

# ROYAL ORDNANCE, BISHOPTON



REMEDIATION AND RECLAMATION EARTHWORKS

## ENVIRONMENTAL STATEMENT

### APPENDIX 14.11 BADGER MITIGATION STRATEGY

October 2006

## **1. Introduction**

The following mitigation strategy was formulated to resolve the apparent potential conflict between the proposed remediation and reclamation earthworks and the maintenance of the badger population at the former Royal Ordnance site, Bishopton. The key factors in its formulation were:

- An understanding of the dynamics of the badger population, gained from continuing site surveys (see figure 14.2 of the Remediation and Reclamation Earthworks Environmental Statement, 2006)
- The requirements of remediation and reclamation earthworks in terms of activity and phasing (the strategy was partly hindered by the preference of badgers to construct setts in old spoil heaps and bunds – all of which are to be removed)
- Proposed long-term use of the site (i.e., whether to be in a housing area, for commercial use or as open space, for instance).

The work concentrated on the area outlined for the proposed extension of the village of Bishopton, where disturbance and potential conflict was greatest, but had to take into account the impacts of displacement and translocation on badgers outside of this area. The understanding of the particular badger tribes or clans on site was particularly useful in this respect (see figure 14.3 of the Remediation and Reclamation Earthworks Environmental Statement, 2006).

## **2. Legislation : Protection of Badgers Act 1992 (c.51)**

The Protection of Badgers Act 1992 is based primarily on the need to protect badgers from baiting and deliberate harm or injury. It also contains restrictions that apply more widely which are important for developers.

### *Offences*

Taking, injuring or killing badgers.

#### **1.**

- (1) A person is guilty of an offence if he wilfully kills, injures or takes a badger.

- (2) Attempts to kill, injure or take a badger

- (3) Is found to have in his possession a badger or anything derived from a badger

Cruelty.

#### **2.**

- (1) A person is guilty of an offence if –

(a) he cruelly ill-treats a badger

(b) he uses any badger tongs

(c) he digs for a badger

(d) he uses for the purpose of killing or taking a badger any firearm other than a smooth bore weapon of not less than 20 bore.

- (2) at the material time the accused was digging for a badger he shall be presumed to have been digging unless the contrary is shown.

Interfering with badger setts.

#### **3.**

A person is guilty of an offence if, except as permitted by or under this Act, he interferes with a badger sett by doing any of the following things –

- (a) damaging a badger sett or any part of it;
- (b) destroying a badger sett;
- (c) obstructing access to, or any entrance of, a badger sett;
- (d) causing a dog to enter a badger sett; or
- (e) disturbing a badger when it is occupying a badger sett,

intending to do any of those things or being reckless as to whether his actions would have any of those consequences.

Licences.

10. –(1) A licence may be granted to any person by the appropriate Conservancy Council authorising him, notwithstanding anything in the foregoing provisions of this Act, but subject to compliance with any conditions specified in the licence

The definition of a badger sett within the meaning of the 1992 Act is given as “any structure or place, which displays signs indicating current use by a badger”. “Current” is not defined in the Act, and may be open to interpretation. English Nature say a sett is in “current use” if it has been occupied at all over the previous 12 months. Whatever the interpretation of “current use” however it is important to note that a sett is protected whether or not there is a badger actually in residence at the time of inspection.

### **3. Best Practice Methodology**

#### **A. One-way gates.**

Every effort must be made to ensure that setts, especially main setts, are retained on the site. If sett destruction is unavoidable, SNH (Scottish Natural Heritage) can licence the exclusion of badgers from the sett, followed by its immediate destruction. Exclusion can be humanely achieved by a combination of badger-proof fencing and/or specially designed one-way gates that allow the badgers out of the sett area, but prevent their re-entry. A licence will only be issued if there are alternative suitable setts available to the badgers, within the same territory.

One-way badger gates were developed to help ensure that when sett tunnels are closed down under licence, no badgers are harmed or remain trapped underground. One-way gates must only be used under licences issued by SNH

The gates normally constructed of wood, only open outwards allowing badgers to exit but not re-enter the sett. Gates should be fitted tightly into the tunnel entrances and to prevent badgers digging back in around the gate, an apron of heavy-duty chain-link (or similar material) can be attached firmly to the ground around the entrance. Badger gates must always be positioned on existing badger runs, if they are to be effective.

#### **B. Monitoring Activity.**

A simple monitoring technique to determine whether badgers are still present in the sett is to lightly place two small sticks (about 15cms (6") in length) just inside each gate, such that they will be knocked over if a badger passes through. An alternative measure is to attach weak cotton or a strand of grass across the front of the gate using thumbtacks to secure each end to the uprights. Gated setts should then be monitored every three days to determine if badgers have re-entered the sett and gates must be checked to ensure that they swing freely and close properly.

### **C. Availability of Suitable Setts.**

A licence will only be issued if there are alternative setts available. If these are not present, an artificial sett must be provided, but this must be seen as the least preferred option with regard to the badgers' interests. Artificial setts are costly and time-consuming to construct and require careful advance planning. To select a suitable sett location advice must be sought from SNH and the work supervised by a badger expert. Success with artificial setts occurs where they have been located less than 100 metres from the original natural sett, having been constructed at least six months before the badgers are excluded, thereby, giving them time to find and investigate the new sett.

### **D. Timing.**

Disturbing badgers in setts and damaging setts should be avoided completely between the beginning of December and the end of June. Badgers mate throughout the year but pregnancy starts around the end of November or early December. Cubs are born underground usually towards the end of January or beginning of February, emerging for the first time after about eight weeks. Therefore sett exclusion should normally be limited to between the start of July and the end of November.

### **E. Corridors.**

Badgers are creatures of habit and use well-established paths to travel between setts and feeding areas in their territory. The initial badger survey should identify these paths, enabling the development to be planned in such a way that the badgers have undeveloped corridors of suitable habitat to link with other setts and feeding areas out of the site.

### **F. Loss of Foraging**

If a significant proportion of a territory is to be lost to the development, and includes important feeding areas, it may be possible to enhance the foraging value of the remaining territory to compensate for any feeding areas lost. However, supplementary feeding with 'artificial' foodstuffs is not recommended as this can lead to the badgers

becoming largely dependent on humans. A better approach, provided it does not conflict with other natural heritage interests (such as the conservation of species-rich unimproved grassland), is to consider improving the quality of the remaining areas of grassland, through appropriate management, thereby increasing the abundance of earthworms. It is irresponsible to expect badgers to replace lost foraging by feeding in gardens or other amenity areas. This will only lead to animosity from neighbouring landowners, many of whom will not welcome badgers digging up their lawns, vegetable plots and flower-beds.

### **G. Road Safety**

More badgers die on roads than from any other cause. Badgers can be assisted to cross roads safely by the provision of purpose-built underpasses and badger-proof fencing. It is important that such underpasses are located on or close to existing badger paths. When new roads are planned, the proposed measures to protect badgers must be specified as early as possible during the design stage, thereby enabling tunnels and fencing to be fully integrated with features such as drainage, cuttings and embankments. The correct positioning and specification for these structures is essential, otherwise they will be ineffective and a waste of money. Many contractors are unaware of the very fine attention to detail which is required to make badger fencing effective; junctions with minor roads and gates, in particular, can present a challenge to the fencing contractor and badger specialist alike. Needless to say, if badger fencing is required, the services of such a specialist will invariably be essential.

#### **4. Current Badger Status**

Setts have been located in numerous areas surrounding the development site. drawing 905/102 illustrates the current active setts.

11 setts will be disturbed during Phase 0 (from start to quarter 2 2009).

6 setts will be disturbed during Phase 1 (2009 – 2011).

3 setts will be disturbed during Phase 3 (2014 – 2015).

The plan shows only a snap-shot in time and the locations and usage of setts will have to be monitored on a regular basis, with implication for adjustment of the mitigation strategy.

## **5. Proposed Habitat Creation and Phasing Plan**

Badgers in Britain are known to inhabit a range of habitats, but generally speaking there are certain characteristics that badgers will favour, based upon food supply, soil type, slope, cover and altitude. Optimal habitat for badgers will usually possess well drained soil that is easy to dig into but firm enough to prevent the sett from collapsing, a sufficient food supply which is reliable throughout the year, adequate cover near the sett to allow inconspicuous entry and exit. Well-used, established setts are generally found in areas that are free from disturbance, especially by people and domestic animals, in particular dogs.

Badgers generally favour slopes in which to excavate their setts, due to ease of soil removal and better drainage. Badgers setts are usually dug in deciduous woodland, small copses or mixed woodland. This provides good ground cover. Coniferous woodland is rarely used because ground cover is generally scarcer and food supply limited.

The following summarises the proposed phased mitigation for the area to be developed. The details of the phases, see figure 3.8 of the Remediation and Reclamation Earthworks Environmental Statement, 2006.

### **Phase 0: From start to quarter 2 2009**

Approximately 11 setts have been located where badgers must be excluded during this initial period of the remediation work. The badger translocation principles are illustrated in Drawing 905/102 and the proposed detailed mitigation is illustrated in drawings 905/103-106. Red lines indicated the site boundary, blue lines land excluded from mitigation works and green lines the extents of habitat creation.

Two setts exist on the boundary of the development site near zone H2. An area exists within the development site near H2 that is not being remediated and could be used to re-house the badgers. This area will require enhancement with deciduous tree planting and scrub, such as bramble and blackthorn. with a managed grassed area to

maximise habitat diversity. Artificial setts must be provided in this area, and their construction must be completed at least six months before the badgers are to be excluded.

Four setts have been located between the areas of H3 and H9. A corridor is proposed to move the badgers into the adjacent farmland North West of the development area with removal of the reservoir in this area for establishment of broadleaf woodland. Artificial setts must be constructed in this area to encourage the badgers to move from their present locations. It is proposed that the area be planted with new broad-leaved trees and some areas of scrub for example blackthorn and bramble, together with grassed areas which would be managed by regular cutting to provide further feeding habitats. In the field corners woodland should be created with hedgerows being established together with a grazing regime in the fields to maximise biodiversity in the area.

Three setts have been located in and around zone H5. It is proposed that the badgers are moved into the ETF south of the development area. Enhancement around zone M1 would create ideal habitat as this area is hilly and setts may be created artificially into the hillside.

Two setts have been located in woodland to the south of the 'Borrow Area', in the hillside to the north of the site. Current proposals and sett location suggests that the animals can remain safely in place without disturbance. It is proposed, however, to mitigate for the loss of habitat that there is enhancement over the Boghall tip and to the land to the north-west corner of the site where this is currently young (4 - 5 yrs old) coniferous plantation grows here. The tip itself is covered by scattered scrub and neutral grassland, but will be reclaimed and replanted with grassland. It is proposed that a large area of the young coniferous plantation be cleared to allow grassland to develop, which would increase the badgers foraging habitat. The grassland area would have to be managed to maintain short grass (possibly, through grazing), which is ideal for badgers foraging for earthworms – a staple of their diet. Further to this it is proposed that brambles, blackthorn and a coppiced area be introduced to perimeter of this location, thereby increasing the badgers' food supply. Trees may then be replanted in the adjacent farmland to create further habitats.

Tree felling and habitat creation (grassland, scrub areas ((bramble and blackthorn)) and pond construction) must occur at the earliest opportunity so as to establish the new foraging zones for the badgers, as this will encourage them to move to the new locations during this period to the 2<sup>nd</sup> quarter of 2009. Upon completion of these works it is proposed that the creation of one-way gates be used to remove the badgers (see section 2) from their setts at the latest 2008. Upon removal of the badgers the old setts must be destroyed with immediate effect.

### **Phase 1: 2009-2011**

6 setts have been located around the area where phase 1 of the remediation works are to be carried out (around zone E1). It is proposed that the badgers be moved into the area east of the FSCA. The area here must therefore be prepared early with habitat creation such as a grassland and introduction of brambles and blackthorn.

### **Phase 2: 2012-2013**

Badger setts within the Barochan Moss area will not be disturbed and so can be left. However this is a large area of bog land where the existing water table is high. It is proposed at this location to create a wetland habitat that would increase the carrying capacity of the surrounding area by increasing biodiversity. Ponds would be created and in doing so would bring amphibians and other life such as invertebrates that rely on water therefore creating other food sources for the badgers. In parts of this area there are large areas of Rhododendron and the policy here would be to remove these plants and allow further plant species to colonise, thereby increasing the biodiversity of the area.

A policy for this area has been to return it to Alder Carr, i.e. Alder dominated woodland on rich wet to waterlogged soils. This would create a diverse ecosystem, which would increase the biodiversity in the area and by allowing the site to flood would kill the rhododendron without having to use herbicides. These ecosystems have the richest flora, typically including yellow flag iris, cuckoo flower, woody nightshade, marsh marigold, water starwort, yellow pimpernel and various rushes and sedges. The very best sites may have tussock sedge, wood horsetail, or even wood clubrush. These woods generally offer some of the best areas for lower plants -

mosses, liverworts and ferns. In a few places sphagnum moss can be found. They are also the very best areas for invertebrates that find habitats in the waterlogged old logs.

### **Phase 3: 2014-2015**

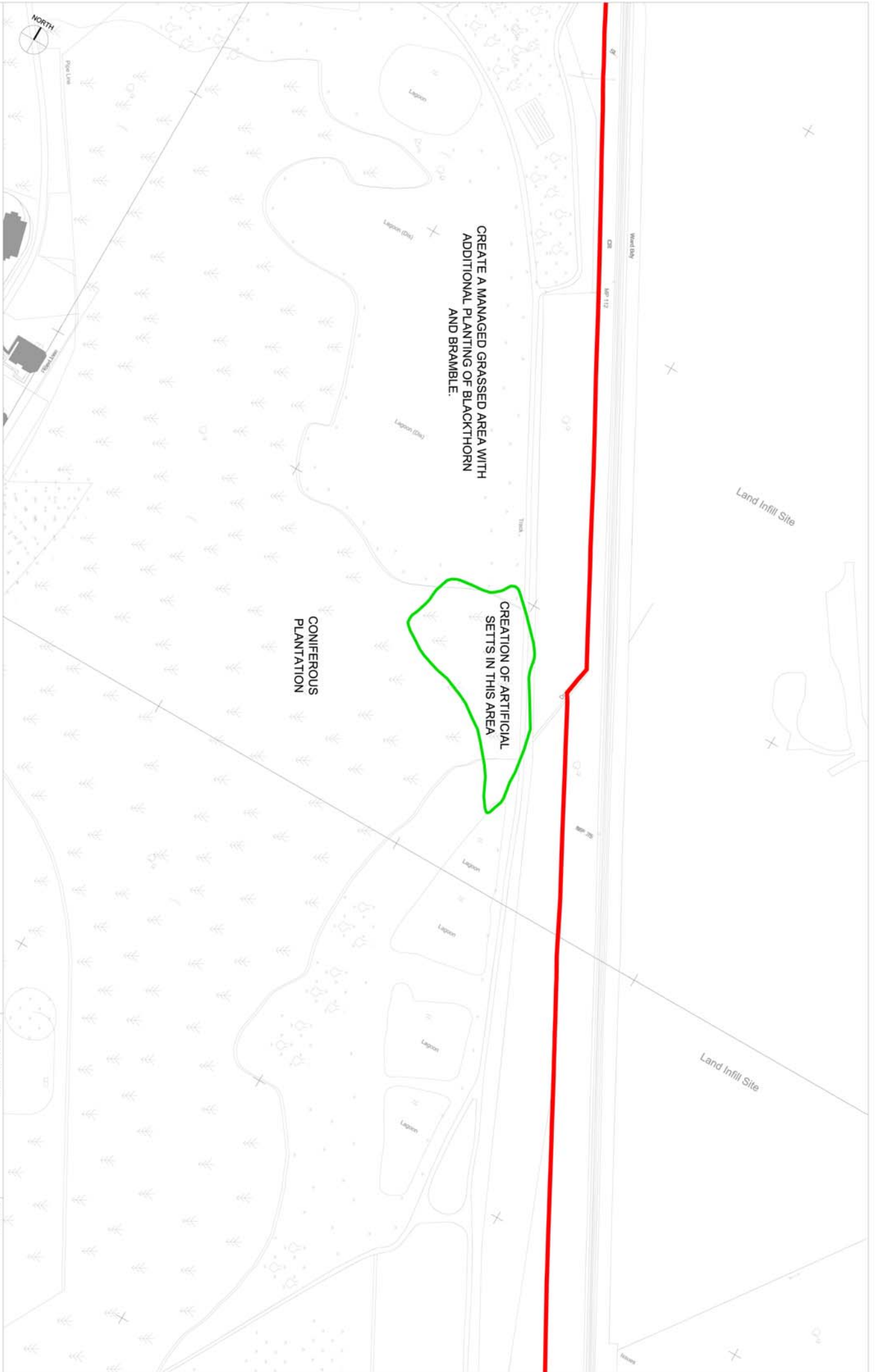
3 setts have been located in zone H15. This location contains historic woodland and the badger setts within this area can be contained. However, further habitat creation is advised as a park is to be developed through this area. The policy here is to enhance the area with zones of short grass and thickets of bramble. The desired outcome is to establish a wildlife corridor so as to allow the badgers to roam and forage freely through this area.

By increasing the carrying capacities of all areas across the site via habitat creation badger territory sizes would be reduced because there would be an increase in food supplies and so foraging activity would be kept to smaller areas.

### **Beyond 2015.**

All remaining Phase work does not involve disturbance and so interference with the remaining badger setts will be minimal.





CREATE A MANAGED GRASSED AREA WITH  
ADDITIONAL PLANTING OF BLACKTHORN  
AND BRAMBLE.

CREATION OF ARTIFICIAL  
SETTS IN THIS AREA

CONIFEROUS  
PLANTATION

Land Infill Site

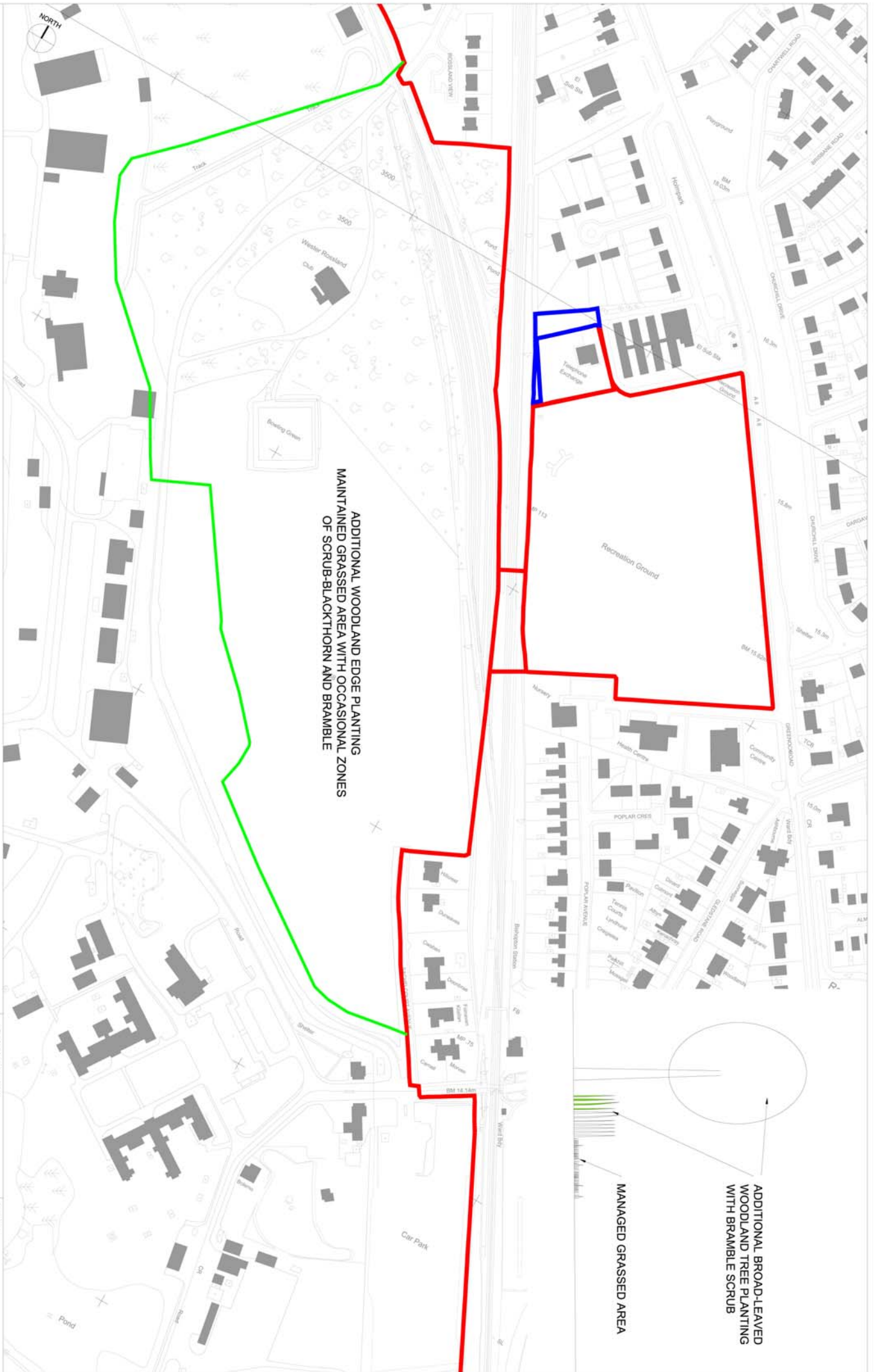
Land Infill Site

**Case Associates**  
 Suite 301 The Mill Farm  
 82 Wood Street Liverpool L1 4 ED  
 Tel 0151 707 0110 Fax 0151 707 0232  
 Email info@caseassociates.co.uk

**Project Info**  
**NEW BADGER HABITAT IN ZONE B**  
 Scale: 1:2500 @ A3  
 Date: 23.06.05  
 Rev: SW

**905/104**

**ROYAL ORDNANCE BISHOPTON  
 REMEDIATION EARTHWORKS**



ADDITIONAL WOODLAND EDGE PLANTING  
 MAINTAINED GRASSED AREA WITH OCCASIONAL ZONES  
 OF SCRUB-BLACKTHORN AND BRAMBLE

ADDITIONAL BROAD-LEAVED  
 WOODLAND TREE PLANTING  
 WITH BRAMBLE SCRUB

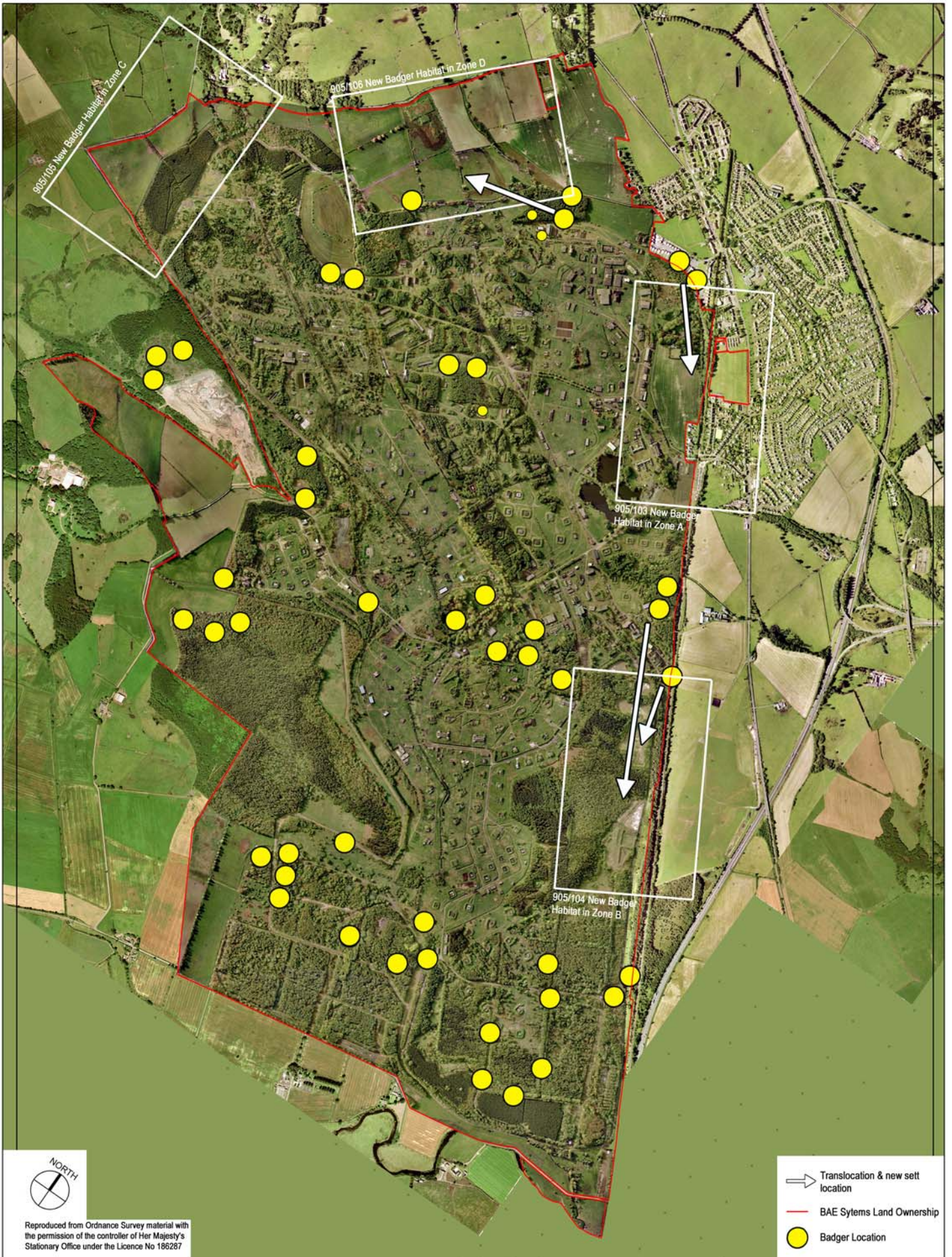
MANAGED GRASSED AREA

Case Associates  
 Suite 301 The Fair House  
 82 Wood Street Liverpool L1 4 ED  
 Tel 0151 707 0110 Fax 0151 707 0232  
 Email info@caseassociates.co.uk

Project No  
 NEW BADGER HABITAT IN ZONE A

Scale 1:2500 @ A3  
 Date 23.06.05  
 Site SW

905/103



Reproduced from Ordnance Survey material with the permission of the controller of Her Majesty's Stationary Office under the Licence No 186287

- Translocation & new sett location
- BAE Sylems Land Ownership
- Badger Location

NOTE  
Locations of badgers supplied by Starling Learning  
August 2006.

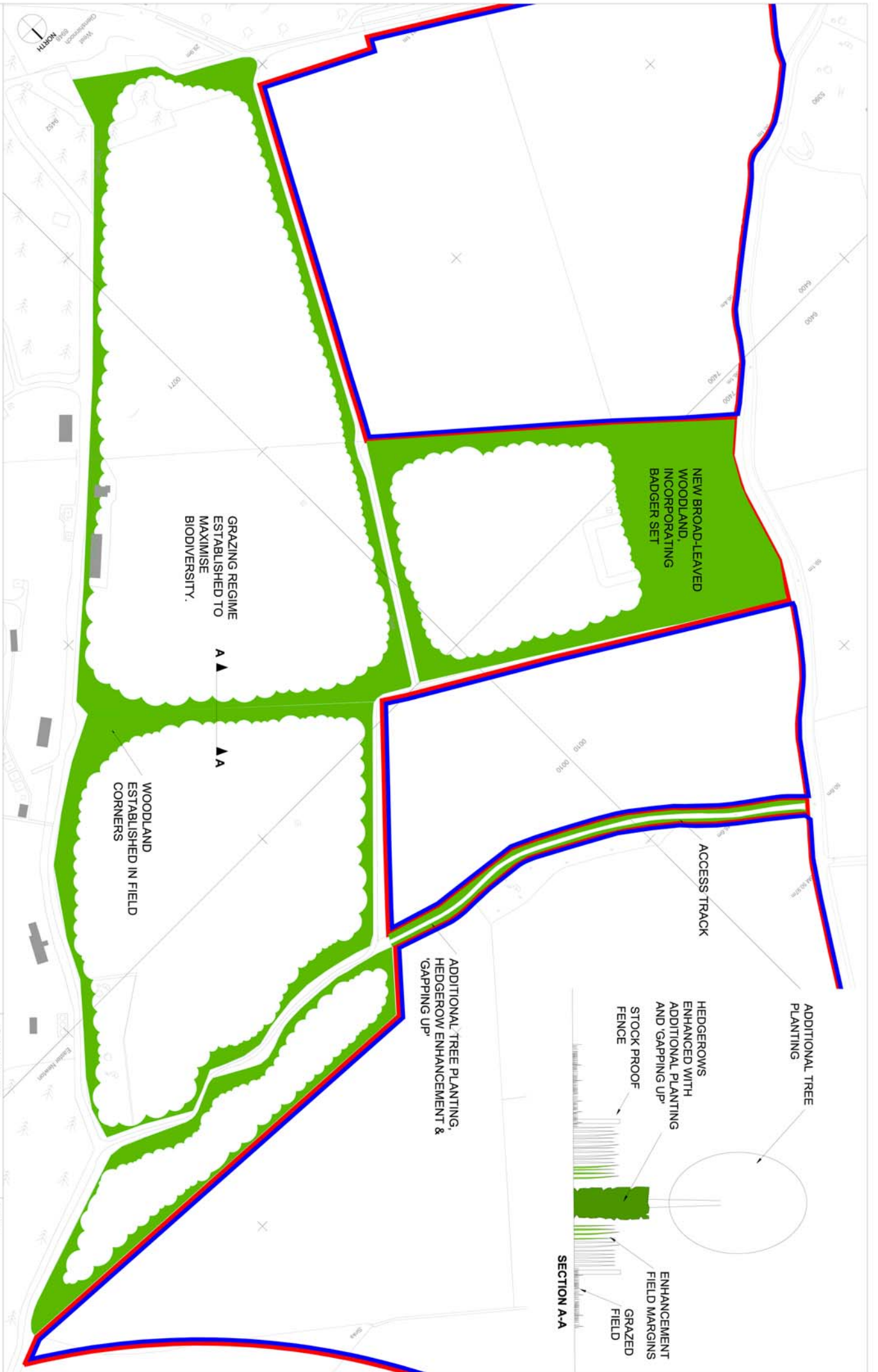
**Cass Associates**  
Studio 104 The Tea Factory  
82 Wood Street Liverpool L1 4DQ  
Tel 0151 707 0110 Fax: 0151 707 0332  
Email: all@cassassociates.co.uk

drawing title  
**BADGER TRANSLOCATION PRINCIPLES**

ROYAL ORDNANCE, BISHOPTON

scale 1:22,500@A4  
date 24.08.06  
dm SW

**905/102**



Case Associates  
 Suite 301 The Mill Farm  
 82 Wood Street Liverpool L1 4 ED  
 Tel 0151 707 0110 Fax 0151 707 0232  
 Email info@caseassociates.co.uk

ROYAL ORDNANCE BISHOPTON  
 REMEDIATION EARTHWORKS

Project Title  
 NEW BADGER HABITAT IN ZONE D

Scale 1:2500 @ A3  
 Date 23.06.05  
 Rev 5/11

905/106