



ARBOR VITAE

ECOLOGY • FORESTRY • LAND USE



ECOLOGICAL IMPACT ASSESSMENT

LAND AT OVERTON-ON-DEE

Project name: Overton-on-Dee, Wrexham

Grid Reference: SJ37624184

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Requested by: Pickstock Homes

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1 INTRODUCTION

1.1 BACKGROUND TO DEVELOPMENT

Planning permission will be sought for the construction of 44 new residential properties on a piece of land at Overton-on-Dee, Wrexham.

Arbor Vitae Environment were commissioned by Pickstock Homes to undertake an Ecological Impact Assessment in order to assess the impact of the development on habitats and protected species.

1.2 SCOPE OF SURVEY

The survey is primarily designed to:

- Identify and record habitats and important ecological features on site;
- Evaluate the potential of the proposed development site to provide opportunities for protected species;
- Determine any likely impact which the development and landscape proposals may have on these.
- Identify opportunities for the enhancement of habitats and biodiversity features on site.

1.3 KEY PRINCIPLES

All ecological surveys conducted by Arbor Vitae Environment Ltd are underpinned by the following key principles, as outlined by CIEEM (2018):

Avoidance - Seek options that avoid harm to ecological features (for example, by locating on an alternative site).

Mitigation - Adverse effects should be avoided or minimized through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation.

Compensation - Where there are significant residual adverse ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.

Enhancements - Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

2 SITE DESCRIPTION

2.1 LOCATION, LANDSCAPE, AND BACKGROUND

The village of Overton is located between Ellesmere and Wrexham, just over the north Shropshire border. The land surrounding the village is a mixture of agricultural arable, permanent pasture and semi-natural broadleaved woodland. The development site currently sits adjacent to existing residential properties at the west boundary.

The proposals will include 44 dwellings, detached and semi-detached, some with garages, public open space and all associated infrastructure.

3 SURVEY METHODOLOGY

3.1 DESK STUDY

An initial desk study was composed to gain background information regarding any protected species or designations within the area. The main sources of information were MagicMap, Lle Geoportal and NBN Atlas. Records were obtained from Cofnod for a 1km search around the site, to include protected species and sites.

3.2 SITE SURVEY

A site visit was made on 07/10/2022. The survey was carried out in accordance with CIEEM (2017) best practice guidelines. The objective of the survey was to find and record any signs of use by protected species and to note the habitat features present.

An assessment of the available habitats both on and adjacent to the site led to consideration of the potential of the site for the following protected species:

- Badger
- Bats
- Breeding birds
- Great Crested Newt
- Otters
- Reptiles

The survey methodology was tailored to evaluate the area for these species in the following ways:

Badger

An area within 50 metres of the site was closely searched for the following signs of badger activity:

- Setts,
- Tracks and footprints,
- Latrines,
- Snuffle holes.

Bats

The site was assessed in terms of its suitability to support bat species. Hedgerow habitat and nearby potential habitat were assessed and recorded and potential impacts from the proposals considered.

Breeding birds

The site was assessed in terms of its suitability to support breeding bird populations. Hedgerow habitat and nearby potential habitat were assessed and recorded.

Great crested newt

A desk study and a ground search were conducted to search for any areas of open water within 250 metres. Waterbodies were then assessed based on the Habitat Suitability Index for great crested newts (Oldham et al., 2000 and ARG UK, 2010).

Otter

Any water courses within the area and appropriate terrestrial land were searched for the following field signs:

- Spraint,
- Footprints,
- Feeding remains.

Reptiles

The site was assessed based on its suitability to support reptile populations including connections to terrestrial land from water and suitable resting habitat nearby.

3.3 PERSONNEL

The survey was carried out by Phillipa Stirling MSc ACIEEM: Ecologist. Natural Resources Wales bat licence number: S091037-1 and GCN licence number: S089109-1.

3.4 CONSTRAINTS

Breeding birds would not have been present at the time of the survey but previous nesting and appropriate nesting sites would have been apparent.

4 SURVEY RESULTS

4.1 DESK STUDY

The desk study found that within 2km of the site there were the following designations:

Name	Designation	Distance from site
River Dee and Bala Lake	SAC, SSSI	0.5km
Cloy Brook Pastures	SSSI	1.3km
Neile's Wood	Wildlife Site Restored Ancient Woodland	0.2km
Dee Banks Wood	Wildlife Site	0.2km
Blake's Wood	Ancient Semi-Natural Woodland	1.4km
Helt Wood	Restored Ancient Woodland	0.6km
Argoed Wood	Restored Ancient Woodland	0.6km
Caerowlin Wood	Ancient Semi-Natural Woodland	1.5km
Castle Wood, Round Wood, Asney Wood, Gwernheylod Wood	Restored Ancient Woodland	0.9km
The search included Ramsar, SSSI, SAC, SPA, LWS, NNR and LNR. ¹		

Results from the desk study revealed that within a 1km radius of the proposed development site the following protected species have been recorded:

Species	Distance	Protection
Mammals		
Otter	0.5km	European Protected Species, Wildlife and Countryside Act 1981.
Badger	0.5km	Protection of Badgers Act 1992, Wildlife and Countryside Act 1981.

¹ SSSI: Site of Special Scientific Interest, SAC: Special Area of Conservation, SPA: Special Protection Area, LWS: Local Wildlife Site NNR: National Nature Reserve, LNR: Local Nature Reserve.

Common pipistrelle	0.1km	European Protected Species, Wildlife and Countryside Act 1981.
Hedgehog	0.2km	s.41 NERC Wildlife and Countryside Act 1981.
Birds		
Fieldfare Barn owl Kingfisher Kestrel	0.3-1km	Wildlife and Countryside Act 1981.
Amphibians		
Great crested newt	1.1km	European Protected Species, Wildlife and Countryside Act 1981.

4.2 HABITATS ON SITE

All habitats are classified using JNCC's Phase 1 Habitat Survey Handbook (JNCC, 2010).

Improved grassland

The site is dominated by improved grassland habitat which is regularly grazed and/or mown. Species recorded within the grassland during the survey were: perennial ryegrass, annual meadow grass, cock's foot, Yorkshire fog, white clover, creeping buttercup, dandelion, ribwort plantain, broad leaved dock, shepherd's purse and chickweed. The sward is uniform in height across the field. Areas around the edges of the field, near hedgerows and underneath trees, concentrations of common nettle and dock sp. are found as a result of livestock sheltering/nutrient build up.

Hedgerow & trees

Hedge 1: borders the adjacent tennis courts and bowling green. Made up of hawthorn, blackthorn and ash with ivy and bramble growing through. The ground flora is limited to cleavers, creeping buttercup, common nettle and cock's foot. The hedge is cut into a uniform box profile.

Hedge 2: a mature hedge dominated by hawthorn. Other species include: blackthorn, hazel, holly and sycamore. Ivy and bramble are present and the hedge is around 2m wide in places with hollow sections made by livestock seeking shelter. The ground flora is mostly bare, with some common nettle and arum recorded in localised patches. There are some early sycamore trees within this length of hedge which are in good condition. The hedge is tall (5m) and not kept in a box profile.

Hedge 3: a species-poor hedge consisting of hawthorn and blackthorn with hazel, sycamore and elder present in low density. One mature oak tree present at the north end with multiple potential rooting features and an owl box mounted on the north side.

Hedge 4: a hawthorn hedge which runs along the edge of a planted wood. Blackthorn, ivy and bramble present. Ground flora consisting of: cleavers and common nettle.



Beyond the south boundary in neighbouring gardens there are several trees to include: one mature oak, three silver birch and two young sycamore.

4.3 ADJACENT HABITATS

Planted woodland

A small plantation sits at the north boundary of the site, consisting of a mixture of young broadleaf and coniferous trees. Species include: oak, sycamore, hazel, silver birch, horse chestnut, Corsican pine, ash, rowan, elder.

Buildings, hardstanding

Land to the west and south of the site is dominated by existing residential properties with associated driveways, footpaths and road systems.

Improved grassland

Land to the east and north of the site is dominated by permanent pasture of the same composition as the survey site.

4.4 PROTECTED SPECIES

Badgers

no evidence of badger activity was found within the site or surrounding search area.

Bats

The majority of the site provides low quality habitat for bat species. There is one mature oak tree at the north east corner of the site within Hedge 3 which provides moderate-high potential as a bat roost. Features suitable for use by bats include cracks in the limbs, rot holes and loose bark.

Breeding birds

Potential nesting sites for wild birds are limited to the peripheral hedgerows and the small block of planted woodland to the north of the site.

Great Crested Newt

A total of 6 ponds are mapped within 500m of the site boundary. GCN recorded 1.1km from the site. The areas are concentrated to the south east of the site:

1. An area beneath mature trees to the north of Station Road. This area does not hold water and there is no pond present.
2. A dirty water pit for farm and slurry run-off. Not a pond.

3. A shallow depression in an improved grassland field which floods seasonally. No discernible features of a pond.
4. An area beneath mature trees which rarely holds water and remains shaded all year. No suitable aquatic habitat for GCN and not a pond.
5. Two areas mapped as ponds on the south side of Station Road, 400m from the site. No access to the ponds was possible but aerial imagery suggests that these areas are wooded and/or dry.

A further two ponds appear on some mapping platforms at the south east corner of the site boundary. Both of these ponds were filled in when four residential dwellings were built on the plot of land under consent P/2016/0504. No ponds exist in this area now.

There are no ponds present within a 250m radius of the site. The terrestrial value of the site to GCN is sub-optimal. The improved grassland offers very limited shelter or foraging opportunities and many of the hedgerow bases have been damaged by grazing livestock therefore offering poor suitability as places for brumation.

Otter

The closest record of otter to the site is 0.5km to the south west. There is no suitable habitat available on site for otter.

Reptile species

There are no records of reptiles within 1km of the site and the habitats on site do not provide suitable terrestrial opportunities.

5 POTENTIAL ECOLOGICAL IMPACT

5.1 HABITAT ASSESSMENT

Improved grassland

The proposals will result in the loss of approximately 2 hectares of improved grassland. The habitat in its current state offers limited opportunities to wildlife due to a lack of diversity or flowering species. The proposals will not result in the loss of protected or priority habitat.

Hedgerow & trees

The proposed plan aims to retain all hedgerow and trees around the periphery of the site. The mature oak (tag 0080 on AIA plan) at the north east corner is in good condition with high value to wildlife. An owl box is installed in the tree and there are numerous potential

roosting features for bats. The tree should be retained and protected throughout development.

5.2 PROTECTED SPECIES ASSESSMENT

Badger

There is no evidence to suggest that badgers are active on or adjacent to the site. The proposals will have no impact upon local badger setts/individuals.

Bats

If all hedgerow and trees are retained, no further survey work would be required and mitigation for bats would centre on ensuring that artificial lighting on the site is designed sympathetically for nocturnal wildlife.

If the mature oak tree at the north east corner cannot be retained, bat activity surveys would be required before any work to remove the tree can be completed. Surveys would be required between May and August with a minimum of two surveys to include dusk and dawn visits.

Breeding birds

Nesting opportunities at the site are limited to hedgerows. There are no plans to remove hedges and therefore the work is unlikely to have any impact upon breeding birds. Precautionary measures will be adopted on site to ensure any residual risk is removed.

Great crested newt

There are no ponds within 250m of the site and the closest record of GCN originates from a set of ponds approximately 1.1km north east. Results from the Cofnod search confirm that there are no records of GCN within 1km of the site boundary. The land to be developed offers sub-optimal terrestrial opportunities for GCN and it is highly unlikely that the proposals will have any impact upon the species.

The status of two ponds 400m south is unknown although all available evidence suggests that these areas are wooded and unlikely to hold water year round. The terrestrial habitat surrounding both (improved grassland) also reduces the likelihood of them providing suitable aquatic opportunities for GCN. Station Road separates the site from the land to the south, as well as new residential development, forming a terrestrial barrier to dispersal.

The proposals are highly unlikely to cause an offence under the relevant legislation given that;

- The existing improved grassland habitat provides sub-optimal terrestrial opportunities for GCN. The main field site does not provide suitable refuge sites or brumation chambers and the open nature of the land makes it unsuitable for dispersing GCN,
- The development will have no impact upon known breeding sites for GCN nor will it affect any core terrestrial habitat closely associated with breeding ponds,
- Studies have demonstrated that 95% of all summer refuges of GCN fall within 63m of their summer breeding pond (Jehle, 2000). Subsequent studies also found that capture rates of GCN were at their highest within 50m of a breeding site with a significant reduction in capture rates beyond 100m (Cresswell and Whitworth, 2004).
- The generic Risk Assessment for Mitigation Licences estimates that an offence would be 'highly unlikely' based on the loss of 2ha of land more than 250m from a known breeding pond.

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	1 - 5 ha lost or damaged	0.04
Individual great crested newts	No effect	0
Maximum:		0.04
Rapid risk assessment result:		GREEN: OFFENCE HIGHLY UNLIKELY

Otter

The proposals will have no impact upon habitats which provide suitable terrestrial opportunities for otter nor land near to watercourses in use by this species.

Reptile species

Provided that the current management regime continues on the land, the site will continue to provide unsuitable terrestrial habitat for reptile species.

6 AVOIDANCE, MITIGATION AND ENHANCEMENT

6.1 HABITAT MITIGATION

The loss of 2ha of improved grassland will have limited impact upon wider ecological systems. The proposed site plans will include the allocation of 0.4ha of open grassland which will provide high quality, species-rich grassland. Although not equal to that being lost, creation of higher quality habitat will provide a betterment with regard to pollen and nectar resources on site which will create biodiverse pockets amongst the development.

6.2 PROTECTED SPECIES MITIGATION

Bats

The following guidance is taken from the Bat Conservation Trust document “Bats and Artificial Lighting in the UK” and will be incorporated into any lighting designs for the site:

- Hedgerows and key habitat features including mature trees on the site will not be illuminated in order to retain dark movement corridors for nocturnal wildlife.
- Any exterior security or decorative lights to be installed on the development site will be less than 3 m from the ground and fitted with hoods to direct the light below the horizontal plane, at an angle of less than seventy degrees from vertical, and shall not be fixed to, or directed at, bat boxes or gables or eaves.
- Security lighting will be set on motion sensors with short timers (<1 minute) and will be LED with a passive infrared trigger.
- Lighting must be less than 3 lux at ground level and there shall be no light splay exceeding 1 lux along buildings, eaves or roof or adjacent hedgerows or trees.
- External lights will be hooded and directed toward the ground to reduce upward light spill.
- A warm white spectrum will be adopted throughout the scheme to reduce blue light component (<2700Kelvin).
- Internal luminaires will be recessed where installed in proximity to windows to reduce glare and light spill. LED luminaires will be used internally where possible due to their sharp cut-off, lower intensity, and dimming capability.
- Luminaires will always be mounted horizontally with an upward light ratio of 0%.

Breeding birds

A thorough ground inspection should be completed prior to works commencing on site if works start between 1st March and 31st August (inclusive) in any given year. If breeding

birds are found, an exclusion zone of 5 metres should be implemented and maintained until breeding is complete and the fledglings have left the nest.

If any hedgerow removal is necessary, a thorough inspection of the section of hedgerow should be carried out to check for breeding birds it works start between 1st March and 31st August (inclusive).

Great crested newt

In order to remove any residual risk to amphibians, a set of Reasonable Avoidance Measures will be adopted as per Appendix 2.

6.3 ECOLOGICAL ENHANCEMENT

A nest box scheme will be adopted throughout the site. All detached garages will be built with 2 build-in wildlife boxes to be retained as permanent features throughout the lifetime of the buildings. There are 22 detached garages on site and therefore 44 new permanent wildlife features will be created. Each garage will include two of the following options with the final positioning to be agreed with the project ecologist:

- 1SP Schwegler (or similar approved Woodcrete) house sparrow terrace with a double or triple brood chamber.
- 2FR Schwegler (or similar approved Woodcrete) bat tube with an open entrance for 'self-cleaning'. These boxes need to be 2m above ground level.
- Clay bee brick for solitary bee species including red mason and leafcutter bees, both of which are non-aggressive and therefore suitable for living in close proximity to humans. These bricks will be at least 1m from the ground on a south facing wall.
- Three large Woodcrete insect shelters will be positioned along the east boundary of the site, near to existing hedgerow.

Bee brick.	1SP sparrow terrace.	2FR bat tube.	Insect shelter
			

Hedgehog highways will be implemented throughout the site, especially within garden plots which are enclosed by close board fencing. Each garden will be fitted with at least one 13x13cm gap at the base of the fence with the final positioning to be agreed with the project ecologist. Each hole will be fitted with a 'Hedgehog Highway' sign to ensure they are not blocked up by residents.

The People's Trust for Endangered Species 'Hedgehog Street' initiative is an advocate for this method: <https://www.hedgehogstreet.org/help-hedgehogs/link-your-garden/>



Individual trees will be planted throughout the scheme as part of the landscaping plan. There are many benefits to planting trees within residential developments including: flood reduction, improved air quality, migrating the urban heat island, noise reduction, biodiversity and social benefits (Woodland Trust, 2019).

The following species will be used amongst houses: field maple, rowan, bird cherry, and common alder. Silver birch, large leaved lime and common oak will be used within the POS as there is more room for growth and less chance of negative interaction with residents. A final landscaping plan will be agreed with the project ecologist.

Public Open Space will occupy the south east corner of the site with approximately 0.3ha allocated for this. The area will be a mixture of grassland, individual trees and swales created for the on-site drainage. The area of grassland will be re-seeded with a species rich mixture suitable for amenity spaces with an 80:20 grass to wildflower ratio. The grassland will be maintained as required, with the edges left to grow and flower to provide nectar and pollen resources for invertebrates.

7 SUMMARY

Planning permission will be sought for the construction of 44 new residential properties on a piece of land at Overton-on-Dee, Wrexham. Arbor Vitae Environment were commissioned by Pickstock Homes to undertake an Ecological Impact Assessment in order to assess the impact of the development on habitats and protected species.

- The proposals will result in the loss of approximately 2 hectares of improved grassland. The habitat in its current state offers limited opportunities to wildlife due to a lack of diversity or flowering species.
- The proposed plan aims to retain all hedgerow and trees around the periphery of the site. It may become necessary to remove the mature oak at the north east corner of the site. If so, further survey work with regard to protected species would be required.
- There is no evidence to suggest that badgers are active on or adjacent to the site. The proposals will have no impact upon local badger setts/individuals.
- If all hedgerow and trees are retained, no further survey work would be required and mitigation for bats would centre on ensuring that artificial lighting on the site is designed sympathetically for nocturnal wildlife. If the mature oak tree at the north east corner cannot be retained, bat activity surveys would be required before any work to remove the tree can be completed.
- Nesting opportunities at the site are limited to hedgerows. There are no plans to remove hedges and therefore the work is unlikely to have any impact upon breeding birds. Precautionary measures will be adopted on site to ensure any residual risk is removed.
- There are no extant ponds within 250m of the site and the closest record of GCN originates from a set of ponds approximately 1.1km north east. The land to be developed offers sub-optimal terrestrial opportunities for GCN and it is highly unlikely that the proposals will have any impact upon the species. The generic Risk Assessment for Mitigation Licences estimates that an offence would be 'highly unlikely' based on the loss of 2ha of land more than 250m from a known breeding pond.
- RAMMS will be adopted to remove any residual risk to amphibians.
- The proposals will have no impact upon habitats which provide suitable terrestrial opportunities for otter nor land near to watercourses in use by this species.
- Provided that the current management regime continues on the land, the site will continue to provide unsuitable terrestrial habitat for reptile species.
- Precautionary measures will be adopted in order to avoid any residual risk to breeding birds and a Wildlife Sensitive Lighting Plan will be designed for the site.
- Ecological enhancement will include: built-in wildlife boxes, tree planting, hedgehog highways and species-rich seeding of the POS.

8 REFERENCES

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FIGURE 1 LOCATION. 1:50,000

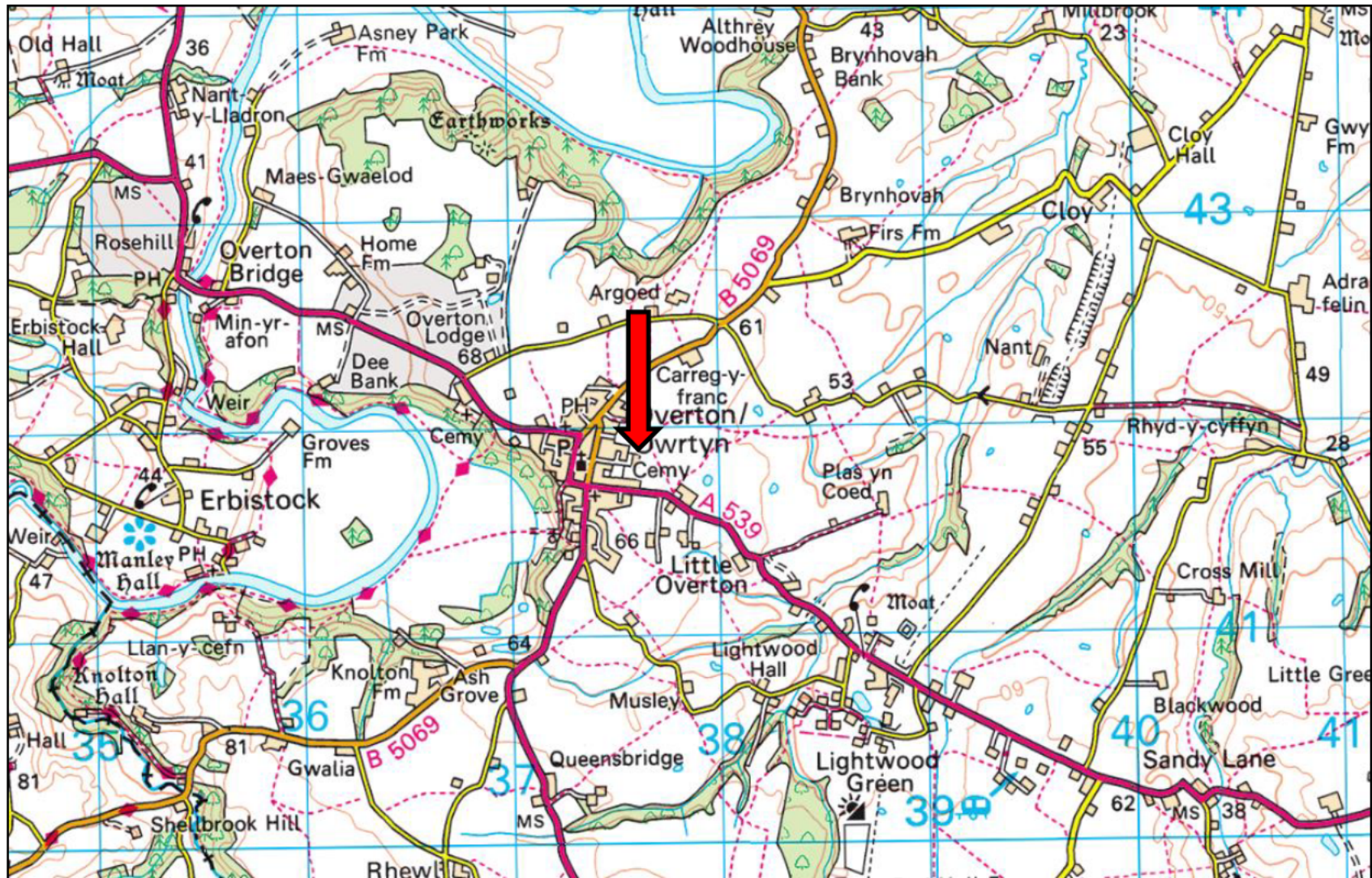
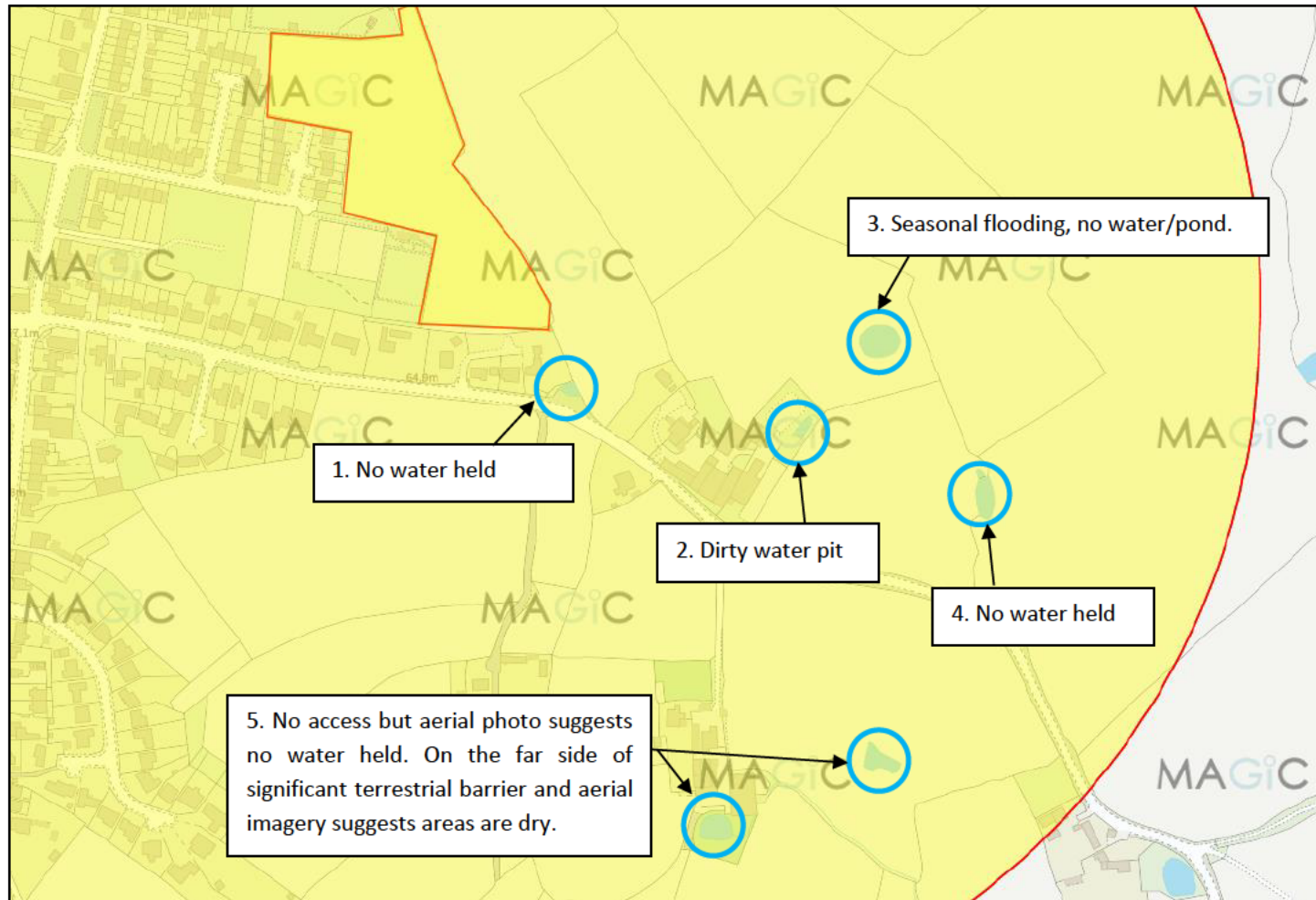


FIGURE 2 AERIAL PHOTOGRAPH



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FIGURE 3 PONDS WITHIN 500M



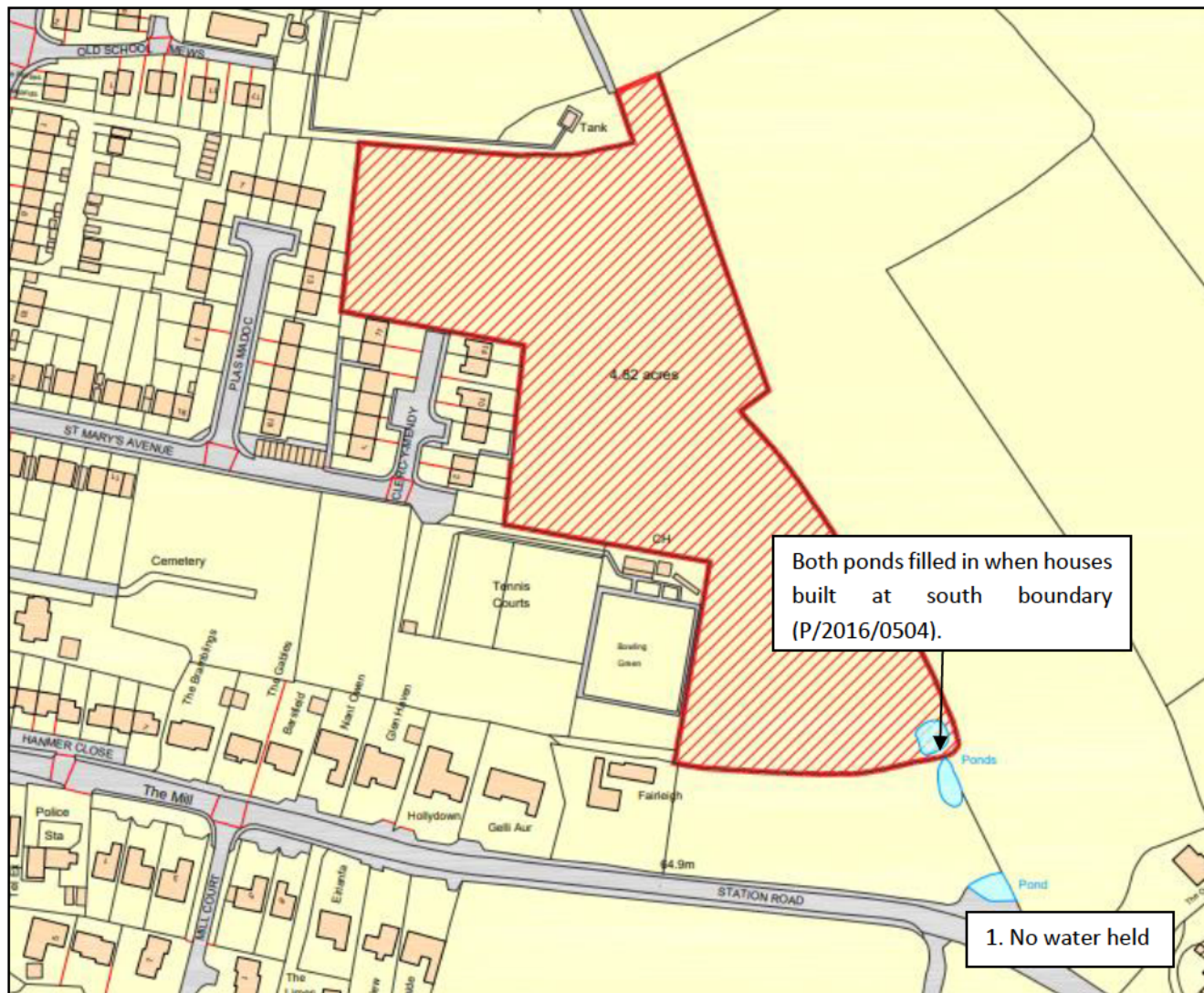
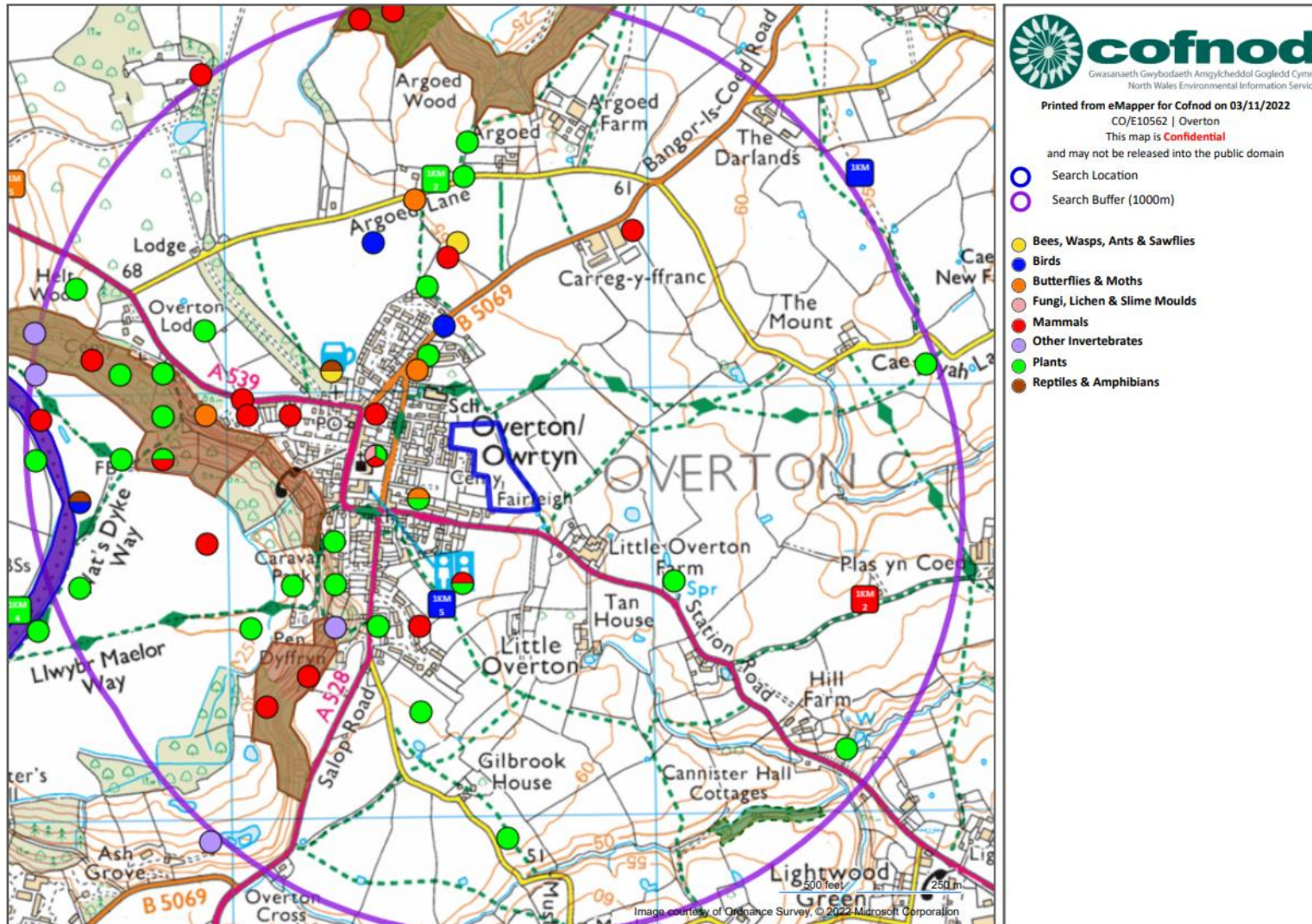


FIGURE 4 COFNOD RECORDS



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FIGURE 5 PROPOSED LAYOUT



APPENDIX 1 PHOTOGRAPHS



Improved grassland.



Hedge 1.



Hedge 2.



Hedge 3.



Hedge 4 & planted wood.



Adjacent housing.



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APPENDIX 2 REASONABLE AVOIDANCE MEASURES METHOD STATEMENT: GCN.

Legislation

Great Crested Newts (GCN) are a European Protected Species (EPS) and they and their habitats are fully protected under national (Wildlife & Countryside Act 1981 (as amended)) and European law (The Habitats and Species Regulations 2017 (as amended)). The combined legislation makes it illegal to:

- deliberately capture, kill or injure a great crested newt;
- damage or destroy a breeding site or resting place
- intentionally or recklessly obstruct access to any place used for shelter and protection including resting and breeding places, whether occupied or not;
- deliberately, intentionally or recklessly disturb a great crested newt when in a place of shelter;
- possess a great crested newt, or any part of it, unless acquired lawfully;
- sell, barter, exchange or transport or offer for sale great crested newts or parts of them.

Induction of contractors

- A toolbox talk will be given to all site personnel in order to make them aware of the possible presence of GCN, how to identify this species and the avoidance measures to be used on site.
- A paper copy of the avoidance measures will be retained on site together with the contact details of the GCN licensed ecologist.

Timing & duration

- All works will take place during daylight hours.

Pre-construction

- All improved grassland on site will be maintained at a height of 10cm for at least 2 months prior to work starting. This is to deter any amphibians from using the field site.

Site compound

- The site compound will be kept in a designated location on hardstanding.
- All site materials will be stored on pallets or other raised objects to avoid creating resting places/refuges for GCN.
- Any toxic or poisonous materials will be safely stored within a locked container.

Construction methods and special precautions



- Any waste materials including soil, rubble, turf etc. will be removed from site immediately to avoid the creation of refuge mounds/sites.
- All excavations on site will be covered at night or ramps will be provided to allow amphibians to exit excavations. All excavations will be checked for amphibians each morning prior to the re-commencement of works.
- All exposed new pipework and drains will be capped at night so as to avoid trapping amphibians.
- All excavated materials/waste will be stored in skips or similar and not on the ground where it could be used as a refuge/resting area by amphibians. Alternatively, all waste will be removed from site daily.
- All stored building materials that might be used as temporary resting places by amphibians will be stored off the ground on pallets or similar.

If GCN are found at any point during the development or activities outlined above, works must stop and an appropriately qualified ecologist will be contacted for advice.

Contractors are prohibited from handling GCN.

