified. This usage is, however, likely to be on only an occasional basis and, as such, there was no evidence to suggest that the site is of any particular value to the wider local Badger population.

6.4 Bats

No evidence of any bat roost was found within the site boundary. With regard to flight lines and foraging areas, these were essentially limited to the stream corridor and adjacent dismantled railway immediately outside of the study areas. These habitat features are typical of habitats utilised by bats and, as such, they are likely to be of high local importance as both flight and feeding corridors to the local bat population.

6.5 Otter

The limited evidence of Otter from the Afon Gwenfro indicates that the stream is not capable of supporting the species on a permanent basis and its value is as a temporary and connecting habitat within the wider territories of the local population. Streams such as this, although not a high quality habitat in their own right do, nevertheless, fulfil an important connecting role and are therefore of value to the local Otter population.

6.6 Other Species

There was no evidence to suggest that the site is of any value to other key species of nature conservation concern.

7.0 IDENTIFICATION AND ASSESSMENT OF IMPACTS

7.1 Introduction

A proposed residential layout has been developed for the site and has been used to inform the impact assessment. Under this layout, residential development works would be associated with the prepared development platform, with public open space provisions, including habitat provisions, located in the southern parts of the site encompassing the wooded stream corridor and dismantled railway boundary habitats.

Given that the development platform has been prepared as part of the extant planning consent, a number of potential impacts associated with pre-development are of no relevance to this current application. Pre- and mid-term impacts are therefore primarily associated only with construction

activities. Potential long-term and permanent impacts are associated with the loss, fragmentation or modification of habitats currently found on or around the site. Individual species of flora and fauna could be impacted to differing degrees and in various ways by this loss or alteration of habitat. In terms of other potential impacts, impacts on wildlife adjacent to the development zones may occur due to human interference in one form or another. Physical disturbance may result from the presence of people walking, noise created by people, vehicular disturbance, the dumping of rubbish and accidental or deliberate pollution incidents. Such disturbance may lead to habitat deterioration and the disturbance of individual animals using these peripheral areas.

7.2 Assessment of Ecological Impacts

7.2.1 Pre- and Mid-term Impacts

Impacts related to this proposed development are primarily related to the construction activities themselves. In its prepared state, and with the development footprint clearly defined, such impacts should be relatively minor in nature. Some localised disturbance could be expected to species utilising the retained wooded stream corridor and this is likely to represent a minor adverse impact.

In relation to individual site features, although not directly impacted by construction works, the Afon Gwenfro represents a potentially sensitive receptor both with regard to the sensitivity of the habitat as well as being potentially sensitive to indirect effects in terms of pollution, increased sediment load etc. Whilst any such pollution could represent a substantial adverse impact, it is readily possible to implement pollution prevention measures which would result in the risk of any pollution incident occurring being negligible.

7.2.2 Permanent Impacts

Habitats

The habitats on the site, and particularly the cleared former factory and associated infrastructure, are low value habitats of no particular value, the loss of which would represent a negligible impact.

In the southern part of the site, the wooded stream corridor and associated habitat represent the highest value habitat within the site. This area would be retained and therefore not directly impacted.

Breeding Birds

Impacts related to breeding birds are associated with the direct loss of breeding and feeding habitat and the displacement of breeding birds from adjoining areas as a result of disturbance during the construction and operational phases of the redevelopment. Whilst there may be a minor adverse impact on birds during the construction phase, given the retention of areas of key habitat, the overall impact on breeding birds is considered to be negligible to minor adverse. In relation to the presence of Little Ringed Plover in 2011, although a record of high significance, cleared sites such as this are transient in nature and the habitat would inevitably become unsuitable for the species over time. No evidence of this species was found in 2012.

Badger

On the basis of current information, there would be no adverse impact on Badger as a result of the proposed development.

Bats

No roosting evidence was found and there would therefore be no impact on any roost site. All trees offering any potential are likewise retained. With regard to foraging, the key local habitat associated with the stream corridor will be retained, whilst the other key local habitat associated with the dismantled railway line is outside of the site boundary and therefore also not impacted. Given the retention of habitat, it is likely that usage will continue at a similar level in the future and that this part of the study area will remain as an area which is of local importance to bats. No adverse impact on bats is therefore envisaged.

With regard to future lighting issues, whilst elevated levels of light may be a significant consideration for certain species of bat, this is not considered to be relevant to this site. Specific to this, there is already a relatively large amount of light pollution in the immediate wider local area. Likewise, the only species of bat recorded during the surveys, Common Pipistrelle, is a species which is not sensitive to elevated levels of light, being often attracted to feed on insects around street lamps etc.

Otter

Given the retention of the stream corridor, as well as the typically nocturnal behaviour of Otter, the occasional usage of this habitat is likely to continue. No adverse impact on Otter is therefore envisaged.

8.0 MITIGATION/RECOMMENDATIONS

8.1 Introduction

The term mitigation is frequently used to refer to all works required to comply with the relevant legislation when developing land occupied by legally protected species. There are essentially two elements to this process. Firstly, mitigation in its strictest sense relates to work or practices which reduce or remove impacts, for example, a capture programme to remove reptiles or amphibians from a construction area in advance of construction. Secondly, compensation refers to works which offset the damage or impact of a development, for example, additional habitat creation or restoration to offset the impact of direct habitat loss. Development projects can likewise provide opportunities for positive biodiversity enhancement measures to be incorporated at the design stage. Although unrelated to mitigation, such biodiversity enhancement is an increasingly important aspect of development projects and something which should be sought wherever possible.

Specific to this project, strict mitigation requirements are minimal. Likewise, it has been possible at the preliminary design stage to incorporate ecological considerations into the planning of the development and this has enabled potentially significant ecological effects to be avoided.

8.2 Advanced Mitigation Requirements

8.2.1 Breeding Birds

Whilst there is no suitable habitat for the majority of breeding birds within the prepared development footprint, the possibility of Little Ringed Plover utilising the site in the future cannot be totally dismissed. Depending upon the timing of the start of any future construction activities, further surveys of the site would therefore be required. The protection for this species which included on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) is greater than the general protection afforded all breeding birds whilst nesting and includes it being an offence to disturb a bird whilst it is building a nest or is in, on, or near, a nest containing eggs or young. It is also an offence to disturb the dependent young of a Schedule 1 species. In terms of the nesting behaviour of Little Ringed Plover, the species arrives in the UK from mid-March with breeding typically in the period April-June. The incubation period is 24-25 days and the fledging period 25-27 days, with one or two broods. The European populations typically leave their breeding grounds during the period June to mid-July.

8.2.2 Invasive Species

Indian balsam is frequent and locally dominant along sections of the stream corridor and rarely within the development footprint. It is a rapidly spreading invasive species which quickly out-competes other plants. It is therefore recommend that options for the control of this species are included within construction and in the overall management of the stream corridor.

8.3 Other Enhancement/Protection Measures and Further Recommendations

8.3.1 Introduction

The original EclA made a number of recommendations relating to the protection and enhancement of the stream corridor. These were subsequently taken forward by means of a condition in the extant planning permission which required the preparation of an Ecological Method Statement and Management Plan. This approach is considered to remain entirely appropriate. Such measures recommended for this retained habitat are considered further below.

8.3.2 Control of Indian Balsam

The control of Indian Balsam represents a fundamental aspect of future management and one which represents the priority at the outset of management. Whilst it is probably unrealistic to achieve long-term eradication of this species, it should be readily achievable reduce the current levels. In terms of the control options that are available, the plant is easy to cut, either by hand or machine, provided there is adequate access. To prevent re-growth, the plants need to be cut below the lowest node and therefore cutting is only effective if made very close to the soil level. Regular mowing will also control this plant even if the cutting level is above the lowest node, provided the frequency is sufficient to prevent the formation of flowers and seeds. Given these requirements, mechanical control is typically effective only in those locations where good access is available to ground smooth enough for close mowing and free of shrubs or bushes. This may therefore be appropriate in parts of the management area, particularly Area 6. Along the stream corridor itself, access of more difficult and, whilst small-scale cutting may be achievable, other methods, for example, hand pulling are likely to be required.

In terms of other options that are available, the species can be controlled by spraying the foliage with glyphosate. The plants should be sprayed in the spring before flowering but late enough to ensure that germinating seedlings have grown up sufficiently to be adequately covered by the spray. Small infestations and individual plants can be controlled by using glyphosate in a weed wiper. This has the advantage of preserving native plants and grasses which would otherwise be killed by the glyphosate. This option may again be appropriate for parts of the site. There are, however, potential considerations in relation to the proximity of the Afon Gwenfro and the Environment Agency should be consulted if this option is pursued.

8.3.3 Scrub Control

The control of the highly invasive Dogwood is a key objective along the stream corridor. This can be achieved as follows:

- The area of Dogwood should be cut and removed from the site.
- Following initial clearance, re-infestation is likely and main stumps may need to be treated.
- Additional young growth is also likely and will need to be treated with an appropriate herbicide.
- Given the proximity of the scrub to the Afon Gwenfro, the use of chemicals should be discussed and agreed in consultation with the Environment Agency.

8.3.4 Woodland Management

Whilst the Afon Gwenfro corridor is already a locally valuable habitat, the implementation of specific management can provide enhancement to the habitat as follows:

- All non-native tree species should be removed from the site. This particularly relates to the mature Leyland Cypress but also includes species such as Sycamore.
- Within existing gaps in the management plan area as well as new gaps left as a result of the felling of non-native species or removal of non-native scrub, replacement plantings should be provided.
- Replacement planting should be with native trees and shrubs which are characteristic of the local area.
- Local provenance stock should be used wherever practicable.
- Planting density should be sufficiently open to enable a shrub layer and ground flora to develop.
- Localised low density planting of shrub species should be implemented to improve the structure of the woodland.
- Small-scale selective coppicing of streamside Alder and Willow should be undertaken to both reduce shading of the Afon Gwenfro and to diversify structure.
- Wood from trees felled or coppiced elsewhere on site should be used to create a dead wood habitat for invertebrates and other species.

8.3.5 Species Prescriptions

Breeding Birds

Bird boxes can provide valuable additional nesting and roosting habitat for a wide range of species. Specific designs of box are typically inhabited by restricted groups of species. To maximise the potential value of an area it is, therefore, important to provide a variety of box structures. Essentially, bird boxes fall under two main categories; open-fronted and closed-fronted. In addition to this the species which a box attracts will be determined by its dimensions, surrounding habitat, elevation and aspect. In relation to the boxes and their erection:

- A target of 20 boxes is recommended in retained native trees along the corridor.
- The boxes should include both closed-fronted and open-fronted boxes.
- In relation to the closed-fronted boxes, a number of different sized entrance holes should be used. This significantly affects the types of species which are likely to use the box (for example, Blue Tit, Coal Tit etc. prefer a 25mm diameter entrance hole, Great Tit prefers a 28mm diameter entrance hole and Nuthatch, House Sparrow, Tree Sparrow etc. a 32mm diameter entrance hole and Starling a 45-50mm diameter entrance hole).
- Boxes should be placed on retained native trees approximately 2-5m off the ground.
- Boxes should be placed so as to face between north and south-east to avoid the strongest sunlight and wettest winds.
- The density at which boxes are placed should give due regard to the territorial habits of the species for which the box has been designed. Boxes of different designs, targeting different species, should be placed in closer proximity to each other as competition will not be an issue.

Bats

The provision of artificial bat boxes along the Afon Gwenfro corridor would provide additional roosting habitat for bats locally. In relation to the boxes and their erection:

- A target of 10 boxes is recommended in retained native trees along the corridor.
- The design should be one which is approved by The Bat Conservation Trust.
- Siting should be at least 4m from the ground with the front facing SW to SE to ensure that the box warms up during the day.
- Consideration should also be given to other factors, for example, shelter and ease of access
- The erection of boxes should be undertaken by a suitably experienced licensed bat worker.

Otter

The Afon Gwenfro corridor is considered to be suitable for the construction of an artificial Otter holt. This should be constructed as follows:

- The foundation of the holt should be a log framework, pegged securely to the ground with wooded pegs.
- At least two gaps should be left between the logs nearest to the stream bank to provide a choice of exit.

- The inner chamber should be separated into several compartments using more large logs.
- The inner turf should be removed and packed on the outside to help to provide stability. Further logs should be placed across the walls to produce a ceiling.
- Large branches should then spread across the structure which should then be topped by lighter branches and twigs.
- All material used in the construction should be taken from the immediate area.

9.0 RESIDUAL IMPACT ASSESSMENT

9.1 Introduction

This section of the report considers the residual ecological impacts of the proposed development. Following on from the earlier Identification and Assessment of Ecological Impacts and Mitigation sections of the report, these are considered with proposed mitigation measures in place. For clarity, the same assessment criteria as were previously utilised are followed in the residual assessment.

9.2 Habitats/Plants

Permanent habitat losses, particularly within the main former industrial area are all associated with low value habitats. With regard to those habitats which were identified as being of higher value in the site context, such areas are being retained. Recommendations for additional planting would likewise serve to further retain and possibly enhance these habitats. A negligible to minor beneficial residual impact is therefore envisaged for these retained habitats such as the stream corridor.

9.3 Breeding Birds

The provision of artificial nest boxes along with management of woodland habitats along the stream corridor should increase the availability of nesting habitat in these parts of the site. A moderately beneficial impact to this habitat is therefore predicted.

9.4 Bats

The establishment of bat boxes in retained habitats along the stream corridor would significantly increase the potential roosting habitat available locally. This could result in a moderately to substantially beneficial residual impact, particularly when considering the currently low levels of usage.

9.5 Otter

The adequate protection of the Afon Gwenfro, possibly with the additional of enhanced resting habitat through the provision of an artificial holt site would ensure that the corridor remains as available as a habitat corridor for the local Otter population. No residual impact is therefore envisaged, whilst the provision of an artificial holt would represent a substantially beneficial residual impact in the site context.

9.6 Other Species

There would be no adverse residual impacts on any other species. Furthermore, the appropriate retention and management of habitats within the retained areas associated with the stream corridor could increase locally the opportunities for a range of other species groups, for example, invertebrates, and small mammals.

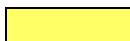
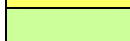
FIGURE 1 – SITE LOCATION



FIGURE 2 – HABITAT PLAN



Key:

	Recolonising Bare Ground
	Neutral Grassland
	Woodland/Scrub
	Scrub/Ruderal Mosaic
	Indian Balsam/Bramble Scrub

Job No.	PCAJ136
Project	Croesnewydd Road, Wrexham
Title	Figure 2 i Habitat Plan
Auditor	KB
Date	22.07.12

APPENDIX 1 – BOTANICAL SPECIES LIST

<i>Acer pseudoplatanus</i>	Sycamore
<i>Acer campestre</i>	Field Maple
<i>Achillea millefolium</i>	Yarrow
<i>Aesculus hippocastanum</i>	Horse-Chestnut
<i>Alliaria petiolata</i>	Garlic Mustard
<i>Allium ursinum</i>	Ramsons
<i>Alnus glutinosa</i>	Alder
<i>Anagallis arvensis</i>	Scarlet Pimpernel
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Apium nodiflorum</i>	Fool's Watercress
<i>Arrhenatherum elatius</i>	False Oat-Grass
<i>Arctium minus sens. lat.</i>	Lesser Burdock
<i>Arum maculatum</i>	Lords-And-Ladies
<i>Bellis perennis</i>	Daisy
<i>Betula pendula</i>	Silver Birch
<i>Cardamine hirsute</i>	Hairy Bittercress
<i>Centaurea nigra</i>	Common Knapweed
<i>Cerastium fontanum</i>	Common Mouse-Ear
<i>Chamerion angustifolium</i>	Rosebay Willowherb
<i>Chrysosplenium oppositifolium</i>	Opposite-Leaved Golden-Saxifrage
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Convolvulus arvensis</i>	Field Bindweed
<i>Cornus sp.</i>	Dogwood
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Cupressus x leylandii</i>	Leyland Cypress
<i>Dactylis glomerata</i>	Cock's-Foot
<i>Elytrigia repens</i>	Common Couch
<i>Epilobium ciliatum</i>	American Willowherb
<i>Epilobium hirsutum</i>	Great Willowherb
<i>Festuca rubra</i>	Red Fescue
<i>Fraxinus excelsior</i>	Ash
<i>Fumaria officinalis</i>	Common Fumitory
<i>Galium aparine</i>	Cleavers
<i>Geranium dissectum</i>	Cut-Leaved Crane's-Bill
<i>Geranium rotundifolium</i>	Round-Leaved Crane's-Bill
<i>Geranium molle</i>	Dove's-Foot Crane's-Bill
<i>Geranium robertianum</i>	Herb-Robert
<i>Geum urbanum</i>	Wood Avens
<i>Glechoma hederacea</i>	Ground-Ivy
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire-Fog

<i>Hyacinthoides non-scripta</i>	Bluebell
<i>Hypericum perforatum</i>	Perforate St John's-Wort
<i>Hypochaeris radicata</i>	Cat's-Ear
<i>Ilex aquifolium</i>	Holly
<i>Impatiens glandulifera</i>	Indian Balsam
<i>Lamium album</i>	White Dead-Nettle
<i>Lamium purpureum</i>	Red Dead-Nettle
<i>Larix decidua</i>	European Larch
<i>Leucanthemum vulgare</i>	Oxeye Daisy
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Mentha aquatica</i>	Water Mint
<i>Mercurialis perennis</i>	Dog's Mercury
<i>Narcissus agg.</i>	Daffodil
<i>Picris echioides</i>	Bristle Ox-tongue
<i>Pinus nigra var. maritima</i>	Corsican Pine
<i>Pinus sylvestris</i>	Scots Pine
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago major</i>	Greater Plantain
<i>Poa annua</i>	Annual Meadow-Grass
<i>Poa pratensis sens. str.</i>	Smooth Meadow-Grass
<i>Poa trivialis</i>	Rough Meadow-Grass
<i>Populus tremula</i>	Aspen
<i>Potentilla reptans</i>	Creeping Cinquefoil
<i>Primula vulgaris</i>	Primrose
<i>Prunus sp.</i>	Cherry
<i>Prunus spinosa</i>	Blackthorn
<i>Pteridium aquilinum</i>	Bracken
<i>Ranunculus ficaria</i>	Lesser Celandine
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Reseda luteola</i>	Weld
<i>Rhododendron spp.</i>	Rhododendron
<i>Rosa canina</i>	Dog-Rose
<i>Rubus fruticosus</i>	Bramble
<i>Rumex acetosa</i>	Common Sorrel
<i>Rumex conglomeratus</i>	Clustered Dock
<i>Rumex obtusifolius</i>	Broad-Leaved Dock
<i>Sagina procumbens</i>	Procumbent Pearlwort
<i>Salix caprea</i>	Goat Willow
<i>Salix cinerea</i>	Grey Willow
<i>Salix fragilis</i>	Crack-Willow
<i>Sambucus nigra</i>	Elder
<i>Scrophularia nodosa</i>	Common Figwort
<i>Senecio jacobaea</i>	Common Ragwort
<i>Senecio vulgaris</i>	Groundsel

<i>Silene dioica</i>	Red Campion
<i>Silene latifolia</i>	White Campion
<i>Sonchus oleraceus</i>	Smooth Sow-Thistle
<i>Stellaria media</i>	Common Chickweed
<i>Taraxacum officinale</i>	Dandelion
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Tripleurospermum inodorum</i>	Scentless Mayweed
<i>Tussilago farfara</i>	Colt's-Foot
<i>Ulmus sp.</i>	Elm Sp.
<i>Urtica dioica</i>	Common Nettle
<i>Verbascum thapsus</i>	Great Mullein
<i>Veronica hederifolia</i>	Ivy-Leaved Speedwell
<i>Veronica serpyllifolia</i>	Thyme-Leaved Speedwell
<i>Vicia sepium</i>	Bush Vetch
<i>Vicia sativa</i>	Common Vetch

APPENDIX 2 – FAUNA SPECIES LIST

English Name	Latin Name	Status (NB1)
Breeding Birds		
Blackcap	<i>Sylvia atricapilla</i>	B
Blue Tit	<i>Parus caeruleus</i>	B
Blackbird	<i>Turdus merula</i>	B
Bullfinch	<i>Pyrrhula pyrrhula</i>	B (WA)
Carrion Crow	<i>Corvus corone</i>	PB
Chaffinch	<i>Fringilla coelebs</i>	B
Goldfinch	<i>Carduelis carduelis</i>	B (WA)
Great Spotted Woodpecker	<i>Dendrocopos major</i>	B (WA)
Great Tit	<i>Parus major</i>	B
Greenfinch	<i>Carduelis chloris</i>	B (WA)
Hedge Sparrow	<i>Prunella modularis</i>	B
House Sparrow	<i>Passer domesticus</i>	B (WA)
Little Ringed Plover	<i>Charadrius dubius</i>	B (2011 only)
Long-Tailed Tit	<i>Aegithalos caudatus</i>	PB (WA)
Magpie	<i>Pica pica</i>	B (WA)
Pied Wagtail	<i>Motacilla alba</i>	PB
Robin	<i>Erithacus rubecula</i>	
Swallow	<i>Hirundo rustica</i>	NB
Willow Warbler	<i>Phylloscopus trochilus</i>	B (WA)
Wood Pigeon	<i>Columba palumbus</i>	PB
Wren	<i>Troglodytes troglodytes</i>	B
Mammals		
Brown Rat	<i>Rattus norvegicus</i>	
Common Pipistrelle Bat	<i>Pipistrellus pipistrellus</i>	
Mink	<i>Mustela vison</i>	
Otter	<i>Lutra lutra</i>	
Rabbit	<i>Oryctolagus cuniculus</i>	

NB1 – Breeding Bird Status Codes (B = Breeding, PB - Possibly Breeding, NB - Non-breeding, B(WA) – Breeding in the wider local area, particularly the adjacent railway line). The species list combines those species recorded during the current as well as the previous surveys.

APPENDIX 3 – PHOTOGRAPHIC RECORD



Photograph 1 - Area 1



Photograph 2 - Area 1



Photograph 3 - Area 2



Photograph 4 - Area 3



Photograph 5 - Area 5



Photograph 6 – Area 5



Photograph 7 – Area 5



Photograph 8 – Area 6



Photograph 9 – Dismantled Railway



Photograph 10 – Eastern Boundary (Southern Section)



Photograph 11 – Eastern Boundary (Northern Section)



Photograph 12 – Pond 1



Photograph 13 – Pond 3