



Reptile 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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RABBIT INGS REGENERATION SCHEME: REPTILE 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 reptiles. The aims of this assessment were:

- To determine whether the Site was used by reptiles 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 great crested newt 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.

2. DESK STUDY

2.1 Legislation

All six species of native reptiles are protected under the *Wildlife & Countryside Act 1981* (as amended) and benefit from variable levels of protection. The adder (*Vipera berus*), grass snake (*Natrix natrix*), slow-worm (*Anguis fragilis*) and common lizard (*Zootoca vivipara*) receive partial or full protection under Section 9 of

the *Wildlife & Countryside Act 1981* (as amended). This legislation makes it an offence to:

- intentionally or recklessly kill or injure these animals; and
- sell, offer for sale, possess or transport for the purpose of sale or publish advertisement to buy or sell individual reptiles.

The smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) are listed in Annex Iva of the *EC Habitat and Species Directive* and in Annex II of the *Bern Convention*. They are also listed in Schedule 5 of Section 9 of the *Wildlife & Countryside Act 1981* (as amended) and in Schedule 2 of the *Conservation Regulations 1994*. As a result, it is an offence to:

- intentionally or recklessly kill or injure these animals;
- deliberately disturb these animals;
- take or destroy their eggs;
- damage destroy or disturb or impede access to breeding or shelter site used by these species;
- sell, offer for sale, possess or transport for the purpose of sale or publish advertisement to buy or sell individual reptiles.

2.2 **Baseline Data**

In a recent (2007) ecological survey, Scott Wilson Ltd made consultation with the West Yorkshire Biological Records Centre (WYBRC) and the North and East Yorkshire Ecological Data Centre (NEYEDC) to obtain up-to-date information pertaining to the occurrence of reptiles within a 2km radius of the site. The following information was obtained regarding reptiles and their habitats within 2km of Rabbit Ings:

- Grass snake (*Natrix natrix*) has been recorded on the Barnsley Canal SSI which is located approximately 1km north-west of the Site. The canal passes within 200m of the Site at its closest point.
- Several historical records exist for grass snakes on the National Biodiversity Network database for the area within the 10km grid square containing the Site.

3. METHODOLOGY

During 2008, a survey was undertaken at the Site by qualified and experienced WYGE ecologists to establish the presence or likely absence of reptilian species. The survey was based on guidance outlined in the *Herpetofauna Workers' Manual* (Joint Nature Conservation Committee, 2003), *Advice Sheet 10 – Reptile Survey* (Froglife, 1999), and the *Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring* (Hill *et al.*, 2005) and involved seven visits to the site.

Artificial refugia (squares of roofing felt) were placed throughout the site in areas considered to have habitat suitable for protected reptiles. The refugia were placed at a density of approximately one refuge per 650m². Each refuge was first checked for basking individuals from a distance before approaching them and searching beneath for sheltering reptiles.

As reptile activity is heavily dependent on weather conditions, the average temperature throughout each survey was recorded.

There were a number of limitations associated with the presence/absence survey:

- Due to issues with vandalism at the site, artificial refugia were positioned out of the view of main footpaths where possible. In addition, they were positioned in areas where disturbance as a result of unauthorised motorcycle and 4x4 activity was less likely. As a result, the refugia were not positioned at the recommended density and any population class assessment is considered likely to be an underestimate.
- A number of artificial refugia were removed or burnt between survey visits. These refugia were not replaced as the risk to reptiles that may be using them was considered to be too high.
- The best results are generally obtained when the air temperature is between 10°C and 20°C. All but one of the seven surveys was undertaken when temperatures were within this optimal range. The first survey was undertaken in mid-March when reptiles will have come out of hibernation and within the survey period although the temperature was 8°C. As refugia were searched for basking as well as sheltering individuals, it is considered likely that reptiles would still have been recorded.

The limitations described above will be considered when the impact of the proposed work on the local reptile population is determined with mitigation configured accordingly.

4. ASSESSMENT AND SURVEY RESULTS

4.1 Habitat Assessment

The Site contains areas of habitat that are considered suitable for a variety of reptiles including grass snake, slow-worm (*Anguis fragilis*) and common lizard (*Lacerta vivipara*) e.g. semi-improved grassland, reed beds and Sandybridge Dyke. In addition, there are south-facing slopes throughout the Site where individuals can bask effectively and areas of debris for shelter and protection. There is a limited amount of acid grassland, heathland and bracken which has potential to support adder (*Vivipara berus*).

4.2 Presence/Absence Survey

Table 1 shows the results of each of the reptile surveys undertaken during 2008, including the temperature and locations of individuals recorded.

Table 1 Survey Results

Survey	Date	Average air temp.	Reptiles Recorded	Location	Notes
1	14/03/2008	8°C	0	N/A	N/A
2	16/04/2008	10°C	0	N/A	N/A
3	02/05/2008	10°C	One grass snake	Adjacent to Pond 5	~80cm in length
4	06/05/2008	10°C	One grass snake	Close to the western end of Sandybridge Dyke	Small, possibly 12 months old
5	18/06/2008	13°C	One grass snake	Eastern end of Site	~30cm
6	04/07/2008	17°C	0	N/A	N/A
7	07/07/2008	15°C	0	N/A	N/A

A number of mats were removed or burnt by vandals throughout the survey period. These mats were not replaced as it was considered highly likely that they would be removed again or the risk of injury to reptiles using the artificial refugia would be increased as a result of human interference.

4.3 Incidental Records

Grass snakes were frequently recorded during July and August 2008 by Mick Birkinshaw of Groundwork Dearne Valley beneath boards to the north of the pallet yard.

Table 2 Incidental Records for Grass Snakes at Rabbit Ings

Date	Reptiles Recorded
28/29 th July 2008	One individual
9 th August 2008	Three grass snakes (one small, one medium and one large ~80/100cm.)
16 th August 2008	Seven grass snakes; five seen under wooden boards and two more 100m north under a concrete slab.
19 th August 2008	Four individuals
20 th August 2008	Two individuals
22 nd August 2008	Three individuals
23 rd August 2008	Four initially with five individuals identified two hours later.

5. IMPACTS AND RECOMMENDATIONS

The WYGE survey results indicate a small population of grass snakes is present at Rabbit Ings i.e. less than five individuals were recorded during any one visit. However, given the limitations of the survey and the quantity of incidental records that have been provided, the grass snake population is better considered as medium. No other reptilian species were recorded although it was determined that there are small areas of habitats suitable for adders within the Site. There were no records for species other than grass snakes within 2km.

Grass snakes have been recorded around the base of the spoil heap and particularly in the area to the north of the pallet yard and along Sandybridge Dyke. The habitats within the Site provide suitable areas for basking, shelter and foraging and, given the varying sizes in individuals recorded, it is likely that a breeding population has been present for a number of years. Grass snakes have been recorded along Barnsley Canal which is 200m from the southern boundary of the Site at its closest point and is connected to Sandybridge Dyke by a number of channels.

As a result of grass snakes being present at the Site and to ensure legal obligations are fulfilled, measures will be taken that minimise the impact of the proposed work on the local population and will include the avoidance of killing or injuring grass

snakes. All reasonable steps will be taken to ensure the proposed work does not cause harm to individuals by capturing and removing grass snakes from the works area. In addition, post-development population monitoring will be undertaken to assess the success of the mitigation scheme.

5.1 **Avoidance of Injury or Death**

Due to the very high level of vandalism that currently occurs at Rabbit Ings (including the removal of palisade fencing for motorcycles and 4x4 vehicles to access the Site), it has been decided that the standard approach of installing reptile proof fencing and pitfall traps/artificial refugia to clear the Site of reptiles prior to the commencement of work is likely to have a detrimental effect on the local population. In addition, the length of fencing required, and the amount of time and cost that would be involved in repairing the fence following incidences of vandalism, would affect the feasibility of the project. Therefore, following discussion with Natural England on 16th July 2008, an alternative method has been identified to minimise the risk of killing or injuring grass snakes.

An experienced ecologist will be present immediately prior to the commencement of work to supervise ground vegetation clearance and soil stripping and importation. This will include a search of any routes that vehicles/excavators use to access work areas. The proposed work will begin in the west of the Site and will progress eastwards throughout the Scheme's programme. The working area for the week ahead will be searched and cleared of reptiles and, once it has been confirmed that no individuals remain in the working area, it will be made unsuitable for recolonisation and work allowed to continue. This process will be repeated throughout the work programme and efforts will be made to ensure any areas suitable for hibernation are cleared before early November 2009. This will be undertaken concurrently with the works proposed for great crested newts which have also been recorded at Rabbit Ings (WYGE report *Rabbit Ings: Great Crested Newt Survey*, 2008).

Any grass snakes (and other reptiles) found during the supervised clearance work will be translocated to (i) an area of land adjacent to the north-west boundary of Rabbit Ings which is also owned by Wakefield Council; (ii) the wildlife refuge in the south-east corner of the Site; or (iii) the Sandybridge Dyke corridor which will remain largely undisturbed as a result of the work. These areas are considered to

be within the range of the local reptile population and will allow individuals access to suitable terrestrial and aquatic habitat for the duration of Scheme.

Therefore, it is considered that the proposed work will have a temporary adverse impact on the local grass snake population although the ecological enhancement measures that will be implemented as part of the Scheme are expected to have an overall positive impact.

5.2 Habitat Retention, Creation and Enhancement

5.2.1 Terrestrial Habitats

The plan for the Scheme has retained existing habitat where possible including the areas around Ponds 2a, 2b and 3 and heathland to the east, and a wildlife refuge in the south-east corner of the Site.

To increase the value of the Site to the local community a mountainbike track will be created throughout the area of neutral grassland on the south-west facing elevation of the spoil heap. If managed correctly, neutral grassland habitat is likely to be used by grass snakes with the track potentially being used by individuals for basking. Therefore, to reduce the value of the track to grass snakes and to minimise the risk of injury or death from mountainbikes, the track will be created from a light coloured substrate which will not absorb heat in the same quantity as a darker surface. Several purpose-built basking areas (created from a darker substrate) will be created within the neutral grassland away from the track to encourage reptiles away from the potential risks associated with mountainbike activity.

The litter and debris throughout the site currently provides opportunities for sheltering reptiles. However, the site will be cleared of debris and the management plan will ensure that litter is removed from the site frequently. Therefore, replacement refugia will be created along the dyke, around ponds and within suitable terrestrial habitat from logs obtained from trees that are felled as part of the Scheme.

5.2.2 Aquatic Habitats

Grass snakes hunt in water and are frequently associated with aquatic habitats such as Sandybridge Dyke and, where possible, waterbodies with the Site will

remain undisturbed during the work. Some work will be undertaken to the banks of the dyke and Pond 1 will be lost as part of the proposals but the overall area of aquatic habitat within the Site will be increased as a result of the Regeneration Scheme. Stepping stone ponds will be created to link Ponds 2a, 2b and 3 (to the north of the site) with aquatic habitats adjacent to the sports pitches in the south-west corner and the overall size of the reed beds will be increased.

Pond 4 and the immediately adjacent habitat will remain undisturbed throughout and after completion of the proposed work.

In addition, there are terrestrial and aquatic habitats outside but in close vicinity of the Site, including Barnsley Canal SSI, that are suitable for grass snakes and it is considered likely that these areas will temporarily support any reptiles displaced as a result of the proposals

5.3 Post-development Population Monitoring

A monitoring plan will be implemented to assess whether the grass snake population has responded favourably to the mitigation and to inform ongoing habitat management. Surveys will be undertaken one and four years post-development to determine the effect of mitigation on the local population.

5.4 Post-development Habitat Management

A management plan will be implemented for at least five years following completion of the Scheme at Rabbit Ings which will include:

- Management of aquatic vegetation in ponds;
- Clearance of shading trees or scrub cover around pond margins;
- Desilting and clearance of leaf-fall within ponds;
- Mowing and cutting grassland to maintain suitable habitat for reptiles (cut grass will be retained in places to create thatch);
- Woodland and scrub management;
- Removal of rubbish on Site;
- Repair to perimeter fences; and
- Desilting of culverts or drainage channels.

5.5 Soil Stockpile Area

Planning permission has been granted for the storage of 95,000 cubic metres of topsoil and subsoil over an area measuring 4.12ha in the north-west of the Rabbit Ings site (LPA reference number 2008/0244; dated 23rd July 2008). Incidental records for grass snakes have been made adjacent to this area where up to seven individuals have been recorded beneath wooden boards and slabs. Work within this area will be subject to the issuing of a Natural England great crested newt development licence and the mitigation which will be implemented for this European Protected Species will also be implemented for grass snakes. This will ensure that the risk of death or injury to individuals will be minimised.

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