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| Report Title | Land at Rivulet Road, Wrexham – Habitat Assessment Survey |
| Client       | Wales and West Housing Association                        |
| Date         | March 2010                                                |

this report was produced by



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| <b>Client</b>              | <b>Wales and West Housing Association</b>                        |
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Figure 1 – Site Location

Figure 2 – Target Notes

## 1 INTRODUCTION

### 1.1 Project Background

1.1.1 Marches Ecology was commissioned by Wales and West Housing Association to undertake a habitat assessment survey of land at Rivulet Road, Wrexham (OS Grid Ref. SJ 338 498). This report has been prepared in support of a planning application for outline permission (P/2009/0969) to construct a range of residential housing units on the site. The site was formerly part of a more extensive gas works. The location of the site is shown in *Figure 1*.

1.1.2 This survey report has three principal aims:

- to assess the habitat on the site for its potential value to legally protected and other notable species (where possible);
- to detail further surveys that may be required; and
- to identify potential development constraints relating to ecology and outline potential mitigation measures.

### 1.2 Scope of Habitat Assessment

1.2.1 The ecological survey work comprised a habitat assessment for legally protected and other notable species. Species considered of potential relevance to the site are as follows:

- Vegetation/ plants;
- Badger (*Meles meles*);
- Bats;
- Otter (*Lutra lutra*);
- Reptiles; and
- Birds.

As there are no known ponds within at least 500 m of the boundary (following review of OS 1:25,000 scale mapping) and the site is entirely enclosed by main roads and built development Great Crested Newts (*Triturus cristatus*) have been excluded from this assessment work. The habitat assessment survey was undertaken on 24<sup>th</sup> February 2010. This report presents the findings of the survey.

1.2.2 Comments provided to the Planning Case Officer by Matthew Ellis (Regional Species and Biodiversity Officer, Countryside Council for Wales) and Zara Lomax (Wrexham County Borough Council ecologist) identified Otters as the key ecological issue to be considered on the site. Both indicated that a buffer zone should be provided adjacent to the River Gwenfro and Matthew Ellis suggested a minimum width for this zone.

### 1.3 Previous Ecological Survey

1.3.1 An ecological survey was undertaken in July 2003 by WSP Environmental Ltd (WSP Environmental Ltd 2003); this incorporated an Extended Phase 1 Habitat Survey. This survey extended to a greater area than was considered for the current survey work; mostly including land to the south/ southwest of the current survey site. This land was also

previously part of the gas works. The results of this survey are summarised and reviewed within the results section of this report.

#### 1.4 Project Background

- 1.4.1 The proposed development is illustrated on a Munro Associates plan entitled '*Site Plan as Proposed*' (Drawing no. 001, rev. H, dated September 2009). This plan shows six 4-bedroom, 21 3-bedroom and 29 2-bedroom apartments in two blocks. The layout also includes 85 car parking spaces with vehicular access gained off Rivulet Road to new internal roads.

#### 1.5 Legislation and Policy

##### Introduction

- 1.5.1 This sub-section provides a brief summary of key relevant legislation. It should not be considered a comprehensive review and is not meant to be so. It is provided here for information only and is not intended to replace specialised legal advice. It does not replace the text of the legislation, but summarises the salient points.

##### Badger

- 1.5.2 The Badger is protected in Britain under the *Protection of Badgers Act 1992* and *Schedule 6 of the Wildlife and Countryside Act 1981* (as amended). The legislation affords protection to Badger and Badger setts, and makes it a criminal offence to:

- wilfully kill, injure, take, possess or cruelly ill-treat a Badger, or attempt to do so;
- interfere with a sett by damaging or destroying it;
- to obstruct access to, or any entrance of, a Badger sett; or
- to disturb a Badger when it is occupying a sett.

##### Bats

- 1.5.3 All species of British bat are listed on *Schedule 5 of the Wildlife and Countryside Act 1981* (as amended), and receive full protection under *Section 9*. They are also listed as European Protected Species on *Schedule 2 of the Conservation (Natural Habitats, etc) Regulations 1994* which gives them full protection under *Regulation 39*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRoW Act).

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

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

- 1.5.5 Several species of bat are included as Priority Species in the UK Biodiversity Action Plan (UK BAP) and also as species of principal importance for the conservation of biological

diversity in Wales under *Section 42 of the Natural Environment and Rural Communities Act 2006* (NERC Act 2006).

- 1.5.6 All species of British bat are also protected under *Schedule 6 of the Wildlife and Countryside Act 1981* (as amended). This protection relates specifically to trapping and direct pursuit of the species. The Wrexham BAP (Wrexham County Borough 2003) includes a Species Action Plan (SAP) for Lesser Horseshoe Bat (*Rhinolophus hipposideros*).

#### Otter

- 1.5.7 The Otter is listed on *Schedule 5 of the Wildlife and Countryside Act 1981* (as amended), and receive full protection under *Section 9*. The 1981 Act was amended by the *Countryside and Rights of Way Act 2000* (the CROW Act) which further extends the protection. It is also listed on *Annexes II and IV of the European Union Directive on Natural Habitats and Wild Fauna and Flora (Council Directive 92/43/EEC)*, which is implemented in the UK by the *Habitats Regulations 1994 (The Conservation (Natural Habitats, &c.) Regulations 1994)* as amended. It is included on *Schedule 2 of the Habitats Regulations* which gives it full protection under *Regulation 39*. The Otter is therefore a so-called European Protected Species.
- 1.5.8 Under the above legislation it is an offence to intentionally or recklessly:
- kill, injure or take an individual of such a species;
  - possess any part of such species either alive or dead;
  - damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
  - disturb such a species whilst using any place of shelter or protection; or
  - sell or attempt to sell any such species.
- 1.5.9 It should be noted that further to a recent amendment to the Habitat Regulations (HMSO 2009) there is currently no formal guidance provided by the Statutory Nature Conservation Organisations on what constitutes potential disturbance to Otters. The amended Habitat Regulations refers to disturbance of animals as including *in particular any disturbance which is likely:*
- to impair their ability -
    - i. to survive, breed or reproduce, or to rear or nurture their young; or
    - ii. in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
  - to affect significantly the local distribution or abundance of the species to which they belong.
- 1.5.10 In the absence of any current guidance the previous guidance (Natural England and Countryside Council for Wales 2007) produced following amendment of the *Habitat Regulations* in 2007 should be used for reference. This guidance document suggests the use of 30 m protection zones around (potential) resting places and 100-200 m protection zones around holt sites in order to avoid disturbance. However contrary to this guidance Forestry Commission England & Natural England (2007) suggests that a licence may be required with respect to 'Any significant change either to livestock or human disturbance within 100m of a known holt or resting place'.

- 1.5.11 The Otter is also a UK BAP priority species and is included in *Section 42* of the *NERC Act 2006* as a species of principal importance for the conservation of biological diversity in Wales. The Otter has a Species Action Plan (SAP) in Wrexham (Wrexham County Borough 2003).

#### Reptiles

- 1.5.12 Viviparous Lizard, Grass Snake, Slow-worm and Adder are all listed under *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), in respect of *Section 9(5)* and part of *Section 9(1)*. This protection was extended by the CRow Act. All four species have recently been added to the UK BAP priority species list and are included on the provisional list of locally important/ endangered species in the Wrexham BAP.

- 1.5.13 Under the above legislation it is an offence to:

- intentionally or recklessly kill or injure any individual of such a species; or
- sell or attempt to sell any part of the species alive or dead.

#### Birds

- 1.5.14 All species of bird are protected under *Section 1* of the *Wildlife and Countryside Act 1981* (as amended). The protection was extended by the *Countryside and Rights of Way Act 2000*.

- 1.5.15 The legislation makes it an offence to intentionally or recklessly:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

- 1.5.16 Certain species of bird are listed on *Schedule 1* of the *Wildlife and Countryside Act 1981* (as amended) and receive protection under *Sections 1(4)* and *1(5)* of the Act. The legislation confers special penalties where the above mentioned offences are committed for any such bird and also make it an offence to intentionally or recklessly:

- disturb any such bird, whilst building its nest or it is in or near a nest containing dependant young; or
- disturb the dependant young of such a bird.

- 1.5.17 *Section 74(2)* of the *Countryside and Rights of Way Act 2000* (now under *Section 42* of the *Natural Environment and Rural Communities Act 2006*) requires the government to prepare and publish a list of species and habitats that it considers to be of principal importance for the conservation of biological diversity in Wales. This list includes a number of birds. *Section 74* places a duty on the government to have regard, in exercising all its functions, to conserve biological diversity in accordance with the United Nations Convention on Biodiversity.

- 1.5.18 *Sections 40* to *42* of the *Natural Environment and Rural Communities Act 2006* (NERC Act) replace *S74* of the CRow Act. *Section 40* of the *NERC Act* extends to all public authorities (includes local planning authorities) the existing *S74* duty to have regard to biodiversity as far as is consistent with the proper exercise of their functions.

**1.6      Structure of this Report**

- 1.6.1      The remainder of this report is structured as follows:
- Section 2* describes the methodology;  
              *Section 3* describes the results;  
              *Section 4* presents the evaluation;  
              *Section 5* outlines ecological constraints and potential mitigation; and  
              *Section 6* contains the target notes.
- Further sections give references and tables of data.

## 2 METHODOLOGY

### 2.1 Habitat Assessment for Protected and Other Notable Species

#### General Habitat Assessment

- 2.1.1 A walkover survey of the site was undertaken to assess the habitat for its potential value for protected and other notable species. This was carried out on 23<sup>rd</sup> February 2010 by Tom Knight of Marches Ecology. The weather was cold and cloudy with a light breeze. The survey focused on land within the boundary of the site, as defined on a Munro Associates plan entitled 'Site Plan as Proposed' (Drawing no. 001, rev. H, dated September 2009) and indicated on Figure 2. This land is referred to henceforth as 'the site'.
- 2.1.2 Habitats and other features were assessed for protected and other notable vertebrates that are likely to occur in the region and within the site, as per the Extended Phase 1 Habitat Survey approach (Institute of Environmental Assessment 1995). Extended Phase 1 Habitat Survey is an appropriate survey method and provides an understanding of habitat use by faunal groups (IEEM 2005). Evidence of activity (of protected/ notable species) was noted when encountered. In addition a subjective assessment of the relative ecological value of the site (for protected species), based on professional experience, was completed.
- 2.1.3 Further information describing the methods employed for particular species where deemed relevant to the site are provided in the following sections. Target notes were made for features of interest, and these are given in Section 6 and mapped on Figure 2. Where applicable these included botanical features of interest. All plant names in this report utilise nomenclature outlined in Stace (1997).

#### Badger

- 2.1.4 Areas that might be used by Badger (*Meles meles*) for foraging and sett building were assessed. Incidental foraging signs, tree scratching, paths, latrines and setts were recorded if found (Harris *et al.*, 1989). The site was fully accessed and immediately adjacent land was viewed from within the access boundaries wherever possible.

#### Bats

- 2.1.5 An assessment was made of the habitat for foraging, and potential locations for roosting. Trees are briefly described and features that increase the likelihood of them being used for bat-roosting are identified (given as *Target Notes* in Section 6). If any definite signs of bats had been found (such as droppings and feeding remains), they would have been recorded. An individual external inspection of each tree was not undertaken at this time due to the number of trees present.
- 2.1.6 No ladders or other climbing equipment were used during this inspection. Cracks were not inspected internally and it is therefore possible that bats or evidence of bats could have been overlooked if located out of view. It should not be considered an exhaustive survey of the trees. The methodology for the initial bat assessment was carried out from surveyor experience and followed methodologies adapted from Bat Conservation Trust (2007).

*Assessment of Bat-roost Potential - Trees*

2.1.7 Trees were classified on roosting opportunities for bats, and the general condition of the tree. Potential bat roosting features including any significant cracks, splits, hollows or holes in the trunk or branches, areas of loose bark, and features such as dense *Hedera helix* (Ivy) cover, or branches that overlap were also recorded. This information enabled each tree to be categorised as follows.

- *High Bat Roost Potential*. Trees with good bat roost potential have numerous or extensive cavities, such as major sections of hollow trunk. They are likely to be used by bats and could be suitable for a maternity roost.
- *Moderate Bat Roost Potential*. Trees with moderate bat roost potential are those with small holes such as woodpecker nest-holes, or cracks. They could be used by individual bats and might be suitable for a maternity roost or other types of roost.
- *Limited Bat Roost Potential*. Trees with limited bat roost potential are those with superficial cracks and holes or small sections of loose bark and/or dense growths of *Hedera helix* (Ivy). They might be used as occasional or transient roosts, but are unlikely to be suitable for large colonies.
- *No Bat Roost Potential*. Trees with no bat roosting potential are those with no holes or cracks, often young trees in good condition. This category was used to identify and discount features or locations of a type which can in some cases potentially be suitable for roosting bats.

2.1.8 There are no buildings present within the survey site (other than temporary containers and portacabins). There are a small number of structures (walls) which were included in the assessment. A similar procedure as that detailed above was used to assess these structures.

**Otter**

2.1.9 The River Gwenfro that is located adjacent to the northwest corner of the site was viewed from the site boundary. The habitat was assessed for its potential value to Otters.

**Reptiles**

2.1.10 The survey involved identifying areas that are suitable for reptiles; potential basking areas, hibernation sites and foraging habitat. English Nature (2004) provides further information on the distribution and ecology of the four widespread species. Habitat requirements differ between species but can be summarised as follows after Beebee & Griffiths (2000):

- Viviparous Lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to walls and pastures, although one of their favoured habitats is rough grassland.
- Slow-worms (*Anguis fragilis*) use similar habitats to Viviparous Lizards, and are often found in rough grassland, gardens and derelict land.
- Grass Snakes (*Natrix natrix*) have broadly similar requirements to Viviparous Lizards with a greater reliance on ponds and wetlands for their food source.
- Adders (*Vipera berus*) use a range of fairly open habitats with some cover, but are most often found in dry heath.

**Birds**

- 2.1.11 Birds observed during the habitat assessment were recorded and notes were made on the suitability of the site for nesting birds. Breeding and wintering bird assemblages can only be described by specific surveys at appropriate times of year.

**2.2 Site Evaluation**

- 2.2.1 The ecological value of habitats and/or species is often assessed according to a number of widely used criteria of which perhaps the most frequently used are naturalness, extent, rarity, and diversity. For the purpose of this report the ecological value of the habitat and species present on the site has been determined with reference to the approach detailed in IEEM 2006 (*paragraphs 3.20 to 3.42 and 3.52 to 3.55*). Broadly speaking habitat value should be obtained by using published, ideally local, site selection criteria and legal or in some instances conservation status. The ecological value of a species considers its distribution and legal or conservation status, the latter is mostly due to inherent rarity.
- 2.2.2 Significant species were defined as follows:
- species protected by the *Wildlife and Countryside Act 1981 (as amended)* ;
  - species protected by European directives;
  - species listed in *Section 42* of the *NERC Act 2006* ;
  - red data book species; and
  - other species listed as scarce or notable in literature issued by conservation organisations or learned societies.
- 2.2.3 Biodiversity Action Plans and lists of declining species (e.g. The of Birds of Conservation Concern: Eaton *et al.*, 2009) have been used only where there is insufficient information to identify local status and can only provide indicative value. Such Action Plans and lists are more important for guiding proposals for habitat creation/enhancement.

### 3 RESULTS

#### 3.1 Previous Ecological Survey

##### Statutory Protected Sites

3.1.1 WSP Environmental Ltd (2003) concluded the following:

- 'The ecological value of the proposed development is limited due to the presence of large areas of hardstanding'.
- 'There were relatively few plant species across the site, none of which are rare or protected'.
- 'Although the retaining wall may potentially provide suitable habitat for roosting bats, no evidence of roosts was found'. Further survey is suggested if any significant works should be undertaken particularly to the retaining wall.
- The habitat across the site was generally considered to be of limited value for reptiles.
- Areas of woodland and scrub were noted as the most important features of the site particularly for roosting/ breeding birds. Much of the scrub was noted as being in the south of the site (e.g. outside the current survey site).
- Four main stands of *Fallopia japonica* (Japanese Knotweed) were recorded in the southern part of the site (e.g. outside the current survey site).

#### 3.2 Habitat Assessment

##### Site Description

3.2.1 The site is located on the southeast side of Wrexham town centre. The survey site extends to approximately 1.113 hectares. It is situated in an urban landscape and is directly bordered on all sides by roads and/or built development (including both residential and commercial properties). The site is bounded to the north by Rivulet Road, part of the southeast boundary by Greenbank Street and part of the western boundary by Salop Road. A short stretch of the River Gwenfro borders the northwest boundary. It flows roughly west to northeast passing beneath Willow Bridge on Salop Road before entering a culverted section beneath Rivulet Road. A large stone block retaining wall dominates the southern site boundary. The other site boundaries are also typically formed by stone block or brick walls.

##### Habitat Description

###### *Sparse Grassland/ Ephemeral Vegetation*

3.2.2 The site is generally characterised by various piles of building materials from a previous construction project with the ground consisting of a range of substrates. Much of the central portion of the site has previously been levelled and cleared. This work has resulted in the creation of various spoil piles (*Target Notes 5 and 16*) and the compaction of remaining areas of sub-soil material. The site is mostly sparsely vegetated and where present plant species are characteristic of such brownfield disturbed habitat (e.g. *Target Notes 2, 8, 13, 16*).

and 17). In some parts of the site these communities are relatively species-rich and include several 'Locally Scarce'<sup>1</sup> and 'Locally Rare'<sup>2</sup> plants.

- 3.2.3 The area of land to the south of the survey site (*Target Note 9*) supports more established vegetation. Generally this is characterised by species-poor rough grassland and stands of tall herbs over uneven ground.

#### *Trees/ Woodland*

- 3.2.4 There is a small stand of semi-natural broad-leaved woodland in the southwest corner of the site (*Target Note 14*). The canopy of this woodland is largely dominated by semi-mature *Betula pendula* (Silver Birch) with *Acer pseudoplatanus* (Sycamore), *Fraxinus excelsior* (Ash) and *Salix caprea* (Goat Willow). The shrub layer is relatively sparse and the ground layer appears to be species-poor. A small stand of the non-native invasive plant *Fallopia japonica* (Japanese Knotweed) was recorded near the northern edge of this woodland (*Target Note 15*).
- 3.2.5 Other than at the woodland described above there are very few trees on the site; it appears that some may have been felled as part of previous site clearance work. A small number of young saplings are present on the retaining wall at *Target Note 10*.
- 3.2.6 Although *Buddleja davidii* (Butterfly-bush) is frequent throughout most of the site the majority of the plants present are young. There are a few small patches of semi-mature bushes (e.g. *Target Note 3*).

#### *Aquatic Habitat*

- 3.2.7 A small, shallow waterbody (*Target Note 11*) is present at the base of the retaining wall on the southern boundary. This may have been created during previous site clearance work to control water drainage across the site. The marginal surface vegetation is species-poor (being dominated by *Agrostis stolonifera* Creeping Bent) and the water quality may also be poor.

#### *Walls*

- 3.2.8 The site boundaries are virtually all formed by free-standing or retaining walls of large stone blocks or brick (*Target Notes 1, 5a, 7, 10 and 14*). These walls support a number of species of plant in particular several ferns.

### **Habitat Assessment**

#### **Badgers**

- 3.2.9 No signs of Badger activity were recorded within the survey site. The majority of the survey site is unsuitable for foraging or excavation of setts as it is dominated by hard surfaces. The woodland in the southeast corner of the site and the bank that forms part of the southern boundary do provide potential sett construction opportunities. However due to the isolation

<sup>1</sup> In Vice County 50, a scarce plant is described as being recorded in 4-15 10 km squares (Green, 2006).

<sup>2</sup> In Vice County 50, a rare plant is described as being recorded in 1-3 10 km squares (Green, 2006).

of the site and urban nature of the surrounding area it is considered unlikely that this species might access/ utilise the site. As such Badgers are not considered further in this report.

### **Bats**

#### *Foraging/ Commuting Habitat*

- 3.2.10 Overall the site provides very limited foraging/ commuting habitat for bats. The woodland at *Target Note 14* is of potential value for foraging bats however it is fairly isolated from other suitable habitat. The sparse vegetation that characterises much of the site is unlikely to be of particular value. There are no linear features across the site that might be utilised by commuting bats.

#### *Inspection of Trees and Other Features*

- 3.2.11 The only trees large enough to be of potential value for roosting bats located within the site are included in the small stand of woodland at *Target Note 14*. Nearly all of the trees within this woodland are relatively young and do not contain any features of potential value for roosting bats. A single *Betula pendula* (Birch) tree described at *Target Note 14a* was considered to be of limited potential value for roosting bats due to the presence of a Woodpecker hole.
- 3.2.12 In nearly all locations the boundary and retaining walls (*Target Notes 1, 5a, 7, 10 and 14*) contained cracks/ crevices and or other small voids that may be of potential value to roosting bats. Dense *Hedera helix* (Ivy) in two locations provides potential roosting sites (*Target Notes 6 and 14*). The retaining wall described at *Target Note 10* contains most features of potential value. These walls are considered to be of limited potential value to roosting bats (at most).

### **Otter**

- 3.2.13 The boundary wall that forms the site boundary with the River Gwenfro (see photos below) forms an approximate 4 m vertical drop from the site to water level (*Target Note 7*). On the western bank of this short stretch of the river it may be possible for Otters to leave the river channel however the adjacent land use is a car park bounded by Salop Road and Rivulet Road and as such they are unlikely to do so. Otters would not be able to access the site.



River Gwenfro from Willow Bridge on Salop Road. Survey site is to the right of this view.



River Gwenfro from Rivulet Road. Site is on the left of this view.

### Reptiles

- 3.2.14 Areas of habitat of some potential value to reptiles (Viviparous Lizard being the most relevant species) are largely limited to the site perimeter (e.g. *Target Notes 5, 12, 13, 16 and 17*). The rough grassland described at *Target Notes 12, 13 and 17* is located on a largely north-facing slope and as such is unlikely to be of potential value. However this grassland is linked to a larger resource of potential value to the south outside the survey site (*Target Note 9*). The other areas of potentially valuable habitat are associated with spoil piles (*Target*

Notes 5 and 16) and as such are likely to have been subject to significant disturbance in the relatively recent past and are both isolated from other areas of suitable habitat.

### Birds

- 3.2.15 Thirteen species of bird were recorded during the habitat assessment either within the site or flying over it. No species listed on *Schedule 1* of the *Wildlife and Countryside Act 1981* (as amended) was recorded. The Dunnock (*Prunella modularis*) is included on the Birds of Conservation Concern Amber List (Eaton *et al.*, 2009), *Section 42* of the *NERC Act 2006* and is a UK BAP priority species.
- 3.2.16 Potential nesting opportunities within the site are mostly limited to the woodland although some opportunities exist within the boundary/ retaining walls (*e.g. Target Note 1*), where dense Ivy is present (*e.g. Target Notes 6 and 14*) and to a lesser extent in semi-mature stands of Butterfly-bush (*e.g. Target Notes 3, 4 and 16*). The Dunnock could potentially nest within the site although opportunities are limited.

## 4 EVALUATION

### 4.1 Habitat and Flora

- 4.1.1 Habitat features of particular value that are present on the site are limited due to construction activity in the recent past. The small stand of semi-natural woodland in the southeast corner, some of the species-rich ephemeral vegetation and the boundary/ retaining walls are the features of most ecological interest. Other features are limited to small patches of Butterfly-bush scrub and some species-poor rank grassland. Such habitats are frequent and ubiquitous across similar highly disturbed brownfield sites in the area. This resource is unlikely to be of greater than site value<sup>3</sup>.
- 4.1.2 Five plant species of note were recorded during the survey: *Lactuca serriola* (Prickly Lettuce), *Vulpia myuros* (Rat's-tail Fescue), *Carex muricata* (Prickly Sedge), *Melilotus altissimus* (Tall Melilot) and *Laburnum anagyroides* (Laburnum). The former three species are identified as 'scarce' in VC50 - Denbighshire (Green 2006) while the latter two are 'rare'. Both locally rare species are non-native as is *Lactuca serriola* (Prickly Lettuce). Prickly Lettuce is included as a locally important species in the Wrexham BAP (WCB 2003). Both Cheffings & Farrell (2005) and Dines (2008) categorise all of these species as of 'Least Concern' in the most recent Vascular Plant Red Data List for Great Britain and Wales respectively.
- 4.1.3 It should be noted that all of the Locally Scarce/ Rare species listed (with the exception of Laburnum) have been frequently recorded by Marches Ecology on similar sites in the Wrexham area and are considered to be under-recorded in Denbighshire. The range of plants on the site is likely to be of local value<sup>4</sup> only.
- 4.1.4 *Fallopia japonica* (Japanese Knotweed) was recorded from one location within the survey site (*Target Note 15*). Under the *Wildlife & Countryside Act 1981* it is an offence to 'plant or otherwise cause Japanese Knotweed to grow' in the wild. This includes spreading the species or transferring polluted ground material from one area to another.

### 4.2 Fauna

#### Bats

- 4.2.1 The site is unlikely to be of particular value for foraging bats. It is isolated in an urban setting with few if any habitat linkages to other areas of suitable habitat.
- 4.2.2 Features of potential value to roosting bats within the site are limited to a single tree (*Target Note 14a*) and the retaining/ boundary walls (*Target Notes 1, 5a, 7, 10 and 14*). The potential roosting value of these features has been assessed as limited. The likelihood of their use is likely to be further restricted by the location of the site.

<sup>3</sup> Site value – areas of habitat that are considered to appreciably enrich the habitat resource within the context of the survey site (after IEEM 2006).

<sup>4</sup> Local value – areas of habitat that enrich the habitat resource within the context of the parish or neighbourhood (after IEEM 2006).

*Otters*

- 4.2.3 Otters are known to regularly use the adjacent stretch of the River Gwenfro (from previous surveys conducted by Marches Ecology during 2009). There are sprainting spots beneath both the Willow Bridge on Salop Road and just inside the culvert beneath Rivulet Road. The latter of these sprainting spots is particularly well used. Based on the evidence recorded during this detailed survey conducted in 2009 it was concluded that the River Gwenfro forms an important part of the territory of at least one male Otter, and towards the River Clywedog may also be included within the territory of a group of female Otters. The value of this Otter population was assessed as being of at least county value<sup>5</sup>.
- 4.2.4 However Otters are unlikely to be able to access the survey site as the river channel is contained on this boundary by a wall with an approximate 4 m vertical drop from the site to the water level. No potential resting places orholt sites were recorded along the previously surveyed stretch of river through the town centre.

*Reptiles*

- 4.2.5 The majority of the site is characterised by bare or sparsely vegetated surfaces. Such areas have been subjected to a high level of disturbance in the recent past. Vegetation (e.g. rough grassland) of potential value for reptiles is limited to small areas on the southern site boundary (*Target Notes 8, 12 and 13*) that is joined by a more extensive area of rough grassland of limited potential value for reptiles. The potential value of this resource is likely to be further restricted due to the isolated location of the site in an urban setting. The rough grassland resource within the site is predominantly located on north-facing slopes and as such is unlikely to be of any potential value for reptiles. Reptiles are therefore not considered further in this report.

*Birds*

- 4.2.6 The value of the site for nesting birds is generally considered to be low. A small number of scrub/ tree nesting species and those that might nest in the walls may find opportunities in the small stands of scrub/ woodland and the boundary/ retaining walls.

<sup>5</sup> County value – areas of habitat that are considered to appreciably enrich the habitat resource within the context of the county (after IEEM 2006).

## 5 ECOLOGICAL ISSUES

### 5.1 General

5.1.1 The proposed development is illustrated on a Munro Associates plan entitled '*Site Plan as Proposed*' (Drawing no. 001, rev. H, dated September 2009). Summary details of the proposal are provided in *Section 1.4*. This drawing and information has been used to provide an assessment of ecological issues as follows:

- further survey requirements; and
- potential development constraints and associated mitigation requirements.

These are dealt with in turn for habitats and flora, and specific species groups in the section below.

### 5.2 Further Survey, Constraints and Mitigation Measures

#### Habitat and Flora

5.2.1 There are considered to be no further survey or associated mitigation requirements. The habitat and flora of the site are considered to be of no greater than site/ local value. To offset the loss of plant diversity from the site the proposed 'buffer strip' could be planted with a suitable locally native wildflower seed mix (in combination with an appropriate management regime).

5.2.2 The retaining/ boundary walls support a number of plants including several ferns; wherever possible these walls should be retained. While some maintenance work may be required wholesale removal of vegetation should be avoided unless a threat to structural integrity is posed.

5.2.3 The small stand of semi-natural woodland located in the southeast corner of the site provides an attractive feature although again it is only of site value. As much of this woodland should be retained within the proposed development as possible.

5.2.4 The stand of *Fallopia japonica* (Japanese Knotweed) recorded at *Target Note 15* and any other stands that may be located within the site should be controlled with appropriate methodologies prior to starting any physical works. Care should be taken with regard to removing such material from the site for disposal to ensure it is not spread throughout the site and elsewhere.

#### Fauna

##### Bats

5.2.5 A single tree (*Target Note 14a*) within the woodland on the site is considered to be of limited potential value for roosting bats. Other features within the site of limited potential value for roosting bats are all associated with retaining/ boundary walls (e.g. Ivy, crevices, small voids). Where such features are located close to the proposed construction site and or may be subject to repair work they should be inspected in detail by a licensed bat surveyor in the first instance and if deemed necessary an emergence survey should be undertaken to

determine whether or not such structures are being utilised by roosting bats. The results of this survey would be used to design mitigation/ compensation measures if required.

#### Otters

- 5.2.6 The River Gwenfro flows into the River Clywedog which is a principal tributary of the River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SSSI/ Special Area of Conservation (SAC). The River Dee SSSI/ SAC is located over 11 km downstream of the proposed development site boundary. As such no direct impacts are predicted on this site. The Otter (*Lutra lutra*) is an Annex II species identified as a qualifying feature and supported by this protected site. Potential impacts on the local Otter population are considered in detail below; no other potential indirect impacts on this protected site have been identified.

- 5.2.7 Potential impacts on Otters due to the proposed development are as follows:

- Increased disturbance during construction and operation; and
- Indirect effects on habitat/ food resource, e.g. pollution of River Gwenfro.

It is considered that there would be no risk posed to individual Otters as they are unable to access the site due to the boundary wall. Similarly no potential resting places or holt sites would directly or indirectly be impacted.

- 5.2.8 The physical disturbance created by a construction project can affect the activities of an Otter if no mitigation measures are implemented. Noise, lights for night working, the use of machinery and the presence of a large number of human beings can all have detrimental effects. However there is no direct line of sight from the river into the site (due to the boundary wall). Similarly this potential impact should be viewed in the context of the relatively high levels of existing activity close to the river as well as the street lighting along Rivulet Road and Salop Road. While Otters may already be subject to some disturbance incidences it appears that they are able to tolerate a certain level of activity as they travel through the town centre.

- 5.2.9 Disturbance during the 'operation' phase of the residential development may impact on Otters. The residential development will introduce the constant presence of humans and domestic animals, noise and lighting to an area where they are not currently present. However both domestic animals and humans will not be able to access the river directly due to the boundary wall. Due to the height of this wall any potential impact due to external lighting will be reduced. As discussed above this impact should be viewed in the context of the site location; that it is already subject to a certain level of human activity as well as the presence of domestic animals and external lighting.

- 5.2.10 In order to minimise/ avoid potential impacts on Otters the following mitigation measures are proposed:

- The existing boundary wall that is directly adjacent to the River Gwenfro will be retained in place at all times to ensure that Otters cannot access the site at any time. Some minor repairs may be required.
- Where the top of this boundary wall is close to the existing site level (e.g. near the Salop Road boundary) the site ground level should either be reduced or the height of the wall increased to ensure that the top of the wall is approximately 1.5 m above the site ground

level. In addition metal railings should be fitted to the top of the wall where possible to further deter human access to the river corridor.

- It is proposed to provide an approximate 8 to 10.4 m wide 'buffer strip' between the boundary wall adjacent to the river and the closest buildings although this buffer would include a pedestrian access walkway.
- A 3 m wide exclusion zone will be temporarily fenced adjacent to the river during the construction period and all site personnel would be prevented from entering this area. Appropriate signage will inform site personnel of the importance of this fencing and that they should not access outside the fenced areas.
- To discourage people from accessing the river corridor and potentially uncontrolled fly-tipping it is proposed to plant a hedge along the entire boundary adjacent to the river within the buffer strip. This hedge should comprise three staggered rows of locally native shrubs to include *Prunus spinosa* (Blackthorn), *Crataegus monogyna* (Hawthorn), *Ilex aquifolium* (Holly) and *Rosa canina* agg. (Dog-rose). Management of this hedge should seek to achieve an approximate height of 2 m and minimum width of 3 m.
- No 'night-workin'g' and therefore uncontrolled external lighting should be used during the construction period within a minimum of 15 m from the bank top of the river.
- Any site compound, portacabins, storage or re-fuelling facilities will be located a minimum of 30 m from the river bank.
- Any external lighting installed on buildings and street lighting should be fitted with baffles and or point straight down into the site or to where it is needed to avoid light spillage. The brightness of these lamps should be as low as legally possible and they should be placed as low as possible on the poles. All artificial lighting should point away from the river; light spillage on to the river corridor should be minimised wherever possible. Further consideration of such measures may be required at such time as when a detailed proposal for the development is available.
- Drainage for the site should be designed to ensure that there will be no reduction in water quality of the adjacent river. The river will be protected during the construction phase through implementation of best practice. This will help to safeguard Otters as well as other riverine species.

- 5.2.11 The proposed size of buffer strip is deemed sufficient in this instance due to the nature of the site and the existing built-up surroundings. Otters are not able to access the site at present and therefore a wider buffer strip would not secure any further potential habitat for them. The buffer strip in combination with the proposed mitigation measures listed above should ensure no measurable impacts on the local Otter population; continued migration/ dispersal.

#### *Birds*

- 5.2.12 The destruction of any bird nests that are in use is illegal. The simplest option to avoid issues arising from the presence of nesting birds is to schedule work that affects nesting habitat (e.g. removal of trees, shrubs and work to the boundary/ retaining walls) outside the nesting period (March to August inclusive).
- 5.2.13 If it is not possible to clear shrubs and trees outside the nesting season all such areas should be checked by a suitably qualified ecologist prior to commencement of works. If a nest is found a buffer zone of no less than 5 m should be retained and fenced off around the nest until any chicks have fledged.

- 
- 5.2.14 Species that currently utilise the site are likely to nest within trees, the walls and possibly some of the shrubs. To offset any loss of trees and shrubs, planting around car park areas, etc should use locally native species where possible and reflect those species currently present on site (e.g. Silver Birch, Ash, Holly, Hawthorn, Goat Willow).
- 5.2.15 In addition as a potential enhancement the installation (and maintenance) of a small number of nest-boxes (within the retained woodland) could be considered. Alternatively, if practicable, a Dipper (*Cinclus cinclus*) nest-box could be erected in an appropriate place along the river corridor. This species is known to have nested a short distance up river in the past. The nest-boxes should be of a robust material such as wood-crete.

## 6 TARGET NOTES

**Target Note 1.** The boundary wall adjacent to Rivulet Road; constructed largely of brick to an approximate height of 3.5 m. The mortar-work is generally in reasonable condition although some holes were noted. There are holes in the outside of the wall but they do not appear to extend far; a hole in the base of the wall indicated that there is no cavity. However the remains of a bird nest was noted in one of the holes. Young *Buddleja davidii* (Butterfly-bush) shrubs are frequent along the top of the wall. The mortar work also supports a number of ferns; *Asplenium adiantum-nigrum* (Black Spleenwort), *Asplenium trichomanes* (Maidenhair Spleenwort), *Asplenium ruta-muraria* (Wall-rue) and *Phyllitis scolopendrium* (Hart's-tongue).

**Target Note 2.** The main part of the site is characterised by various piles of building materials from a previous construction project with the ground consisting of a range of substrates but largely small diameter limestone hardcore with some crushed rubble, scalplings and old cobbles. It is mostly very sparsely vegetated however there are small patches of grassy vegetation dominated by *Festuca rubra* (Red Fescue) and *Medicago lupulina* (Black Medick) with locally abundant *Agrostis stolonifera* (Creeping Bent), frequent *Buddleja davidii* (Butterfly-bush) seedlings, occasional *Tanacetum parthenium* (Feverfew), *Hypochaeris radicata* (Cat's-ear), *Holcus lanatus* (Yorkshire-fog), *Arrhenatherum elatius* (False Oat-grass) and small amounts of *Vulpia myuros* (Rat's-tail Fescue), *Senecio squalidus* (Oxford Ragwort) and *Epilobium parviflorum* (Hoary Willowherb).

The central area of the site has been cleared/ levelled and has been heavily compacted due to the passage of vehicles. There is very little vegetation in this area.

**Target Note 3.** A small stand of *Buddleja davidii* (Butterfly-bush) and *Salix caprea* (Goat Willow) shrubs. They are mostly to approximately 3.5 m high. Due to their relatively open structure they are unlikely to be of value for nesting birds. Similar stands are found scattered around the edge of the site.

**Target Note 4.** A line of semi-mature *Buddleja davidii* (Butterfly-bush) shrubs growing over a gas pipe. They are of limited potential value for nesting birds at most.

**Target Note 5.** Large spoil piles of rubble, large pieces of concrete, tarmac, logs, clay subsoil and other debris. Mostly sparsely vegetated however the pile closest to the river is older and as such is dominated by *Holcus lanatus* (Yorkshire-fog), *Dactylis glomerata* (Cock's-foot) and *Agrostis capillaris* (Common Bent) with frequent *Ranunculus repens* (creeping Buttercup), *Artemisia vulgaris* (Mugwort), *Cirsium vulgare* (Spear Thistle) and *Rumex obtusifolius* (Broad-leaved Dock). This pile is approximately 4 m high.

**Target Note 5a.** The boundary wall adjacent to this spoil pile is constructed of brick over stone blocks. It is approximately 2.5/ 3 m above the site ground level. There are no holes in this wall.

**Target Note 6.** A semi-mature *Acer pseudoplatanus* (Sycamore) with an approximate diameter at breast height (dbh) of 0.2 m. It is located immediately adjacent to but outside the site boundary. It is of no potential value for roosting bats. However the *Hedera helix* (Ivy) growing on the trunk is spreading to the adjacent wall. The Ivy on the wall is particularly dense and provides potential opportunities for nesting birds. An adjacent *Acer pseudoplatanus* (Sycamore) of similar size also located immediately outside the site boundary is of no potential value for roosting bats.

**Target Note 7.** The boundary wall at this location is constructed of stone blocks with chain-mesh fencing on the site-side. The wall top is approximately 0.6 m above the site ground level. However there is an approximate 4 m vertical drop to the river outside the site as there is along the remainder of the site boundary with the river. Closer to Salop Road on the western site boundary the site ground level is virtually at the same height as the wall.

**Target Note 8.** This area has been levelled and the metal framework for an apartment block partly erected by the previous site owner. The concrete foundations for the other half of this apartment block have also been installed. It is very sparsely vegetated with frequent *Buddleja davidii* (Butterfly-bush),

*Agrostis stolonifera* (Creeping Bent) and various other ruderals/ grasses typical of such disturbed substrates.

**Target Note 9.** To the south of the survey site is located the remaining area of the gas works. This area has far more established vegetation including extensive stands of species-poor rough grassland. Some of this grassland may be of limited potential value for reptiles.

**Target Note 10.** A stone block retaining wall to approximately 5/6 m high. There are crevices in the mortar work as well as some large cracks and holes where there are pipes. This wall may be of limited potential value for roosting bats at most. The wall supports various ferns; *Asplenium adiantum-nigrum* (Black Spleenwort), *Asplenium trichomanes* (Maidenhair Spleenwort), *Asplenium ruta-muraria* (Wall-rue), *Phyllitis scolopendrium* (Hart's-tongue) and *Dryopteris filix-mas* (Male-fern) as well as other plants including *Betula pendula* (Silver Birch), *Buddleja davidii* (Butterfly-bush), *Digitalis purpurea* (Foxglove) and *Arrhenatherum elatius* (False Oat-grass). All of the trees are too young and small to be of potential value for roosting bats.

**Target Note 11.** A small waterbody that is approximately 2.5 m by 4 m and approximately 0.2 m deep. The water quality may be poor and it may dry out in the summer. The surface and margins are characterised by abundant *Agrostis stolonifera* (Creeping Bent).

**Target Note 12.** A sheet metal 'retaining wall' presumed to be part of the old gas works. It is approximately 2.5/3 m high. The area to the north of this wall is characterised by species-poor rank grassland and piles of logs.

**Target Note 13.** A small area of largely species-poor rough grassland and tall herbs on a north facing slope. It is dominated by *Agrostis capillaris* (Common Bent), *Holcus lanatus* (Yorkshire-fog), *Arrhenatherum elatius* (False Oat-grass), *Dactylis glomerata* (Cock's-foot) with frequent *Rumex obtusifolius* (Broad-leaved Dock), *Cirsium arvense* (Creeping Thistle) and *Buddleja davidii* (Butterfly-bush).

**Target Note 14.** A small area of broad-leaved woodland. The canopy is dominated by semi-mature *Betula pendula* (Silver Birch) with frequent *Acer pseudoplatanus* (Sycamore), *Fraxinus excelsior* (Ash) and *Salix caprea* (Goat Willow) with a small amount of *Laburnum anagyroides* (Laburnum). The shrub layer is fairly sparse with frequent *Ilex aquifolium* (Holly), locally frequent *Fraxinus excelsior* (Ash), *Ligustrum vulgare* (Wild Privet) and occasional saplings of the other canopy trees and *Crataegus monogyna* (Hawthorn). The ground flora is characterised by locally frequent *Hedera helix* (Ivy), *Geranium robertianum* (Herb-robert), *Rubus fruticosus* agg. (Bramble), *Digitalis purpurea* (Foxglove) and *Pteridium aquilinum* (Bracken). Most of the Birch trees have approximate dbh's of 0.1 to 0.2 m and are of no potential value for roosting bats. These trees are also of limited potential value for nesting birds although an old Wood-pigeon (*Columba palumbus*) nest was noted. There is a lot of litter and tipped debris present. The adjacent stone block retaining wall on the southeast and eastern site boundaries contains some crevices. On the eastern boundary it is also partly covered in dense *Hedera helix* (Ivy) and as such is of limited potential value for roosting bats.

**Target Note 14a.** A semi-mature *Betula pendula* (Silver Birch) with an approximate dbh of 0.3 m. It contains a single Woodpecker hole at approximately 5 m height although the extent of this feature could not be viewed. As such it may be of limited potential value for roosting bats.

**Target Note 15.** A few stems of *Fallopia japonica* (Japanese Knotweed).

**Target Note 16.** A large spoil pile to approximately 3 to 4 m high. It is largely dominated by *Agrostis stolonifera* (Creeping Bent) and *Agrostis capillaris* (Common Bent) with abundant *Ranunculus repens* (Creeping Buttercup), locally frequent *Deschampsia cespitosa* (Tufted Hair-grass), occasional *Juncus inflexus* (Hard Rush), *Cirsium vulgare* (Spear Thistle), *Rumex obtusifolius* (Broad-leaved Dock), *Pulicaria dysenterica* (Common Fleabane), *Centaurea nigra* (Common Knapweed), *Carex nigra* (Common Sedge) and lesser amounts of *Carex otrubae* (False Fox-sedge), *Glyceria fluitans* (Floating Sweet-grass), *Leucanthemum vulgare* (Oxeye Daisy) and *Festuca arundinacea* (Tall Fescue). The adjacent area of the site to the south has been levelled and is sparsely vegetated. Between the spoil

heap and the boundary wall to the north there is a line of semi-mature *Buddleja davidii* (Butterfly-bush) bushes that provide limited opportunities for nesting birds at most.

*Target Note 17.* The edge of the rank grassland that extends on to the site from the adjacent area to the south. The grassland is species-poor and is typically dominated by *Arrhenatherum elatius* with frequent *Agrostis stolonifera* (Creeping Bent), *Dactylis glomerata* (Cock's-foot), *Ranunculus repens* (Creeping Buttercup), occasional *Festuca arundinacea* (Tall Fescue), *Deschampsia cespitosa* (Tufted Hair-grass), *Cirsium vulgare* (Spear Thistle) and *Rumex obtusifolius* (Broad-leaved Dock).

*Target Note 18.* A few stems of *Fallopia japonica* (Japanese Knotweed) outside the site boundary.

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Marches

Ecology

#### C126 Land at Rivulet Road, Wrexham – Habitat Assessment Survey

##### Figure 1 – Site Location

Drawn by: ME

Checked by: TK

Date: 25.02.10

