



Water Vole Survey

Proposed Rabbit Ings Regeneration Scheme,
Near Royston, Barnsley

On behalf of the City of Wakefield Metropolitan
District Council and Yorkshire Forward

By WYG Environment

from strength to strength

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Plan 1 Water Vole Survey

RABBIT INGS REGENERATION SCHEME: WATER VOLE SURVEY

1. INTRODUCTION

1.1 Background to Activity

WYG Environment (WYGE) was commissioned by Carillion on behalf of City of Wakefield Metropolitan Borough Council (WMDC) and Yorkshire Forward (YF) to undertake ecological work as part of a regeneration scheme for the Rabbit Ings site ('the Site') that covers 65.9 hectares of land near the village of Royston, Barnsley. The Site includes land formerly used as a colliery spoil heap, former drift mine and disused sports pitches/recreation ground. The Rabbit Ings Regeneration Scheme ('the Scheme') will include the importation of soil making materials, regrading of steep slopes for Health and Safety reasons, and reclamation works to provide formal and informal recreation uses including sports pitches with two team changing facilities with ancillary site access, car parks and informal open areas with landscape and ecological enhancements.

Following a Phase 1 survey undertaken by Scott Wilson at the Site in 2007, a number of specific habitat and protected/notable species surveys were recommended to accurately predict potential ecological impacts as a result of the proposals. This report provides details of ecological work undertaken at Rabbit Ings in relation to water voles. The aims of this assessment were:

- To determine whether the site was used by water voles with consequent implications for the Regeneration Scheme with respect to the *Wildlife and Countryside Act 1981* (as amended) and relevant planning and policy guidelines;
- To provide proposals for mitigation measures to offset any environmental impacts caused by the proposed work and to maintain the local water vole population at a favourable conservation status; and
- To assist the client to operate within the law.

1.2 Site Location and General Description

The Site (centred around OS grid reference SE 381 118) is located to the north-east of the village of Royston, east of Lund Hill Lane (B6428), some 4.5km north-east of Barnsley, and covers approximately 65.9 hectares (ha). The site is within the administrative boundary of Barnsley Metropolitan Borough Council (BMBC). The majority of the site is owned by WMBC with the recreation ground owned by the Royston and Carlton Community Partnership (RCCP) and a relatively small parcel of land within the south part of the site under the ownership of BMBC.

The site effectively comprises three distinct areas, namely as follows:

- (i) the former Rabbit Ings spoil heap;
- (ii) the former Royston drift mine site located to the north-west of the spoil heap;
and
- (iii) the RCCP recreation ground located to the south-west of the spoil heap.

The Rabbit Ings spoil heap occupies the majority of the Site covering an area of approximately 50.9ha. Sandybridge Lane forms the eastern boundary of the spoil heap and Sandybridge Dyke is located to the south. A dismantled railway, part of Lund Hill Lane, along with the former Royston Drift Mine and some existing employment land is located to the west of the former spoil heap. Open agricultural fields and a former railway line forms the northern boundary of the spoil heap.

The spoil heap comprises a mound of colliery spoil rising approximately 35m to 40m above surrounding land. There are some areas of tree and shrub growth mainly on the southern slopes of the spoil heap, but other parts are sparsely vegetated. The spoil heap appears to be terraced on its northern flank, with steep embankments separating the terrace levels. Parts of the southern flank of the spoil heap are steep sided, leading to a much flatter area of land adjacent to Sandybridge Dyke that has more established areas of tree and shrub vegetation. The top of the spoil heap is generally flat with limited vegetation cover. There is evidence of surface erosion from uncontrolled surface water run-off on parts of the spoil heap. In addition, there is evidence of unauthorised use by motor bikes and 4x4 vehicles on the spoil heap and adjacent land within the Site.

A man-made pond is located in the north-east corner of the Site and a former lagoon is located in the south-west corner.

The former Royston Drift Mine site occupies an area of land approximately 6.5ha, located to the north-west of the spoil heap, east of Lund Hill Lane, and to the north of existing industrial land. It comprises a relatively flat area of land with an area of hardstanding along with the remains of former roadways and footings for former colliery buildings.

The RCCP derelict sports pitches/recreation ground is located adjacent to the south-west part of the spoil heap and covers an area of approximately 8.5ha. The sports pitches are in poor condition and are infrequently used; they have been 'ploughed' to prevent motorcycle and 4x4 access. The eastern boundary of this part of the Site is formed by a disused railway line adjacent to the spoil heap. The western boundary is formed by a public footpath, with Lund Hill Lane to the west, and the southern boundary by a hedgerow.

A public footpath runs generally along the northern site boundary, in part within the Site, providing a link between Lund Hill Lane in the west and Sandybridge Lane to the east. In addition, a public footpath runs from Lund Hill Lane in a south-east direction, to the north of the sports pitches/recreation ground, and leaves the southern boundary of the Site to connect with the wider rights of way network including the Trans Pennine Trail.

1.3 Surrounding Area

Land to the north and east of the Site includes open fields used for agriculture. The village of Shafton is located approximately 0.5km to the south-east of the spoil heap with intervening agricultural land. The Sandybridge Dyke is located along the southern boundary of the Site and the Trans Pennine Trail, with woodland areas and agricultural land to the south.

South-west of the spoil heap and outside the Site is a restored waste disposal tip (Cudworth Landfill Site) forming a prominent mound rising 10m above the surrounding land. West of the RCCP recreation ground is a railway line that runs north-south, passing over Lund Hill Lane, approximately 100m west of the site boundary. In addition, a former landfill site is located outside and to the north of the former drift mine part of the Site.

Between Lund Hill Lane and the former spoil heap is an area of land that is currently used for employment purposes, including a pallet yard and a number of other business activities.

The Monkton Coke and Chemical Works is located to the west of the Site and Lund Hill Lane. North of this coke works and to the west of Lund Hill Lane is a coal storage yard.

Royston Village is located to the south-west of the Site. Some residential properties and a nursery school on the east side of this village are located to the west of Lund Hill Lane approximately 100m distant from the south-west of the Site boundary. There are some residential properties along Lund Hill Lane approximately 250m north of the Site.

The Site is surrounded by arable land to the north, amenity fields and agricultural fields beyond to the south and is bordered by Lund Hill Lane and Sandybridge Lane to the west and east respectively.

1.4 Proposed Work

The Scheme provides for the regeneration of the Site and will primarily involve some importation of soil making materials, regrading and reclamation works to provide formal and informal recreation uses including sports pitches with two team changing facilities, ancillary site access, car parks, and informal open space areas with landscape and ecological enhancements. The Scheme will take 12-18 months to complete, subject to works being progressed within the appropriate soil handling season.

As part of the Scheme, a 40m stretch of the northern bank along Sandybridge Dyke will be excavated to allow flood water flows into the adjacent compensation area. In addition, work as part of the flood compensation scheme will take place within 10m of a 210m stretch of bank which will involve excavation up to a depth of 0.5m to 1m and to within 3m of the bank.

2. **DESK STUDY**

2.1 **Legislation**

The water vole is the largest vole species found in the British Isles and was formerly abundant in the UK, but in recent years numbers have declined rapidly. Habitat loss and predation by introduced mink are believed to have been key factors in this decline.

The water vole is legally protected under Schedule 5 of the *Wildlife & Countryside Act 1981* (as amended) which makes it illegal to:

- Intentionally kill, injure or take water voles;
- Possess or control live or dead water voles or derivatives;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection; and
- Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose.

The Act provides a defence against the above where the action is the incidental result of an otherwise lawful operation and could not reasonably have been avoided.

The water vole is also listed as a species of principal importance for nature conservation (listed on the *Natural Environment and Rural Communities Act 2006*) and is a priority species on the UK Biodiversity Action Plan and the Barnsley Metropolitan Borough Council Biodiversity Action Plan.

2.2 **Baseline Data**

In a recent (2007) ecological survey, Scott Wilson Ltd made consultation with the West Yorkshire Biological Records Centre (WYBRC), the North and East Yorkshire Ecological Data Centre (NEYEDC) and the local mammal group to obtain up-to-date information pertaining to the occurrence of water voles within a 2km radius of the site.

In addition, Eric Bennett Consultancy undertook a Phase 1 assessment in 2001 which incorporated assessments of habitat suitability for water voles. This data was

complimented by a dedicated habitat assessment undertaken by Scott Wilson Ltd in 2004.

The following information was obtained regarding water voles and their habitats within 2km of Rabbit Ings:

- There are records of water vole within the Barnsley Canal Site of Special Scientific Interest (SSSI) located approximately 1km north-west of the site.
- In 2001, Eric Bennett Consultancy noted water vole within Sandybridge Dyke which flows along the southern boundary of the site. This watercourse drains from the Barnsley Canal and therefore provides a corridor for water vole dispersal.
- The 2007 Scott Wilson Ltd Phase 1 habitat survey report noted "potential" for water voles within Sandybridge Dyke; habitats occurring within and adjacent to the dyke included silty grassy banks, slow-flowing water, adjacent reedbeds and marshy swamp which are generally considered suitable for water voles.

3. **METHODOLOGY**

Prior to the commencement of the water vole survey, an assessment of habitats within and adjacent to Rabbit Ings was undertaken. For each watercourse, estimated ditch dimensions, water state and vegetation were noted prior to the determination of suitability to support water voles.

All suitable watercourses were subject to a detailed survey for water vole signs according to the guidance provided by Strachan and Moorhouse (2006). The survey took place on 6th May 2008, during the optimal period (March-June of any given year), and was carried out by two experienced ecologists from WYGE. Each watercourse and its banks were assessed to a distance of 5m from the top of the bank for the following water vole evidence:

- Latrines and faecal pellets;
- Feeding stations;
- Burrows;

- Grazed lawns;
- Footprints; and
- Runways through the vegetation.

4. ASSESSMENT AND SURVEY RESULTS

Survey conditions on 6th May 2008 were good: still and dry with approximately 25% cloud cover and an air temperature of 18°C.

4.1 Habitat Description

Sandybridge Dyke forms the southern boundary to the site and was up to 3m in width at the widest point but was approximately 2m in width over the majority of its length. The banks were up to 1.5m in height and either steep or vertical, being composed of earth.

Grasses dominated the bankside vegetation, comprising Yorkshire-fog and creeping bent although other coarse species were also present such as false oat-grass and timothy. Herbs comprised celery-leaved buttercup (*Ranunculus sceleratus*), angelica, creeping cinquefoil (*Potentilla reptans*), red-leg (*Polygonum maculosa*), pale persicaria (*Persicaria lapathifolium*), hedge woundwort (*Stachys sylvatica*) and common comfrey (*Symphytum officinale*). Scattered plants of male fern (*Dryopteris felix-mas*) were present along the banks.

The banks had collapsed near the small bridge at the western end of the dyke and this had caused very localised flooding on the July survey. Species present at this western end and not found elsewhere along the stream comprised water chickweed (*Myosoton aquaticum*), toadflax (*Linaria vulgaris*), common water-plantain (*Alisma plantago-aquatica*), great bindweed (*Calystegia sylvatica*), Russian comfrey (*Symphytum x uplandicum*) and a small stand of the invasive Himalayan balsam (*Impatiens glandulifera*).

Scrub along the stream banks was dominated by hawthorn and had a ground flora comprising rough meadow-grass, Yorkshire-fog, lesser celandine (*Ranunculus ficaria*), winter-cress (*Barbarea vulgaris*) and male fern.

The habitat along the dyke was considered to be good to optimal for water voles. Although some sections were shaded, other areas provided well-lit shallow grassy banks, stands of reeds or small grassy islands within the watercourse. Habitat towards the east of the site was generally less optimal; becoming more scrubby with the development of hawthorn and elder hedgerow comprised of apparently self-set standards along the banks. Although a small number of burrows were noted amongst the root network of these trees, the habitat was generally shaded and the bankside vegetation sparse indicating sub-optimal conditions for water voles.

4.2 Water Vole Activity

It was evident during the water vole survey that Sandybridge Dyke supported water voles (Plan 1). Although target notes were centred on the south-western corner of the site (near the entry of the watercourse onto the Rabbit Ings site), they were also distributed more sparsely along the surveyed length of the watercourse. Evidence included signs of activity such as latrines, runs, paw prints, grazing lawns and burrows. Larger complexes (with 3 or more holes) were target noted at OS grid references SE 37854 11386, SE 37895 11412 and SE 38147 11485. In addition, an incidental record of water vole droppings was made at Pond 3 to the north of the Site's boundary on 13th August 2008.

Given the proximity of Sandybridge Dyke to a number of ponds within Rabbit Ings, it is possible that water voles have dispersed into the site to occupy these features. Signs of small mammal activity (burrows) were noted from the bankside of a brick-lined pond in the south-eastern corner of the site, although investigating the entire waterbody was difficult due to the adjacent dense scrub and ruderal habitats.

5. IMPACTS AND RECOMMENDATIONS

5.1 Sandybridge Dyke

The proposed work will directly affect the banks along a 40m stretch of Sandybridge Dyke within the area of optimal water vole habitat and will indirectly affect the banks through disturbance as a result of excavation works within 10m of it; it is expected that the proposed work to and within vicinity of the dyke will have a

temporary impact on the local water vole population. It is, therefore, considered likely that this work will have a detrimental affect on the local water vole population as a result of disturbance and the loss of water vole burrows. As the proposed work is required as part of the flood compensation scheme and as disturbance to areas of the bank shown to support water voles cannot be avoided, measures will be implemented to safeguard water voles and the places they use for shelter and protection. The impact on water voles must be defended as an unlawful act which occurred as the incidental result of an otherwise lawful activity or operation and which could not reasonably have been avoided. Reasonable precautions will be implemented in order to avoid committing unlawful acts and steps will be taken to minimise any damage or disturbance to water voles or their habitat.

It is imperative that, as operations in areas where water vole burrows occur are unavoidable, a clear methodology and monitoring mechanism is put in place to evidence that all reasonable efforts have been undertaken in order to minimise any hazard to water voles and their burrows at the Rabbit Ings site.

The following recommendations will, therefore, be implemented:

- The footprint of any direct operational disturbance to the banks will be minimised to 40m and the operational area affecting the watercourse and burrows will be clearly marked. The area of disturbance within 10m of the banks but not directly affecting them will be limited to 210m.
- The maximum footprint of the proposed work (40m) will be managed in a manner which discourages water voles from foraging or occupying burrows i.e. vegetation will be strimmed along both banks to <3cm in height and to a distance of 10m from the bank with materials removed. The vegetation clearance will take place over late winter (January to February 2009) and will be managed on a monthly basis until the proposed work to the dyke takes place. As the banks will, therefore, be unattractive to water voles, it is proposed that the excavation work can be undertaken at any point throughout the year although regular monitoring of the stretch of bank to be affected by the work will be undertaken to ensure water voles have not recolonised the area.
- Regular checks of burrow activity in the period intervening commencement of vegetation clearance and commencement of earthworks will be undertaken

to demonstrate all reasonable steps have been taken to gauge levels of water vole activity and to confirm that the risk of injury or death to water voles has been minimised.

- It must be confirmed that water vole burrows are empty prior to any disturbance of the burrows commencing, otherwise operations such as hand-digging the burrows for removal while they are occupied would constitute a breach of the *Wildlife and Countryside Act 1981*. Confirmation of water vole absence will be difficult to ascertain but supporting evidence will be gathered during the period between vegetation clearance and the commencement of the proposed work, such as levels of latrine use and creation of additional burrows.
- Once probable absence has been ascertained, the burrows within the proposed area of work will be hand dug under the supervision of a suitably experienced ecologist and records maintained regarding the number of burrows destroyed. During works a daily log book will be maintained by contractors which accounts for any operations or incidental observations pertaining to water voles along the dyke.
- An ecological clerk-of-works will be present to supervise the excavation of any areas within 10m of the dyke's banks even where the risk of damage to water vole burrows is considered to be low.
- Ongoing post-development monitoring will be implemented at a level commensurate with the number of burrows impacted, in order to ensure the success of subsequent habitat management strategies, appropriate to maintain and enhance the suitability of the watercourse for the favourable conservation status of water vole in the locality.

Works remote to Sandybridge Dyke (10m+) are considered unlikely to have a significant impact on the conservation status of the water vole and will not be subject to mitigation.

5.2 Other Waterbodies

Ponds will be retained within the Regeneration Scheme plan where possible, including Pond 3 to the north of the Site and the brick-lined pond in the south-west

corner. The ponds will be managed to enhance their ecological value with the brick-lined pond being managed specifically with water voles in mind e.g. scrub encroachment will be controlled to encourage grass and ruderal species to develop along the banks.

5.3 Invasive Species

The presence of the invasive and exotic species Himalayan balsam (*Impatiens grandiflora*) along Sandybridge Dyke was noted during the survey. The presence of Himalayan balsam constitutes an ecological constraint to any work in the area where it occurs and its spread both across the site and off-site will be avoided; this includes the movement of contaminated soil or the transport of contaminated material or cuttings. Any Himalayan balsam material which is cut will be burnt on site to prevent the spread of seed.

Further advice can be provided from the Environment Agency and specialist contractors.

6. REFERENCES

Morris, P.A., Morris, M.J., Macpherson, D., Jefferies, D.J., Strachan, R. & Woodroffe, G.L. (1998).

Estimating Numbers of the Water Vole Arvicola Terrestris: a Correction to the Published Method. Journal of Zoology, 246: 61-62

Natural England (2008)

Water Voles – The Law in Practice: Guidance for Planners and Developers.
English Nature, Peterborough.

Rob Frith and Associates Ltd (2003)

Rabbit Ings: Ecological Assessment.

Scott Wilson (2007)

Rabbit Ings: Extended Phase 1 Habitat Survey.

Scott Wilson (2004)

Rabbit Ings Coalfield Site: Phase 1 Habitat Survey and Appraisal

Strachan, R & Moorhouse T. (2006)

Water Vole Conservation Handbook (Second Edition). Wildlife Conservation Research Unit, Oxford.

PLAN 1

Water Vole Survey Results



Key

- ◆ Burrow
- ▲ Small mammal run
- ⬠ Latrine
- Water vole
- Site boundary
- ~ Water course

White
Young
Green

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Rabbit Ings:

Plan 1 Water Vole Survey Results

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