

Llwyn Onn Water Treatment Works

Update ecology report

Dee Valley Water

28 September 2016



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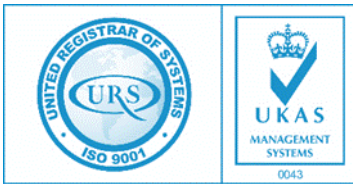
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39000 R8 Rev2	19 th September 2016	Additional reptile survey data added
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1 Introduction

1.1 Terms of Reference

Atmos Consulting Ltd. (Atmos) was commissioned by Dee Valley Water (DVW) to undertake update extended Phase 1 habitat survey and reptile survey of their Llwyn Onn Water Treatment Works (WTW) site located to the south of Wrexham, at approximate Ordnance Survey Grid Reference SJ 357488. In addition Atmos was commissioned to undertake a planning review of relevant planning legislation. The work has been commissioned to inform the proposed redevelopment of the WTW of which part of the works within the WTW are covered under permitted development whilst others parts of the proposed works require planning consent from the local planning authority, Wrexham County Borough Council.

Previous surveys of the site had been completed by Black and Veatch, with a Phase 1 habitat survey and reptile survey completed in 2010^{1,2}. The Phase 1 habitat survey was subsequently updated in 2015 and bat activity surveys were also undertaken in 2015³.

Atmos is also currently working on the Llwyn Onn to Bronwylfa Pipeline project for DVW which connects an existing reservoir at Bronwylfa to the water treatment works at Llwyn Onn. That project is due to be completed in December 2017. Where relevant, information gathered as part of that project has been reviewed against the development proposals for the Llwyn WTW due to our wider knowledge of ecological issues in the local area.

1.2 Survey Area Description

The survey area comprises the Llwyn Onn Water Treatments Works (WTW) and an area immediately to the north of the WTW that is in the ownership of Dee Valley Water. The northern, eastern and southern boundary are bordered by fields of open pasture with an area of broad-leaved woodland present adjacent to the western boundary. The River Clywedog is present 100 m to the east off the site.

The location and survey area boundary are both shown on Figure 1.

1.3 Development Proposals

The proposals include for the:

- demolition of the existing reservoir and installation of two new reservoirs;
- construction of a new pumping station;
- relocation of the orthophosphate dosing point;
- improvement of existing access roads;
- soft landscaping works and planted screening; and

¹ Black and Veatch (2010). Llwyn Onn WTW: Baseline Ecology Report.

² Black and Veatch (2015). Llwyn Onn WTW Bat Survey Report.

³ Black and Veatch (2015). Llwyn Onn WTW Annexe to Baseline Ecology Report.

- pipework and connections associated with the operation of the reservoirs.

To facilitate these works, an area of land to the north of the WTW within DVW's ownership will be used as a temporary carpark with spoil arising from the works undertaken in the WTW deposited within this area. Prior to the depositing of spoil the existing grassland will be stripped and stored on site. Once all spoil has been deposited the stored turves and topsoil will be placed on top of the spoil piles. It is anticipated that all works will be complete by 1st June 2018.

Methodology

1.4 Extended Phase 1 Habitat Survey

The extended Phase 1 habitat survey was completed by an experienced ecologist on 26th August 2016 and broadly followed the methodology detailed in '*Handbook for Phase 1 habitat survey - a technique for environmental audit*'⁴. This entailed classifying and mapping habitat types and collating plant species lists for each of the main habitat types that were identified during the survey. Botanical nomenclature followed that of Stace⁵. During the survey any evidence of protected species, such as badger *Meles meles*, was also recorded.

1.5 Reptile Survey

A reptile survey was undertaken during August to September 2016 with reptile refugia (tins approximately 0.5 m²) placed within areas of suitable reptile habitat (areas of tall/unmanaged grassland) on the 26th August. These were then checked on seven separate occasions for reptiles either basking on or under the refugia.

Table 1 summarises the weather conditions during each of the survey visits.

Table 1: Reptile survey weather conditions

Visit Number	Date	Temperature (°C)	Weather Conditions
1	26.08.16	19.5	60% cloud, wind 3
2	31.08.16	19.5	40% cloud, wind 1
3	02.09.16	22.5	20% cloud wind 1- rain in previous 12 hours
4	05.09.16	19.5	windy 4, no cloud
5	09.09.16	16	80% cloud
6	14.09.16	16	0% cloud, sunny
7	19.09.16	15	60% cloud

Limitations

The Phase 1 habitat survey was undertaken at an appropriate time of year, when most plants are growing and easily identifiable. It is acknowledged that some early flowering species may not have been visible during the survey. However, this is not considered to have presented any significant limitation to the identification of habitats.

The reptile survey was carried out during a contracted period and all surveys, except visit 3, were undertaken during appropriate weather conditions. During visit 3 there had been rain in the previous 12 hours, and it is considered that owing to the wet ground reptiles would have still used the refugia despite a temperature of 22.5°C. The reptile

⁴ JNCC (2010). Handbook for Phase 1 habitat survey - a technique for environmental audit. Revised re-print. Joint Nature Conservation Committee.

⁵ Stace, C (2010). New Flora of the British Isles, 3rd edition. Cambridge University Press.

survey was carried out at a time of the year when reptile populations are at their peak, with young having been born or hatched earlier in the year. It is therefore not considered that the survey was significantly constrained.

2 Results

The results of the extended Phase 1 habitat survey and reptile survey are presented below and should be read in conjunction with Figure 1, which is provided to the rear of the report. Target Notes shown on Figure 1 are described in the text.

2.1 Extended Phase 1 Habitat Survey

The water treatments works comprise a large covered reservoir, settlement lagoons and a number of buildings (pumping station, sub-station, office, etc.) and associated areas of hardstanding. Vegetation is limited to areas of mown grassland surrounding the various parts of the sites infrastructure and scattered trees and scrub around the perimeter.

The area to the north of the WTW site largely comprises an area of unmanaged grassland, which is bordered by hedgerows and mature trees. This area is part divided from the WTW by a narrow tree belt of semi-mature to mature broad-leaved plantation woodland.

Further details on the habitats recorded on site are provided below.

2.1.1 Woodland

Plantation broad-leaved woodland

A narrow belt of mature broad-leaved plantation woodland is present north of the WTW. Species comprise a mix of hazel *Corylus avellana*, beech *Fagus sylvatica* and hawthorn *Crataegus monogyna*. The ground flora was relatively sparse at the time of survey, with the woodland floor mainly comprising leaf litter.

2.1.2 Scrub

Adjacent to the northern boundary is an area of scrub which has developed from an unmanaged hedgerow. Hawthorn and blackthorn *Prunus spinosa* are the dominant species. Bramble *Rubus fruticosus* agg. is locally present too.

2.1.3 Grassland

Semi-improved neutral grassland

The area to the north of the site supports a species-rich grassland. Although a formal National Vegetation Classification (NVC) survey was not undertaken, the grassland shows affinity with the MG5 *Cynosurus cristatus* – *Centaurea nigra* grassland community in the NVC, which is a priority habitat in Wales.

Species recorded included, but were not limited to, abundant to frequent common knapweed *Centaurea nigra*, Crested dog's-tail *Cynosurus cristatus*, Yorkshire fog *Holcus lanatus*, oxeye daisy *Leucanthemum vulgare*, bird's-foot trefoil *Lotus corniculatus*, tansy *Tanacetum vulgare*, yarrow *Achillea millefolium*, wild carrot *Daucus carota*, perforated St Johns-wort *Hypericum perforatum*, wild clary *Salvia verbenaca*, yellow rattle *Rhinanthus minor*, lady's bedstraw *Galium verum* and greater burnet *Sanguisorba officinalis*.

The areas of grassland which surround the buildings and waterbodies are currently managed as short, mown grassland (e.g. Target Note 3 on Figure 1), although species such as ox-eye daisy, common knapweed and bird's-foot trefoil occur. Grass species present include abundant perennial rye-grass *Lolium perenne*, with frequent red fescue *Festuca rubra* and cock's-foot *Dactylis glomerata*.

2.1.4 Open water

There are three areas of open water present on site; all are associated with the treatment process and contain no emergent or submerged aquatic plants. As described above, short-sward grassland characterise the riparian zones, although bramble also occurs.

2.2 Invasive Species

Himalayan balsam *Impatiens glandulifera* is present along the western boundary and north-western corner of the area of land to the north of the WTW and scattered along the southern and western boundary of the WTW. It is likely to have colonised the site via the River Clwyddog corridor approximately 100 m west of the WTW. Himalayan balsam is listed on Schedule 9 of the Wildlife and Countryside Act 1981, as amended, which makes it an offence to cause the spread of this plant into the wild.

2.3 Protected Species

2.3.1 Breeding birds

The areas of grassland, the belt of plantation woodland and hedgerows within the area of land to the north of the WTW, as well as scattered trees within the WTW site itself, all have the potential to support breeding birds.

Nesting birds and their nests receive protection under the Wildlife and Countryside Act 1981, as amended, which makes it an offence to intentionally take, damage or destroy the nest of any wild bird whilst it is in use or is being built.

2.3.2 Great crested newts

Great crested newts have been recorded within 500 m of the site. However, the geographic locations of these records are separated from the site by the presence of significant dispersal barriers, including the River Clywedog to the south and west, and the Cefn road, a busy main road into Wrexham, to the north.

2.3.3 Reptiles

A shed grass snake *Natrix natrix* skin was previously recorded on site, during the reptile survey undertaken in 2010. Although no reptiles were recorded during the present survey it is considered that the habitats within the area of land to the north of the WTW provide suitable habitat to support grass snakes and other common reptile species, such as slow worm *Anguis fragilis* and common lizard *Zootoca vivipara*.

The common reptile species listed above receive partial protection under the Wildlife and Countryside Act 1981, as amended, and it is an offence to intentionally harm or kill a reptile.

2.3.4 Bats

The bat surveys undertaken in 2015 found no direct evidence of roosting bats within any of the buildings on site. However, they did find possible evidence (butterfly wing) to suggest that the old chemical treatment building on site supported small number of roosting bats, but an emergence survey undertaken in 2015 recorded no evidence of bats roosting within the building. Subsequent to that survey the building was demolished.

Currently no buildings or trees with potential to support roosting bats are present within the site. However, the area of grassland, the belt of plantation woodland and hedgerows within the area of land to the north of the WTW, as well as scattered trees within the WTW site, potentially provide foraging habitat and commuting routes for bats.

All bats are protected under provisions within the Wildlife and Countryside Act 1981, as amended, and by the Conservation of Habitats and Species Regulations 2010. As such it is an offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time); and to
- Intentionally or recklessly obstruct access to a bat roost.

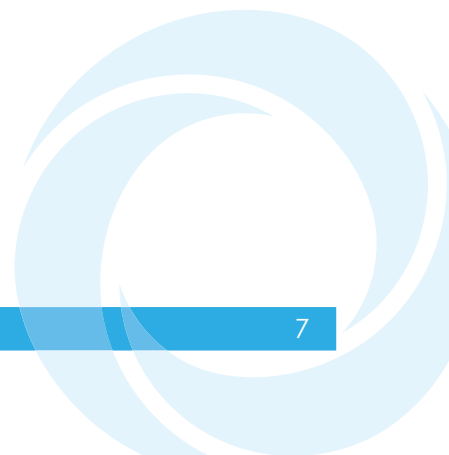
2.3.5 Badgers

In the 2010 surveys a disused badger sett was recorded within the belt of plantation broad-leaved woodland, although no other evidence of badger activity was recorded.

During the Phase 1 habitat survey reported here, and the subsequent reptile survey visits, evidence of badger activity was recorded within the WTW. This comprised two wasp nests which had been dug out and eaten by one or more badgers. The locations of these nests are shown as Target Note 1 and 2 on Figure 1. A pathway leading to the west of the WTW was also recorded, and shown as Target Note 4 on Figure 1, with guard hairs present on the lower string of some barbed wire fencing.

No other evidence of badger, such as latrines or any active sett, was recorded within the survey area. The disused sett recorded within the area of plantation woodland in 010 remains disused, and the entrance holes have now been completely infilled. Badgers are therefore considered to use the WTW for foraging, but no setts are currently present.

Badgers and their setts are protected under the Protection of Badgers Act 1992.



3 Conclusions and Recommendations

Habitats within the WTW have limited ecological value and do not pose a significant constraint to the development of the site. Protected species are present, and appropriate mitigation should be implemented to prevent significant impacts from the development.

The area of grassland to the north of the WTW was developed as part of the WTW works completed in 2013, and the field subsequently restored. It is of moderate ecological value, although it potentially qualifies as a habitat of principal importance under section 42 of the Natural Environment and Rural Communities (NERC) Act 2006. Although this designation does not confer any direct legal protection or requirement to manage this habitat, the section 42 list of priority habitats is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act 2006 "to have regard" to the conservation of biodiversity in all their activities. The Environment (Wales) Act 2016 enhances the current NERC Act duty to require all public authorities, when carrying out their functions in Wales, to seek to "maintain and enhance biodiversity" where it is within the proper exercise of their functions. It is considered that the current proposals will only result in a temporary impact on a small part of the area of grassland, with topsoil and turf stored on site and replaced on top of the areas of deposited spoil. Given the recent origin of the grassland, it is likely that the species present within the grassland will be resilient to this level of disturbance and reinstatement works and that the current biodiversity value of the site will rapidly be restored.

Post development, consideration should be given to the future management of this area to prevent scrub encroachment and maintain or increase its ecological value. This could be in the form of an annual hay cut with all arising removed from site to prevent a build-up of nutrients and to enable germination of an increasing range of grassland species. The current Bronwyflla to Llwyn Onn pipeline is covered by a site-wide great crested newt licence issued by Natural Resource Wales (NRW), and the area of grassland to the north has been put forward as mitigation/ enhancement for newts as part of this licence. Management of the site must therefore be sympathetic to the enhancement measures specified within the Bronwyflla to Llwyn Pipeline great crested newt licence.

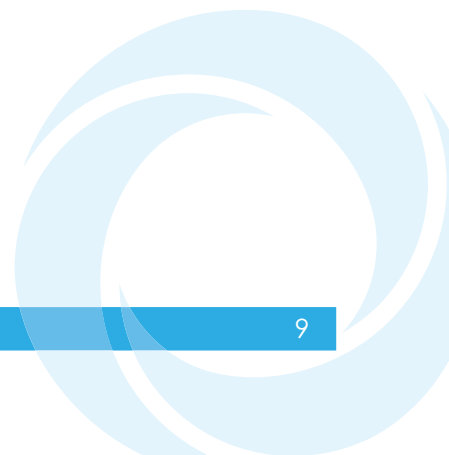
As the vegetation within the site has the potential to support nesting birds it is recommended that works are undertaken outside of the breeding bird season (typically considered to be March to August inclusive). If this is not possible then an ecologist should check for nesting birds within 24 hours of vegetation removal being due to commence. If an active nest is recorded then works in the vicinity will need to be delayed until the nest has failed or the young have fledged.

As reptiles are potentially present within the area of grassland to the north of the WTW it is recommended that prior to works commencing the grassland is subject to a directional stim whereby the grassland is cut to a height of approximately 150 mm in a northward direction to encourage reptiles to disperse from the area. At least 24 hours later the grassland should be mown to ground level, again in a northwards direction. During works all areas of grassland impacted by the proposals should be maintained at ground level to dissuade reptiles from entering. Works should be undertaken when reptiles are active, typically April to October on relatively warm (above 10°C), sunny

days. It is not recommended that vegetation removal is undertaken during the winter months owing to the potential for hibernating reptiles to be present.

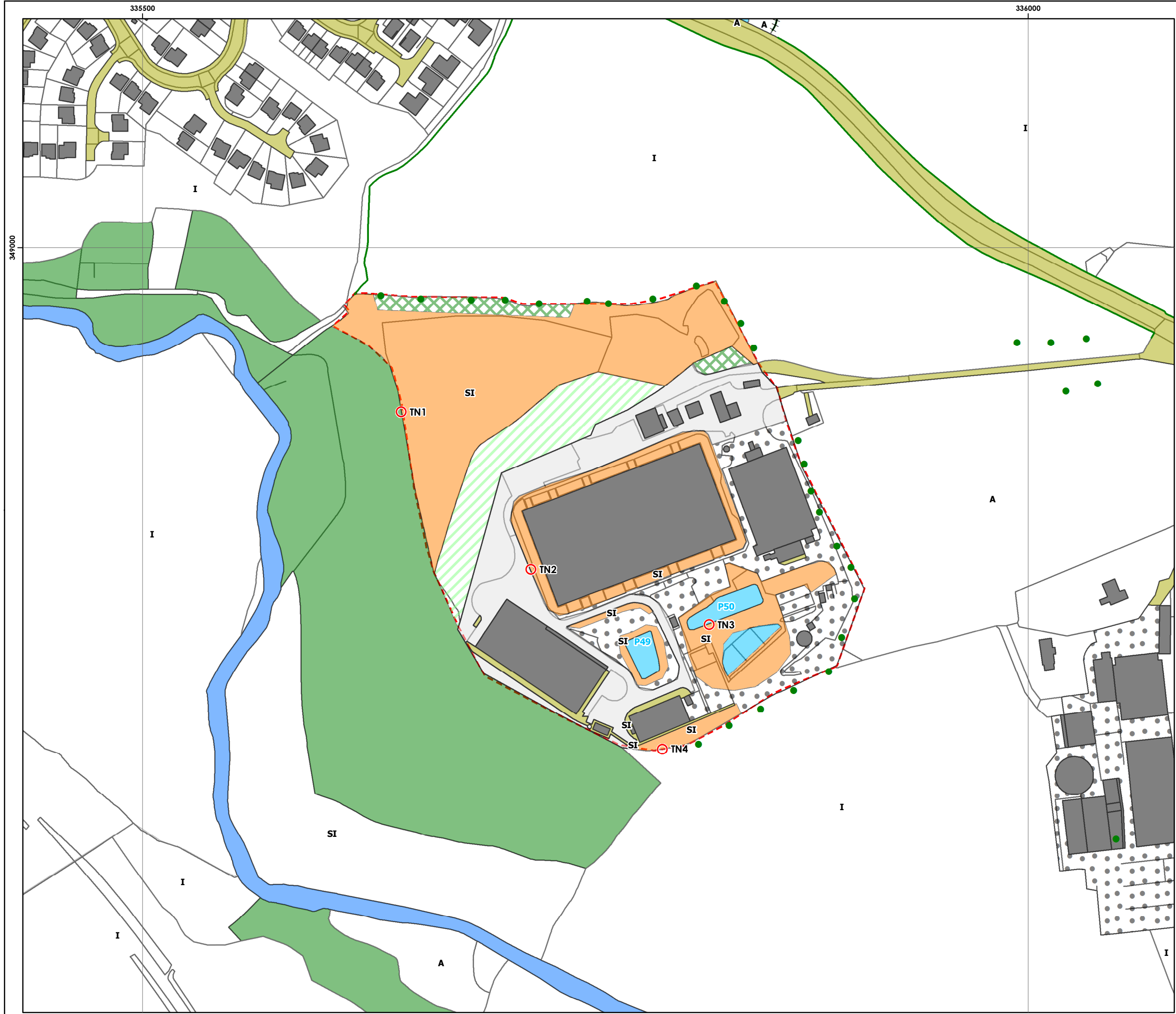
Badgers are foraging and commuting through the site and it is therefore important that any excavations are covered over or infilled at the end of each day to prevent badgers falling in and becoming trapped in any such excavations.

As Himalayan balsam is present on site it is recommended that methods to prevent the dispersal of this plant are instigated. As this plant is dispersed by seed it is recommended that vehicle access to, and soil disturbance on the western boundary and north western corner of the area of grassland to the north of the WTW is prevented. If vehicles do enter this area then a wheel wash or similar should be installed at the exit to the site.



Figures

Figure 1 Extended Phase 1 habitat survey



Llwyn-Onn Water Treatment Works



Figure 1
Llyn-Onn Phase 1 Habitat
Survey Results

- Key
- Survey area
 - Target Note
 - Broadleaved Parkland/scattered trees
 - Intact hedge - species-poor
 - Fence
 - Boundary removed
 - Broadleaved woodland - semi-natural
 - Coniferous woodland - plantation
 - Scrub - dense/continuous
 - SI Neutral grassland - semi-improved
 - I Improved grassland
 - SI Poor semi-improved grassland
 - Standing water
 - Running water
 - A Cultivated/disturbed land - arable
 - Buildings
 - Bare ground
 - Hardstanding
 - Track



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Metres

N

Scale @ A3:
1:2,000

UKAS

ISO 9001

2015

UKAS

ISO 14001

2015

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