

GREEN INFRASTRUCTURE STATEMENT

SITE

Former Air Products Site
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Acrefair
Wrexham
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CLIENT

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JOB No.

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1.0 INTRODUCTION

Ecological Design Construction Ltd (EDC) was instructed by Clwyd Alyn to deliver a Green Infrastructure Statement for the construction of 159 affordable dwellings and associated infrastructure at Former Air Products Site, Acrefair, Wrexham. This document has been prepared to accompany the planning application submitted to Wrexham County Council for the redevelopment of Former Air Products Site, Acrefair ('the Proposed Development').

The Proposed Development is noted within the Adopted Wrexham Local Development Plan 2013-2028 and referred to as Policy BE3: Regeneration of the Former Air Products Site. This details that the site could contain up to 232 residential dwellings.

A baseline ecological survey and impact assessment was undertaken in March and November 2024 by EDC. The initial survey found:

1. The majority of the habitat within the survey boundary consisted potentially of open mosaic previously developed land. Smaller areas of the site consisted of scrub, tall ruderal, unimproved neutral grassland with adjacent woodland blocks to the northeast, southeast and southwest.
2. [REDACTED]
No other protected species were recorded using the Proposed Development site at the time of the survey.
3. Several species of birds are likely to use the dense areas of gorse scrub within the Proposed Development site.

Previous ecological surveys of the site have also been undertaken by Arbtech in October 2022 and Marches in July 2021. These surveys also found:

1. One record of an adult slow worm during the initial ecological survey undertaken in 2021. A targeted reptile survey was undertaken in 2022 and no further evidence of reptiles using the site has been recorded.

2.0 BACKGROUND TO GREEN INFRASTRUCTURE

Planning Policy Wales defines green infrastructure as: *"The network of natural and semi-natural features, green spaces, rivers, and lakes that intersperse and connect places. Component elements of green infrastructure can function at different scales. At the landscape scale green infrastructure can comprise entire ecosystems such as wetlands, waterways, and mountain ranges. At a local scale, it might comprise parks, fields, public rights of way, allotments, cemeteries, and gardens. At smaller scales, individual urban interventions such as street trees, hedgerows, roadside verges, and green roofs/walls can all contribute to green infrastructure networks."*

An update to Planning Policy Wales (PPW) (v.12) and the National Planning Policy (in Chapter 6) has been made in an effort to address both the need to protect, maintain and enhance biodiversity and in enhancing cultural well-being through the planning system. These changes have introduced a new requirement for developers to assess the value addition to Wales' existing landscape and historic environment. As such, a green infrastructure statement must

now be submitted with all planning applications describing how green infrastructure has been incorporated into development proposals.

The update to PPW states that a Green Infrastructure Statement should be submitted with all planning applications. The Green Infrastructure Statement should be proportionate to the scale and nature of the proposed development and describe how green infrastructure has been incorporated into the proposal. PPW envisages the Green Infrastructure Statement as being an effective way of demonstrating positive multi-functional outcomes which are appropriate to the site, and also demonstrate how the stepwise approach has been applied.

3.0 DECCA

The development proposals and biodiversity enhancements follows the 'stepwise approach' to maintain and enhance biodiversity, build resilient ecological network, and deliver net benefits for biodiversity. The approach is to ensure that, where feasible, any adverse environmental impacts identified on site are avoided. The impacts are to be minimised by offering mitigation as required. The enhancements implemented are to be managed and monitored where the level of development impact is assessed as feasible or as conditioned. This is to ensure long term site safeguards and enhance and maintain the favourable conservation status of the flora and fauna identified within the site boundaries

In the implementation of PPW approach, regard must also be given to promoting the resilience of ecosystems through the DECCA framework:

Diversity: maintaining and enhancing diversity at every scale, including genetic, structural, habitat and between-habitat levels. This supports the complexity of ecosystem functions and interactions that deliver services and benefits.

Extent: incorporating measures which maintain and increase the area of semi-natural habitat/features and linkages between habitats. In general, smaller ecosystems have reduced capacity to adapt, recover or resist disturbance.

Condition: The condition of an ecosystem is affected by multiple and complex pressures acting both as short-term and longer-term types of disturbance. Both direct and wider impacts should be considered, for example avoiding or mitigating pressures such as climate change, pollution, invasive species, land management neglect etc.

Connectivity: This refers to the links between and within habitats, which may take the form of physical corridors, stepping stones in the landscape, or patches of the same or related vegetation types that together create a network that enables the flow or movement of genes, species, and natural resources. Developments should take opportunities to develop functional habitat and ecological networks within and between ecosystems, building on existing connectivity.

Aspects of ecosystem resilience (adaptability, recovery, and resistance): ecosystem resilience is a product of the above four attributes. Adaptability, recovery, and resistance to/from a disturbance are defining features of ecosystem resilience.

As identified in PPW, enhancement can include on-site, locally relevant, habitat creation and/or could be part of the development itself. This could be favouring the use of native species using biodiverse nature-based solutions such as Sustainable Urban Drainage System (SuDS), green

roofs, grassland management for wildflowers, reptile refugia, woodland expansion, and wetland creation.

4.0 SITE

The site is approximately 7.5 Ha and was the former Air Products Factory which was demolished circa 2010. The site has a history of development dating back to circa 1860. Only the level area was redeveloped by Air Products. The buildings were demolished and the site was levelled to the area as shown on current aerial imagery. The site comprises of approximately 5 Ha of the former factory area, and two areas of woodland of which consists of 0.75 Ha of self-seeded woodland on a raised retained area of land to the northeast of the site. The former factory area was the British Iron Works coke ovens and rail tracks constructed circa 1860. An undeveloped area of grassland approximately 1 Ha is to the south and alongside the eastern boundary. Two rail lines bisected the site the main line and an interconnecting line. The main line, including Acrefair Station was demolished in 1976, and ran along the southern boundary of the site. The interconnecting rail line feeding the coal mines was to the northwest of the site, running approximately from the existing road entrance south to cross King Street. The site was redeveloped circa 1900's to form the Acrefair Engineering Works. Several large lagoons were formed and are recorded on site and adjacent to the site from the 1870's through to at least the 1960's. These reservoirs/lagoons have since been drained locally. The site was redeveloped, and the Air Products Site was developed on the previous works footprint. This factory was demolished circa 2010 with the site being levelled. Apart from the retaining wall to the woodland area and the railway cutting of the defunct main Wrexham to Barmouth railway line, all remnants of previous development have been removed. The site boundary is shown in Figure 1 below.



Figure 1: Site Boundary

5.0 GREEN INFRASTRUCTURE PROPOSED ON SITE

The redevelopment works consists of the construction of 159 affordable dwellings and associated infrastructure at Former Air Products Site, Acrefair, Wrexham.

To enhance and improve the biodiversity of the proposals the following Green Infrastructure Plan is to be encompassed as part of the development proposals.

5.1 DIVERSITY:

The proposed development site is classed as a brown field with the last development being demolished and the site levelled circa 2010. The majority of the site has seen intensive industrial use over the last 150 years. A small portion of the site to the east of 1.4 Ha in size records no historical industrial development, however this and other sections of the site has had a top soils strip and the materials banded pending reuse. The woodland blocks adjacent to the proposed development are not included within the development footprint and will be retained.

The former Barmouth to Wrexham railway was decommissioned as part of the Beeching cost saving exercises and is still shown on the 1960 OS mapping. The original railway cutting is still visible on site, however some fill has been placed over the track bed and some fly tipping is recorded off the pedestrian footpath bridge, to which this area records seasonal flooding.

The woodland areas are considered to be species poor which have self-seeded on pre-existing railway embankments and former coke ovens, the under store is shaded and dominated by ivy, the tree species in the main block consist of ash, sycamore, elder and a few soft woods. The majority of the site consists of crushed rubble, over pushed, and levelled, with thin soils. The vegetation has started to redevelop; however, this is relatively recent. The species recorded are typical of a regenerating site on nutrient poor soils. None of the floral species are considered to be of national or local importance. (Marches Ecology 2021, Arbtech 2022/23).

Flora:

The Proposed Development looks to introduce a more diverse planting across the site post development, to include formal and non-formal plantings. The immediate areas to the housing will be planted with low maintenance formal plantings, a percentage to be selected to provide foraging opportunities for invertebrates (blossom) and birds (berries), and year-round cover and nesting sites for birds.

The proposals are to develop the central corridor by seeding with a more diverse species rich grassland mix. This includes the creation of:

- A swale formed to retain water before feeding into the attenuation pond;
- A species rich hedgerow to connect the two woodland blocks on the southeastern boundary; and,
- All three of the retained woodland blocks are to be enhanced by selective felling and replanting with more diverse native species. The woodlands are to be managed to form small glades to introduce more natural light to the under store to promote a more diverse floral content.

At present the existing railway cutting located to the southeast of the Proposed Development is considered to be hazardous, due to the deep water, the steep sided embankments, the rock walls, and tall retaining walls. It is proposed that this area is filled and reprofiled to the former

track bed to create a more manageable and diverse area for public access. The loss of the water body is to be negated for by the introduction of the swales, seasonal attenuation pond and a small newly constructed wildlife pond on site.

The grassland areas are to be managed to form graduation in sward height. This will form a gradual profile from short sward through to scrub borders at the perimeters of the site, with the introduced seed and fruit bearing plants are to be managed to benefit wildlife.

To define between amenity management and habitat management, knee rails will be introduced to demark the management regimes. The grassland habitats will be managed to form a gradual profile from short sward through to scrub borders to the perimeters of the site, with the introduced seed and fruit bearing plants will be managed to benefit wildlife.

Fauna:

The survey identified fauna within the site boundaries, slow worm, [REDACTED] and fox, and local records for hedgehog. [REDACTED]

[REDACTED] The fox earth is to be retained, and the adjacent woodland will be enhanced by selective felling and replanting with more diverse native species. The woodland block to the northeast of the site is presently accessible from the public footpath, so a fence is to be introduced to reduce public access to this sensitive area.

Enhancement is to be implemented for both slow worm and hedgehog. In the case of hedgehog, the plot boundaries will be constructed so as not to restrict movement by this species through and across the site. Refugia will be developed for both hedgehog and slow worm by forming linear clawdd walling to the perimeters of green spaces.

Historically, the site and the immediate adjoining areas recorded large water bodies, assumed for the process of the iron works. These water bodies have been lost over time. The only waterbodies retained locally are the small waterbody to the rear of Hampden Arms to the north of the site and the seasonal water body within the onsite railway cutting. The Hampden Arms waterbody recorded a positive eDNA for great crested newt (2015) showing that amphibians are still recorded locally. The water body on site has been tested for eDNA April 2024, the results were negative for great crested newt. For several reasons, this water body will require to be drained, and the area filled. This net loss is to be negated. As part of the landscaping plan a series of interconnecting swales are to be constructed across the site to connect to a seasonal attenuation pond. Secondary to this, a new wildlife pond is to be formed adjacent to the old waterbody. The size of this pond is to be approximately 10 – 20 m².

To improve diversity within the developed area, bat and bird boxes will be introduced. As the housing is constructed using timber frame methodologies, (to be confirmed) boxes will be face mounted, see drawing ref: 1078 MIT-01 and Proposed Landscape Masterplan 3104-001 Rev E.

5.2 EXTENT:

The former development areas within the site boundaries are considered to be species poor for both flora and fauna, with no species being recorded of local or national importance. The woodland blocks and the original area of unimproved grassland (prior to the topsoil strip) offer the greater diversity on site. The site has little connectivity to the areas beyond the southwestern and northwestern boundaries due to the road networks. The boundaries open

up to areas of informal gardens, the linear corridor of the old railway track bed and the common land. The introduction of the proposed biodiversity enhancement will improve the local ecosystem by increasing biodiversity. This with the existing connectivity to the adjacent habitats, natural and formal, will promote enhancement of the site over time if monitored and managed accordingly.

5.3 CONDITION:

The existing Proposed Development footprints area is considered in its present condition to be species poor with little potential for improvement. The wider habitats of the perimeter woodland, consisting of self-seeded woodland pioneer species on top of former railway embankments and historic industrial process areas is also considered to be species poor. This pertains mainly to the woodland under store, dominated by ivy. The development footprint receives periodic predevelopment grass/scrub management, and the woodland blocks are presently unmanaged.

As part of the development proposals the main areas will be enhanced by introducing both formal and wildlife enhancement landscape schemes. To improve and maintain condition, an appropriate management and monitoring strategy is to be undertaken.

5.4 CONNECTIVITY:

The southwestern and northwestern boundaries of the site are considered to have restricted connectivity due to the retained structures on third party landholdings and the existing road network system. The northeastern, southeastern and western boundaries are onto a mix of unmanaged formal gardens, woodland blocks and common land, with a mixed sward of grasses and scrub/ruderal blocks.



Hedgerows have been introduced on the western boundary to connect the two woodland blocks. This is to enhance the connectivity for small mammals, including hedgehog, between the woodland blocks and the wider habitats.

The introduction of wildlife friendly fencing around the site and between plots is to enable movement for hedgehog and other small mammals across and through the site.

The filling of the former railway cutting to the top of the retaining wall/rockface will greatly enhance connectivity for species within this area.

The overall approach will maintain and enhance the existing connectivity across the site and connectivity to the wider habitats.

5.5 ASPECTS OF ECOSYSTEM RESILIENCE:

As part of the desk top studies that were undertaken, information contained in Area Statements, Local Nature Plans, Local Nature Recovery Action Plans, Local Biodiversity Action

Plans, and data held by Local Environmental Record Centres. Where available, this information has been taken into account. Aspects of global warming have also been assessed and addressed as part of the scheme. This includes the location of bird and bat boxes/bricks, resilience to drought in the choice of plantings, and the control of flooding by introducing SUDS and water bodies.

On implementation of the scheme and its enhancements a monitoring/management plan has been drafted to ensure continuing site safeguarding going forward (Section 8). The management plan should be reviewed as more data becomes available from the local impacts of global warming to allow the prescriptions to be amended and implemented accordingly.

This approach, taking the above factors into consideration, Diversity, Extent, Condition and Connectivity, will be able to manage and maintain ecosystem resilience.

6.0 ENHANCEMENT

6.1 AMPHIBIANS:

The population status for Great Crested Newt (GCN) in northeast Wales is considered to be good and stable with wide distribution.

The local data search identified historic records for this species locally and the loss over time of large to medium water bodies. The eDNA result for the existing water body on site showed a negative, however this result is for a single species and does not include potential presence in the future or for common newt, frog, or toad.

Base on the above and the wider use of water bodies by fauna and as a biodiversity enhancement the following is recommended:

Recommendation

- A small pond is constructed as conservation gain. The pond is to be approximately 10 – 20 m²; and,
- The linear swales should be constructed in sections and designed to retain water, with the ability to interconnect and flow during wet periods.

6.2 MAMMALS:

6.2.1 BADGER:

[REDACTED]

[REDACTED]

Recommendation

- Prior to works being undertaken a follow up survey is to be undertaken and an assessment of impact by the proposed construction phase [REDACTED] is to be undertaken. If it is considered that the works are likely to disturb/impact on the sett then a license under the Badger act is to be sort to ensure the works are undertaken lawfully.

Connectivity

- Access through all perimeter/security fencing to be retained;
- Connectivity is to be retained and enhanced across the site; and,

- Traffic calming is to be introduced across the roads at strategic points to aid safe badger movement.

Conservation Gain

- Introduced species rich grassland to be introduced, this will enhance foraging across the wider site;
- Sensitive management of the existing woodland blocks to increase the biodiversity of the woodland under store;
- Introduce over seeding in the newly managed areas of the woodland blocks with a woodland mix, to include blue bell etc. for enhanced foraging; and,
- A new secure fence to be introduced between the public footpath and the northeastern boundary of the woodland, this is to reduce public access to a sensitive area.

6.2.2 BATS:

The local data records a single presence on site for *Myotis*. Presently no transect surveys have been undertaken on site, this recommended to inform the development of the site area lighting scheme to enable dark corridors to be developed.

The following recommendations are therefore being recommended to ensure the potential for bats to roost, forage and transect the site.

Recommendation

- Transect surveys are to be undertaken across the site to establish foraging routes and to aid the development of dark corridors and inform the street lighting and security lighting plan.

Connectivity

- The boundary features where feasible will be enhanced by introducing species rich native hedgerows interplanted with native tree stock. The introduction in time will create wind breaks for cover for smaller insect species and for shading from any light pollution, especially along the newly introduced connecting hedgerow between the woodland blocks.

Lighting

Research with regards to impacts from lighting on bats has identified that lighting which emits ultraviolet radiation attracts flying insects. This has been recorded as being potentially beneficial to some foraging species of bat, namely Pipistrelle (*Pipistrellus* species), Noctule (*Nyctalus noctula*), Leisler's (*Nyctalus leisleri*), however high levels of ultraviolet radiation have been found to have an adverse impact on other bat species, Horseshoe, *Myotis* species, which forage in low light levels. Historically lights emitting low levels of ultraviolet radiation etc have been recommended. With the requirement for lighting on adoptable roads, lighting with a low carbon footprint and the movement towards promoting dark skies, lighting is moving towards

the installation of LED lighting. Although this type of lighting is more efficient, it does emit a level of ultraviolet radiation. Therefore:

- Shading, filtering, and directional lighting is to be promoted where feasible; and,
- Any lighting plans provided by the electrical engineers are to show compliance with the above requirements as part of the scheme and specifically in proximity to the retained hedgerow boundaries, where L.A. highway lighting approvals allow.

It is to be considered that the greatest impact on lighting on bats is at emergence and if this is directly onto a roost entrance it is shown that a delayed emergence can occur, this however is not a factor to be considered as this is newly created housing stock.

Security lighting is likely to be requested to be fitted to the rear plots; this is to be discouraged by the housing association, where properties abut, back on to the woodland blocks or areas identified as foraging corridors. Therefore:

- Any fixed security lighting is to include automatic control to include timed and light sensitive switching, with an average illumination time of approximately 1 to 2 minutes, this approach is to be promoted to reduce the impact.

Conservation Gain

- The introduction of a small pond, will greatly enhance the foraging potential for bats locally, specifically soprano pipistrelle (*Pipistrellus pygmaeus*);
- Variation to grass sward and improved species enrichment will promote a greater diversity of foraging insect for bats;
- Introduction of insect species rich tree species, oak species (*Quercus robur/pedunculata*);
- Bat boxes are to be located on the perimeter plots facing the boundary habitats, hedgerows, or the internal POS areas. The bat boxes are to be positioned so as to face all aspects, north, south, east, and west and spread across properties as the layout allows. The positioning of the bricks should take into consideration of the mandatory LA adoptable lighting schemes;
- The bat boxes to be surface mounted, not to be positioned over windows or doorways and adjacent to bedrooms;
- Bat boxes to be Schwegler Universal Bat Box 1FFH or 1FQ or similar approved;
- The existing stone retaining wall is to be maintained in a safe stable condition with minimum pointing of the potential roost points; and,
- Four winter hibernation boxes are to be fixed to the face of the stone retaining wall at high level the boxes are to be Schwegler 1WQ or similar approved.

This approach will ensure that the long-term favourable conservation status for this species is maintained and enhanced by the conservation gain proposed.

6.2.3 HEDGEHOG:

The survey did not identify this species within the site boundary. The local area does record this species; however, the northwestern and part of the southwestern boundaries have restricted access to the site due to the existing retaining walls and road network. The remaining boundaries are open and the habitats are deemed to be favourable to support this species. Therefore, the enhancement of the site and careful design of the boundaries can be considered to be a potential conservation gain for this species locally.

Conservation Gain

- The landscape and site boundaries are to consider the movement of large and medium sized mammals across the site and specifically the locally recorded biodiversity species hedgehog, therefore careful design of the garden boundaries is to be considered to allow passage from area to area for this species;
- If enclosed fencing is to be used, then hedgehog friendly gravel boards are to be used, this will allow access for locally threatened biodiversity species like hedgehog which are impacted heavily by closed gardens; and,
- Schwegler Hedgehog Domes are to be built into the introduced clawdd walling with a 150 mm pipe cut horizontally to form a 100 mm height with a length of 300 mm leading from the front face of the clawdd to the dome; and,
- The proposed residential gardens will be separated by fence lines. It is therefore required that 13 cm x 13 cm holes at the base of the fences will be created to allow for movement of the hedgehog population.

This approach will ensure that the long-term favourable conservation status for this species is maintained and enhanced by the conservation gain proposed.

6.3 REPTILES:

The surveys of the immediate development area did not record this species, nor did the desk top surveys identify this taxon group locally. A single record for slow worm was recorded on the former railway station link road which access the site on the southwestern boundary. The site itself in this area is considered to have a low potential in its present condition for this species, however the abutting unmanaged formal gardens and habitats on this boundary offer the greater potential.

Recommendation

- Prior to works being undertaken, the immediate area to the southwestern boundary is to be searched and the grass scrub is to be removed. A temporary reptile exclusion fence is to be installed alongside of this boundary to restrict migration of reptiles to the wider development area during the construction phase. This is to ensure no animals are harmed during the construction phase.

Connectivity

- The site habitats in this area are to be managed to a short sward to discourage colonisation during the construction phase; and,
- The boundary features where feasible will be enhanced by introducing species rich native hedgerows interplanted with native tree stock.

Conservation Gain

- Clawdd walls to be introduced in a linear plan to the open areas along the southwestern boundaries;
- The drystone walls to the front face of the clawdd will offer cracks and openings for the use by common lizard as refugia/hibernacula;
- The dry-stone wall to be constructed from limestone, to provide a thermal mass for heat retention and basking for reptiles;
- The clawdd walls to be approximately 1 m high with a drystone wall front backed, with sods and earth to a width of 1 m with a back slope. The top of the walls is to be planted with scrub, bramble, gorse etc. The walls should have a minimum length of 2 m x 2 m; and,
- Grassland in front of the walling to be managed to a short sward to aid basking and monitoring.

This approach will ensure that the long-term favourable conservation status for this species is maintained and enhanced by the conservation gain proposed.

6.4 *BIRDS*

The former development footprint has limited nesting potential for birds, being limited to the woodland blocks, pockets of scrub and tall ruderal herb.

Recommendation

- If works are to commence when birds are likely to be nesting, (assessment by experienced ecologist) then secondary pre works nesting bird surveys are to be undertaken and the requisite reasonable avoidance measures undertaken until the area is deemed clear.

Conservation Gain

- Bird boxes are to be sited on the new building. The boxes are to be positioned on the eastern elevations of the building, so as not to overheat in the strong mid-day sunlight;
- The boxes should be a mix of Sparrow, Starling, and Tit. All nest boxes to be positioned beneath soffit height or to the underside of the barge board soffits of the mono gables;
- Sparrow/Starling Boxes to be Wood Stone Estella Nest Boxes or similar approved;

- Any hedgerow enhancement is to be of native species, and any standard trees planted should be selected to provide foraging opportunities for invertebrates (blossom) and birds (berries), and year-round cover and nesting sites for birds;
- Evergreen dense planting should be considered for early nesting, preferably to the southern areas of the site; and,
- Existing grassland management to be retained to provide short and long swards to promote foraging by different species of bird requirements, tall ruderal for finches etc, short sward for corvids, blackbird, gulls etc.

This approach will ensure that the long-term favourable conservation status for this species is maintained and enhanced by the conservation gain proposed.

6.5 INVERTEBRATES

The site currently has habitat which could conform to open mosaic on previously development land. This classification of habitat is important for invertebrate species. Within the Proposed Development an area of the site of approx. 0.5 Ha will be created specifically for wildlife adjacent to the wildlife pond. This area will be managed to maintain the open mosaic land with the aim of providing habitat for invertebrate species. Marches 2021 survey recorded Essex skipper (*Thymelicus lineola*) and small skipper (*Thymelicus sylvestris*), common blue (*Polyommatus icarus*) and small copper (*Lycaena phlaeas*) and six-spot burnet (*Zygaena filipendulae*). The site also provides suitable habitat for dingy skipper (*Erynnis tages*).

Recommendation

- It has been noted as per comms from Wrexham County Council Ecologist that both dingy skipper and grizzled skipper (*Pyrgus malvae*) have been recorded using the site. Prior to development an invertebrate survey specifically for butterfly species will be undertaken to assess the full assemblage present on site. With the specific aim of recording dingy skipper and grizzled skipper.

Conservation Gain.

- For grizzled skipper the following plant species where suitable to the area are to be planted within the wildlife area: agrimony (*Agrimonia eupatoria*), creeping cinquefoil (*Potentilla reptans*) and Wild Strawberry (*Fragaria vesca*), barren strawberry (*P. sterilis*), tormentil (*P. erecta*), salad burnet (*Sanguisorba minor*), bramble (*Rubus fruticosus*), dogrose (*Rosa canina*), and wood avens (*Geum urbanum*).
- For dingy skipper the following plant species are to be planted within the wildlife area: common bird's-foot-trefoil (*Lotus corniculatus*), horseshoe vetch (*Hippocrepis comosa*) and greater bird's-foot-trefoil (*L. pedunculatus*).
- For common blue the following plant species are to be planted within the wildlife area: common bird's-foot-trefoil, greater bird's-foot-trefoil, black medick (*Medicago lupulina*), common restharrow (*Ononis repens*), white clover (*Trifolium repens*), lesser trefoil (*T. dubium*).

- For Essex skipper the following plant species are to be planted within the wildlife area: cock's-foot (*Dactylis glomerata*), creeping coft-grass (*Holcus mollis*), common couch (*Elytrigia repens*), timothy (*Phleum pratense*), meadow foxtail (*Alopecurus pratensis*), false brome (*Brachypodium sylvaticum*), and tor-grass (*B. pinnatum*). It rarely uses Yorkshire-fog (*Holcus lanatus*).
- For small skipper the following plant species are to be planted within the wildlife area: Yorkshire-fog, timothy, creeping soft-grass, false brome, meadow foxtail, and cock's-foot.
- For small copper the following plant species are to be planted within the wildlife area: common sorrel (*Rumex acetosa*) and sheep's sorrel (*R. acetosella*).

6.6 HABITATS:

The walkover surveys identified the dominant habitat to be disturbed semi-improved neutral grassland. The survey area is bordered by housing and road networks to the northwest, southwest and part of the northeast of the site all classed as species poor habitats. The woodland blocks consist mainly of pioneer species with a species poor under store. The woodland blocks are self-seeded on previously developed industrial areas and former railway embankments and track. The bordering habitats to the southeast and southwest offer the greater biodiversity.

Recommendation

- Select and reuse the retained top soils previously banded within the area of unimproved grassland located between the woodland blocks on the south western boundary. Soils and associated seed bank used to form the hedgerow and buffer strip between the access road and site boundary. To plant twin row species rich hedgerows to southeastern boundary.

Conservation Gain

As part of the planning application a landscape plan covers this area, the plan includes grass land areas, borders, and individual tree planting. The plan has been developed to include formal planting and wildlife areas, set out to maintain and enhance connectivity. The scheme will be managed to retain variable sward and features, to include a small wildlife pond, interconnecting swales, newly introduced native hedgerows and management and enhancement of the existing woodland blocks.

Careful consideration is to be undertaken to ensure no plantings specified are contrary to the Invasive Non-Native Species (INNS) species lists for the North Wales areas i.e., Cotoneaster, Japanese Rose, Pirri-Pirri-Bur, Montbretia, Buddleia etc. see drawing ref: 1078 MIT-01 and Proposed Landscape Masterplan 3104-001 Rev E.

- The immediate areas to the housing is to be turf. Turf is to be selected where feasible to have a diverse seed mix as detailed in Table 5;

Table 5: lawn diverse species mix

Scientific Name	Common Name	Percentage
Kidney Vetch	<i>Anthyllis vulneraria</i>	4%
Lady's Bedstraw	<i>Galium verum</i>	12%
Common Catsear	<i>Hypochaeris radicata</i>	3%
Rough hawkbit	<i>Leontodon hispidus</i>	4%
Oxeye daisy	<i>Leucanthemum vulgare</i>	8%
Birdsfoot Trefoil	<i>Lotus corniculatus</i>	10%
Ribwort plantain	<i>Plantago lanceolata</i>	8%
Cowslip	<i>Primula veris</i>	2%
Self heal	<i>Prunella vulgaris</i>	16%
Meadow Buttercup	<i>Ranunculus acris</i>	12%
Common sorrel	<i>Rumex acetosa</i>	17%
Yarrow	<i>Achillea millefolium</i>	6%
Common bent	<i>Agrostis capillaris</i>	4.4%
Crested Dogstail	<i>Cynosurus cristatus</i>	1.6%
Red Fescue	<i>Festuca rubra</i>	28%
Chewings Fescue	<i>Festuca rubra subsp. commutata</i>	24%
Slender Creeping Red Fescue	<i>Festuca rubra litoralis</i>	20%
Yellow Oatgrass	<i>Trisetum flavescens</i>	1%
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	1%

- Newly formed wildlife areas and borders to receive a species rich meadow seed mix to be approved, suggest species richness detailed within Table 6;

Table 6: Species Consideration for habitat planting

Scientific Name	Common Name
<i>Papaver rhoeas</i>	Corn Poppy
<i>Rhinanthus minor</i>	Yellow Rattle
<i>Anthyllis vulneraria</i>	Kidney Vetch
<i>Armeria maritima</i>	Thrift
<i>Campanula glomerata</i>	Clustered Bellflower
<i>Centaurea nigra</i>	Common Knapweed
<i>Echium vulgare</i>	Vipers Bugloss
<i>Galium verum</i>	Lady's Bedstraw
<i>Helianthemum nummularium</i>	Rock Rose

<i>Hypochaeris radicata</i>	Cats Ear
<i>Ligusticum scoticum</i>	Scots Lovage
<i>Lotus corniculatus</i>	Birdsfoot Trefoil
<i>Primula veris</i>	Cowslip
<i>Scorzonerooides autumnalis</i>	Autumn Hawkbit
<i>Silene dioica</i>	Red Champion
<i>Silene latifolia</i>	White Champion
<i>Silene uniflora</i>	Sea Champion
<i>Centaurea nigra</i>	Common Knapweed
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rumex acetosa</i>	Common Sorrel
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Dianthus deltooides</i>	Maiden Pink
<i>Malva sylvestris</i>	Common Mallow
<i>Origanum vulgare</i>	Wild marjoram
<i>Plantago major</i>	Greater Plantain
<i>Taraxacum officinale</i>	Dandelion
<i>Cirsium arvense</i>	Creeping Thistle
<i>Viola riviniana</i>	Dog Violet
<i>Rumex acetosella</i>	Sheep's Sorrel
<i>Potentilla reptans</i>	Creeping cinquefoil
<i>Cirsium arvense</i>	Creeping thistle
<i>Rubus fruticosus</i>	Blackberry
<i>Agrostis capillaris</i>	Common Bent
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Cynosurus cristatus</i>	Crested Dog's Tail
<i>Festuca rubra ssp commutata</i>	Chewings Fescue
<i>Poa pratensis</i>	Smooth-stalked Meadow Grass

- To planting native tree specimens within the developments POS and wildlife areas and adjacent to hedgerows;
- Hedgerow planting to include Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Hazel (*Corylus avellana*), Field maple (*Acer campestre*), Holly (*Ilex aquifolium*) and Dog Rose (*Rosa canina*);

- To forming small sections of linear clawdd embankments with a drystone wall frontage as shown on the indicative plan ref:1078 MIT-01;
- To installing a knee rail between the grassland areas/amenity areas and the habitat areas. This is to define grass management between habitat and amenity grass management prescriptions;
- To form a small pond with native marginal aquatic, care to be taken to choose less invasive plant stock relative to the pond size. The pond is to offer a water source for mammals and birds;
- Manage and thin some of the tree stock within the woodland blocks and interplant with more invertebrate favourable species, Oaks, Small Leaf lime, Alders.
- Form some open glades within the woodland blocks and seed with a woodland mix to improve biodiversity;
- Tree planting to include fruit/bearing bearing stock including Rowan (*Sorbus aucuparia*) Damson (*Prunus domestica subsp. Insititia*), Eating apple (*Malus x domestica*) and Crab apple (*Malus sylvestris*), Wild cherry (*Prunus avium*), Bird cherry (*Prunus padus*); and,
- Monitor and manage ash die back and remove deceased stock and replace with suitable alternatives, Rowan, Alder etc.

7.0 BUILDING WITH NATURE STANDARDS FRAMEWORK

The Proposed Development aligns with multiple green infrastructure standards specified in the Building with Nature Standards Framework¹. The Building with Nature Standards Framework 2.0 involves twelve Standards grouped into four categories. These include six Core Standards and three themes, Wellbeing, Water and Wildlife, containing two Standards in each. The six Core Standards create a solid foundation for the delivery of high-quality green infrastructure through design, planning and development.

7.1 STANDARDS MET

7.1.1 STANDARD 1: OPTIMISE MULTIFUNCTIONALITY AND CONNECTIVITY

The proposed planting of hedgerows, scrub, trees, and grassland will provide wildlife corridors between the areas of habitat adjacent to the site and create a buffer between the site and the surrounding residential developments.

The swale and ponds will provide both a sustainable drainage system and new aquatic habitats.

7.1.2 STANDARD 2: POSITIVELY RESPONDS TO THE CLIMATE EMERGENCY

The green infrastructure is designed to enhance climate resiliency by incorporating mitigation and adaptations that respond to the impacts of climate change. This will be achieved by habitat enhancement and trees planting around the site. This will help with natural carbon capture, and rainwater retention through rain gardens, a swale and wildlife ponds.

7.1.3 STANDARD 3: MAXIMISES ENVIRONMENTAL NET GAIN

The green infrastructure is designed to actively mitigate any unavoidable harmful environmental impacts of the development on soil and air quality, and to minimise light and noise pollution.

During demolition and construction, should any potential contaminants be identified, mitigation measures will be implemented to protect sensitive receptors. This includes anticipated measures to be contained within a Construction Environmental Management Plan (CEMP).

The Proposed Development will therefore secure measurable biodiversity net gain, providing greater ecological value and species diversity across the whole of the site. This accords with national planning policy as set out in Section 6 of the Environment (Wales) Act 2016 and local planning policy.

7.1.4 STANDARD 4: CHAMPIONS A CONTEXT DRIVEN APPROACH

Proposed habitats on site were chosen based on their local significance by reviewing the Wrexham Biodiversity Action Plan and the list of priority habitats in Wales². Both native

1

https://static1.squarespace.com/static/5c45e569c3c16a9eac56d244/t/6351513d1afee236d4cf6ce8/1666273600232/Building_with_Nature_Standards_Framework_2.0_Oct22_Download_Version.pdf

² Welsh Government (2016). Environment (Wales) Act 2016. Available online at:

hedgerows and ponds are listed as habitats of principal importance.

7.1.5 STANDARD 5: CREATES DISTINCTIVE PLACES

The green infrastructure is integral to the project, is designed to reinforce local distinctiveness and will create a distinctive sense of place. With the exception of the open mosaic habitat the site has very limited diversity and therefore low ecological value.

The proposal will increase the quality of the site and its distinctiveness through the creation of new landscapes and habitats. This includes planting of native trees, hedgerows, wildflower meadows and mixed grassland which will connect to existing corridors, and maintain and enhance features that improve integration with the surrounding area.

7.1.6 STANDARD 6: SECURES EFFECTIVE PLACE-KEEPING

Section 8: MANAGEMENT AND SITE SAFEGUARD detailed within this report sets out management practises required to ensure the successful implementation of the environmental mitigation, enhancement and creation proposed as part of this Green Infrastructure Statement.

7.1.7 STANDARD 7: BRINGS NATURE CLOSER TO PEOPLE

The green infrastructure within the Proposed Development will be accessible to the residential residents within the scheme. However, there will be sections of the Proposed Development which will be inaccessible to members of the public in order to protect nature from disturbance resulting from increased public access.

7.1.8 STANDARD 8: SUPPORTS EQUITABLE AND INCLUSIVE PLACES

ClwydAlyn, formed in 1978, are a Registered Social Landlord managing over 6,500 homes in North and Mid-Wales. They are the developer for the Proposed Development and will retain the site post-development. The site will be managed as part of their housing scheme. ClwydAlyn provide a wide range of homes and services, including affordable family housing, supported living, shared ownership, and leasehold management. They also offer services to vulnerable people in North Wales, such as homeless shelters, domestic violence refuges, mental health support, and care homes for those in need.

7.1.9 STANDARD 9: DELIVERS CLIMATE RESILIENT WATER MANAGEMENT

The Proposed Development site is a brownfield site and currently there is no active management system preventing foul water discharge across the site. The Proposed Development design include creation of a SuDS, wildlife pond, swale and rain gardens to manage the surface water onsite.

The Proposed Development design also includes a reduction in the amount of paved and impermeable area in order to prevent flooding. SuDS treatment will be applied to all surface water, which will be treated through settling and biological uptake.

7.1.10 STANDARD 10: BRINGS WATER CLOSER TO PEOPLE

The Proposed Development is designed to integrate water within the landscape features to create pond habitat, swale design and is part of the SuDS treatment. These ponds and swale will bring additional amenity to the existing landscape and provide ecological benefits for invertebrates and aquatic species such as amphibians. The swale and ponds will provide both a sustainable drainage system and new aquatic habitats.

7.1.11 STANDARD 11: DELIVERS WILDLIFE ENHANCEMENT

The green infrastructure optimises long term and climate resilient net benefits for nature by enhancing existing ecological assets such as the woodland blocks around the site and creating locally relevant new habitats within the boundary of the Proposed Development. This includes planting of mixed grassland, wildflower meadow, mixed scrub, urban trees, species-rich hedgerow, and raingardens. Two new ponds and swale will be created. Bat, bird boxes will be included within the building design to provide additional roost/nesting resources.

The Proposed Development will support the conservation status of priority species and habitats and deliver positive benefits for wildlife, within and beyond the boundary of the development for the durations of its lifecycle.

7.1.12 STANDARD 12: UNDERPINS NATURE'S RECOVERY

The Proposed Development will aim to redevelopment a brownfield sites into a new residential development within a green environment. The Proposed Development looks to create an area of green infrastructure within the center of the site including a new swale to be connected to two new ponds as part of the SuDS.

The planted vegetation will recreate habitat for invertebrates, the ponds will support amphibians, and the wildlife boxes will compliment these enhancements by providing roost/nesting sources.

8.0 MANAGEMENT AND SITE SAFEGUARD

8.1 Management Objectives

The management of the land will achieve the following main objectives: -

- Enhance the newly formed habitats and retain and improve the semi-natural habitats within the undeveloped areas of the scheme.
- Improve the quality and abundance of roosting and nesting features within the development scheme by erecting bat boxes and bird boxes on the new properties.
- Manage the land so that protected species are conserved. The protected/biodiversity species recorded locally are:
 - Slow worm;
 - Bats;
 - Badger;
 - Hedgehog;
 - Invertebrates: and,
 - Nesting birds.
- Introduce new hedgerows with native planting, to improve connectivity for bats, reptiles, and terrestrial mammals such as hedgehog.
- Make an adequate record of the biological and physical features of the site and undertake an annual monitoring program.
- Provide long-term site security and management for these ecological enhancements.

8.2 Tenure

The land is in the ownership of and is to be developed by the owner's chosen contractor and maintained by ClwydAlyn Housing Association Limited. The development will provide housing association properties.

The development is managed, and the site is retained in the ownership of the housing association. The management and maintenance of the properties, public open spaces and habitats within the site boundaries are the sole responsibility of ClwydAlyn Housing Association Ltd.

In the event of the site manager ceasing to operate, an approved alternative housing association will take over the tenure. Housing associations in Wales are guaranteed by the Welsh Assembly Government.

8.3 Conservation Management

Buildings

The housing association is to retain, and replace as required the newly erected bat boxes and bird boxes in consultation with their retained ecologist.

Additional external lighting is to be avoided. Bats are very susceptible to disturbance from light and any lighting near the bat access should be minimized as far as possible.

The housing association is to agree to consult NRW prior to undertaking any other operation or work in areas adjacent to those used by the bats. The housing association will also be responsible to obtain all other consents from other relevant bodies before works commence.

Access to the bat boxes and bird boxes is to be agreed for the purpose of maintenance and monitoring.

Habitats

Due to global warming and the change in cyclical weather patterns within the UK, the seasons given within the plan must take into account seasonal variations and management times should be altered accordingly at the discretion of the ecological managers.

As the enhancement scheme develops, adaptation of the management plan to best serve any variations to the management as required and in line with prescriptions laid out and accordance with DECCA - *Aspects of ecosystem resilience* (adaptability, recovery, and resistance).

Table 7: Created Habitats years 1 to 5 (Habitats)

Habitat	Aim	Management	Timing
Sown grassland and site margins	Decrease time taken for grassland sward to close by encouraging tillering.	Once grasses reach 100 mm height, areas to be cut to 50 mm sward height.	Single cut April – May annually
	Prevent overspread or over spray by invasive flora control management.	Agree good practices with contractors, offset treatments, prevailing weather conditions.	All times
	Assess and manage scrub encroachment in grassland.	Periodic cutting and pulling of invasive stock, management of others. Allow approx. 20-40% to develop into dense stands.	Spring autumn annually
Created water bodies	Monitor invasive emergent flora.	Remove flora species by hand.	spring annually
	Monitor for fish to newly formed ponds only.	Removal of fish either by 'electro fishing' or drain down to remove fry.	As required October
	Monitor for algal blooms.	Introduction of bales of barley straw. If problem persists, analyse water for high nitrate concentrations.	Monitor, spring, summer, autumn
Scrub plantings	Monitor plantings for failure or dieback	Remove dead stock and replant.	Spring annually

and tree stock	Prevent choking by adjacent plantings until stock is established.	Selective trimming or strimming.	May to September annually
	Check tree guards and supports.	Reposition, adjust, and remove as required.	Monthly
	Check stock for vermin damage, disease etc.	Assess problems and address with specific management.	Monthly
Clawdd/ hibernacula	To maintain access to hibernation areas and refuges by fauna.	Check openings and clear any soil, turf coverings etc. and clear obstructions without damage to scrub cover.	Summer annually

Table 8: Restored Habitats Cyclical Management, Created Habitats Year 5 onwards

Habitat	Aim	Management	Timing
Grassland and field margins	To retain good grass sward structure.	Single seasonal cut, min cut height of 150 mm. Cut to be post seed drop each season. Not before the end of July, suggested August-September. Min 500 mm offset to hedgerow base, to establish a dense corridor at all times.	Single cut late Autumn, to coincide with arable crop foraging and new crop planting.
	Prevent overspread or over spray by invasive flora control management.	Agree good practices with contractors, offset treatments, prevailing weather conditions.	All times.
	Assess and manage scrub encroachment in grassland	Periodic cutting and pulling of invasive stock, management of others	Spring/ Autumn annually
Water bodies	Maintain areas of open water to the pond perimeters	Clear by hand or by machine. Areas to be checked prior to works for water vole activity. Removed material to be stockpiled adjacent to pond edge for approximately 2 days to allow invertebrates to return to water body	As required
	Monitor invasive emergent flora	Remove flora species by hand or machine in the case of Typha and Phragmites. Removed material to be stockpiled	As required

		adjacent to pond edge for approximately 2 days to allow invertebrates to return to water body.	
	Monitor for algal blooms	Introduction of bales of barley straw. If problem persists, analyse water for high nitrate concentrations	Monitor, spring, summer, autumn
	Prevent total shading of southern elevation	Remove or cut back scrub and tree growth. If the pond or water body is susceptible to evaporation, allow partial shading to western elevation.	Autumn annually
Scrub plantings and tree stock	Maintain good hedgerow form	Monitor and allow hedge cutting seasonally to prevent leggy growth. 33% of hedgerows with slowest growth to be uncut each season.	Autumn annually
	Prevent hedgerows from becoming leggy	New hedgerows to be laid in, 8-year dependent on their establishment rate. Leggy hedgerows to be laid	As required
	Check tree guards and supports	Remove and adjust as required	Six monthly
	Check stock for vermin damage, disease etc.	Assess problems and address with specific management	Monthly
	Maintain scrub densities	Selective coppicing dependent on species, allow approx. 20-40 % to develop into dense stands.	Annually October
	Retain areas of deadwood	All trimmings and cut timber to be retained and formed into habitat piles. Any deceased stock to be removed and burnt.	Annually
Clawdd/hibernacula	To maintain access to hibernation areas and refuges by fauna	Check openings and clear any soil, turf coverings etc. and clear obstructions without damage to scrub cover	Summer Annually
Public access and effect	Reduce disturbance and public impacts to habitats	Discourage over access by public, remove litter and debris in ponds and general areas. Protect	Periodic monitoring

		Water Vole burrows, nest sites etc. as required	
Species monitoring	Bat	Two external surveys to be carried out for evidence of use.	May and September
	Reptile	Monitoring through placement of reptile trays within the grassland.	Annually April to September
	Birds	Field surveys to list species nesting activity and diversity.	Annually March to June
	Mammals	Field surveys to log burrows, tracks, paths, and latrines.	On attendance
	Invertebrates	Field surveys to monitor butterfly populations within the site.	Annually between Mid-May and Mid-July.
	Flora	Record species development and diversity.	Seasonally
	Invasive species	Monitor and remove as required, see attached list.	Monthly

Note:

Monitoring of Bird nesting and mammal activity is to be logged incidentally during work operations. Specific in-depth surveys are not required, i.e., bird species log and nesting activity if identified. Badger

[REDACTED]

Site visits are set either monthly, bi-monthly or by identified month. It is assumed on delivering the cost of the seasonal works that the workload is identified per visit i.e., all works needed to be undertaken that month as identified in the schedules are undertaken as one visit as opposed to individual tasks being priced as individual standalone visits.

Example:

The above schedule 'Public access and effect' has four identified tasks to be undertaken, all site-based tasks can be undertaken on the same visit. The fence checks, litter picking and grass cutting can be undertaken at the same time. It is therefore anticipated that the costs are delivered in this format.

8.4 Invasive Species

Careful consideration of the landscape plan is to be undertaken to ensure that no invasive non-native species (INNS) are inadvertently introduced as part of the scheme. Any management works should be

undertaken following the development of a biosecurity risk assessment. This is to ensure that any management works undertaken do not introduce any INNS, and any management of INNS identified on site are removed from site. Any removal of INNS must be undertaken with an approved method so as not to contaminate adjacent land or any other sites by accidentally translocating materials that may contain INNS.

Table 9: Non-native species which require to be monitored for colonization.

Scientific Name	Common Name
<i>Azolla filiculoides</i>	Water fern
<i>Cabomba caroliniana</i>	Fanwort
<i>Cotoneaster microphyllus</i>	Cotoneaster
<i>Cotoneaster simonsii</i>	Cotoneaster
<i>Crassula helmsii</i>	Australian swamp stonecrop
<i>Eichhornia crassipes</i>	Water hyacinth
<i>Elodea canadensis</i>	American or Canadian Waterweed or Pondweed
<i>Elodea nuttallii</i>	Western Waterweed
<i>Reynoutria japonica</i>	Japanese knotweed
<i>Gunnera tinctoria</i>	Giant Rhubarb / Gunnera
<i>Heracleum mantegazzianum</i>	Giant Hogweed
<i>Hyacinthoides hispanica</i>	Spanish bluebell
<i>Hyacinthoides x massartiana</i>	Hybrid Bluebell
<i>Impatiens glandulifera</i>	Himalayan balsam
<i>Lagarosiphon major</i>	curly waterweed
<i>Myriophyllum aquaticum</i>	Parrots Feather
<i>Pistia stratiotes</i>	Water lettuce
<i>Robinia pseudoacacia</i>	False acacia
<i>Rhododendron ponticum</i>	Rhododendron
<i>Rhododendron x superponticum</i>	Hybrid Rhododendron
<i>Rhododendron ponticum x maximum</i>	Hybrid Rhododendron
<i>Salvinia molesta</i>	Giant salvinia

8.5 Monitoring

Post-development monitoring will be carried out for two consecutive years following the completion of the development works.

Bat-

Monitoring each year will comprise two external inspections of bat boxes for signs of use. If evidence of activity is identified an emergence surveys are to be undertaken by a licensed bat worker in May and September. Any vandalism is to be reported to the site managers ClwydAlyn and any adaptation or repair is to be overseen by the retained ecologist.

Badger-



Reptile-

Reptile trays are to be bedded in within the rank grassland to the southern boundaries of the site. Check surveys of the trays are to be undertaken, April/May and August/September for evidence of presence of slow worm.

Amphibian-

One seasonal torch count is to be undertaken approximately mid-April to check for presence of amphibians and general health of the water body.

All data collected by the retained ecologist is to be uploaded to Nature Resources Wales (NRW) and COFNOD (the local environmental records centre for North Wales) data centre.

8.6 Mechanism for ensuring delivery of post-development works

The housing stock and development site are retained in the ownership of ClwydAlyn Housing Association. All funding for maintenance and monitoring is undertaken by ClwydAlyn Housing association. The housing association is to appoint an ecological land manager to undertake the monitoring and maintenance of the wildlife areas, and all costs to be index linked going forward. In the event of the housing association ceasing to trade, the site will be taken up by an equally approved housing association guaranteed by the Welsh Assembly Government. If some individual units are sold into private holdings, the standard agreement is to secure a service charge as part of the land transfer to offset management costs, including wildlife management costs.

In the interim period of appointing an ecological land manager the responsibility of the management of the wildlife areas will be undertaken by either their main contactor or an in house management teams under the supervision of the retained ecologist, all in accordance with the management plan.

8.7 Ecological Compliance Audit

The initial works and mitigation will be overseen by the ecological consultants for the duration of the works to ensure compliance with the planning approvals. The management plan is to be adopted and will be applied for two years following the completion of the development. This should include the site owners or their successor in title or future occupier' in the event that the site management and control of the site is taken over by a third party during these two years.

A compliance audit scheme will be undertaken to demonstrate compliant implementation of the provisions of the planning approvals and conditions. To facilitate and inform this assessment, specified parameters (performance indicators), which are listed below, will be used to assess component and overall performance of this project. This assessment will then indicate whether performance is satisfactory and in compliance with legal or other requirements or conditions. The assessment requirements are detailed within table 4.

Table 10: Ecological Compliance Audit

No	Requirement	Performance Indicator	Pass (Yes/No)
1	A suitably experienced licensed ecologist will be appointed and	Ecologist adviser retained on site:	

	retained during the construction phase, to provide on-site advice.		
2	Prior to undertaking ground works the retained ecologist will undertake a check survey to identify any variation to survey. If the works are to be undertaken during the bird nesting season, a pre works nesting bird survey is to be undertaken.	Report on findings to be produced. Any variations to be adopted into the scheme.	
3	Implementation of surveillance or monitoring of schemes, during and post development.	Has identified or required implementation of surveillance or monitoring been undertaken during the implementation phase of the project and results submitted to the local authority? Has identified or required implementation of post project surveillance or monitoring been undertaken and results submitted to NRW, COFNOD and NBN gateway?	
4	Following completion of mitigation works, an ecologist is to inspect the buildings and created habitats to ensure ecological works have been carried out as specified in plans or in the method statements.	Have mitigation works been carried out as specified in the method statement or plans?	
5	Following completion of each phase of compensation/mitigation works, the bat specialist will inspect the building to confirm bat roost safeguard and that that exit points have not been blocked or illuminated. Replacement of bat roosting sites at each phase of the project if necessary.	Inspection will aim to confirm that bat exit points are not blocked and not illuminated.	
6	Implementation of works during identified or specified times.	Inspection log confirming works have been undertaken during specified or conditioned times.	

9.0 CONCLUSION

No major impacts on protected/biodiversity species or habitats have been identified. Generally, it is therefore the surveyor's opinion that the proposed development works are considered likely to have no long-term impact on the favorable conservation status of locally recorded protected species, or their ecological functionality if the works are carried out in accordance with good mitigation and management going forward. The project includes the integration of green infrastructure to ensure biodiversity net gain with a diverse environment of flora and fauna.

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