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Appendix A Submitted Plans and Supporting Figures

A.1 Purpose of this Appendix

This appendix records the planning plans and supporting figures that define the site boundary, existing conditions, proposed layout, building form and landscape strategy for the Lower Wych One Planet Development. The plan and figure PDFs themselves are separate submission documents; this appendix provides a plain-language schedule linking those plans and figures to the Management Plan.

The schedule will be updated whenever a plan or figure is revised. No technical assumption in the Management Plan relies on a superseded plan, scale, title or layout.

A.2 Current Submitted Plan Schedule

Table A-1 records the plan and figure set used for the Management Plan. Titles and scales are coordinated with the submitted PDF plan set.

Table A-1: Current submitted plans

Plan / figure	Title	Scale / sheet	Status	Planning role
Location plan	A1.1 Location plan	1:1250	Current planning issue	Confirms the site boundary in its wider Lower Wych context.
Existing site plan	A1.2 Existing site plan	1:500	Current planning issue	Records the existing site, boundary and visibility splays within the existing highway verge.
Constraints plan	A1.3 Constraints Plan	1:750	Current planning issue	Shows site constraints
Proposed site plan	A1.4 Proposed site plan	1:500	Current planning issue	Fixes the proposed site lay-out, site boundary, trees, root protection areas and visibility splays.
Proposed floor plans and eleva-tions	1.5 Proposed floor plans and elevations	1:100	Current planning issue	Defines the domestic and enterprise floor plan, proposed elevations and the separation of dwelling, workshop, busi-ness kitchen, packing, hygiene, mushroom and technical spaces.
Proposed floor plans and eleva-tions	1.6 Proposed floor plans and elevations	1:100	Current planning issue	Root cellar, polytunnels, open barn
Landscape plan	A1.7 Landscape plan	1:500	Current planning issue	Shows the landscape frame-work, productive beds, existing trees and root protection areas.
Mineral plan	A1.8 Mineral plan	1:1250	Current planning issue	Shows the potential mineral deposits

Appendix B Key Assumptions Note

B.1 Purpose of this Appendix

This appendix provides a clean, planning-facing summary of the fixed headline assumptions used across the Management Plan. It records the settled figures that the Local Planning Authority needs in order to understand the proposal. Detailed calculations remain in the relevant technical appendices.

The Key Assumptions Note records only the settled figures that the Local Planning Authority needs in order to understand the proposal. Detailed calculations remain in the relevant technical appendices.

B.2 Site, Household and Monitoring Assumptions

Table B-1 sets out the fixed site and household assumptions used across the Management Plan.

Table B-1: Site, household and monitoring assumptions

Item	Adopted planning-stage assumption	Source / use
Site name / address	Land at Lower Wych, Lower Wych Road, Bronington, Wrexham, Wales, SY14 7JZ	Used across Sections 1, 2, 6 and water evidence.
Local Planning Authority	Wrexham County Borough Council	Used for planning submission and consultee routing.
Land Registry title	CYM898817	Ownership and legal-control evidence.
Site area	20,710 m2 / 2.071 ha / 5.12 acres; 20,700 m2 used as rounded land-use audit basis	Used for land-use percentages and area audit.
OS grid reference	SJ 47903 43889 / SJ479438	Used in baseline and technical reports.
Household	[redacted]	Used for minimum needs, EFA, water demand and monitoring.
OPD Year 1 start	Date of first habitation of the OPD dwelling	Used for phasing and annual monitoring.
Annual Monitoring Reports	Submitted within one month of each anniversary of first habitation	Section 13 monitoring timetable.
Full EFA reviews	Year 3 mid-term review and Year 5 Management Plan review	Section 12 and Section 13 monitoring route.
Food self-sufficiency	Year 5 management target approximately 80%; OPD 65% treated as compliance floor / stress-test minimum	Sections 4, 12 and 13.

B.3 Land-Use and Productive-Area Assumptions

Table B-2 records the main land-use figures. The rounded whole-site area of 20,700 m2 is used for percentage checks.

Table B-2: Headline land-use and productive-area assumptions

Land use / system	Adopted area / figure	Use in the Management Plan
Whole site	20,700 m² audit basis; 20,710 m² actual title-deed area	Controls land-use percentage checks.
Combined built footprint	313 m² / 0.031 ha / 0.077 acres / c. 1.51% of site	Sections 3, 8 and landscape / reversibility evidence.
Access, parking, turning and paths	256 m² / c. 1.24% of site	Transport, landscape and SuDS evidence.
Outdoor annual vegetable beds	326.4 m²; 4 no. 12 m × 6.8 m net growing blocks	Food-production and CSA yield evidence.

Land use / system	Adopted area / figure	Use in the Management Plan
Protected cropping / polytunnels	144.0 m²; 2 no. 12 m × 6 m polytunnels	Protected crops, microgreens / propagation and irrigation calculations.
Total annual vegetable and protected-crop area	470.4 m²	Main annual crop area used for yield and irrigation sizing.
Orchard and soft fruit	1,550 m²	Perennial food, preserves and longer-term resilience.
Low-technology outdoor wasabi beds	100 m²	Secondary specialist crop; clean rainwater only.
Outdoor mushroom log / woodchip area	150 m²	Business mushrooms and household food contribution.
Indoor mushroom room	18 m² GIA	Enterprise building area; not counted as open land-use area.
Low-input rotational grazing / poultry pasture	2,810 m²	Poultry / goat rotation, fertility cycling and grassland management.
Existing woodland	3,829 m² / c. 0.946 acres	Retained habitat / landscape framework and LWS constraint.
New mixed native coppice blocks	2,250 m²	Biomass, shelter, habitat, carbon and small wood products; C1-C4 rotation.
Dedicated wildflower meadow block	1,125 m²	Flower-rich meadow / floristic enhancement area.
Pollinator strips / beetle banks	963 m²	Beneficial-insect support and productive habitat corridors.
Managed meadow / scrub-grassland mosaic / wildlife refugia	6,683.2 m²	Large ecological matrix including rough meadow, late-cut areas, scrub pockets, hibernacula, log piles and wildlife refugia.
Ponds and reedbed	200.4 m²	Clean-water ponds, greywater polishing pond and reedbed footprint.

B.4 Buildings, Energy and Water Assumptions

Table B-3 records the main technical assumptions used by Sections 6 and 8. Detailed equipment selection may change at Building Regulations and installation stage, but the final system should meet or exceed these planning-stage commitments.

Table B-3: Buildings, energy and water assumptions

Item	Adopted planning-stage figure	Management Plan role
Dwelling area	Part Single-storey, part double storey WikiHouse dwelling; 136 m2 GEA / approximately 115 m2 GIA, as shown on the floor plans and elevations	Domestic building and sole residence.
Enterprise building area	Single-storey WikiHouse enterprise building; 141 m2 GEA / approximately 114 m2 GIA including 18 m2 indoor mushroom room	Ancillary land-based enterprise use.
PV array	20.88 kWp roof-mounted array (c. 20.9 kWp in narrative text); indicatively 36 high-output modules at around 580 W each	Roof-first renewable electricity strategy.
Battery bank	50 kWh nominal LiFePO4 battery bank; approximately 40 kWh usable	Off-grid resilience and load shifting.
Inverter / charger	8-10 kW class inverter / charger	Electrical system design allowance.
Primary heating	6-8 kW air-source heat pump, final capacity confirmed by detailed heat-loss calculation	Operational-energy / Part L route.
Thermal storage	Approximately 600 litre thermal store within a 500-800 litre allowance	Hot-water and heating resilience.
Building fabric	Walls 0.123 W/m2K; roof 0.108 W/m2K; floor 0.128 W/m2K; windows target Uw 0.80 W/m2K; airtightness target 0.15 AC/H; MVHR 80% heat recovery basis	Zero-carbon buildings and energy-demand reduction.
Potable rainwater storage	40 m3 / 40,000 L underground storage, indicatively 2 x 20,000 L tanks, filtered and UV-polished	Domestic water independence.
Clean-water irrigation / attenuation ponds	Two 10 m diameter ponds, approximately 100 m3 total storage and approximately 80 m3 usable irrigation drawdown	Market garden irrigation, attenuation and dry-spell resilience.
Greywater treatment	15 m2 horizontal subsurface-flow reedbed discharging to 6 m diameter polishing pond / infiltration / non-edible planting only	Clean-water / greywater separation and SAC compatibility.

B.5 Performance and Monitoring Assumptions

Table B-4 records the key performance assumptions that need to remain consistent across the chapters and appendices.

Table B-4: Headline performance assumptions

Topic	Adopted figure / commitment	Where carried through
Year 5 minimum-needs budget	£6,604/year in 2025 price terms	Section 4 and Appendix D.
Core-case Year 5 net income	£10,410/year after central overhead; c. 158% of minimum needs	Section 4 and Appendix D.
Full Year 5 plan net income	£14,080/year; c. 213% of minimum needs	Section 4 and Appendix D.
Estimated first-habitation EFA	1.59 gha/person; +15% sensitivity = 1.83 gha/person	Section 12 and Appendix G.
Estimated Year 5 EFA - planned 80% food self-sufficiency	1.39 gha/person; +15% sensitivity = 1.60 gha/person	Section 12 and Appendix G.
Year 5 food stress test	65% food self-sufficiency floor gives 1.54 gha/person; +15% sensitivity = 1.77 gha/person	Section 12 and Appendix G.
Annual vehicle mileage	5,628 miles/year baseline; approximately 4,990 miles/year if 30% school-run reduction achieved	Section 11 and Appendix Q.
Residual non-recyclable waste	Year 5 management target below 100 kg/year; 30 kg/year treated as stretch target only	Section 7 and Appendix M.

Appendix C Ownership, Sole Residence and Planning Obligation / S106 Heads

C.1 Purpose of this Appendix

This appendix records the ownership, sole-residence and legal-control framework for the proposed One Planet Development. It is a planning-stage heads-of-terms document only. The final legal drafting will be prepared by the applicants, their solicitor and the Local Planning Authority if planning permission is granted or if a unilateral undertaking is required before determination.

C.2 Ownership and Land Control



The red-line boundary used for the planning application should match the Land Registry title plan and the submitted Location Plan. The dwelling, enterprise building, access, land-based activities, water systems, sanitation systems, habitat works and monitoring obligations should all remain tied to the same planning unit unless varied by the Local Planning Authority.

C.3 Sole Residence Statement

The following wording is proposed as the planning-stage sole-residence statement:



C.4 Planning Obligation / S106 Heads of Terms

The final form of legal agreement will be agreed with the Local Planning Authority. Table C-1 sets out the recommended planning-stage heads of terms.

Table C-1: Planning obligation / S106 heads of terms

Head of term	Proposed planning control	Purpose
Planning unit	The dwelling, enterprise building, land-based uses, infrastructure and application land are treated as one planning unit.	Prevents separation of the dwelling from the holding.
Named OPD occupation	Occupation is limited to the named applicants and their household, or to future occupiers who operate the approved OPD Management Plan or an approved successor plan.	Keeps occupation tied to OPD function rather than general market housing.
Sole residence	The OPD dwelling must be the sole residence of the occupiers.	Responds to TAN 6 / OPD Practice Guidance essential characteristics.
Land-based minimum needs	The occupiers must use reasonable endeavours to meet the Management Plan targets for land-based income, food, energy, water and waste assimilation within the five-year period.	Ties occupation to the land-based justification.

Head of term	Proposed planning control	Purpose
Management Plan compliance	Development and occupation must be carried out in accordance with the approved Management Plan and approved appendices, subject to agreed monitoring adjustments.	Makes the Management Plan enforceable.
Annual monitoring	Annual Monitoring Reports are submitted within one month of each anniversary of first habitation.	Provides an auditable compliance route.
Year 3 and Year 5 review	A full EFA is prepared at Year 3 and again at the Year 5 Management Plan review, with corrective action where required.	Tests OPD footprint performance and direction of travel.
Restriction on separate sale	The dwelling is not sold, leased or otherwise disposed of separately from the OPD holding without LPA agreement.	Protects the integrity of the OPD planning unit.
Material changes	Material changes to the approved enterprise, building, water, waste, energy, access or land-management strategy require LPA approval where they fall outside the approved Management Plan.	Prevents uncontrolled drift from the approved scheme.
Exit / restoration	If the OPD fails and no acceptable successor plan is approved, the exit and restoration strategy is implemented within an agreed timescale.	Ensures reversibility and protects the countryside.

C.5 Supporting Evidence

Table C-2 identifies the evidence that supports this appendix and the final legal-control route.

Table C-2: Ownership and legal-control evidence checklist

Evidence item	Current treatment	Submission note
Official copy register and title plan for CYM898817	Attach or make available as legal evidence.	Check red-line boundary against title plan.
Planning Location Plan / red-line boundary	Appendix A submitted plan schedule.	Must match ownership and application boundary.
Certificate of ownership	Planning application form requirement.	Complete using the correct ownership certificate.
Signed sole-residence statement	Use C.3 wording as base.	Signed and dated statement, where required.
Planning obligation / S106 heads	Use C.4 as planning-stage heads.	Final wording to be settled by the applicants, their solicitor and the Local Planning Authority if required.
Exit and restoration method	See Appendix X.	Should be cross-referenced from final legal agreement.

Appendix D Business, Minimum Needs, Yield and Labour Evidence Pack

D.1 Purpose of this Appendix

This appendix summarises the evidence behind the Business and Improvement Plan. It records the Year 5 minimum-needs budget, the core land-based enterprise case, the secondary / upside enterprises, the main sensitivity tests, productive-area basis and labour-control approach.

The appendix is not intended to replace Section 4. Its role is to gather the supporting figures in one place so that the Local Planning Authority can see how the business case meets TAN 6 without relying on off-site professional income or every secondary enterprise performing strongly.

D.2 Minimum Needs Budget

The Year 5 minimum-needs budget is [redacted]/year in 2025 price terms. The first five categories are the mandatory OPD minimum-needs categories; food-production inputs and contingency are included to make the plan more realistic.

Table D-1: Projected household minimum needs at Year 5

Category	Annual cost	Description
Food not produced on site	[redacted]	Planned 20% bought-in food allowance at the Year 5 target; stress-tested against 35% bought-in if only the OPD minimum is achieved in a poor year.
Clothing	[redacted]	Basic clothing and footwear for the household.
Personal travel	[redacted]	Family / domestic travel. Business delivery costs are treated as enterprise costs.
IT and communications	[redacted]	Telephone, internet, communication and small hardware allowance.
Council Tax	[redacted]	Band A planning-stage estimate; the VOA will determine the final band after completion.
Food-production inputs	[redacted]	Seeds, poultry feed, soil amendments, growing media and routine productive inputs.
Contingency	[redacted]	Approximate 10% contingency for minor shocks or cost variations.
Total minimum needs	[redacted]	Net land-based income must exceed this figure from Year 5 onward.

D.3 Enterprise Reliance and Year 5 Income Case

The enterprise strategy uses a resilient portfolio but does not make the OPD minimum-needs test depend on every enterprise. The core case is specialty mushrooms, microgreens, zero-waste ferments and the CSA seasonal vegetable / fruit share. Wasabi, honey and micro-dairy are secondary, supporting or future lines.

Table D-2: Core and secondary enterprise classification

Enterprise	Role	Year 5 net income used in full plan	Reason for classification
Specialty mushrooms	Core	[redacted]	Short establishment period; existing skills; indoor / outdoor production; clear local route to market.
Microgreens	Core	[redacted]	Fast turnover; small protected-crop footprint; direct local sales; controllable production.
Zero-waste vegetable ferments	Core	[redacted]	Adds value to site-grown surplus; long shelf life; manageable food-safety controls.
CSA seasonal vegetable / fruit share	Core	[redacted]	Direct local food contribution; low operating cost; no double-counting of mushrooms, ferments or honey.

Enterprise	Role	Year 5 net income used in full plan	Reason for classification
Core case after central overhead	Core total	[redacted]	Exceeds the [redacted] minimum-needs requirement without wasabi, honey or micro-dairy.
Wasabi	Secondary / upside	[redacted]	Specialist crop retained as low-technology outdoor beds but not load-bearing.
Beekeeping / honey	Supporting	[redacted]	Useful pollination and product diversity; subject to colony performance.
Micro-dairy	Secondary / future only	[redacted]	Not relied upon unless training, welfare, registration and market controls are confirmed.
Full Year 5 plan	Core + secondary	[redacted]	Approximately 213% of the [redacted] minimum-needs requirement.

D.4 Sensitivity and Dependency Tests

The central planning test is whether the business case still works if higher-risk or more regulatory-complex lines underperform. Table D-3 summarises the main dependency tests.

Table D-3: Enterprise dependency test

Scenario	Net Year 5 income	Minimum-needs coverage	Planning interpretation
Full plan	[redacted]	213%	All enterprises including secondary / upside lines, after conservative central overhead.
Core case only: mushrooms + microgreens + ferments + CSA, less central overhead	[redacted]	158%	Passes TAN 6 minimum-needs test without wasabi, honey or micro-dairy.
No wasabi	[redacted]	189%	Specialist wasabi failure does not threaten viability.
No micro-dairy	[redacted]	199%	Dairy can remain secondary / future without weakening the OPD case.
No honey	[redacted]	197%	Poor honey year or colony loss does not threaten viability.
No wasabi + no micro-dairy + no honey	[redacted]	158%	Equals the core case and remains safely above minimum needs.

The full-plan worst-case sensitivity test in Section 4 still generates [redacted] net income, equivalent to approximately 146% of the [redacted] minimum-needs requirement. That test is supplementary; the more important planning point is that the core case alone remains above minimum needs.

D.5 Productive-Area and Yield Evidence

The yield case is based on a deliberately compact annual crop area supported by wider perennial, woodland-edge, grazing and coppice systems. The annual vegetable and protected-crop area is 470.4 m2, made up of 326.4 m2 of outdoor beds and 144.0 m2 of protected cropping.

Table D-4: Productive-area evidence summary

Productive system	Area / size basis	Role in the business / food case
Outdoor annual vegetable beds	326.4 m2; 4 no. 12 m x 6.8 m net growing blocks	Household vegetables, CSA vegetables, ferment crops, roots, alliums, brassicas, salads and storage crops.
Protected cropping / polytunnels	144.0 m2; 2 no. 12 m x 6 m polytunnels	Tomatoes, cucumbers, peppers, basil, propagation, winter salads and microgreens / bench area.

Productive system	Area / size basis	Role in the business / food case
Orchard and soft fruit	1,550 m2	Household fruit, preserves, CSA seasonal fruit and longer-term perennial resilience.
Low-technology outdoor wasabi beds	100 m2	Secondary business crop; clean harvested rain-water only.
Outdoor mushroom log and woodchip area	150 m2	Business mushrooms and household self-suffi-ciency contribution.
Indoor mushroom growing room	18 m2 GIA	Controlled fruiting and year-round reliability within enterprise building.
Low-input rotational grazing / poultry pasture	2,810 m²	Low-density poultry / goat rotation, fertility cycling and grassland management.
New coppice blocks	2,250 m²	Resilience biomass, shelter, biodiversity, craft poles and small wood products; C1-C4 rotation.

D.6 Labour and Bad-Season Controls

The labour strategy assumes that both adults provide the work needed for the core land-based enterprises and site management. Secondary enterprises are deliberately scalable. If illness, family pressure, extreme weather or a poor season reduce labour availability, essential tasks are protected first and secondary activity drops away.

Table D-5: Labour triage principles

Priority	Tasks protected first	Tasks paused or reduced first
1. Legal / welfare / safety	Animal checks, potable water, food hygiene, fire safety, sanitation, essential repairs and monitoring records.	Events, optional workshops, new product trials and non-essential marketing.
2. Core food and income	Mushrooms, microgreens, ferments, CSA har-vest, crop irrigation, storage, customer obliga-tions and basic accounts.	Wasabi expansion, honey product diversifi-cation and micro-dairy activation.
3. Land condition	Compost management, soil cover, water sys-tems, tree / hedge protection, invasive / pest control and habitat safeguards.	Non-urgent new planting, coppice product trials and aesthetic refinements.
4. Long-term im-provement	Annual review, training, market review and planned infrastructure maintenance.	Optional community activity beyond the capped programme.

D.7 Evidence Index

This appendix cross-references the enterprise-by-enterprise gross and net income table, minimum-needs budget, route-to-market evidence, yield assumptions, CSA cap, food-safety route, labour schedule, bad-season triage, train-ing requirements and the tables used to generate the final figures.

Appendix E Applicant Skills, Experience and Delivery Capacity Statement

E.1 Purpose of this Appendix

This appendix explains why the applicants have the practical, professional and organisational capacity to deliver the Lower Wych OPD Management Plan. It should be read alongside Section 1, which introduces the applicants, and Section 4, which sets out the workforce, enterprise and labour evidence.

The purpose is to show that the proposed household has credible skills for the specific tasks the Management Plan relies upon, and that any remaining skills gaps are identified and controlled before the relevant enterprise or regulated activity is activated.

E.2 Applicant Profiles

[redacted]

E.3 Skills Matrix

Table E-1 records the main skills and how they relate to the proposed OPD.

Table E-1: Applicant skills and relevance to delivery

Skill / experience area	[redacted]	[redacted]	Relevance to the OPD
Architectural design and construction coordination	[redacted]	[redacted]	Supports WikiHouse design coordination, contractor briefing, Building Regulations route, reversibility and construction-stage management.

Skill / experience area	[redacted]	[redacted]	Relevance to the OPD
Business management			Supports enterprise accounts, CSA / customer systems, reporting, insurance, tax, marketing and annual monitoring.
Food growing and land-based production			Supports the core case of CSA crops, microgreens, mushrooms and land-based productivity.
Fermentation and food processing			Supports the zero-waste ferments enterprise and food-hygiene route.
Food safety and regulatory readiness			Supports lawful food preparation, customer safety and enterprise monitoring.
Community / education / safeguarding			Supports small educational visits, neighbour communication, accessibility and careful community engagement.
Local connection and support network			Supports practical resilience, school / service knowledge and realistic rural travel assumptions.

E.4 Skills Gaps and Mitigation

The Management Plan deliberately distinguishes between core enterprises and secondary / future enterprises. The main identified gap is dairy goat husbandry and associated regulatory experience. For that reason, micro-dairy is not relied upon in the core minimum-needs case and will not be activated unless training, welfare, registration, food-safety and market controls are in place.

Table E-2: Skills gaps and mitigation

Area	Risk if unmanaged	Mitigation before activation
Micro-dairy / goat husbandry	Animal welfare, regulatory and labour burden if introduced too soon.	Treat as secondary / future only; obtain dairy goat management training, mentoring, welfare plan, registrations and food-hygiene route first.
PV, battery and electrical systems	Safety, reliability and off-grid resilience depend on competent installation.	Use MCS / competent installers and Building Control / electrical certification route as required.
SAB / SuDS approval	Surface-water consent is a separate statutory route.	Prepare standalone SAB / SuDS strategy and obtain approval before construction where required.
Protected species / ecology	Risk to woodland, ponds, bats, birds, amphibians and other protected species.	Treat P1 and P5 as confirmed GCN-positive, treat P2 / relevant wider pond context on an assumed-presence basis where access has not been secured, and apply the avoidance-led RAMS, CEMP, low-impact lighting and stop-work procedures before relevant works.
Food processing and fermentation compliance	Risk of food-safety or labelling non-compliance.	Food premises registration / advice, HACCP controls, allergen management, batch records and appropriate hygiene design.

E.5 Delivery Capacity and Division of Labour

[redacted]

During spring, summer and autumn, labour is concentrated on propagation, crop care, irrigation, harvesting, processing, CSA preparation, delivery bundling and habitat management. During winter, labour shifts toward planning, accounts, woodland and coppice work, maintenance, training and review. Specialist contractors will be used for one-off regulated or technical tasks such as groundworks, electrical installation, PV / battery installation, plumbing, Building Regulations certification or specialist ecological work.

Appendix F Productive Land, Yield and Land-Use Area Audit

F.1 Purpose of this appendix

This appendix records the definitive land-use arithmetic and productive-area basis used by the Business and Improvement Plan, Land Management chapter, landscape plan and water calculations. It replaces the previous duplicate F.1 working schedule with one concise planning-facing audit table.

The whole-site audit basis is 20,700 m2, with the actual title-deed area recorded elsewhere as 20,710 m2 / 2.071 ha / 5.12 acres. Areas are exclusive unless expressly stated, so the table avoids double counting between buildings, productive land, habitat land, ponds and access.

F.2 Exclusive land-use schedule

Category	Area / % site	Planning role
Built footprint: dwelling, enterprise building and open barn	313 m2 / c. 1.51%	Compact built cluster; supports the OPD dwelling, land-based enterprise and covered working/storage functions.
Access, parking, turning and paths	256 m2 / c. 1.24%	Kept modest; permeable or grass-reinforced where practical.
Intensive annual horticulture: vegetable beds and polytunnels	470.4 m2 / c. 2.27%	Main annual crop area used for yield and irrigation sizing.
Speciality crops: wasabi and outdoor mushrooms	250 m2 / c. 1.21%	100 m2 low-technology wasabi beds plus 150 m2 mushroom log / woodchip area.
Orchard and soft fruit	1,550 m2 / c. 7.49%	Perennial food, preserves, CSA seasonal fruit and longer-term food resilience.
Existing woodland	3,829 m2 / c. 18.50%	Retained lowland mixed deciduous woodland / LWS constraint; not treated as new coppice.
New mixed native coppice blocks	2,250 m2 / c. 10.87%	Biomass, shelter, habitat, carbon and small wood products; C1-C4 combined rotation.
Dedicated wildflower meadow block	1,125 m2 / c. 5.43%	Flower-rich meadow / floristic enhancement.
Pollinator strips / beetle banks	963 m2 / c. 4.65%	Beneficial-insect support and productive habitat corridors.
Managed meadow / scrub-grassland mosaic / wildlife refugia	6,683.2 m2 / c. 32.29%	Rough meadow, late-cut areas, scrub pockets, hibernacula, log piles and wildlife refugia.
Low-input rotational grazing / poultry pasture	2,810 m2 / c. 13.57%	Low-density poultry / goat rotation, fertility cycling and grassland management.
Ponds and reedbed	200.4 m2 / c. 0.97%	Two clean-water ponds, one greywater polishing pond and 15 m2 reedbed.

F.3 Productive-area evidence summary

System	Area / size basis	Evidence role
Outdoor annual vegetable beds	326.4 m2; 4 no. 12 m x 6.8 m net growing blocks	Household vegetables, CSA vegetables, ferment crops, roots, brassicas, salads and storage crops.
Protected cropping / polytunnels	144.0 m2; 2 no. 12 m x 6 m polytunnels	Tomatoes, cucumbers, peppers, basil, propagation, winter salads and microgreens / bench area.
Total annual vegetables and protected crops	470.4 m2	Main annual crop area and irrigation design area.
Orchard and soft fruit	1,550 m2	Household fruit, preserves, CSA seasonal fruit and longer-term resilience; Year 5 tree-fruit yield stated cautiously.
Low-technology outdoor wasabi beds	100 m2	Secondary specialist crop; clean harvested rainwater only; not load-bearing for minimum needs.
Outdoor mushroom log / woodchip area	150 m2	Business mushrooms and household food contribution; separate from woodland and coppice.
Indoor mushroom room	18 m2 GIA within enterprise building	Controlled fruiting and year-round reliability; recorded as building GIA, not open land-use area.
Low-input rotational grazing / poultry pasture	2,810 m2	Poultry / possible goat rotation, fertility cycling and grassland management.
New mixed native coppice	2,250 m2, C1-C4	Resilience biomass, biodiversity, shelter, carbon and small wood products; indicative annual coupe c.321 m2/year.

F.4 Yield and irrigation logic

Item	Adopted planning figure	Control / interpretation
Net annual vegetable / protected-crop area	470.4 m2	Used for annual crop yield and irrigation calculations.
Benchmark yield rate	4.87 kg/m2/year	Huw Richards self-sufficiency garden benchmark supplied by applicant; a cross-check, not a guarantee.
Benchmark-equivalent output	c. 2,289 kg/year	Planning range deliberately expressed as c. 1.8-2.4 tonnes/year to allow for establishment, weather, pest pressure and labour.
Household allocation	c. 500-650 kg/year	Supports the Year 5 food self-sufficiency target.
CSA allocation	c. 720-900 kg/year	15 households x 24 weeks; a small mixed-produce seasonal share, not a full vegetable-shop replacement box.
Ferment raw-crop allocation	c. 260-390 kg/year	Supports jarred ferments and value-added production.
Microgreens	c. 180 kg/year	Managed within protected cropping / propagation space.
Irrigation design rate	4 L/m2/day over 470.4 m2	Design daily demand 1,882 L/day; clean-water ponds provide c. 80 m3 usable drawdown.

F.5 Alignment controls

- Existing woodland and new coppice remain separate so the plan does not imply coppicing of the retained LWS woodland.
- The two 10 m ponds are clean-water irrigation / attenuation ponds only. The 6 m polishing pond is the only pond receiving treated greywater.
- Clean rainwater and clean runoff only are used for edible-crop irrigation; treated greywater is routed to reedbed, polishing pond, infiltration and / or non-edible planting only.
- The CSA is described as a small mixed-produce seasonal share, supported by microgreens, mushrooms, ferments.

Appendix G Ecological Footprint Calculator and EFA Input Evidence

G.1 Purpose of this Appendix

This appendix records the evidence basis for the completed Welsh Government One Planet Development Ecological Footprint Calculator. The calculator is submitted with the application, with this note explaining the input assumptions and the boundary between domestic EFA inputs, business activity and wider community effects.

The EFA is a domestic per-capita footprint test for the OPD household. It does not replace the Business and Improvement Plan, Energy and Water chapter, Waste chapter, Transport Assessment or Zero Carbon Buildings evidence; instead, it draws the relevant domestic inputs from those chapters into the calculator.

G.2 Calculator Scope and Household Basis

Table G-1: EFA calculator scope

Item	Adopted basis	Planning interpretation
Household	[redacted]	Four-person household used for per-capita calculator outputs.
Calculator stage at application	Estimated first habitation and estimated Year 5 completed	Year 3 / Year 5 actual review column is left blank until monitored records exist.
Domestic boundary	Domestic consumption, domestic travel, domestic food inputs, household land-use entries and household services	Business and visitor activity are separated so the domestic result is not distorted.
Main Year 5 food case	80% household food self-sufficiency target	Planned operating position, with 65% OPD food floor stress-tested separately.
Sensitivity approach	+15% sensitivity shown against key results	Reflects the guidance that EFA is an indicator rather than an exact physical measurement.
Linked documents	Sections 4, 6, 7, 11 and 12; completed EFA workbook	All inputs must remain aligned with the final submitted Management Plan.

G.3 Headline EFA Results

Table G-2: Application-stage EFA results and sensitivity test

Scenario	Calculator result	+15% sensitivity	Compliance interpretation
Published Welsh national comparator	3.28 gha/person	n/a	National comparator only; not the project compliance test.
OPD long-term objective	1.88 gha/person	n/a	Welsh one-planet direction of travel.
OPD Year 5 compliance threshold	2.4 gha/person	n/a	Main OPD EFA compliance benchmark for Year 5.
Existing household baseline	3.63 gha/person	4.17 gha/person	Optional context only; not relied on for OPD compliance.
Estimated first habitation	1.59 gha/person	1.83 gha/person	Below the 2.4 threshold and below 1.88 even with +15% sensitivity.
Year 3 / Year 5 actual review	Blank at application stage	Blank	To be completed from monitored records at the Year 3 and Year 5 reviews.
Estimated Year 5 - planned 80% food self-sufficiency	1.39 gha/person	1.60 gha/person	Main Year 5 estimate; comfortably below 2.4 and below 1.88.
Year 5 stress-test - 65% food floor	1.54 gha/person	1.77 gha/person	Robustness test; still below 2.4 and below 1.88 with +15% sensitivity.

G.4 Key Domestic Input Assumptions

Table G-3: Key calculator input assumptions

Input area	First habitation basis	Year 5 basis	Reason / cross-reference
Grid electricity / gas / oil	Zero grid electricity; zero gas; zero oil	Zero grid electricity; zero gas; zero oil	Off-grid PV, battery, ASHP-led heat and small resilience woodfuel allowance.
Off-grid solar PV row	5,170 kWh/year	5,170 kWh/year	Entered as the annual domestic / ancillary electrical demand served by the roof-first PV system.
Biomass / logs	1,450 kWh/year	1,450 kWh/year	Small resilience heat allowance only.
Renewable energy / water plant	[redacted]/year over 15 years	[redacted]/year over 15 years	Conservative domestic share of PV, battery, ASHP, thermal store, rainwater and water-treatment plant.
Home construction	[redacted]/year over 30 years	£[redacted] year over 30 years	Conservative domestic dwelling capital allowance; not a prediction of actual self-build cash cost.
Domestic private car distance	4,500 km/year	3,500 km/year	Domestic mileage only; business and visitor mileage are monitored in Section 11.
Petrol use	350 litres/year	280 litres/year	Domestic private-vehicle fuel allowance.
Bought-in food	Reduced from baseline	[redacted]/year at 80% target	Reflects planned Year 5 household food self-sufficiency; 65% floor stress-tested separately.
Domestic food-production inputs	Compost, seeds, tools, feed and plot entries included	Compost [redacted] seeds [redacted]; equipment [redacted] feed [redacted]; domestic plot 3,300 m2	Domestic inputs only; business growing areas and costs excluded from domestic EFA.
Consumable goods and services	Reduced low-consumption pattern	Low new-goods spend, second-hand purchasing and low services spend	Consistent with the minimum-needs budget and OPD low-consumption household model.

G.5 Year 5 Footprint Breakdown

Table G-4: Estimated Year 5 domestic footprint breakdown

Category	Year 5 gha/person	Explanation
Energy	0.00	No grid electricity, gas or oil entry at Year 5; only small biomass allowance appears in the calculator.
Housing / construction / plant	0.36	Conservative dwelling, renewable / water plant, repair and household maintenance allowance.
Transport	0.15	Domestic travel and vehicle inputs only; business and visitor transport monitored separately.
Bought-in food	0.20	Residual purchased food at planned 80% household food self-sufficiency.
Home-grown food inputs / domestic plot	0.21	Compost, seeds, garden equipment, domestic food-production land and feed for home consumption.
Consumables	0.06	Low new-goods consumption with second-hand clothing, furniture, tools and household items where practical.
Services	0.03	Low service, holiday, education, financial and miscellaneous service expenditure.
Public services and national capital	0.38	Standard OPD calculator background contribution; calculator-fixed rather than user-entered.
Total	1.39	Estimated Year 5 domestic ecological footprint.

G.6 EFA Boundary and Other Footprints

Table G-5: Non-domestic activity and treatment outside the domestic EFA

Other footprint area	Treatment in this Management Plan
Enterprise building and workshop / packing areas	Excluded from domestic EFA. Addressed through the low-carbon buildings, fabric distinction, operational-energy monitoring and reversibility evidence.
Business energy and materials	Excluded from domestic EFA. Accounted for in the Business and Improvement Plan, Section 6 energy monitoring and enterprise records.
Business travel	Excluded from domestic EFA. Quantified and monitored in Section 11 as part of the site-associated travel plan.
Visitors, events and educational visits	Excluded from domestic EFA. Capped and monitored through Sections 10 and 11.
Wider community effects	Considered qualitatively only. Local food, knowledge-sharing and produce-sharing may reduce off-site impacts, but no numerical EFA credit is taken.
Carbon sequestration, biodiversity and soil improvement	Outside the EFA calculator. Addressed through land management, habitat creation, coppice, orchard, meadow, woodland-edge management and whole-life carbon evidence.

G.7 Monitoring Evidence Required

- Retain the submitted EFA workbook as the locked application-stage version, with file name, date and revision number recorded.
- Keep annual records of domestic electricity use, PV generation, battery operation, biomass use, rainwater / water plant operation and domestic consumption patterns.
- Record domestic travel separately from business and visitor travel, using the trip log required by Section 11.
- Record household food production and bought-in food expenditure so the 80% target and 65% stress-test floor can be reviewed from actual data.
- Prepare a full EFA at Year 3 and Year 5 using monitored records rather than application-stage estimates.
- Use yellow-card / red-card corrective action if monitored results move materially away from the 2.4 gha/person threshold trajectory.

Appendix G.1 - Completed Welsh Government OPD EFA Calculator: Data Entry Sheet

One Planet Development Ecological Footprint Calculator

Conversion factors provided by SEI (Stockholm Environment Institute)

Current Per Capita Ecological Footprint	3.626 gha
Estimated Per Capita Ecological Footprint on First Habitation	1.589 gha
Year Three & Year Five review Per Capita Ecological Footprint	gha
Future estimated Per Capita Ecological Footprint	1.391 gha

Input ref.	Data entry sheet * It is recommended you enter current household figures as a baseline to guide your e	Existing Household Actual Figures Pre Application (not required on application)	Estimated Household Figures on First Habitation Required on Application	Use For Year Three & Year Five Review Actual Figures (not required on application)	Estimated Household Figures at Year Five Required on application
1	Number of people in Household	4	4		4
2	Household annual income	42000 £ per year		£ per year	
	ENERGY				
3	On Grid electricity	3500 kWh	0 kWh	kWh	0 kWh
4	Off grid electricity: solar PV	0 kWh	5170 kWh	kWh	5170 kWh
5	Off grid electricity: wind turbine	0 kWh	0 kWh	kWh	0 kWh
6	Gas (includes bottled gas) - 1kg LPG = 12.77 kWh	12000 kWh	0 kWh	kWh	0 kWh
7	Biomass - logs - 1 tonne (see notes) = 3869 kWh	0 kWh	1450 kWh	kWh	1450 kWh
8	Coal - 1 kg = 8.05 kWh	0 kWh	0 kWh	kWh	0 kWh
9	Oil - 1 litre = 10 kWh	0 kWh	0 kWh	kWh	0 kWh
	HOUSING & INFRASTRUCTURE				
10	Rent or mortgage expenditure	9600 £ per year	0 £ per year	£ per year	0 £ per year
11	Capital Cost - renewable energy equipment /water plant - spread over 15 years	0 £ per year	5000 £ per year	£ per year	5000 £ per year
12	Capital Cost - Costs of home construction - spread over 30 years	0 £ per year	6000 £ per year	£ per year	6000 £ per year
13	Maintenance and repair of the dwelling	800 £ per year	200 £ per year	£ per year	300 £ per year
14	Goods & services for household maintenance	250 £ per year	100 £ per year	£ per year	100 £ per year
15	Water supply and miscellaneous dwelling services	420 £ per year	0 £ per year	£ per year	0 £ per year
	TRAVEL & TRANSPORTATION				
16	Purchase of vehicles	1500 £ per year	1200 £ per year	£ per year	1000 £ per year
17	Operation of personal transport equipment (maintenance, services etc)	600 £ per year	500 £ per year	£ per year	500 £ per year
18	Railway transport	200 £ per year	150 £ per year	£ per year	150 £ per year
19	Road transport (buses and taxis)	100 £ per year	100 £ per year	£ per year	100 £ per year
20	Air transport	800 £ per year	200 £ per year	£ per year	100 £ per year
21	Water transport	0 £ per year	0 £ per year	£ per year	0 £ per year
22	Distance travelled by private car	12000 km per year	4500 km per year	km per year	3500 km per year
23	Domestic Private vehicle petrol use	800 litres per year	350 litres per year	litres per year	280 litres per year
24	Domestic Private vehicle diesel use	0 litres per year	0 litres per year	litres per year	0 litres per year
25	Domestic Private vehicle 100% biodiesel use	0 litres per year	0 litres per year	litres per year	0 litres per year
26	Domestic Private vehicle reclaimed veg oil use	0 litres per year	0 litres per year	litres per year	0 litres per year
	FOOD (shop purchased)				
27	Meat and meat products (excl. poultry)	800 £ per year	300 £ per year	£ per year	150 £ per year
28	Poultry meat and poultry meat products	400 £ per year	100 £ per year	£ per year	0 £ per year
29	Fish and fish products from catch	300 £ per year	150 £ per year	£ per year	80 £ per year
30	Fruit and vegetables	1200 £ per year	200 £ per year	£ per year	50 £ per year
31	Vegetable and animal oils and fats	100 £ per year	90 £ per year	£ per year	80 £ per year
32	Dairy products	600 £ per year	250 £ per year	£ per year	100 £ per year
33	Grain mill products; starches and starch products	200 £ per year	200 £ per year	£ per year	200 £ per year
34	Bread; rusks and biscuits; pastry goods and cakes	400 £ per year	100 £ per year	£ per year	0 £ per year
35	Cocoa; chocolate and sugar confectionery	300 £ per year	150 £ per year	£ per year	100 £ per year
36	Other food products (incl. sugar)	400 £ per year	150 £ per year	£ per year	80 £ per year
37	Non-alcoholic beverages	500 £ per year	150 £ per year	£ per year	100 £ per year
38	Alcoholic beverages	500 £ per year	100 £ per year	£ per year	50 £ per year
39	Eating out and take away foods	1500 £ per year	200 £ per year	£ per year	50 £ per year
	FOOD (home grown) enter only figures for your domestic production				
40	Compost purchased	0 £ per year	100 £ per year	£ per year	80 £ per year
41	Inorganic fertilizer purchased	0 £ per year	0 £ per year	£ per year	0 £ per year
42	Gardening/ horticultural equipment purchased	100 £ per year	200 £ per year	£ per year	80 £ per year
43	Seeds	20 £ per year	100 £ per year	£ per year	60 £ per year
44	Size of plot (include domestic buildings and land used to grow only your family's foods)	20 m2	1000 m2	m2	3300 m2
45	Animal feeds bought & fed to livestock for home consumption	0 £ per year	200 £ per year	£ per year	330 £ per year
	CONSUMABLE GOODS (shop purchased)				
46	Tobacco	0 £ per year	0 £ per year	£ per year	0 £ per year
47	Clothing	1200 £ per year	600 £ per year	£ per year	300 £ per year
48	2nd hand clothing	200 £ per year	300 £ per year	£ per year	200 £ per year
49	Footwear	400 £ per year	200 £ per year	£ per year	100 £ per year
50	2nd hand footwear	50 £ per year	100 £ per year	£ per year	25 £ per year
51	Furniture; furnishings; carpets etc.	800 £ per year	400 £ per year	£ per year	100 £ per year
52	2nd hand furniture	100 £ per year	300 £ per year	£ per year	100 £ per year
53	Household textiles	200 £ per year	100 £ per year	£ per year	80 £ per year
54	Household appliances	400 £ per year	150 £ per year	£ per year	100 £ per year
55	Glassware; tableware & household utensils	150 £ per year	60 £ per year	£ per year	30 £ per year
56	2nd hand household utensils etc	20 £ per year	50 £ per year	£ per year	30 £ per year
57	Tools and equipment for house & garden	300 £ per year	300 £ per year	£ per year	200 £ per year
58	2nd hand tools and equipment for house & garden	50 £ per year	150 £ per year	£ per year	100 £ per year
59	Medical products; appliances & equipment	300 £ per year	200 £ per year	£ per year	150 £ per year
60	Telephone & telefax equipment	200 £ per year	100 £ per year	£ per year	40 £ per year
61	Audio-visual; photo & info. processing equipment	400 £ per year	150 £ per year	£ per year	20 £ per year
62	Other major durables for recreation & culture	200 £ per year	100 £ per year	£ per year	50 £ per year
63	Other recreational equipment etc.	200 £ per year	100 £ per year	£ per year	50 £ per year
64	Newspapers; books & stationery	400 £ per year	200 £ per year	£ per year	100 £ per year
65	Personal care	600 £ per year	300 £ per year	£ per year	200 £ per year
66	Personal effects not included elsewhere	150 £ per year	60 £ per year	£ per year	50 £ per year
	Services -				
67	Postal services	40 £ per year	40 £ per year	£ per year	21 £ per year
68	Telephone & telefax services	840 £ per year	540 £ per year	£ per year	420 £ per year
69	Education	3500 £ per year	200 £ per year	£ per year	100 £ per year
70	Accommodation services	2000 £ per year	300 £ per year	£ per year	100 £ per year
71	Insurance	900 £ per year	700 £ per year	£ per year	450 £ per year
72	Financial services not included elsewhere	200 £ per year	200 £ per year	£ per year	150 £ per year
73	Other services not included elsewhere	1300 £ per year	200 £ per year	£ per year	150 £ per year
74	UK residents abroad (UK holiday makers)	500 £ per year	100 £ per year	£ per year	50 £ per year
	All other transactions in year not accounted for above -				
75	Savings in year	3000 £ in year		£ in year	
76	All fuel costs in year, inc. vehicle fuel, gas, elect. etc	2800 £ per year		£ per year	
	Verification against annual income. If +/- 5% of income then figures OK If not then you need to check the figures you have entered.	42990		0	

Note: Application-stage extract from the completed Welsh Government OPD Ecological Footprint Calculator. The calculator records a current household baseline of 3.626 gha/person, an estimated first-habitation footprint of 1.589 gha/person, and an estimated future / Year 5 footprint of 1.391 gha/person. The Year 3 / Year 5 actual review column is intentionally left blank at application stage and will be completed through OPD monitoring.

Appendix H Low-Carbon Buildings, Materials and Part L (Wales) Compliance Route

H.1 Purpose of this appendix

This appendix records the concise evidence route for the OPD zero-carbon buildings test. Its role is to identify the fixed building assumptions, the planning-stage performance commitments and the detailed evidence that will be supplied before construction / occupation.

H.2 Compliance route

Evidence route	Planning-stage role	Detailed-stage evidence
Section 8 zero-carbon proof chapter	Explains how the buildings are low-impact in construction and use and tied to reversibility.	Update only if a major building-system substitution occurs.
SAP / Part L (Wales)	Statutory operational-energy and regulated-carbon compliance route.	Design-stage and as-built SAP / Part L evidence, Building Control approval and commissioning records.
Materials report	Records construction impact, materials provenance and whole-life-carbon evidence in a format familiar to OPD assessment.	Supplier quantities, transport distances and final materials schedule.
WikiHouse technical / fire / fabric evidence	Demonstrates system credibility, fabric performance and the retained fire-tested lining route.	Manufacturer data, structural engineer sign-off, fire strategy and final Building Regulations drawings.
Commissioning and monitoring	Turns design commitments into annual OPD monitoring evidence.	Airtightness test, MVHR commissioning, PV logs, energy sub-metering and annual performance records.
Exit / restoration	Shows that buildings are not permanent mineral-sterilising or countryside-urbanising infrastructure.	Appendix X removal / reuse / restoration method and annual monitoring notes.

H.3 Building and structure schedule

Building / structure	Planning / Building Regulations status	Low-carbon, servicing and exit approach
WikiHouse dwelling	Domestic building and sole residence. Building Regulations approval required.	WikiHouse Skylark 250 Plus on screw piles; high-performance fabric, MVHR, ASHP-led heat and hot water, thermal store, roof-mounted PV and battery storage; capable of removal or conversion if residential use must cease.
Enterprise building	Ancillary land-based enterprise building. Building Regulations approval required.	Same reversible timber-cassette logic, with fabric and servicing differentiated by use. Heated / serviced only as needed for hygiene, product quality and condensation control.
Root cellar / passive cold store	Agricultural / storage structure. Not proposed to require Building Regulations approval.	Earth-sheltered or low-impact passive storage; no routine heating or mechanical cooling.
Two polytunnels	Protected cropping structures. Not proposed to require Building Regulations approval.	Unheated, demountable crop-production structures; roof runoff contributes to the separate clean-water irrigation strategy.
Open barn / tool stores	Agricultural support structures. Not proposed to require Building Regulations approval.	Simple timber / demountable storage; unheated.
PV, battery, tanks and service plant	Operational infrastructure linked to approved buildings.	Roof-first renewable generation and modular plant; replaceable and removable.

H.4 Adopted fabric and services schedule

Component	Adopted planning-stage value	Verification route
External walls	U-value = 0.123 W/m2K	WikiHouse Skylark 250 Plus fabric schedule / final specification.
Roof	U-value = 0.108 W/m2K	Final specification and Part L / SAP evidence.
Floor	U-value = 0.128 W/m2K	Final specification and Part L / SAP evidence.
Windows	Target Uw = 0.80 W/m2K	Window supplier data and SAP input.
Airtightness	0.15 AC/H background infiltration target, equivalent to 3 AC/H @ 50 Pa	As-built airtightness test and MVHR commissioning.
Ventilation	Balanced MVHR; 0.6 AC/H with 80% heat recovery modelling basis	Design and commissioning certificate.
Energy plant	20.88 kWp PV, 50 kWh nominal LiFePO4 battery, 6-8 kW ASHP, c. 600 L thermal store	Installer design, commissioning records and annual monitoring.
Potable rainwater	40 m3 storage; 259 m2 potable catchment; 44 m2 green roof excluded	Appendix J water evidence and private-supply records.

Appendix H.4A - PVGIS Off-Grid PV and Battery Performance Report

European Commission

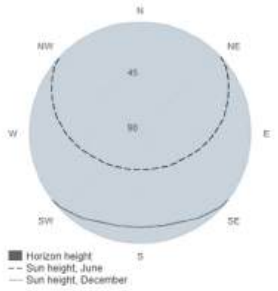
Performance of off-grid PV system

PVGIS-5 estimates of solar electricity generation

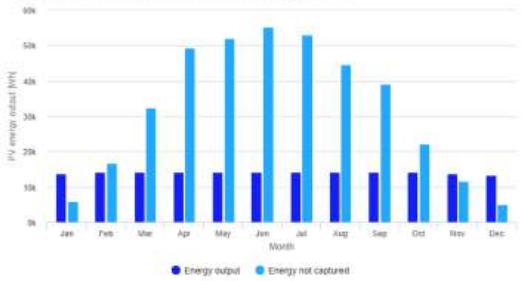
Provided inputs

Latitude/Longitude:	52.990,-2.778	Slope angle:	45 °
Horizon:	Calculated	Azimuth angle	0 °
Database used:	PVGIS-SARAH3	**Simulation outputs**	
PV installed:	20880 Wp	Percentage days with full battery:	80.18 %
Battery capacity:	50000 Wh	Percentage days with empty battery:	2.72 %
Cutoff limit:	20 %	Average energy not captured:	40266.95 Wh
Consumption per day:	14164 Wh	Average energy missing:	5228.75 Wh

Outline of horizon at chosen location:



Power production estimate for off-grid PV:

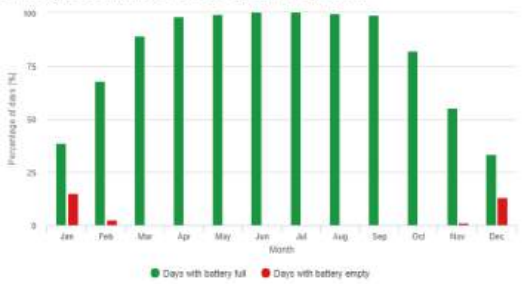


Monthly average performance

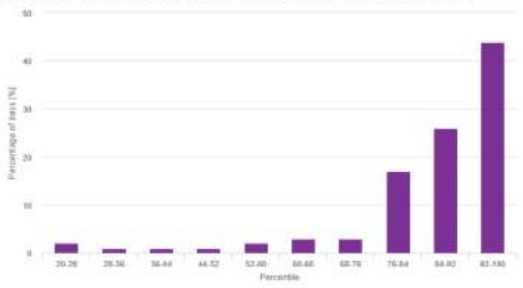
Month	E_d	E_l	f_f	f_e
January	13639.6	5961.4	38.8	15.2
February	14211.4	16685.3	68.0	2.6
March	14229.8	32267.3	89.0	0.0
April	14172.7	49276.4	98.1	0.0
May	14173.5	51941.7	99.3	0.2
June	14165.7	55113.8	100.0	0.0
July	14160.4	52974.2	99.8	0.0
August	14151.8	44623.2	99.5	0.0
September	14149.1	39155.3	98.8	0.0
October	14118.6	22227.9	82.2	0.2
November	13814.1	11684.6	55.4	1.2
December	13245.0	5053.0	33.5	12.9

E_d: Average energy production per day [Wh/day].
E_l: Average energy not captured per day [Wh/day].
f_f: Percentage of days when battery became full [%].
f_e: Percentage of days when battery became empty [%].

Battery performance for off-grid PV system:



Probability of battery charge state at the end of the day:



Cs	Cb
20-28	2.0
28-36	1.0
36-44	1.0
44-52	1.0
52-60	2.0
60-68	3.0
68-76	3.0
76-84	17.0
84-92	26.0
92-100	44.0

Cs: Charge state at the end of each day [%].
Cb: Percentage of days with this charge state [%].

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Joint Research Centre

Report generated on 2026/05/12

Note: European Commission Joint Research Centre PVGIS-5 output generated on 12 May 2026 for the Lower Wych site. Model inputs comprise a 20.88 kWp photovoltaic array, 50 kWh nominal battery capacity, 20% battery cut-off and modelled electricity consumption of 14.164 kWh/day. The output is a modelled performance estimate and should be read alongside the energy-demand assumptions, seasonal resilience measures and monitoring provisions contained in Appendix H and Section 6 of the Management Plan.

Appendix I WikiHouse Planning Evidence Pack

I.1 Purpose of this appendix

This appendix gives a concise planning-facing index for the WikiHouse evidence. It avoids repeating the full WikiHouse technical case.

I.2 System summary

Topic	Planning-facing explanation	Evidence / verification
System type	Open-source CNC-cut timber cassette / block system assembled dry on site from standardised components.	WikiHouse / Open Systems Lab system literature and construction method note.
Version used at Lower Wych	WikiHouse Skylark 250 Plus for the dwelling, with external woodfibre over-insulation and natural-fibre insulation.	Lower Wych specification and fabric table.
Appearance	The structural system does not determine the external appearance; the submitted elevations, cladding and roof finish control landscape character.	Plans, elevations
Scale suitability	The proposed single-storey dwelling, part double storey and enterprise building sit within the expected small-building use of the system.	Manufacturer / structural engineer design statement and Part A calculations before construction.
Operational performance	High insulation, airtightness, triple glazing and MVHR reduce demand before renewable systems are sized.	Section 6, Section 8, SAP / Part L Wales and commissioning records.
Reversibility	Dry timber chassis, screw piles, modular services and demountable ancillary structures support exit / restoration.	Appendix X and final construction method statement.

I.3 Principal questions

Planning question	Response	Evidence route
Is the system credible rather than experimental?	Yes. It is a published technical system with third-party thermal / LCA evidence and a clear Building Regulations route.	WikiHouse literature, Leeds Beckett thermal / LCA study, structural engineer statement and Building Control evidence.
Can it fit the rural landscape?	Yes. External materials and siting are controlled by the submitted drawings; the timber system is visually recessive once clad.	Elevations, landscape plan, materials palette and viewpoint evidence.
Can it meet fire and structural requirements?	The planning submission does not replace Building Regulations approval; it identifies a credible route and preserves the fire-tested lining logic.	Fire strategy, structural calculations and Building Control sign-off before construction.
Does it satisfy OPD low-carbon principles?	The system reduces concrete, uses timber-based dry assembly and supports high fabric performance.	Section 8, Appendix H, materials / WLC schedule and Part L evidence.

I.4 Lower Wych specification summary

Element	Specification	Planning significance
Structure	WikiHouse Skylark 250 Plus; CNC-cut OSB3 interlocking timber-cassette chassis.	Dry, lightweight, low-waste fabrication and reversible assembly.
Foundations	Ground screw piles with timber base plates / ring beam.	Avoids broad concrete foundations and assists removal / restoration.
Insulation	Sheep's wool within cassette cavity plus Steico woodfibre over-insulation.	Natural-fibre / biogenic material palette with high fabric performance.
Airtightness	INTELLO PLUS or equivalent continuous internal vapour / airtightness layer.	Supports 0.15 AC/H target and MVHR-led ventilation.
Internal lining / finish	Fire-tested plasterboard lining route retained; lime skim finish.	Avoids untested substitutions and keeps an OPD-appropriate internal finish.
External finish	Welsh-sawn larch weatherboard where available; standing seam metal / EPDM roof strategy.	Durable, natural, recessive rural material palette.

I.5 Evidence to attach or hold for determination

- Plain-English WikiHouse system summary and construction sequence note.
- Precedent image pack showing completed WikiHouse / rural timber-cassette projects.
- Leeds Beckett thermal-performance and LCA evidence, used as supporting evidence rather than as a substitute for project-specific SAP.
- Structural-principle statement, with final Part A calculations reserved for Building Regulations.
- Fire strategy confirming the retained tested plasterboard lining route.
- Materials / whole-life-carbon schedule and final provenance table.

Appendix J Potable Rainwater, Borehole Contingency and Irrigation Strategy

Purpose and structure

This appendix keeps the water strategy auditable without reproducing every calculation in narrative form. It covers three linked but separate systems: domestic potable rainwater, borehole contingency, and clean-water irrigation for the market garden and polytunnels. The governing rule is unchanged: edible-crop irrigation uses clean rainwater / clean runoff only; treated greywater is routed separately to the reedbed, polishing pond, infiltration and / or non-edible planting.

J.1 Domestic Potable Rainwater Report

Item	Adopted planning-stage figure	Role in design
Total roof area	303 m2	Whole roof area used for coordination with drawings.
Potable rainwater catchment	259 m2	Harvesting from suitable metal / EPDM roof areas only.
Green roof area excluded from potable harvesting	44 m2	Routed to landscape attenuation / swales rather than potable storage.
Adopted rainfall basis	Shawbury 1991-2020 mean = 682.53 mm/year	Inland lowland station treated as representative for Lower Wych.
Dry-year stress basis	510 mm/year	Approximately 25% below the Shawbury mean, used as a conservative stress test.
Collection efficiency	Weighted average c. 0.878, rounded to 0.88	143 m2 sloped / standing seam roof at 0.90 plus 116 m2 flat / EPDM catchment at 0.85.
Domestic demand	102,200 L/year	Equivalent to 70 L/person/day for a four-person household.
Potable storage	40,000 L underground storage, indicatively 2 x 20,000 L tanks	Off-grid resilience; approx. 143 days at peak demand before allowing for refill.

Domestic yield and storage test

Scenario	Annual yield	Annual demand	Surplus / deficit	Interpretation
Mean year	155,139 L	102,200 L	+52,939 L	Annual yield comfortably exceeds demand.
Dry-year stress	115,923 L	102,200 L	+13,723 L	Still positive under the adopted dry-year stress.
60 days peak demand	16,800 L	n/a	n/a	40,000 L storage exceeds a robust off-grid resilience allowance.
90 days peak demand	25,200 L	n/a	n/a	40,000 L storage retains additional headroom.

Treatment train and compliance route

Stage	Device / method	Function
1	First-flush diverters at downpipes	Divert the first dirty runoff from roof debris, dust and bird droppings.
2	Leaf and sediment filters upstream of tank	Remove larger particulates before storage.

Stage	Device / method	Function
3	Opaque / below-ground storage tanks	Limit algal growth and provide stable storage.
4	5 micron sediment cartridge at pump outlet	Remove fine particles before domestic distribution.
5	Activated carbon filter	Improve taste and reduce dissolved organics.
6	UV sterilisation before internal distribution	Provide potable treatment route subject to private-water-supply testing.

Final equipment selection, filter specification, private-water testing and any Building Regulations Part G / private-water-supply requirements will be confirmed before occupation and then reported through annual monitoring.

J.2 Borehole Contingency Note

The primary water supply is rainwater harvesting. A borehole is retained only as a contingency if annual monitoring shows that the rainwater-primary plan cannot meet domestic demand without unacceptable reliability or water-quality risk. Domestic demand is approximately 0.28 m3/day, far below the 20 m3/day abstraction-licensing threshold. Any borehole drilling, yield testing, water-quality analysis and treatment design would be confirmed before use and would not alter the primary rainwater-led OPD water strategy.

J.3 Market Garden and Polytunnel Irrigation Strategy

Item	Adopted planning-stage figure	Notes
Outdoor growing beds	326.4 m2	4 no. 6.8 m x 12 m beds.
Polytunnel crop area / roof catchment	144.0 m2	2 no. 6 m x 12 m polytunnels; horizontal plan area used for rainfall.
Total routinely irrigated productive area	470.4 m2	Core crop area requiring reliable summer irrigation.
Design summer irrigation rate	4 L/m2/day	Efficient drip irrigation, mulch and no-dig soil management.
Design daily irrigation demand	1,882 L/day	Equivalent to 1.88 m3/day.
Clean-water ponds	2 no. 10 m diameter ponds	Dual irrigation reserve / attenuation ponds with planted wildlife margins.
Adopted total pond water storage	c. 100 m3	Conservative allowance for natural sloped banks and shelves.
Usable irrigation drawdown	c. 80 m3	Retains c. 20 m3 as ecological minimum water.
Storm attenuation / freeboard	c. 30-40 m3	Upper freeboard zone with controlled overflow.

Dry-spell resilience summary:

Water resource case	Available irrigation water	Days at 3 L/m2/day	Days at 4 L/m2/day	Days at 5 L/m2/day
Pond reserve only	80,000 L	56.7	42.5	34.0
Pond reserve + dry April-September poly-tunnel roof yield	109,587 L	77.7	58.2	46.6
Pond reserve + mean April-September poly-tunnel roof yield	119,449 L	84.6	63.5	50.8

Water-quality rules and monitoring

- No treated greywater is used for edible-crop irrigation.
- The two 10 m ponds receive clean rainwater / clean runoff only; the 6 m polishing pond is the greywater end-point after reedbed treatment.
- Pond pump intakes are set above the ecological minimum water level so dry-spell irrigation does not empty the ponds.
- Overflow is controlled to vegetated swales / infiltration and not allowed to cut direct sediment or nutrient path-ways to woodland, pond P1 or watercourses.
- Annual monitoring records domestic demand, tank levels, private-water results, tankered-in water if any, irriga-tion use, pond levels, drought-response stage and maintenance of filters / gutters / spillways.

Construction-stage details to confirm

- Final roof catchment drawing showing potable catchment, excluded green roof and downpipe routes.
- Tank supplier design, first-flush volumes, filter specification, UV sizing and water-testing plan.
- Final pond profiles, liners / clay sealing where needed, freeboard, spillways and safe planted margins.
- Irrigation header tanks, pump specification, dripline zoning and silt / debris controls.
- SAB / SuDS interface and any required drainage approval route before construction.

Appendix K Surface Water Drainage and SAB / SuDS Strategy

K.1 Purpose of this Appendix

This appendix records the planning-stage surface-water strategy and the separate SAB / SuDS consent route for the Lower Wych OPD. It is deliberately separated from Appendix L, which deals with pollution prevention, greywater, the reedbed, the polishing pond and SAC compatibility. Surface water is a statutory drainage-consent track; pollution prevention and nutrient-pathway control are a separate environmental-protection track.

The strategy is based on avoiding rapid runoff at source, keeping surfaces permeable where practical, harvesting clean roof water, routing clean runoff through vegetated features, storing water within the holding, and maintaining clear separation between clean-water attenuation features and the greywater treatment chain.

K.2 SAB Consent Route

Table K-1: SAB / SuDS consent route

Issue	Planning-stage position	Evidence / action	Timing
SAB trigger	The development is treated as requiring SAB consideration because the combined construction area of the dwelling, enterprise building, access, parking, tracks, polytunnels and water-management features is expected to exceed 100 m2.	Prepare a SAB-facing impermeable / construction-area schedule and confirm the trigger with the SuDS Approval Body.	Before construction; ideally in parallel with planning determination.
Separate consent	SAB approval is not buried within the planning appendices or the SAC note. It is a separate statutory consent route under Schedule 3 of the Flood and Water Management Act 2010.	Submit SAB pre-application or full SAB application with drainage plan, calculations, maintenance schedule and exceedance routing.	Before any construction that requires SAB approval.
Planning interface	The planning submission should demonstrate that a feasible SuDS strategy exists, but final hydraulic sizing can be refined through the SAB track.	Use this appendix as the planning-stage bridge between the Management Plan and the SAB application.	Planning submission and SAB application.
Maintenance responsibility	The OPD household / landholding will retain responsibility for routine inspection and maintenance unless the SAB process specifies otherwise.	Include ownership, access and maintenance notes in the SAB pack and Annual Monitoring Report template.	Final SAB application and annual monitoring.
Relationship to water strategy	Potable rainwater storage, clean-water irrigation storage and surface-water attenuation are linked operationally but must be distinguishable on drawings.	Provide a clean-water drainage plan showing tanks, ponds, swales / rain gardens, permeable areas and overflows.	Before SAB submission.

K.3 Surface-Water Design Principles

Table K-2: Design principles

Principle	Application at Lower Wych	Planning benefit
Reduce runoff at source	Harvest clean roof runoff into potable rainwater tanks and non-potable clean-water storage before it becomes surface runoff.	Reduces runoff volume and supports OPD water independence.
Keep hard surfaces permeable	Use permeable / grass-reinforced access, parking, turning and path surfaces wherever practical.	Avoids suburban hardstanding character and reduces fast runoff.
Slow and spread flow	Use shallow contour swales, rain-garden features, silt traps and vegetated infiltration areas.	Reduces erosion, sediment movement and downstream peak-flow risk.
Store clean water on site	Use two 10 m diameter clean-water irrigation / attenuation ponds with planted margins and controlled overflow.	Combines irrigation resilience, attenuation, fire-resilience and biodiversity value.
Separate clean water from greywater	Clean-water ponds receive rainwater and clean runoff only. Greywater goes only to the reedbed, 6 m polishing pond / planted wetland cell, infiltration and non-edible planting.	Keeps edible-crop irrigation and SAC / pollution controls auditable.
Design for exceedance	Route exceptional overflow away from buildings, stored materials, compost, UDDT areas, the retained LWS woodland and neighbouring land.	Reduces risk during intense rainfall events and protects sensitive receptors.

K.4 Surface-Water Components and Routing Schedule

Table K-3: Surface-water components

Component	Planning-stage figure / description	Surface-water role	Final design check
Dwelling and enterprise roofs	Roof catchments linked to rainwater harvesting and clean overflow routes. Domestic potable roof catchment is treated in Appendix J.	Intercepts clean roof water for storage before overflow to clean-water SuDS features.	Coordinate roof areas, gutter lines, first-flush / silt control and overflow points at detailed design stage.
Potable rainwater storage	40 m3 / 40,000 L underground storage, indicatively 2 x 20,000 L tanks.	Reduces clean roof runoff at source and supplies domestic potable water after filtration and UV treatment.	Confirm tank location, access covers, overflow and backflow protection.
Polytunnel roof catchment	2 no. 12 m x 6 m polytunnels; 144 m2 horizontal catchment used for irrigation calculations.	Captures clean water for crop irrigation and reduces uncontrolled runoff from protected cropping structures.	Confirm guttering, header tanks, filters and overflow to clean-water ponds / swales.
Access, parking and paths	Approx. 256 m2 planning-stage area from the current land-use audit.	Permeable / grass-reinforced surfaces reduce fast runoff and maintain rural character.	Confirm construction build-up, sub-base permeability, gradients and maintenance access.
Two clean-water irrigation / attenuation ponds	2 no. 10 m diameter ponds; approx. 100 m3 total water storage, approx. 80 m3 usable irrigation drawdown and approx. 30-40 m3 storm attenuation zone.	Dual irrigation reserve and clean runoff attenuation with planted wildlife margins.	Confirm levels, bank slopes, freeboard, safety shelves, silt traps, inlet/outlet details and controlled overflow.
Shallow swales / rain gardens	Planning-stage features to be fixed on the SAB drainage plan.	Slow, spread and infiltrate clean runoff from tracks, productive areas and overflow routes.	Confirm location, cross sections, planting, check dams if needed and overflow hierarchy.

Component	Planning-stage figure / description	Surface-water role	Final design check
Vegetated infiltration areas	Non-edible planted areas, coppice / willow / hedgerow margins where appropriate.	Receives controlled clean overflow and some treated greywater overflow only where specified in Appendix L.	Confirm soil infiltration, separation from LWS woodland and avoidance of nutrient overload.
Greywater polishing pond	6 m diameter planted wetland cell downstream of the reedbed.	Not a clean-water attenuation pond. It receives treated greywater only and is dealt with in Appendix L.	Show separately on drawings so it is not confused with edible-crop irrigation storage.

K.5 SAB Evidence Pack to Prepare

- Impermeable-area / construction-area schedule distinguishing roofs, polytunnels, access, parking, tracks, tanks, ponds and other structures.
- Existing and proposed levels plan showing the gentle northward fall, exceedance paths and areas where water is slowed, stored or infiltrated.
- Drainage layout plan showing roof runoff, potable storage overflow, polytunnel runoff, swales / rain gardens, clean-water ponds and controlled overflow points.
- Simple hydraulic calculations for design storm events, climate-change allowance, storage volumes, infiltration / discharge assumptions and freeboard.
- Maintenance schedule naming inspection frequency, silt removal, vegetation management, permeable-surface care and post-storm checks.
- Construction-phase controls showing how sediment, fuels, concrete washout, dirty water and disturbed soil will be prevented from entering ponds, ditches, woodland or neighbouring land.

K.6 Monitoring, Maintenance and Triggers

Table K-4: Monitoring and adaptive management

Feature	Routine record	Target / success check	Trigger and corrective action
Gutters, downpipes and first-flush / silt controls	Quarterly check and after major storms.	Clear flow to tanks / clean-water routes; no blockage or erosion.	Blockage, overflow staining or sediment build-up -> clean, repair and record.
Permeable access and parking	Annual visual inspection and after heavy-rain events.	No ponding, rutting, clogging or muddy runoff to the highway / habitats.	Ponding or sediment movement -> scrape, re-grade, re-seed, add aggregate or improve edge drainage.
Swales / rain gardens	Photographs and vegetation check after establishment and storms.	Stable vegetation, no erosion gullies and no direct polluted pathway.	Erosion or standing water -> repair levels, add check features, replant or de-silt.
Clean-water ponds	Weekly level checks in growing season; post-storm observations.	Stable banks, retained ecological minimum water and safe freeboard.	Bank erosion, algal growth, silt build-up or unsafe drawdown -> reduce abstraction, de-silt, replant margins or review overflow.
Exceedance routes	Annual walkover and after exceptional rainfall.	Overflow directed away from buildings, compost, UDDTs, LWS woodland and neighbours.	Unplanned flow route -> adjust grading, bunds, swales or infiltration area.

K.7 Relationship to Other Appendices

- Appendix J covers water supply, potable rainwater storage, hydrogeological contingency and clean-water irrigation sizing.
- Appendix L covers pollution prevention, greywater treatment, reedbed / polishing pond operation and SAC compatibility.
- Appendix M covers sanitation, composting, nutrients and waste streams.

Appendix L Pollution Prevention, Greywater, Reedbed and SAC Compatibility Note

L.1 Purpose of this appendix

This appendix summarises the source-pathway-receptor controls that make the water, sanitation, nutrient and construction strategy compatible with the on-site pond, Doley Wood and Meadows LWS woodland, the wider Wych Brook / River Dee catchment and the River Dee / Bala Lake SAC screening position. It is deliberately tabular so the commitments can be checked through CEMP and annual monitoring records.

L.2 Sensitive receptors and design response

Receptor	Potential pathway	Design response	Monitoring
River Dee / Wych Brook catchment	Nutrients, sediment, greywater, dirty runoff or high-strength residues leaving the site.	No blackwater discharge; greywater to reedbed / polishing / infiltration only; clean-water and greywater systems separated; nutrient applications capped and recorded.	Reedbed inspections, pond checks, nutrient logs and incident records.
Doley Wood and Meadows LWS woodland	Compaction, storage, runoff, leachate, lighting, dust or construction damage.	No built form, storage, composting, dirty-water routing or nutrient application within LWS woodland; CEMP and RPA / woodland-edge controls.	Fixed photographs, ecological walkover, woodland-edge notes and CEMP checks.
Pond P1 and wider pond network	Sediment, spills, greywater, livestock / manure runoff or construction dust.	CEMP controls, no direct discharge, buffer / exclusion zones, clean-water / greywater separation and GCN RAMS.	Pond observations, protected-species record and pollution incident log.
Edible crops	Use of lower-quality water or uncontrolled nutrient streams.	Edible-crop irrigation is clean rainwater / clean runoff only.	Irrigation log and water-system inspection.
Neighbouring land / highway	Mud, silt, runoff or construction spill.	Stabilised access, material storage controls, silt traps, spill kits and contractor briefing.	Site diary and incident records.

L.3 Greywater treatment route

Parameter	Adopted planning-stage allowance	Management note
Influent type	Greywater only from showers, basins, laundry and ordinary domestic-equivalent kitchen use.	No blackwater because urine-diverting dry toilets avoid WC flushing.
Design flow	Expected average c. 220-240 L/day; 300 L/day retained as peak hydraulic design allowance.	Allows for visitor days, washing peaks and operational resilience.
Primary controls	Grease / solids separation before reedbed where required.	Kitchen fats, oils, strong brines and high-strength enterprise liquids are captured separately.
Main treatment	15 m2 horizontal subsurface-flow reedbed.	Natural treatment with inspection and vegetation management.
Polishing / final route	6 m diameter polishing pond / planted wetland cell, infiltration and / or non-edible planting.	Not connected to edible irrigation ponds or clean-water crop supply.

Parameter	Adopted planning-stage allowance	Management note
Hard exclusions	No blackwater, no raw urine, no strong brines, no fats/oils, no chemical washout and no trade-like effluent without further advice.	Prevents nutrient / water-quality ambiguity.

L.4 Clean-water / greywater separation rules

Stream	Allowed route	Hard exclusion	Reason
Potable rainwater	Roof catchment -> first flush / filtration -> 40 m3 storage -> UV treatment -> dwelling.	Not routed through ponds before potable use.	Keeps drinking-water treatment controlled and auditable.
Polytunnel / ancillary clean runoff	Guttering / silt control -> header tanks / clean-water ponds / swales.	No reedbed or sanitation connection.	Supplies edible crops with clean non-potable water only.
Domestic greywater	Grease / solids control -> reedbed -> polishing pond / infiltration / non-edible planting.	No edible-crop irrigation and no 10 m clean-water ponds.	Avoids nutrient-pathway risk.
Source-separated urine	Storage / nutrient capture; recorded application only to coppice / willow / non-edible nutrient strips.	No reedbed, ponds, ditches, watercourse or edible annual beds.	Controls phosphorus and pathogen risk.
Humanure / sanitation compost	Covered composting and curing; use restricted to trees, coppice or non-annual edible areas.	No fresh application to annual edible beds and no runoff pathway.	Maintains sanitation and SAC compatibility.

L.5 Construction-phase pollution controls

Risk	Control	Record
Sediment and disturbed soil	Minimise exposed soil; use silt fencing, check dams or equivalent; protect pond and woodland edges.	Daily site notes during earthworks and post-rain photographs.
Fuel, oils and chemicals	Store in bunded containers away from ponds, woodland, hedgerows and drainage lines; maintain spill kit.	COSHH file, spill-kit check and incident log.
Concrete / lime / washout	No uncontrolled washout to ground, pond, ditch or swale; use designated containerised washout.	Contractor briefing and inspection notes.
Material storage	No storage within LWS woodland, RPAs, pond buffers or GCN-sensitive margins.	Constraints plan, site induction and fixed photographs.
Dust / debris	Dampen, cover or contain dusty operations; remove waste promptly.	Site diary and complaints / incident log.

L.6 SAC / phosphorus pathway control

The planning-stage pathway conclusion is that no direct SAC land-take, no blackwater discharge and no direct aquatic nutrient discharge pathway is proposed. The principal phosphorus-bearing streams are source-separated, stored, treated, applied only to appropriate non-edible receiving areas at recorded rates, or removed by lawful off-site routes where needed.

Source / stream	Control at Lower Wych	Residual pathway / monitoring
Blackwater / WC flushing	No conventional WCs; urine-diverting dry toilets avoid blackwater generation.	No blackwater discharge pathway to ground, pond, ditch, watercourse or SAC catchment.
Domestic greywater	15 m2 reedbed, 6 m polishing pond / planted wetland cell, infiltration / non-edible planting only.	No edible-crop irrigation; inspect for ponding, odour, blockage or bypass.
Source-separated urine	Stored / nutrient-captured separately; applied only to coppice, willow or non-edible nutrient strips at recorded rates.	Application log, soil observations and no discharge to reedbed / ponds / ditches.
Compost / humanure	Covered bays, dry carbon, batch separation and curing before use.	Use restricted to trees, coppice or other non-annual edible areas; leachate trigger recorded.
Enterprise wash-water / brines	Captured, screened and handled separately where high-strength or salty.	No discharge to reedbed unless domestic-equivalent and suitable.

L.7 Monitoring and incident response

- Quarterly reedbed and polishing-pond inspection, plus event checks after heavy rainfall or abnormal use.
- Compost and sanitation batch records, including dates, temperature / curing notes and final application locations.
- Nutrient application log for urine, compost and any coppice / non-edible receiving areas.
- Immediate stop / contain / notify response for any spill, bypass, dirty-water escape, fish / amphibian concern or visible pollution pathway.
- Annual Monitoring Report summary of inspections, incidents, corrective actions and any need to revise the CEMP or water system.

Appendix M Waste, Sanitation and Nutrient Flow Diagram

M.1 Purpose of this appendix

This appendix gives the compact waste, sanitation and nutrient-flow schedule for the holding. It should be read with Section 7, Appendix L and the final utilities / nutrient-flow diagram. The aim is to show clear separation between safe on-site assimilation, controlled nutrient reuse and lawful off-site disposal for residual or hazardous materials.

M.2 Waste hierarchy and audit scope

The strategy follows the waste hierarchy: prevent, reduce, reuse, recycle, recover and dispose only as a last resort. It covers the four-person household, land-based enterprises, food-production areas and small controlled community activity. The Year 5 management target is residual non-recyclable waste below 100 kg/year, with 30 kg/year treated as a stretch target only.

M.3 Principal waste streams and management routes

Waste stream	Approx. quantity / source	Management route	Monitoring record
Kitchen peelings and plate scrapings	c. 400 kg/year from household food preparation and meals.	Hot-compost bays and worm systems with sufficient dry carbon.	Compost log by bay, date and approximate volume.
Human faeces and dry cover material	c. 150 L/year solids plus cover material.	UDDT solids collected in sealed containers, hot-composted where suitable, then cured before restricted use.	Sanitation log: container change, batch ID, curing period and final application location.
Source-separated urine	c. 2,000 L/year from UDDTs.	Stored / nutrient-captured separately; applied only to willow, coppice or non-edible nutrient strips at recorded rates.	Urine volume, storage, application date, location and rate.
Paper, cardboard, glass, metal, HDPE and residual waste	Low-volume domestic / enterprise packaging; residual target below 100 kg/year by Year 5.	Reuse first, then recycle; residual and small hazardous items to lawful HWRC / collection routes.	Bag volumes, weights or receipts where available.
Crop residues, weeds and spoiled produce	Variable seasonal material.	Compost, worm-process, mulch or exclude persistent weeds if seed / regrowth risk is high.	Crop and compost logs.
Woody prunings / coppice arisings	c. 1-2 m3/year initially, rising with coppice maturity.	Chip for paths / mulch / compost carbon, retain as habitat piles or dry for kindling / resilience woodfuel where suitable.	Annual land-management notes.
Poultry / livestock bedding and manures	Several barrows/year depending on stocking.	Hot-compost with dry carbon; return to land at appropriate rates and away from runoff pathways.	Manure / compost log and field application notes.
Veterinary medicines, sharps and fallen stock	Rare / low volume.	Sharps and medicines by approved clinical / hazardous routes; fallen stock by registered collector / approved route. No on-site burial or burning.	Medicine, disposal and collection records.
Spent mushroom substrate and microgreen mats	c. 300 kg/year substrate plus mats/trimmings.	Reuse as compost carbon, mulch or soil-building material where suitable.	Enterprise and compost logs.

Waste stream	Approx. quantity / source	Management route	Monitoring record
Fermentation brines, lees and wash-down residues	c. 200 L/year at small-enterprise scale.	Food-safe residues reused where appropriate; strong brines, fats, oils and chemicals captured separately, not discharged to reedbed.	Batch / disposal records.
Community / educational visit waste	Low volume from pre-booked small events.	Reusable cups, plates and crates; visitor waste separated and removed through household recycling / residual routes.	Event log and waste note.

M.4 Urine-diverting dry toilet protocol

Parameter	Specification / commitment	Reason
Number installed	Two manufactured or equivalent UDDT systems: primary household WC plus secondary / accessibility WC.	Matches the floor plan and avoids blackwater generation.
Urine diversion	Separator with gravity drain to sealed urine storage.	Separates the highest nutrient stream at source.
Solids container	Sealed, fly-proof, exchangeable container, typically 60-80 L, with spare rotation.	Prevents overfilling, odour, flies and handling risk.
Cover material	Dry shredded carbon: sawdust, shredded cardboard and spent mushroom substrate where suitable.	Controls odour and supports composting carbon balance.
Ventilation	Continuous low-volume extract from solids chamber to external vent.	Controls odour and moisture.
Composting / curing	Minimum 12 months active composting / curing for sanitation compost before restricted use.	Protects hygiene and makes records auditable.
Use restriction	Humanure compost used only around trees, coppice, hedgerows or other non-annual edible areas unless future lawful advice confirms otherwise.	Maintains food-safety and nutrient-pathway control.

M.5 Nutrient-flow diagram schedule

Input / source	Primary handling	Safe output / destination	Hard exclusion
Rainwater from potable roof catchment	First flush, filtration, storage, UV.	Domestic potable supply.	No untreated potable supply and no routing through ponds before treatment.
Clean runoff from polytunnels / ancillary roofs	Guttering, silt control, header tank / clean-water ponds.	Edible-crop irrigation and attenuation.	No reedbed / sanitation connection.
Greywater	Grease / solids control, reedbed, polishing pond / infiltration.	Non-edible planting / infiltration only.	No edible-crop irrigation and no clean-water ponds.
Human urine	Source-separated storage / nutrient capture.	Coppice, willow or non-edible nutrient strips at recorded rates.	No ponds, ditches, reedbed, watercourse or edible annual beds.
Humanure solids	Sealed collection, composting and curing.	Trees, coppice, hedgerows or non-annual edible areas.	No fresh use and no annual edible-bed application.
Food / crop / bedding organic residues	Composting, worm systems, mulch where suitable.	Mature compost, mulch or soil carbon.	No raw waste to ponds, ditches or LWS woodland.
Hazardous / veterinary / clinical waste	Secure storage and lawful removal.	Approved contractor / HWRC route as appropriate.	No on-site burial, burning or composting.

M.6 Monitoring

- Monthly or batch-based compost and sanitation records, including volumes, temperature / curing notes and final destination.
- Annual residual-waste estimate against the below-100 kg/year management target.
- Receipts or log entries for hazardous, clinical, veterinary and residual off-site waste routes.
- Nutrient-application log for urine, compost and any non-edible receiving areas.
- Corrective action if odour, flies, leachate, incomplete records, overflow or runoff pathways occur.

Appendix N Ecology Pack: PEA, Great Crested Newt, Protected Species, CEMP and Lighting

This appendix is the ecology evidence control appendix. GCN Precautionary Working Method Statement, RAMS and Habitat Management Addendum is included in full at Appendix N.1, with the survey reports and plan listed as supporting attachments.

Attachment / sub-appendix	Status	Role
Appendix N-A Preliminary Ecological Appraisal	PDF submitted separately	Ecological baseline, habitat descriptions, protected-species constraints and recommendations. The OPD appendix updates the mitigation response for the full OPD layout.
Appendix N-B SureScreen GCN Technical Report	Result page inserted below	Factual eDNA result record: Pond 5 and Pond 1 positive for GCN eDNA, both 12/12 positive replicates.
Appendix N-C GCN Mitigation Plan / RAMS Plan	Drawing plan inserted below	Shows P1 protection zone, construction access restriction, dark/no-lighting zones, hibernacula, no-storage zone and stop-work notes.
Appendix N.1 GCN PWMS, RAMS and Habitat Management Addendum	Included in full below	Planning-stage avoidance, RAMS and habitat-management document updated following positive eDNA results.

Appendix N.1 - Great Crested Newt Precautionary Working Method Statement, Reasonable Avoidance Measures and Habitat Management Addendum

1. Purpose and status of this appendix

This appendix sets out the planning-stage great crested newt strategy for the Lower Wych One Planet Development. It combines a Precautionary Working Method Statement, Reasonable Avoidance Measures and a habitat-management addendum into one practical document.

The purpose of the document is to show how the application has taken great crested newts into account, how the scheme avoids direct impacts on ponds and key connected habitat, and how construction-phase risks will be controlled through practical working methods.

This document is applicant-authored. It is a planning-stage precautionary RAMS and habitat-management document. It does not determine the protected-species position for every future work element; instead it sets out the avoidance measures, working controls and habitat commitments that will guide detailed construction planning.

Great crested newt presence has been confirmed by eDNA in P1 on-site and P5 off-site.

The application does not rely on proving absence across the wider pond network.

Where third-party pond access is unavailable, a precautionary assumed-presence approach is adopted.

The proposed development avoids direct pond loss, retains the on-site pond, retains woodland, hedgerows and mature trees, and limits the construction footprint.

Groundworks and vegetation clearance will be controlled by Reasonable Avoidance Measures, construction-phase pollution controls and stop-work procedures.

The proposal includes habitat creation and enhancement measures, including new clean-water ponds, hibernacula, rough grassland margins, hedge restoration, dark corridors, orchard and coppice understorey.

If later detailed construction planning identifies a work element that cannot be carried out without risk of a protected-species offence, that work element will not proceed until the protected-species position for that work element has been resolved.

2. Evidence base and survey position

2.1 Documents and information used

This appendix is based on the following evidence:

2.1A Evidence hierarchy and scope note

The GCN evidence hierarchy for this appendix is deliberately narrow and robust. The SureScreen Scientifics laboratory certificate is relied upon as the factual eDNA result record for P1 and P5. The Preliminary Ecological Appraisal is used as baseline habitat and constraint evidence. The submitted layout, GCN RAMS plan and this Appendix N.1 are relied upon as the operative planning-stage avoidance, mitigation and habitat-management strategy.

The separate consultant eDNA narrative report is not relied upon as the application description, planning-authority record or protected-species licensing conclusion for this OPD, because it was prepared against a generic bungalow / parking description and inconsistent administrative references. The planning case therefore does not import any statement that a licence is required. Instead it accepts confirmed local GCN presence and demonstrates an avoidance-led construction and habitat strategy designed to avoid harm in situ.

The proposal proceeds on presence / assumed presence and avoids the need to prove absence. Further specialist ecological input would be sought if a specific later work element cannot be redesigned or controlled through the RAMS / CEMP measures in this appendix.

Evidence item	Status / role in this appendix
Preliminary Ecological Appraisal	Identifies site habitats, pond context, amphibian / GCN constraint and recommended further actions including eDNA where accessible, CEMP / pollution prevention, low-impact lighting and precautionary working methods.
P1 eDNA result	SureScreen Scientifics certificate confirms Pond 1 positive for GCN eDNA at 12/12 positive replicates, with degradation and inhibition checks passed and no matters affecting the result. P1 is retained and protected under this appendix.
P5 eDNA result	SureScreen Scientifics certificate confirms Pond 5 positive for GCN eDNA at 12/12 positive replicates, with degradation and inhibition checks passed and no matters affecting the result. P5 is off site and is not directly affected by the proposed works.
P2, P8, P9 and P10 access position	P2 access was requested following direct contact with the owner and provision of information about eDNA sampling; the owner declined third-party access on privacy grounds. P8, P9 and P10 are more than 250 m from the proposed working footprint and are not within the primary construction-phase disturbance area. They are not relied upon to prove either absence or presence; the precautionary assumed-presence approach is applied where ecological connectivity is relevant.
Submitted OPD layout	Confirms compact built footprint, retention of P1, retention of woodland / LWS margin, retention of hedgerows and location of proposed buildings / water-management features.

2.2 Pond and survey summary

Pond	Position at planning stage	Planning-stage approach
P1	SureScreen Scientifics certificate confirms Pond 1 positive for GCN eDNA at 12/12 positive replicates. P1 is retained in full and protected by the P1 protection zone, no-storage rules, access controls, silt controls, dark-corridor rules and stop-work procedure.	Retained in full. No infill, piping, discharge, shading alteration, fish introduction or water-fowl encouragement. Managed as part of the retained pond / hedgerow / rough-grassland habitat network.
P5	SureScreen Scientifics certificate confirms Pond 5 positive for GCN eDNA at 12/12 positive replicates. P5 lies on third-party land outside the applicants' control and is not proposed to be directly affected by the works.	Treated as confirmed local GCN presence. No direct works to P5 are proposed. Connected terrestrial habitat is considered precautionarily.
P2	Access was requested following direct contact with the owner and provision of information about eDNA sampling. The owner declined third-party access for the requested survey work on privacy grounds.	No absence conclusion drawn. Assumed-presence approach adopted where ecologically connected.
P8-P10	P8, P9 and P10 are more than 250 m from the proposed working footprint and are not within the primary construction-phase disturbance area. They were not included in the application-stage eDNA scope.	Not relied upon to prove either absence or presence. Where ecological connectivity to the working area is relevant, the assumed-presence approach and RAMS remain precautionary.
Wider network	Multiple ponds lie within the wider survey radius, with terrestrial connectivity through hedgerows, grassland margins, woodland edge and tree lines.	The application does not rely on proving absence across the wider pond network. It assumes GCN may use suitable terrestrial habitat where relevant.

2.3 Access limitations and assumed-presence approach

Several ponds in the relevant survey area are outside the applicants' ownership and control. Access has been requested where possible, but access has not currently been secured for all ponds.

For that reason, the application does not rely on an absence case across the wider pond network. Where ponds are inaccessible, no absence conclusion is drawn. Instead, the assessment adopts a precautionary assumed-presence approach for the connected local pond network and for suitable terrestrial habitat that could be used by GCN for dispersal, foraging, refuge or hibernation.

The planning-stage evidence is therefore focused on presence / assumed presence, impact-pathway assessment and avoidance measures, rather than population-size classification. This is proportionate because no existing pond is proposed for loss, P1 is retained and enhanced, principal habitat corridors are retained, and construction-phase risk is controlled through the Reasonable Avoidance Measures and CEMP.

The application-stage eDNA scope is focused on ponds within the relevant potential disturbance context of the proposed working footprint: P1 on-site, P2 where access was requested but not secured, and P5 where access was available and eDNA sampling confirmed GCN presence. P8, P9 and P10 are more than 250 m from the proposed working footprint and are not within the primary construction-phase disturbance area. They are therefore not relied upon to prove either absence or presence. Where off-site ponds remain unsurveyed or inaccessible, the precautionary assumed-presence approach is applied where ecological connectivity to the working area is relevant.

2.4 NRW eDNA guidance and proportionate survey approach

Natural Resources Wales eDNA guidance confirms that eDNA is an accepted survey technique for great crested newts and may be used as evidence of presence in support of planning assessment. The same guidance states that eDNA alone may not always be suitable to evidence absence in all circumstances, that eDNA surveys are not mandatory for every application, and that survey effort should be linked to the objective of the assessment and the risk profile of the proposed works.

The Lower Wych application does not rely on proving absence across the wider pond network. Great crested newt presence is accepted locally, inaccessible ponds are treated on an assumed-presence basis, and the design response is to avoid direct pond loss, retain and enhance the on-site pond, retain hedgerows and woodland-edge habitat, control groundworks through RAMS and CEMP measures, and provide habitat gains through new ponds, hibernacula,

rough grassland, hedgerow restoration and dark corridors.

On that basis, the planning-stage evidence is proportionate to the scale and risk profile of the proposal. No routine bottle-trapping, capture / translocation exercise is proposed at application stage, because the application accepts presence and designs around it. Further specialist ecological input would be limited to a specific later work element if that element cannot be redesigned or controlled under the avoidance measures set out in this appendix.

3. Site and development summary relevant to GCN

3.1 Site context

- The site is a 5.12-acre / 2.07-hectare rural holding at Lower Wych. The principal ecological features relevant to GCN are:

- the on-site pond P1;

- native hedgerows along the southern and eastern boundaries;

- mature and semi-mature trees;

- retained lowland mixed deciduous woodland forming part of the Doley Wood and Meadows Local Wildlife Site context;

- grassland, scrub, field margins and rougher vegetation that may provide terrestrial movement, foraging and refuge opportunities;

- the wider off-site pond network, including confirmed GCN presence at P5.

3.2 Development summary

The proposed OPD comprises a compact low-impact dwelling and enterprise cluster, access / parking, water-management infrastructure, productive growing areas, polytunnels, habitat creation and land-management works. The built footprint is approximately 313 m², equivalent to approximately 1.5% of the 20,700 m² rounded site area.

The principal dwelling construction period is anticipated to be approximately 8-10 weeks to weathertight stage, subject to weather, ecology constraints and construction sequencing. The WikiHouse cassette structure and screw-pile strategy support reversibility and site restoration under the wider OPD exit strategy. The dwelling avoids strip foundations, raft foundations and large concrete pours. However, the proposal does include limited groundworks for access improvements, service runs, rainwater tanks, clean-water ponds, reedbed / polishing pond and associated land-management works. These activities are therefore addressed through the Reasonable Avoidance Measures below.

3.3 Embedded avoidance within the design

The following avoidance measures are embedded in the layout and management plan:

Design measure	GCN relevance
Retention of P1	Avoids direct loss of the on-site pond and allows it to be managed as part of the habitat network.
Retention of woodland / LWS margin	Avoids direct loss of the highest-value terrestrial habitat within the holding.
Retention and enhancement of hedgerows	Maintains movement corridors and terrestrial cover.
Compact built footprint	Limits land take and avoids spreading built form across the holding.
Screw-pile foundation strategy	Avoids strip / raft foundation excavation and large concrete pours for the dwelling. Raised above ground.
Permeable / grass-reinforced access surfaces where practical	Reduces hard-surfacing impact and avoids sealed impermeable surfaces where possible.

Design measure	GCN relevance
No direct discharge to existing ponds	Avoids water-quality impacts to P1 and off-site ponds.
New clean-water ponds	Creates additional aquatic habitat and wildlife margins.
Hibernacula and refuge features	Provides additional shelter and hibernation opportunities.
Dark-corridor lighting	Avoids lighting impacts on pond, hedgerow and woodland-edge habitat.
OPD annual land-management monitoring	Provides an ongoing structure for checking habitat condition and compliance.

4. Planning-stage impact-pathway assessment

The table below identifies the main potential pathways by which GCN could be affected and the measures proposed to avoid or reduce risk.

Potential impact pathway	Planning-stage risk	Avoidance / control measure
Direct loss of existing pond habitat	No direct pond loss proposed.	P1 retained in full. No infill, piping, direct discharge, fish introduction or waterfowl encouragement.
Works near P1	Low to moderate if uncontrolled.	P1 is shown on Figure N.1-1 as a GCN-positive retained pond with a P1 protection zone. No storage, spoil, fuel, chemicals, washout, unloading, refuelling or machinery parking will take place within the P1 protection zone. Where the construction access passes close to P1, a temporary low-profile soil bund / silt-control edge will be installed during construction, with the permanent vegetated filter berm retained or shaped on the same alignment after construction.
Vegetation clearance	Moderate if dense grass, scrub, hedge bases or refuges are disturbed without controls.	Staged clearance, pre-works checks, sensitive timing, careful removal of refuges, arisings placed as habitat piles outside works area.
Service trenches / rainwater tanks	Moderate if trenches are left open or become traps.	Trenches and excavations covered overnight or fitted with escape ramps; checked each morning before work recommences; backfilled promptly.
Screw-pile installation	Low, subject to access and vegetation control.	Works to remain within marked working area; no storage in sensitive margins; pre-works check where vegetation or refugia are present.
Access / parking works	Low to moderate if soil stripping, kerbing or drainage creates barriers or traps.	The access past P1 will be treated as a controlled construction corridor. Construction traffic will remain on the marked access route only, with no stopping or unloading beside P1. Silt-control, temporary protective barrier and low-profile bund measures will be used where the route passes closest to P1. Permeable / grass-reinforced surfaces will be used where practical; gully-pot trap features will be avoided where practical.
New clean-water ponds, reedbed and polishing pond	Short-term ground disturbance; long-term habitat gain.	Installed under RAMS and CEMP controls; no damage to existing ponds, hedgerows or woodland edge; spoil managed away from sensitive habitat.

Potential impact pathway	Planning-stage risk	Avoidance / control measure
Materials, machinery and spoil storage	Low if controlled; moderate if placed on rough margins or near ponds.	Designated storage / compound area only; materials stored on pallets or in skips; no loose piles near pond, hedgerow bases, woodland or long grass margins.
Lighting	Low if controlled.	Warm-colour, directional, low-level lighting only where necessary; no floodlighting; no routine lighting to P1, new ponds, hedgerows or woodland edge.
Pollution, silt and cement washout	Moderate if uncontrolled.	CEMP controls, spill kits, no fuel/chemical storage near ponds, no cement washout to ground/ponds/ditches, silt controls during groundworks.
Accidental discovery of GCN during works	Low to moderate.	Stop-work protocol; no handling unless required to prevent immediate harm and only in accordance with legal advice / competent ecological advice.

5. Reasonable Avoidance Measures and Precautionary Working Method Statement

5.1 General working principles

All works with potential to affect GCN or other amphibians will follow the measures below. The measures apply to groundworks, vegetation clearance, access works, pond / reedbed works, service runs, materials storage and any other activity that could disturb ground-level habitat.

The general principles are:

Keep the working footprint as small as practical.

Mark and avoid sensitive habitat features before work begins.

Keep ponds, hedgerows, woodland edge and rough margins free from storage, pollution and compaction.

Avoid creating temporary traps such as open trenches, uncovered pipe ends or open voids.

Avoid night working and unnecessary artificial lighting.

Check work areas before disturbance.

Stop works if a GCN or suspected GCN is found.

Keep records of induction, checks and any ecological incidents.

5.1A Responsible persons

The applicants will act as site manager for the purposes of implementing this RAMS unless a separate main contractor is appointed. Where a main contractor is appointed, the applicants will remain responsible for ensuring that the contractor follows this appendix, Figure N.1-1 and the CEMP.

Task	Responsible person
Overall RAMS implementation	Applicants / site manager
Marking P1 protection zone, access route and storage area	Applicants / site manager before works
Installing and maintaining pond-side protective barrier, silt controls and filter berm	Applicants / site manager, or appointed contractor if used
Toolbox talk and site induction	Applicants / site manager using Annex D
Daily excavation / trench checks	Applicants / site manager or nominated contractor

Task	Responsible person
Weekly and post-heavy-rain checks of P1 protection measures	Applicants / site manager
Stop-work response if GCN or suspected GCN is found	Applicants / site manager; specialist ecological advice before restart
Annual habitat-condition monitoring	Applicants through OPD Annual Monitoring Report

5.2 Sensitive areas and no-go zones

Before groundworks begin, the following features will be marked on the ground and shown on the site induction plan:

P1 pond and its protection zone;

hedgerow bases;

woodland / Local Wildlife Site margin;

retained mature trees and root protection areas;

rough grassland / scrub margins to be retained;

proposed hibernacula locations;

proposed new pond locations;

designated materials / compound / storage area;

permitted vehicle route and working area.

No storage of materials, fuel, chemicals, cement, spoil, rubble, pipework or machinery will take place within the marked sensitive areas.

5.3 Timing and working hours

Works will be planned to reduce risk to amphibians and other wildlife:

works will normally take place during daylight hours;

night working will be avoided;

vegetation clearance affecting dense vegetation, refuges, brash, hedge bases or rough grassland will be planned outside the most sensitive periods where practical;

clearance of features that may be suitable for hibernation will normally be avoided from November to February inclusive, with October and March treated as shoulder months where weather conditions may still require caution;

nesting bird constraints will also be considered for hedgerow, scrub or tree works.

5.4 Site induction and toolbox talk

Before any groundworks, vegetation clearance, pond works, reedbed works, service trenching, access works or significant materials movement, all persons involved in the works will receive a site induction / toolbox talk.

The induction will explain:

the protected status of great crested newts;

the confirmed local presence of GCN and assumed-presence approach;

sensitive areas on site;

permitted vehicle routes and storage areas;

excavation-covering requirements;

pollution-prevention measures;

what to do if GCN or other amphibians are found;

who to contact before works restart.

A copy of the RAMS and toolbox-talk record will be kept on site.

A copy of Figure N.1-1, the GCN RAMS notes and the amphibian identification sheet at Annex E will be displayed in the site welfare / compound area during relevant works.

5.5 Vegetation clearance

Vegetation clearance will be kept to the minimum required for the works.

Where grassland, scrub, brash, hedge-base vegetation or other potential refuge habitat needs to be cleared, the following procedure will apply:

The work area will be walked and visually checked before clearance.

Any obvious refuges such as logs, rubble, boards, plastic sheets, stone piles or dense brash will be checked before removal.

Vegetation will be cleared in a staged manner where practical, with the first cut leaving a sward of approximately 150-200 mm to encourage any amphibians to move away before final clearance.

Final clearance will proceed carefully and progressively, working away from ponds, hedgerows and woodland edge where practical.

Arisings will be removed from the working area or placed as habitat piles in agreed receptor / enhancement locations outside the construction footprint.

Hedge or scrub clearance during the nesting bird season will only proceed after appropriate nesting-bird checks.

5.6 Refugia, brash, logs, stone and debris

Potential refuges will be treated carefully. These include:

logs;

brash piles;

rubble;

stone;

boards;

plastic sheets;

discarded materials;

dense tussocky grass;

mammal holes or ground voids where disturbance is proposed.

Where such features must be moved from a works area, they will be carefully lifted and checked. Where suitable, material will be reused to create habitat piles or hibernacula outside the construction footprint.

5.7 Excavations, trenches, pipework and voids

All excavations, trenches and holes will be managed to avoid trapping amphibians and other wildlife:

excavations will be backfilled as soon as practical;

excavations left open overnight will be covered securely or fitted with a shallow escape ramp;

covers will sit flush to the ground or overlap the excavation edges where practical;

excavations will be checked each morning before work recommences;

pipe ends, ducts, voids and open containers will be capped, covered or stored so that amphibians cannot enter;

excavated materials will not be left as loose piles in sensitive habitat;

spoil will be stored only in designated areas away from ponds, hedgerows and woodland edge.

5.8 Vehicle movement and access

Vehicle movements will be kept to designated routes and working areas.

Site speed will be kept low.

Vehicles will not track through pond margins, hedgerow bases, woodland edge or retained rough margins.

Vehicle routes will be visually checked where they pass close to sensitive habitat.

Ground compaction outside the working area will be avoided.

Temporary tracking, if required, will be used to reduce rutting and soil damage.

5.9 Materials, fuel and chemical storage

A designated storage / compound area will be identified before works begin. Materials will be stored above ground where practical, for example on pallets, in stillages, containers or skips.

The following will not be stored near ponds, hedgerows, woodland edge, rough grassland margins or new habitat features:

fuel;

oils;

chemicals;

cement;

lime;

concrete washout;

spoil;

rubble;

plastic sheeting;

pipes;

timber stacks;

loose construction materials.

Spill kits will be available during works. Any spill will be contained and cleaned immediately.

5.10 Surface water and drainage precautions

The construction and operational drainage strategy will avoid creating amphibian traps and avoid pollution pathways to ponds or watercourses.

No direct construction runoff will enter P1 or any off-site pond.

No cement, lime, concrete washout, fuel or chemical washout will be discharged to ground near ponds, ditches or hedgerows.

Gully pots and trapped drainage features will be avoided where practical.

Where covers, drains or inlets are required, they will be designed to avoid trapping amphibians.

Permeable and grass-reinforced surfaces will be used where practical.

5.11 Lighting controls

Lighting will be designed to protect pond, hedgerow and woodland-edge habitat and is consistent with the project-wide low-impact lighting strategy.

No floodlighting is proposed.

External lighting will be kept to the minimum necessary for safe access.

Fittings will be downward-directed, warm-colour, specified at a maximum colour temperature of 2700 K, and controlled by timer / PIR where practical.

The lighting design will aim for no more than 2 lux at hedgerow, woodland-edge and pond-margin boundaries, with lower levels used wherever practicable and no routine external lighting within 25 m of P1.

Lighting at pond, hedgerow and woodland-edge habitat will be avoided where possible and, where unavoidable, kept to the lowest practicable level and directed away from habitat edges.

Dark corridors along hedgerows, woodland and pond margins will be retained at all times.

The final external-lighting arrangement will be confirmed through the project-wide low-impact lighting strategy and any planning condition relating to external lighting.

5.12 Discovery protocol

If a great crested newt, suspected great crested newt, eggs, larvae or an occupied refuge is encountered within the working area:

Works in that immediate area will stop immediately.

The animal, eggs or refuge will not be handled or moved by contractors.

The site manager / applicant will be informed immediately.

Specialist ecological advice will be sought before works recommence in that area.

Works elsewhere on site may continue only where there is no risk to the animal or refuge and no connection to the affected area.

If the affected work element cannot be carried out without risk of a protected-species offence, that work element will not proceed until the protected-species position for that work element has been resolved.

If other amphibians or reptiles are encountered, they will be allowed to move away naturally where possible. Where an animal is in immediate danger, works will stop and advice will be sought before any further action is taken.

5.13 Site records

The following records will be kept during relevant works:

toolbox-talk sign-off sheet;

daily excavation / trench check records where excavations are open;

sensitive-area plan / induction plan;

photograph record of marked no-go zones;

weekly and post-heavy-rain checks of pond-side barriers, silt controls, no-storage markers and the temporary construction bund / filter berm;

pollution-control record if any incident occurs;

any amphibian / reptile sighting record;

stop-work / restart record if triggered;

photographs of completed habitat features.

5.14 Construction-phase biosecurity

Construction-phase biosecurity will be applied to reduce the risk of transferring amphibian disease, invasive aquatic plants, contaminated silt or plant fragments between waterbodies.

Boots, tools and equipment used in or near ponds, reedbed areas or wetland margins will be cleaned before and after use. Plant and machinery arriving from other wet sites will be visually checked and cleaned of mud, vegetation and debris before entering sensitive areas. No pond water, silt, aquatic plants, animals or egg-laying material will be transferred from off-site ponds to the Lower Wych ponds.

Any aquatic planting for new clean-water ponds will be sourced from reputable suppliers and checked to avoid introducing invasive aquatic species. Fish will not be introduced to any pond. If invasive aquatic or marginal plants are identified, specialist advice will be sought before management works are undertaken.

5.15 Construction access, timing and localised protective fencing

The construction access route passing P1 will be treated as a controlled construction corridor. Construction vehicles will remain on the marked route only and will not stop, park, unload, refuel or store materials beside P1.

Where the construction access passes close to P1, a temporary low-profile soil bund / silt-control edge will be installed before construction traffic uses that section of the route. This will be positioned outside the pond margin and aligned to prevent construction runoff, silt, wet cutting residue, cement washout, fuel or chemicals entering P1.

Following construction, this line will be retained or reshaped as a permanent shallow vegetated filter strip / low earth berm integrated with the root-cellar screening copse. It will intercept clean surface runoff from the access / dwelling side but will not discharge directly to P1.

Pond-side protective barriers, silt controls, no-storage markers and the temporary construction bund / silt-control edge will be checked at least weekly during active construction and after heavy rainfall. Any damaged, displaced or ineffective measure will be repaired or adjusted before works continue in the affected area.

Higher-risk groundworks, vegetation clearance, service trenches, tank installation, reedbed / pond works and access-surface formation will, where practicable, be programmed during the amphibian active season, generally April to October, after the working footprint has been checked and maintained as short vegetation or bare ground. Clearance of dense vegetation, refuges, brash, logs, rubble or other potential hibernation features will normally be avoided during the core hibernation period, November to February inclusive, unless covered by a later agreed method statement.

Screw-pile installation is a low-disturbance foundation method with no strip / raft excavation or large concrete pour, but it will still be carried out within the marked RAMS working area, following the toolbox talk, pond-protection, access-route, excavation and stop-work controls.

Above-ground WikiHouse cassette assembly, roofing, cladding and internal fit-out may proceed outside the groundworks window where no vegetation clearance, excavation or disturbance to sensitive habitat is involved.

Localised temporary amphibian protection fencing may be used only if required by detailed construction sequencing to separate a specific active works edge from P1 or connected habitat. P1 will not be enclosed.

6. Habitat Creation and Management Plan - GCN-relevant measures

6.1 Purpose

The habitat measures in this section are designed to strengthen the pond, hedgerow, woodland-edge and rough-grassland network at Lower Wych. They form part of the wider OPD Land Management and Green Infrastructure strategy and are intended to benefit GCN, other amphibians, reptiles, invertebrates, birds, bats and small mammals.

6.2 Retention and enhancement of P1

P1 is confirmed GCN-positive by eDNA and will be retained in full.

Management commitments:

no infilling;

no piping or culverting;

no fish introduction;

no waterfowl encouragement;

no chemical runoff;

no direct greywater or reedbed discharge;

no materials or fuel storage within the pond protection zone;

no routine lighting to the pond or its margins;

sensitive marginal vegetation management;

retention of terrestrial cover around the pond where compatible with safety and land management.

P1 will be monitored through annual OPD habitat-condition checks, recording water presence, obvious pollution, marginal condition, fish / waterfowl absence, shading changes, and any incidental amphibian observations.

6.3 New clean-water ponds

Two new clean-water ponds are proposed as part of the wider clean-water irrigation / attenuation / wildlife strategy.

Planning-stage specification: the two clean-water ponds are proposed as the clean-water irrigation / attenuation / wildlife ponds shown in the OPD landscape and water strategy. Final dimensions will be confirmed by the detailed landscape and drainage design, but they will include varied profiles, shallow marginal shelves, planted wildlife margins, clean-water inputs only, no greywater input, no fish introduction and no waterfowl encouragement. Marginal planting will use native species sourced from reputable suppliers and will follow the biosecurity protocols at §5.14 and §6.7. The ponds will be retained and managed through the OPD Management Plan, annual habitat-condition checks and five-year reviews.

Design principles:

clean rainwater / surface-water function only;

no greywater input;

no fish introduction;

no waterfowl encouragement;

varied pond profile with shallow margins;

planted wildlife margins;

open-water and vegetated-edge balance;

adjacent rough grassland / scrub margins;

located to strengthen the wider pond and hedgerow habitat network.

The ponds will be constructed under RAMS and CEMP controls. Spoil will be managed away from sensitive habitat. Planting material will be sourced responsibly and checked to avoid the introduction of invasive aquatic plants.

6.4 Hibernacula and refuge creation

Three hibernacula will be created in strategic locations linking P1, the woodland / Local Wildlife Site margin, hedgerows and proposed new ponds.

Minimum specification: each principal hibernaculum will be approximately 2 m long, at least 1 m wide and approximately 1 m high, adjusted to suit the final location, ground conditions and available clean materials. The design will use clean inert stone / rubble, logs, brash, subsoil and topsoil to create damp, frost-protected voids, with access and egress gaps retained. Hibernacula will be positioned outside the construction footprint, above flood-prone ground where practical, and connected to rough grassland, hedgerow or woodland-edge habitat. Detailed construction and management are set out at Annex F.

Construction and management will follow the detailed hibernaculum specification at Annex F.

Indicative principles:

located outside the construction footprint;

located away from flood-prone hollows;

connected to rough grassland, hedgerow or woodland-edge habitat;

built from clean inert material, logs, stone, subsoil and topsoil;

capped lightly with soil and seeded or allowed to vegetate;

access / egress gaps retained;

not used as storage or disturbed during normal land management.

Smaller log / brash / stone refuges may also be created from site-won clean material where available.

6.5 Hedgerow restoration and dark corridors

Existing hedgerows will be retained and enhanced through gapping-up and sensitive management.

Management commitments:

retain existing hedgerows where practical;

gap-up with native species;

avoid unnecessary night lighting;

manage on a rotational basis outside the main nesting bird season;

maintain rough grass / hedge-base cover where compatible with access and safety;

prevent storage or compaction along hedge bases during works.

6.6 Rough grassland, scrub margins and orchard / coppice understorey

Rough grassland, scrub margins, orchard understorey and coppice edges will be managed as part of a connected terrestrial habitat mosaic.

Management commitments:

maintain a mosaic of sward heights;

avoid pesticide / herbicide use near ponds, hedgerows and habitat margins unless essential for invasive species control;

retain some tussocky and undisturbed margins;

retain log piles and deadwood where safe;

cut on a rotational basis rather than all at once;

avoid cutting in conditions or seasons that create unnecessary amphibian risk.

6.7 Biosecurity

Biosecurity is required to reduce the risk of transferring amphibian disease or invasive aquatic species.

The following measures will apply:

tools, boots and equipment used in or near ponds will be cleaned before and after use;

mud, vegetation and debris will be removed from footwear, tools and plant before moving between waterbodies;

aquatic planting will be sourced from reputable suppliers;

no pond plants, water, silt or animals will be transferred from off-site ponds;

no fish will be introduced;

any invasive aquatic or marginal plant species identified will be isolated and managed appropriately.

7. Monitoring and reporting

Monitoring through the OPD Annual Monitoring Report will be limited to habitat-condition and compliance checks unless further species monitoring is specifically required by planning condition or a later agreed method statement.

Annual checks will record:

P1 condition;

condition of the new clean-water ponds;

absence / presence of fish or waterfowl;

hibernacula integrity;

hedgerow and dark-corridor condition;

rough grassland / scrub margin condition;

lighting compliance;

pollution-control performance;

any incidental amphibian sightings;

any RAMS incidents or stop-work events during the previous monitoring year.

Where required by planning condition or later agreed method statement, any additional species monitoring will be integrated into the OPD annual monitoring record.

8. Mitigation Guidelines 2001 framework - impact assessment, mitigation hierarchy and survey standard

This appendix has been prepared with explicit reference to the Great Crested Newt Mitigation Guidelines, Version August 2001. NRW's current eDNA guidance confirms that overall survey strategies should follow existing published guidance, including the Great Crested Newt Mitigation Guidelines 2001. The Guidelines are therefore used here as the technical framework for judging survey objective, likely impact, mitigation approach, habitat enhancement and monitoring.

8.1 Site-level impact assessment under the Mitigation Guidelines 2001

The Guidelines emphasise that impact assessment should compare survey information with the proposed development plans and should consider both site-level and wider-context effects. They also provide a site-level impact scale for common impact types at §6.5. That scale is applied below on a precautionary planning-stage basis.

Habitat feature	Development effect at Lower Wych	Planning-stage classification / response
Breeding pond: P1 on-site pond	P1 is confirmed GCN-positive by eDNA and is retained and enhanced. No infill, piping, direct discharge, fish introduction or waterfowl encouragement is proposed. Construction-phase risk is addressed through the retained pond protection strategy, P1 protection zone, controlled construction access, silt-control measures, RAMS and CEMP controls.	Low residual site-level impact with RAMS / CEMP controls and pond-protection measures.
Other pond used by GCN: P5 off-site pond	P5 is confirmed GCN-positive by eDNA. It lies outside the site and is not directly affected by the works.	No direct impact. Connected terrestrial habitat is considered precautionarily.
Immediate terrestrial habitat near ponds / habitat margins	No planned loss of woodland or hedgerow corridors. Localised and temporary disturbance may arise from access, services, pond / reedbed works and construction movement.	Low residual site-level impact where works remain within marked working areas and follow RAMS.
Intermediate terrestrial habitat within the wider pond network	Built footprint of approximately 313 m² / 1.5% of the holding. No fragmentation of retained hedgerow, woodland or pond network. New ponds, hedgerow restoration, hibernacula and rough margins strengthen habitat connectivity.	Low residual site-level impact with net habitat trajectory positive.
Distant terrestrial habitat	Limited involvement, managed through the wider OPD Land Management Plan.	Low residual site-level impact.
Post-development interference	Risks controlled through no fish introduction, no waterfowl encouragement, no direct greywater input, no chemical runoff to ponds, low-impact lighting and annual habitat-condition checks.	Low residual site-level impact with ongoing OPD monitoring.

The Guidelines also caution that "low" impact does not necessarily mean "no" risk to individual animals and that mitigation or avoidance measures may still be required. For that reason, this appendix combines the low site-level impact assessment above with the Reasonable Avoidance Measures at Section 5 and the habitat measures at Section 6.

Specifically, even where a site-level impact is classified as low under §6.5 of the Mitigation Guidelines 2001, individual GCN may still be present in terrestrial habitat at the time of works. The individual-animal protections in §5 therefore remain central to the construction method.

8.2 Mitigation hierarchy and avoidance-led approach

The Guidelines set out a hierarchy in which the preferred outcome is no negative impact on great crested newt populations. Where only minor impact is predicted, in-situ compensation and habitat creation may be appropriate; where major impact is unavoidable, a more substantial mitigation approach may be required.

The Lower Wych OPD is presented as an avoidance-led scheme. It does not propose the loss of any existing pond, does not rely on infilling or modifying P1, and does not require removal of woodland, hedgerow corridors or principal terrestrial refuge habitat. The remaining risk relates to construction-phase ground disturbance, vegetation clearance, temporary excavations, storage, access works and water-management infrastructure. Those risks are addressed through the Reasonable Avoidance Measures in Section 5 and the habitat measures in Section 6.

The habitat trajectory is positive: P1 is retained and enhanced, two new clean-water ponds are proposed, three hibernacula are provided, hedgerow restoration and dark corridors are secured, and rough grassland / scrub margins, orchard understorey and coppice edges are managed as a connected terrestrial habitat mosaic.

The proposal is therefore best described as avoidance-led at population / site level, with individual-animal risk controlled through RAMS at construction stage. This reflects the Mitigation Guidelines 2001 distinction between site-level population effects and the residual possibility that individual animals may be present in terrestrial habitat during specific works.

8.3 Survey objective and application-stage evidence

The Guidelines distinguish between survey objectives and emphasise that survey effort should be linked to the site circumstances, the proposed works and the information needed to assess likely effects. They distinguish presence / absence survey at §5.7.1 from population size class assessment at §5.7.2. For Lower Wych, the application-stage objective is to establish and acknowledge local presence, record survey access limitations, and assess whether the proposed works can avoid harm through layout, timing, RAMS, CEMP controls and habitat enhancement.

The Lower Wych application does not seek to quantify the local GCN population in order to justify pond loss or destruction of principal terrestrial habitat. The application proceeds on a precautionary assumed-presence basis, supported by eDNA evidence for accessible ponds, confirmed presence in P1 and P5, an access-attempt log for inaccessible ponds, and site-specific RAMS. If later detailed construction planning or regulatory review identifies a specific additional protected-species requirement for a work element, that requirement can be addressed for that work element before it proceeds.

The application-stage survey evidence uses eDNA for accessible ponds, in line with NRW's current recognition of eDNA as an accepted technique for GCN presence evidence, and applies assumed presence where access is unavailable. This is an evidence-led route rather than an absence-led route.

8.4 Conformance with the Mitigation Guidelines 2001 plan structure

The Guidelines provide a suggested structure for mitigation plans at §10.1. Although this appendix is a planning-stage precautionary document rather than a formal statutory method statement, it has been structured to address the same core matters: development background, survey position, site assessment, impact assessment, avoidance / mitigation, habitat management, monitoring and annexed evidence.

Mitigation Guidelines 2001 topic	Where addressed in this appendix
Introduction / development background	Sections 1 and 3
Professional eDNA sample; result record by Sure-Screen certificate	Section 2 and Annexes A-C
Professional eDNA sample; result record by Sure-Screen certificate	SureScreen Scientifics GCN result page inserted in Appendix N
Avoidance / mitigation strategy	SureScreen Scientifics GCN result page inserted in Appendix N
Habitat creation / management	Section 6 and Annexes F-H
Monitoring and reporting	Section 7 and Annex H
References / precedents	Section 9
Annexed evidence	Annexes A-H

8.5 Residual protected-species position

At application stage, the strategy is focused on confirmed presence, assumed presence where access is unavailable, impact-pathway assessment, avoidance measures, RAMS, CEMP controls and habitat enhancement. If later detailed construction planning identifies a work element that cannot be carried out without risk of a protected-species offence, that work element will not proceed until the protected-species position for that work element has been resolved.

This approach is deliberately precautionary. It accepts confirmed GCN presence in P1 and P5, does not rely on proving absence in inaccessible or unsurveyed ponds, and combines survey evidence for accessible ponds, assumed presence where absence cannot be evidenced, embedded avoidance in the layout, construction-phase RAMS, habitat creation and annual habitat-condition monitoring through the OPD Management Plan.

8.6 Welsh planning framework and SAC catchment

The Lower Wych OPD application is in Wales. In addition to the technical framework above, this appendix has regard to the biodiversity and resilience duty under section 6 of the Environment (Wales) Act 2016 and the biodiversity / ecosystem-resilience requirements of Planning Policy Wales. The retention and enhancement of P1, the creation of new clean-water ponds, hibernacula, hedgerow restoration, dark corridors and rough grassland / orchard / coppice mosaic contribute to maintaining and enhancing biodiversity on the holding.

The site also lies within the wider River Dee and Bala Lake SAC catchment. Great crested newts are not a qualifying feature of that SAC, but the catchment context reinforces the need for careful pollution prevention, clean-water / greywater separation and controlled surface-water management. The GCN measures in this appendix are therefore consistent with the project CEMP, water strategy and Habitats Regulations screening material for the wider OPD application.

9. Precedent note

The structure and content of this appendix have been prepared with reference to local and regional precedent documents dealing with great crested newt risk through precautionary working methods, RAMS, habitat creation and condition discharge.

Precedent	Relevance to Lower Wych
Five Oak Stables, Whitchurch	Short Precautionary Working Method Statement for small-scale rural development with ponds within 250 m and a nearby historic GCN record. Useful template for document structure, toolbox talk, stop-work protocol and practical working methods.
Cinders Farm, Ruabon	Wrexham CBC precedent where GCN were known in the surrounding landscape, a method-statement / RAMS approach was accepted, and habitat measures including ponds and hibernacula were secured. Local procedural precedent.
Mulsford Farm, Sarn	Regional RAMS precedent containing practical wording for contractor induction, daylight working, excavation covers / ramps, pipe capping, controlled materials storage, stop-work procedures and amphibian-friendly drainage.

Precedent	Relevance to Lower Wych
Great Crested Newt Mitigation Guidelines 2001	Pond context plan / submitted layout / applicant access record
NRW eDNA and GCN guidance	Pond context plan / submitted layout / applicant access record
Hendy Wind Farm, Bettws Disserth, Llandrindod Wells	Pond context plan / submitted layout / applicant access record
Windmill House, Carden, SY14 7HP	Close geographical cross-border precedent in the SY14 landscape where GCN matters were handled through post-permission RAMS / condition discharge. Included as geographical context, subject to retaining the relevant decision / discharge documents in the evidence pack.

Annex A - eDNA and pond survey evidence

Status: the SureScreen Scientifics laboratory certificate is included in the ecology evidence pack and confirms Pond 1 and Pond 5 positive for GCN eDNA, both at 12/12 positive replicates, with degradation and inhibition checks passed and no matters affecting the result. The certificate is relied upon as the factual result record; the separate consultant eDNA narrative is not relied upon as the OPD application description or licence-trigger statement.

Pond	Date sampled	Surveyor / sampler	Laboratory	Result	Supporting document
P1 - on-site pond	Friday 8 May 2026	Professional eDNA sample; factual result record is the SureScreen certificate	SureScreen Scientifics Ltd	Positive - GCN presence confirmed by eDNA	SureScreen Scientifics GCN Technical Report - included; key result page inserted in Appendix N
P5 - off-site pond	Friday 8 May 2026	Professional eDNA sample; factual result record is the SureScreen certificate	SureScreen Scientifics Ltd	Positive - GCN presence confirmed by eDNA	SureScreen Scientifics GCN Technical Report - included; key result page inserted in Appendix N

Annex B - Pond access-attempt log

Purpose: To record reasonable attempts to obtain access to third-party ponds and to explain why no absence conclusion is drawn for inaccessible ponds.

Pond	Ownership / control	Access requested?	Date / method of request	Response	Evidence retained	Planning-stage position
P2	Third-party land	Yes	Direct discussion with owner; information about eDNA sampling provided before written response	Owner declined third-party access for the requested survey work, citing privacy and not supporting third-party requests to access the property	Email correspondence retained by applicants	No absence conclusion drawn. Assumed-presence approach applied where ecologically connected.

B1. Access limitation statement

The applicants cannot lawfully enter third-party land or survey third-party ponds without permission. Where permission has not been secured, the application does not claim absence. Instead, the impact assessment proceeds on an

assumed-presence basis, with avoidance, RAMS and habitat enhancement applied to the Lower Wych site.

Annex C - Figure N.1-1 GCN Constraints and RAMS Plan

Figure N.1-1 should be read with the submitted GCN Constraints and RAMS Plan drawing and the Reasonable Avoidance Measures in Section 5. It shows the P1 GCN-positive pond, P1 protection zone, 25 m no-lighting zone, 50 m GCN RAMS awareness zone, controlled construction access route, working / compound area, temporary protective barrier / silt-control edge, vegetated filter strip, hibernacula, clean-water ponds and retained dark corridors.

Figure N.1-1 - GCN Constraints and RAMS Plan.

Annex D - Site induction / toolbox talk and sign-off sheet

D1. Great crested newt site induction / toolbox talk

Before any vegetation clearance, groundworks, pond works, reedbed works, service trenching, access works or significant materials movement, all persons involved in the works will receive a site induction covering great crested newts and other amphibians.

The induction will cover the following points:

Legal protection

Great crested newts are legally protected. It is an offence to capture, injure or kill them, take or destroy their eggs, or damage / destroy breeding sites or resting places.

Site context

GCN presence has been confirmed by eDNA in P1 on-site and P5 off-site. The Lower Wych site is therefore being managed on a precautionary assumed-presence basis. P1, pond margins, hedgerow bases, the woodland / LWS edge, rough grassland margins and hibernacula are sensitive features.

What workers must do

Stay within marked working areas and vehicle routes.

Keep materials, fuel, chemicals, spoil and machinery away from ponds, hedgerows and woodland edge.

Keep excavations covered overnight or provide escape ramps.

Check excavations each morning before starting work.

Cap or cover open pipe ends and voids.

Avoid night working and unnecessary lighting.

Keep site speed low.

Report any amphibian or suspected GCN immediately.

What workers must not do

Do not handle GCN or suspected GCN.

Do not move eggs, larvae or occupied refuges.

Do not continue works in an area where GCN or suspected GCN has been found.

Do not store materials in long grass, hedge bases, pond margins or woodland edge.

Do not pour washout, fuel, oil, chemicals, cement, lime or dirty water onto ground near ponds or ditches.

Do not leave open trenches, pipe ends, buckets or voids overnight without covers or escape routes.

If a GCN or suspected GCN is found

Stop work in that area immediately.

Do not handle the animal.

Inform the site manager / applicant.

Keep people and machinery away from the animal or refuge.

Seek specialist ecological advice before restarting works in that area.

D2. Toolbox talk sign-off sheet

Declaration: I confirm that I have received the great crested newt / amphibian site induction, understand the Reasonable Avoidance Measures, and will follow the working methods set out in Appendix N.1.

Name	Company / role	Date	Signature

Annex E - Amphibian identification sheet

This identification sheet is for site induction purposes only. If there is any uncertainty, works must stop in the immediate area and advice must be sought.

Species	Simple identification notes
Great crested newt	Largest UK newt. Dark / blackish body with rough, warty-looking skin. Orange or yellow-orange belly with black blotches. During breeding season males have a jagged crest along back and tail and a pale / silvery stripe on the tail.
Smooth newt	Smaller and smoother than GCN. Brown or grey-brown body. Orange belly with smaller spots. Breeding males have a smoother crest.
Palmate newt	Smallest native newt. Brownish body. Pale or orange belly usually with fewer spots. Breeding males may have dark webbed hind feet and a fine tail filament.
Common frog	Smooth skin; colour variable; often greenish, brown or tan. Dark mask behind the eye. Moves by jumping. Eggs are laid in clumps.
Common toad	Warty skin, squat body, copper-coloured eyes. Walks more than jumps. Eggs are laid in long strings.

Site rule: Do not handle any newt. Stop work and seek advice if a newt or suspected newt is found in the working area.

Annex F - Hibernaculum and refuge specification

F1. Purpose

Hibernacula and refuges will provide shelter, frost-free cavities, damp refuges and overwintering opportunities for amphibians and other small wildlife. They will also strengthen the habitat links between ponds, hedgerows, rough margins and woodland edge.

F2. Number and location

Three hibernacula are proposed at planning stage. Final locations will be shown on the GCN constraints and RAMS plan. Locations should:

be outside the construction footprint;

be close to habitat corridors such as ponds, hedgerows, woodland edge or rough grassland;

avoid flood-prone hollows;

avoid areas likely to be disturbed by vehicles, cultivation or regular mowing;

be close enough to habitat features to be useful, but not so close to ponds that construction disturbs pond margins.

F3. Materials

Use clean, inert, untreated materials such as:

logs;

brash;

clean stone;

clean rubble / broken brick;

subsoil;

topsoil;

turves;

coarse woody material.

Do not use contaminated material, treated timber, plastics, painted material, cement waste, concrete washout, sharp metal, glass or invasive plant material.

F4. Indicative construction method

Mark the hibernaculum location.

Lightly strip turf / topsoil to form a shallow depression where suitable.

Place larger logs, stone and clean rubble loosely to create internal voids.

Add brash and smaller woody material to create varied cavities.

Cap lightly with subsoil and topsoil, leaving gaps for access and egress.

Place turves or seed with a suitable rough-grass / wildflower mix.

Do not compact the feature.

Photograph the completed feature and mark it on the monitoring plan.

Indicative size: approximately 2 m long x 1-2 m wide x 1 m high, adjusted to suit the specific location and available materials.

F5. Management

Do not remove, burn, strim into or dismantle hibernacula.

Maintain rough vegetation around the feature.

Check annually for collapse, flooding, obstruction or disturbance.

Repair with clean natural materials if required.

Annex G - Construction compliance checklist

This checklist should be used by the applicant / site manager during relevant works.

1. RAMS available on site - copy retained in site folder.

2. Toolbox talk delivered before relevant works - signed toolbox-talk sheet retained.

3. Sensitive areas marked before works - P1, hedgerows, woodland edge and no-storage zones photographed / marked on plan.

4. Storage / compound area identified - photograph / plan retained.

5. Fuel, chemicals and washout controls in place - spill kit and CEMP measures checked.

6. Vehicle route agreed and marked where needed - site plan / photograph retained.

7. Vegetation clearance checked before works - date / note recorded.

8. Refugia checked before movement - date / note recorded.

9. Excavations covered overnight or escape ramps installed - daily check log used where excavations are open.

10. Excavations checked each morning before works - daily check log used.

11. Pipe ends, ducts and voids capped or covered.

12. No storage in pond / hedgerow / woodland buffers.

13. Lighting controls followed.

14. Biosecurity measures used for pond works - cleaning record where pond or wetland works occur.

15. Stop-work protocol understood - covered in toolbox talk / induction.

16. Any amphibian sightings recorded - sighting log used.

17. Hibernacula constructed as shown - photographs / plan retained.

18. New ponds completed and margins protected - photographs / plan retained.

G1. Daily excavation check log

Record, where relevant: date; excavation / trench location; whether the excavation was covered or ramped overnight; whether the morning check was completed; whether wildlife was found; action taken; and initials of the person completing the check.

G2. Amphibian / wildlife sighting log

Record, where relevant: date; location; species or description; whether works were stopped; whether advice was sought; action taken; and any photograph reference.

Annex H - Habitat management and monitoring schedule

The schedule below is limited to habitat-condition and compliance monitoring unless further species survey is specifically required by planning condition, subsequent agreed method statement.

P1 retained pond

Year 0 / pre-works: mark protection zone before works. Year 1: check water condition, marginal vegetation, no pollution, no fish / waterfowl. Years 2-5: annual visual check. Ongoing: record in OPD Annual Monitoring Report.

Vegetated filter strip / low earth berm

Year 0 / construction: install temporary construction silt-control edge where access passes P1. Year 1: retain / reshape as permanent vegetated filter berm. Years 2-5: check vegetation cover, erosion, blockage and absence of direct discharge to P1. Ongoing: record in OPD Annual Monitoring Report.

New clean-water ponds

Year 0 / pre-works: confirm locations and construction method. Year 1: construct ponds and establish planted margins. Years 2-5: check vegetation establishment, open water, absence of fish / invasive species. Ongoing: habitat-condition check only unless further survey is specifically required.

Hibernacula

Year 0 / pre-works: mark locations. Year 1: construct three hibernacula and photograph. Years 2-5: check access gaps, collapse, flooding and disturbance. Ongoing: repair if needed.

Hedgerows

Year 0 / pre-works: protect during construction. Year 1: gap-up / restore as per Land Management Plan. Years 2-5: rotational management outside nesting season. Ongoing: maintain as dark corridors and movement habitat.

Rough grass / scrub margins

Year 0 / pre-works: identify retained margins. Year 1: maintain rough / tussocky cover outside works area. Years 2-5: rotational cut, avoiding cutting all margins in one operation. Ongoing: record habitat condition.

Orchard / coppice understorey

Year 0 / pre-works: confirm planting and management approach. Year 1: establish planting and ground cover. Years 2-5: maintain low-input mosaic. Ongoing: record structure and condition.

Lighting

Year 0 / pre-works: confirm fittings and no-spill approach. Year 1: check installed lights. Years 2-5: annual check of direction and lux controls where relevant. Ongoing: record any changes.

Biosecurity

Year 0 / pre-works: include in induction. Year 1: apply during pond / wetland works. Years 2-5: use for any pond management works. Ongoing: record incidents or invasive species if found.

RAMS compliance

Year 0 / pre-works: toolbox talk before works. Year 1: keep records during works. Years 2-5: re-apply only if further relevant works occur. Ongoing: retain records in OPD monitoring file.

Species survey

If any additional species survey work is required by planning condition or subsequent agreed method statement, it will be integrated into the monitoring file. Incidental sightings will be logged.

H1. Annual OPD monitoring wording

The OPD Annual Monitoring Report will include a short GCN / amphibian habitat-condition entry. This will record:

condition of P1;

vegetated filter berm / silt-control condition;

condition of new clean-water ponds;

fish / waterfowl absence;

hibernacula condition;

hedgerow and dark-corridor condition;

rough grassland / scrub margin condition;

lighting compliance;

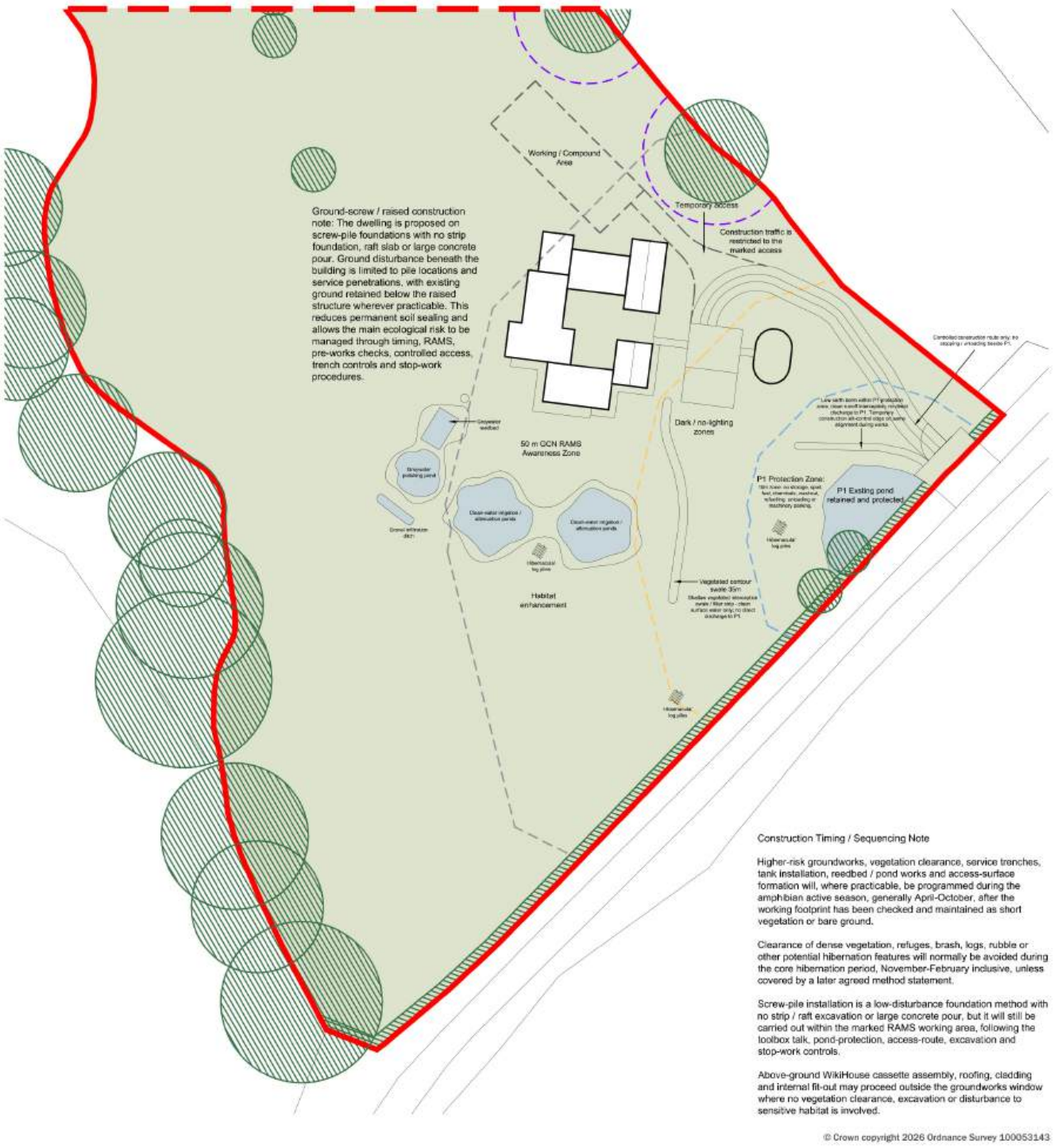
any pollution incidents;

any incidental amphibian sightings;

any further works that may require the RAMS to be re-applied.

If any additional eDNA or species-population monitoring is specifically required by a planning condition or subsequent agreed method statement, it will be recorded through the OPD monitoring file.

Figure N-B.1: Great Crested Newt Constraints, Protection and Reasonable Avoidance Measures Plan



GCN RAMS NOTES

- P1 is confirmed GCN-positive eDNA
- Construction traffic is restricted to the marked access route only.
- No storage, spoil, fuel, chemicals, washout, unloading, refuelling or machinery parking within the P1 protection zone.
- Where the construction access passes close to P1, a temporary protective barrier and silt-control edge will be installed during construction.
- Trenches and excavations will be covered overnight or fitted with escape ramps and checked each morning.
- No routine external lighting within 25 m of P1. Dark corridors to hedgerows, ponds and woodland edge retained.
- P5 off-site pond - GCN confirmed by eDNA; no direct works. See eDNA report and pond context plan.
- If a GCN or suspected GCN is found, works in that area stop and specialist ecological advice is sought before recommencement.
- Higher-risk groundworks to be programmed April-October where practicable; above-ground WikiHouse assembly may proceed outside this period where no new ground disturbance or habitat clearance is involved.

Note: Site plan identifying the Pond P1 protection zone, controlled construction access route, temporary protective barriers, dark and no-lighting zones, habitat enhancement measures, trench and excavation controls, and seasonal construction sequencing.

Figure N-A.1: SureScreen Scientifics GCN eDNA Laboratory Analysis – Ponds P1 and P5

Folio No:	1426-2026
Purchase Order:	SY14 7JX
Contact:	Arbtech
Issue Date:	14.05.2026
Received Date:	12.05.2026

SureScreen Scientifics

GCN eDNA Analysis

Summary

When great crested newts (GCN), *Triturus cristatus* , inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analyzing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

Results

Lab ID	Site Name	OS Reference	Degradation Check	Inhibition Check	Result	Positive Replicates
GCN26 03205	SY14 7JX - Pond 5	SJ 348022 343823	Pass	Pass	Positive	12/12
GCN26 04666	SY14 7JX - Pond 1	SJ 47942 43889	Pass	Pass	Positive	12/12

Matters affecting result: none

Reported by: Ruby Fielding

Approved by: Chelsea Warner

Note: Original SureScreen Scientifics laboratory certificate, Folio No. 1426-2026, issued 14 May 2026. Samples from Pond P1 and off-site Pond P5 both returned positive results in 12 of 12 replicates, with the degradation and inhibition checks passed. This provides the primary laboratory evidence for the confirmed-presence basis adopted in Appendix N.1 and the avoidance-led measures shown in Appendix N-B.

eDNA Sampling

Sample kits and analysis was provided by SureScreen. Sampling followed the relevant sections of the method set out in the DEFRA funded study endorsed by Natural England (Biggs et al 2014). In summary the sampling protocol is as follows:

- 20 samples were taken from around the entire perimeter of the waterbody.
- The surveyor stayed out of the water while taking the samples (extension poles were used in situations where open/sufficiently deep water was at a distance from the dry banks.
- Survey locations were distributed around the pond perimeter but micro-siting was used to select locations most likely to be used by GCN.
- At each sample location the water column was stirred prior to taking the sample but care was taken to avoid disturbing the sediment on the base of the pond.
- Once all 20 samples were taken, 15ml of the total sample were pipetted into each of the 6 sampling tubes, whilst ensuring that the water in the sample bag was mixed before taking each 15ml sample and that only one sample tube was opened at any one time.
- At all times the surveyor ensured that the risk of contaminating the sampling equipment was minimised by avoiding the placement of the ladle or pipette on the ground or on any otherwise potentially contaminated surfaces and by changing gloves between the initial sampling stage and the pipetting stages of the method.

Appendix O Biodiversity / Habitat Baseline and Net Benefit Schedule

O.1 Purpose and evidence status

This appendix is a concise Green Infrastructure and biodiversity net-benefit schedule. It does not replace the Arbtech Preliminary Ecological Appraisal, the GCN evidence or Appendix N. Its role is to show the baseline assets, the proposed habitat gains, the ecosystem-resilience logic and the monitoring route in a form that can be checked without creating a second ecology chapter.

O.2 Baseline assets and constraints

Baseline asset / constraint	Planning status / condition	Net-benefit response
Existing broadleaved woodland	3,829 m2 retained lowland mixed deciduous woodland; on-site section of Doley Wood and Meadows LWS; PEA condition good.	Retain in full; no built form, storage, runoff discharge or lighting spill; manage edge, deadwood and invasive species.
Doley Wood and Meadows Local Wildlife Site	Adjacent woodland section plus connected wider habitat.	Treat as ecological constraint and sensitive receptor; CEMP, RPA protection and woodland-edge buffer controls.
Native hedgerows	PEA condition good.	Retain, gap-plant, lay / cut on rotation outside nesting season and maintain dark corridors.
Scattered trees T1-T16	Good / moderate condition; retained.	Protect RPAs; install boxes where advised; FAR only if later works affect roost features.
Pond P1 and wider pond network	P1 retained; GCN confirmed in P1 and P5; P2 / wider context treated on assumed-presence basis where access not secured.	Retain P1, create clean-water ponds, apply GCN RAMS / CEMP / stop-work procedure, maintain dark pond corridors.
Other neutral grassland	PEA condition poor.	Enhance through rotational grazing / pasture, wildflower meadow, pollinator strips and managed meadow / scrub-grassland mosaic.
Bramble / rough margins and mammal holes	Useful refugia; two mammal holes recorded.	Retain / manage as habitat mosaic; mark constraints and re-check before relevant works.

O.3 Proposed habitat and green-infrastructure schedule

Habitat / GI component	Area / feature	Net-benefit function
Retained woodland / LWS section	3,829 m2	Retained mature habitat, connectivity, shade, deadwood and dark corridor value.
New mixed native coppice blocks	2,250 m2	Shelter, biomass, carbon, invertebrate / bird habitat and woodland-edge connectivity.
Orchard and soft fruit	1,550 m2	Blossom, fruit, pollinator forage, food production and structural diversity.
Dedicated wildflower meadow	1,125 m2	Flower-rich grassland / floristic enhancement.
Pollinator strips / beetle banks	963 m2	Continuous forage, beneficial-insect habitat and productive-habitat corridors.
Managed meadow / scrub-grassland mosaic / refugia	6,683.2 m2	Rough grass, late-cut areas, scrub pockets, log piles, hibernacula and shelter.
Low-input rotational grazing / poultry pasture	2,810 m2	Low-intensity grassland management and fertility cycling without nutrient enrichment of sensitive areas.
Clean-water ponds	2 no. 10 m ponds	Amphibian habitat, invertebrates, irrigation reserve and attenuation; no greywater connection.
Greywater reedbed and polishing pond	15 m2 reedbed + 6 m polishing pond / planted wetland cell	Treatment and planted wetland function, physically separate from edible irrigation.
Hedgerow strengthening and dark corridors	Boundary network retained and enhanced	Bats, birds, invertebrates, landscape structure and habitat connectivity.

O.4 Ecosystem resilience response

Attribute	Lower Wych response
Diversity	The site shifts from woodland, hedgerows and poor-condition grassland to a richer mosaic of woodland edge, orchard, meadow, pasture, ponds, wetland, coppice, pollinator strips and productive habitats.
Extent	The majority of the 5.12-acre holding remains green infrastructure, productive land or managed habitat; the built footprint remains compact.
Condition	Poor-condition grassland is targeted for improvement; retained woodland / hedgerows are protected from construction, lighting, runoff and storage impacts.
Connectivity	Woodland, hedgerows, ponds, meadow margins, pollinator strips and dark corridors are managed as one connected network.
Adaptability	Annual monitoring allows cutting, grazing, planting, pond and pollution controls to be changed if habitats underperform.

O.5 Species and habitat enhancements

Group	Enhancement / protection
Great crested newt and amphibians	Appendix N retains the full avoidance-led GCN PWMS / RAMS. P1 and P5 are treated as confirmed GCN-positive; P2 / wider pond context is treated on assumed-presence basis; hibernacula, pond protection, trench checks and stop-work procedures apply.
Bats	Low-impact warm-spectrum lighting only where necessary; no light spill to woodland, hedgerows, mature trees or ponds; bat boxes where advised.
Birds	Retain nesting habitat; avoid routine hedge/tree/scrub clearance March-August unless checked; install bird boxes.
Reptiles and hedgehog	Refugia, log piles, hibernacula, rough margins and precautionary clearance methods.
Badger / mammal holes	Mark constraints, avoid disturbance and re-check if works are delayed or activity changes.
Pollinators	Orchard blossom, wildflower meadow, beetle banks, uncut margins and pesticide-free productive areas.

O.6 Water, lighting and construction safeguards

- Clean-water and greywater systems remain physically separate; treated greywater is not used for edible-crop irrigation.
- No direct discharge is made to P1, ditches, woodland or watercourse.
- External lighting is avoided where possible and otherwise warm, low-level, downward, PIR-controlled and time-limited.
- The CEMP / ecological construction method statement marks woodland, ponds, RPAs, mammal holes, dark corridors, storage exclusions and pollution controls.
- Material storage, composting, washout, fuels and dirty runoff are excluded from woodland, RPAs, pond margins and drainage pathways.

O.7 Monitoring summary

Monitoring item	Record / evidence	Corrective-action trigger
Woodland	Annual photographs, no-storage checks, deadwood / invasive-species notes and lighting checks.	Compaction, storage, damage, runoff, invasive spread or light spill.
Hedgerows and trees	Hedge condition, cutting dates, gap-planting survival and RPA checks.	Planting failure, excessive cutting, nesting-season disturbance or tree-root impact.
Meadow / pasture / pollinator strips	Cutting / grazing records, sward notes and photographs.	Poor establishment, overgrazing, nutrient enrichment or scrub encroachment.
Ponds / reedbed / wetland	Water level, clarity, vegetation condition, algae, overflow and maintenance notes.	Pollution, drying below ecological minimum, odour, blockage, algal bloom or greywater connection error.
GCN / protected species safeguards	Toolbox talks, RAMS sign-off, trench checks, stop-work records and sightings.	Any GCN finding in works area, breach of RAMS or unplanned habitat impact.
Biodiversity net benefit	Annual summary of habitat works, losses / gains, photographs and remedial actions.	Failure to deliver scheduled habitat creation or repeated poor establishment.

O.8 Conclusion

The biodiversity / GI conclusion is that the OPD retains the highest-value existing habitats, avoids direct loss to the on-site woodland, protects confirmed / assumed GCN interests through the full Appendix N avoidance-led RAMS and habitat-management approach, and delivers a monitored habitat mosaic across most of the holding. This appendix therefore keeps the net-benefit case clear, while the detailed protected-species method statements remain in Appendix N and the third-party ecology reports remain as separate submission attachments.

Appendix P Landscape and Visual Evidence Pack

P.1 Purpose and evidence status

This appendix signposts the drawing, photography and viewpoint evidence behind the landscape and visual case. The detailed visual evidence is incorporated in the main Management Plan as Figures 9-1 to 9-3 rather than repeated as separate Appendix P sheets. Exact camera positions, dates, lens information and bearings are recorded on the submitted figure sheets.

Table P-1: Landscape and visual evidence incorporated in Section 9 figures

Figure ref.	Evidence item	Submission treatment	Purpose
Figure 9-1	Viewpoint Location Plan	Incorporated in Section 9 of the Management Plan.	Maps VP1-VP6 with receptor type, approximate distance, direction and camera point.
Figure 9-2	Representative Existing Viewpoint Photographs	Incorporated in Section 9 of the Management Plan.	Shows existing enclosure, gateway visibility, local lane views, filtered views and wider context.
Figure 9-3	Existing Local Visibility Assessment Plan	Incorporated in Section 9 of the Management Plan.	Explains the practical visual envelope using landform, hedgerows, woodland and field boundaries.

P.2 Viewpoint schedule

Table P-2 uses the same VP1-VP6 numbering as Section 9 of the Management Plan, so the appendix, viewpoint location plan and photographic evidence align. Heritage-context checks such as Lower Wych Bridge and Castle Hill are addressed in the landscape / heritage narrative and are not given duplicate VP numbers.

Table p-2: Viewpoint schedule for final photographic evidence

VP	Location / receptor	Distance / bearing	Purpose in the assessment
VP1	South-western lane approach to the site	Short-range lane approach from the south-west, looking north-east toward the site frontage.	Tests the approach view from the south-west. Existing hedgerows, roadside vegetation and landform screen views into the site before reaching the gateway.
VP2	Lane frontage / road corridor near the site	Short-range view along the lane, close to the site frontage.	Tests whether road users experience open views into the site from the lane. The photograph shows that roadside hedgerows and falling site topography prevent open views into the field.
VP3	Existing gateway / immediate lane frontage	Close-range view through the existing gateway into the site.	Principal localised public view. This is the main point at which the interior of the site can be seen from the lane and is therefore the key view for assessing access, building set-back and Year 5 planting / screening.
VP4	Lane view east / south-east of the site	Short-range view along the lane from the east / south-east, looking along the roadside hedgerow.	Tests views from the eastern lane approach and the effect of the roadside hedge. The site is screened by existing hedgerow and trees, with no open view into the main field.

VP	Location / receptor	Distance / bearing	Purpose in the assessment
VP1	South-western lane approach to the site	Short-range lane approach from the south-west, looking north-east toward the site frontage.	Tests the approach view from the south-west. Existing hedgerows, road-side vegetation and landform screen views into the site before reaching the gateway.
VP2	Lane frontage / road corridor near the site	Short-range view along the lane, close to the site front-age.	Tests whether road users experience open views into the site from the lane. The photograph shows that roadside hedgerows and falling site topography prevent open views into the field.
VP5	Wider lane view from the east	Wider approach view from the eastern lane corridor.	Tests whether the site is visible from the wider local road approach. The view is contained by roadside hedgerow, exist-ing trees and landform, with no direct view into the site.
VP6	North-east rising landform and hedge line	Wider north-east approach view, looking toward the landform and roadside hedge context.	Tests whether the site is visible from the north-east approach. Rising landform and the intervening hedge line screen views toward the site.

The field and woodland enclosure mean that the proposed dwelling, enterprise building, root cellar, open barn and polytunnels are unlikely to be readily visible from public rights of

P.3 Visual evidence conclusion

The submitted visual evidence demonstrates that the main landscape and visual effect is a localised, close-range change at the existing gateway. Wider views are filtered by hedgerows, landform and retained woodland. The evi-dence is incorporated in the main Management Plan as Figure 9-1 Viewpoint Location Plan, Figure 9-2 Representative Existing Viewpoint Photographs and Figure 9-3 Existing Local Visibility Assessment Plan.

Appendix Q Transport and Access Evidence Pack

Q.1 Purpose of this Appendix

This appendix contains the transport evidence behind the Transport Assessment and Travel Plan: definitive mileage assumptions, access / visibility evidence, highway-safety data, trip-log template and monitoring method.

Evidence item	Planning-stage position
Site distances	Eglwys Cross Farm bus stop 2.2 miles; Malpas 2.5 miles; Tallarn Green Primary School 2.8 miles; Whitchurch 6 miles; Wrexham 12 miles; Chester 16 miles.
Visibility splays	2.4 m x 120 m splays shown on submitted existing/proposed site plans; within adopted highway / grass verge and no hedgerow removal.
Baseline annual mileage	5,628 miles/year site-related vehicle mileage in the definitive travel plan: 2,828 domestic, 1,800 business, 1,000 visitor.
Targeted reduction case	Approximately 4,990 miles/year if the targeted 30% school-run car-mileage reduction is achieved through cycling and shared travel.
Highway-safety evidence	Crashmap / DfT STATS19 evidence indicates a very low reportable-accident record on principal local routes; the full evidence note is retained with the transport evidence.

Q.2 Trip Log Template

Date	Purpose	Destination	Round-trip miles	Mode	Occupancy / sharing	Linked trip?

Appendix R Community Impact and Engagement Log

R.1 Purpose and evidence status

This appendix records proportionate neighbour, landowner and community engagement for a single-household OPD. It is deliberately an issue-response log, not a raw email dump. Copies of material correspondence can be uploaded separately on the planning portal where they exist and are useful to the case officer.

R.2 Engagement log

Table R-1: Community and neighbour engagement log

Date / stage	Person / group	Purpose / issue raised	Applicant response / current status
Pre-submission ecological survey period	Neighbouring landowners / occupiers with relevant pond or boundary interests	Request access / cooperation for ecological survey work, including GCN pond survey matters, and explain the OPD as a small family-run land-based holding rather than a general rural housing proposal.	Where survey access or third-party pond confirmation was unavailable, the application takes the more precautionary route: P1 and P5 are treated as confirmed GCN-positive and P2 / the relevant wider pond context is treated on an assumed-presence basis. This is carried through Appendix N and avoids relying on an absence case.

Date / stage	Person / group	Purpose / issue raised	Applicant response / current status
Pre-submission engagement	Immediate neighbours / nearby occupiers	Explain the scale of the proposal, family occupation.	Community activity is capped and controlled in Section 10 and Appendix R: no open retail destination, no unmanaged public access, no amplified late-night events, and visitor travel monitored through Section 11 / Appendix Q.
Pre-submission land-management discussion	Adjacent landowners / rural contacts	Boundary, access, ecological protection.	The submitted layout keeps built form compact, protects hedgerows / woodland / RPAs, uses clean-water systems for edible crops and separates greywater treatment. Any future operational concerns are handled through annual monitoring and direct neighbour contact.
Application-stage engagement route	Local Planning Authority, consultees and neighbours through the statutory planning process	Formal comments and objections/support received during consultation.	Material issues will be logged against the relevant Management Plan section and, where necessary, responded to through revised plans, conditions, obligations or annual monitoring commitments.
Post-permission / annual monitoring stage	Immediate neighbours and LPA	Concerns about traffic, parking, noise, lighting, odour, animals, events or site management.	A simple feedback route is retained. Repeated or material concerns trigger adaptive-management actions in Sections 10, 11 and 13, including reducing visitor activity, adjusting delivery times, tightening lighting controls or changing operational practices.

R.3 Community impact controls carried into the Management Plan

Potential concern	Control in the submission
Unmanaged visitor traffic	No general retail opening; CSA / collections / events are capped, pre-arranged and monitored.
Noise / events	Small seasonal events only, capped in Section 10, no amplified late-night entertainment, and finish times controlled.
Lighting	No floodlighting; warm, low-level, downward, time-limited fittings only where necessary; dark corridors protected.
Odour / waste	Covered composting, sanitation logs, source separation, no runoff to ponds / ditches / woodland / LWS, and lawful off-site routes for residual / hazardous waste.
Ecological disturbance	CEMP, Appendix N GCN RAMS, low-impact lighting, RPAs, pond protection, mammal-hole checks and stop-work procedures.

Appendix S Pre-Application and Consultee Correspondence Pack

S.1 Purpose and evidence status

This appendix is the issue-response index for pre-application and material consultee matters. It records the planning issue, the response now built into the Management Plan, and where the supporting evidence sits. Copies of formal correspondence should be uploaded separately where available; routine drafting emails are excluded unless needed to explain a material planning point.

Table S-1: Pre-application and consultee issue-response table

Source / date	Issue raised / material point	Applicant response now included	Where addressed / attachment status
WCBC pre-application response ENQ/2024/1056, 3 September 2024	Locational sustainability, rural accessibility and highway-safety concern, including concern about cycling / walking on local lanes.	Full Transport Assessment and Travel Plan now uses fixed distances, DfT AADF count point 805107, Crashmap / STATS19 highway-safety evidence, trip reduction, trip logging, school-run reduction target and visibility splays of 2.4 m x 120 m within the existing highway verge.	Section 11; Appendix Q; Existing Site Plan; Proposed Site Plan; highway-safety evidence attachments.
Applicant transport response / mitigation update, September 2024	Need to show that the site can operate without unacceptable transport impact and without relying on unrealistic public-transport assumptions.	The final case does not rely on daily bus commuting. It reduces need to travel first, then uses trip-chaining, cycling, lift-share, bus / rail interchange and monitored mileage reduction. Baseline site-associated mileage is fixed at 5,628 miles/year, reducing to approximately 4,990 miles/year if the school-run reduction is achieved.	Section 11; Appendix Q; Section 13 monitoring.
Arbtech Preliminary Ecological Appraisal, survey 31 July 2025 / report August 2025	CEMP, GCN eDNA work, precautionary methods for protected species and low-impact lighting.	Application now treats the woodland / LWS, pond network, hedgerows, bats, nesting birds, badger / mammals, reptiles, amphibians and GCN as core constraints. CEMP, lighting controls, stop-work procedures and Appendix N RAMS are included.	Section 5; Appendix N; Appendix O; PEA submitted separately.

Appendix S.1 – Request to Natural Resources Wales for Preliminary Development Advice

Contact details:

Name [redacted]

Company name None

About the site and proposed development:

Site address	Lower Wych Road, Bronington, Wrexham, Wales,
Site postcode	SY14 7JZ
British National Grid map reference (or latitude/longitude)	SJ 47903 43889 / SJ479438 - 52.989787, -2.777536

Please provide a detailed description of your proposed development, including: The current use of the site The proposed new use The size and type of the development Any other relevant site history If you have any specific queries that you are seeking NRW's views on, then please add these here. Please note that depending on the complexity of the request, we may not be able to respond to these queries as part of our free preliminary opinion.

Dear NRW Development Planning team,

I am preparing a One Planet Development planning application for a 5.12-acre holding at Lower Wych, Wrexham County Borough.

Site details:

Lower Wych, Wrexham County Borough
OS grid reference: SJ 47903 43889
Approximate site area: 5.12 acres / 2.07 hectares
Local Planning Authority: Wrexham County Borough Council
Nearest watercourse: Wych Brook, approximately 400 m to the north

The proposal is being prepared as a One Planet Development under TAN 6, with submission to Wrexham County Borough Council.

The site is currently agricultural land with a retained woodland parcel. It has no existing dwelling, no existing residential use, and no mains water, sewerage, gas or electricity connection serving the holding. Access is from the existing field gateway off Lower Wych Road.

The proposed new use is a single-household One Planet Development for a four-person household. In practical terms this would comprise a modest low-impact dwelling, a small land-based enterprise / processing building, protected and outdoor food-growing areas, orchard and soft-fruit planting, ponds, rainwater harvesting, source-separated sanitation, greywater treatment, and ecological land management across the wider holding.

The development is small in scale and land-based. The built elements are clustered outside the retained woodland / Local Wildlife Site area, with the majority of the 5.12-acre holding remaining in woodland, meadow, orchard, grazing, growing, coppice, pond and habitat-management use.

Document note: Copy of the preliminary advice request submitted to Natural Resources Wales and received on 7 May 2026. The request sought advice on the proposed source-separated sanitation and greywater-treatment system, groundwater and watercourse constraints, the River Dee and Bala Lake SAC nutrient pathway, and the supporting information required for planning-stage Habitats Regulations Assessment screening. The attached request is included as a record of the scope of matters raised with NRW and should be read with NRW's response at Appendix S.2.

By way of site history, the land has been used as pasture / agricultural land rather than as a residential plot. We acquired the holding in 2024 specifically to prepare a monitored One Planet Development proposal. There is no known previous built development on the holding relevant to the proposed wastewater or nutrient strategy.

Before submitting the application, I would be grateful for NRW's early advice on the proposed wastewater and nutrient approach, and on any site-specific constraints NRW would expect us to address.

The proposed system is deliberately simple and low discharge:

urine-diverting dry toilets, with no WC blackwater discharge;
urine separated and retained on site for controlled use on non-edible planting / coppice;
greywater treated through a horizontal subsurface-flow reedbed;
final polishing through a planted wetland / polishing cell, with infiltration / non-edible planting only;
no intentional discharge to Wych Brook, any ditch, or any watercourse;
no treated greywater used for edible-crop irrigation;
clean-water irrigation / attenuation ponds kept completely separate from the greywater system.

The greywater system is being designed for domestic greywater from a four-person household and is expected to remain well below 2 m^3/day. We understand that small domestic sewage / greywater discharges may be capable of registration or exemption where they meet the relevant NRW volume, siting and pollution-prevention requirements, but we would welcome NRW's advice on the correct route for this specific proposal.

I would be grateful for advice on the following points.

Dry toilets / urine separation

Can urine-diverting dry toilets / composting toilet facilities be registered or treated under the usual NRW exemption route for this type of small domestic system? If there is a specific form, registration route or guidance page we should use, please could you point us to it.

Greywater treatment and infiltration

For a four-person household using a reedbed and planted polishing wetland, with no direct watercourse discharge, is this the type of arrangement that can normally be considered under NRW's small sewage discharge registration / exemption route, subject to detailed design and siting?

If NRW considers that this should instead be discussed through the environmental permitting pre-application route, please could you advise.

Groundwater and site constraints

Could NRW confirm whether the site is affected by any groundwater constraint that should influence the design, such as:

Source Protection Zone;
former / previously designated Nitrate Vulnerable Zone status under the NRW 2013 NVZ layer, and any implications under the current Water Resources (Control of Agricultural Pollution) (Wales) Regulations;
special groundwater designation;
aquifer designation or groundwater vulnerability issue;
known drainage ditch / watercourse constraint relevant to greywater infiltration.

We will also check NRW's public mapping, but would appreciate confirmation of the key constraints NRW would expect us to address.

River Dee and Bala Lake SAC catchment

The site lies within the wider River Dee and Bala Lake SAC catchment. Given that no blackwater discharge and no direct discharge to Wych Brook or any watercourse are proposed, could NRW advise what level of water-quality / nutrient-pathway information it would expect to see with the planning application?

We are aware of the current focus on phosphorus and water-quality compliance in SAC river catchments, and have designed the wastewater chain to avoid a direct phosphorus pathway to the SAC. We would welcome NRW's view on whether the proposed source-pathway-receptor approach is

the right way to present this information for Wrexham County Borough Council's planning-stage screening.

Information to support the planning application

We are preparing a short source-pathway-receptor note for Wrexham County Borough Council to assist any Habitats Regulations Assessment screening they may need to undertake. This will cover greywater, nutrient handling, construction runoff, drainage, lighting and relevant ecological receptors.

Could NRW advise whether this is a sensible structure for the supporting information, and whether there are any particular water-quality or ecological matters NRW would expect the Council to have before it at screening stage?

I can send a short information pack if helpful, including:

site location plan;
proposed site / landscape plan;
draft greywater reedbed / polishing wetland note;
Preliminary Ecological Appraisal summary;
draft source-pathway-receptor note.

We would be grateful for written advice under the appropriate NRW pre-application route. If a pre-application reference number can be issued, we will quote it in our submitted Habitats Regulations Assessment screening note and Management Plan documents.

Please let me know the most useful format and whether this should be submitted through a particular NRW pre-application route.

Yours sincerely,

Philip Handley

Essential Documents

We need the following information to provide you with our preliminary advice. A location plan clearly showing the boundary of the proposed development. This should be at a scale between 1:10,000 and 1:25,000 and should show any watercourses or water bodies within your development site. An indicative layout plan (detailed if available) of the proposed works, including all proposed access roads, buildings, details of the method of disposing of foul sewage and any other proposed structures, together with any site formation and temporary works that you propose to carry out. Where relevant, a plan of any other development or works that you may carry out, or request others to carry out, in order to construct and/or to operate your proposed development.

- File: Final Drawings-Location Plan - A3.pdf - Download
- File: Final Drawings-Proposed Site Plan - A1.pdf - Download

Where should we send your form?

North Wales

- Anglesey
- Conwy
- Denbighshire
- Flintshire
- Gwynedd
- Snowdonia National Park
- Wrexham

Appendix S.2 – Natural Resources Wales Preliminary Development Advice Response

Cyfoeth Naturiol Cymru
Natural Resources Wales

Dyddiad/Date: 18 May 2026

Annwyl Syr/Madam/Dear Sir/Madam,

Bwriad/Proposal: The proposed new use is a single-household One Planet Development for a four- person household. In practical terms this would comprise a modest low -impact dwelling, a small land- based enterprise / processing building, protected and outdoor food- growing areas, orchard and soft-fruit planting, ponds, rainwater harvesting, source -separated sanitation, greywater treatment, and ecological land management across the wider holding.

Lleoliad/Location: Lower Wych Road, Bronington, Wrexham, SY14 7JZ.

Thank you for consulting Cyfoeth Naturiol Cymru / Natural Resources Wales about the above pre-application enquiry, which we received on 07/05/2026.

We have considered your enquiry in relation to our consultation topics list. We advise the following matters are relevant to your site / proposal and suggest you consider these further prior to the submission of any planning application:

Foul Drainage

The application site is within the catchment of the River Dee and Bala Lake Special Area of Conservation (SAC). In line with our *Advice to Planning Authorities for Planning Applications Affecting Nutrient Sensitive River Special Areas of Conservation*, under the Habitats Regulations, Planning Authorities must consider the impact of proposed developments on water quality within SAC river catchments.

The suitability of foul drainage arrangements for the proposal is a matter for the LPA to determine. We therefore advise that as part of any future planning application submission, you provide the LPA with sufficient details e.g. of the proposed method of foul drainage to inform their Habitats Regulations Assessment (HRA).

Protected Species

Our records show there may be protected species in the vicinity of the site (Hazel Dormouse). We advise liaison with the LPA's ecologist to discuss and agree the scope of any surveys required. We refer you to our website for further advice.

Document note: Natural Resources Wales response dated 18 May 2026. NRW advised that the site lies within the catchment of the River Dee and Bala Lake Special Area of Conservation and that sufficient details of the proposed foul-drainage arrangements should be supplied to enable the Local Planning Authority to undertake its Habitats Regulations Assessment. NRW also advised that records indicated the potential presence of Hazel Dormouse in the vicinity and recommended liaison with the Local Planning Authority's ecologist. The response constitutes preliminary advice and does not represent approval of the proposed drainage system, confirmation of an exemption or permit position, or completion of the Local Planning Authority's HRA.

Source / date	Issue raised / material point	Applicant response now included	Where addressed / attachment status
GCN / pond evidence and access position	GCN presence confirmed / assumed and risk of relying on absence where survey access is unavailable.	P1 and P5 are treated as confirmed GCN-positive; P2 / the relevant wider pond context is treated on an assumed-presence basis where access was not secured. The application proceeds through avoidance-led RAMS, hibernacula, clean-water pond creation, trench checks, pollution prevention and stop-work procedures.	Appendix N; Section 5; Appendix O.
Minerals safeguarding policy context	Site lies within a Category 1 sand-and-gravel safeguarding context; need to avoid unnecessary sterilisation and address prior extraction.	Appendix T now includes PPW / MTAN1 / UDP MW9 / MW11 framing, clustered footprint assessment, screw-pile / reversibility commitments.	Appendix T; Landscape Plan showing mineral safeguarding area; Appendix S records issue-response.
River Dee / Bala Lake SAC, phosphorus and nutrient pathway	Need to close the hydrological / nutrient pathway and avoid uncontrolled discharge to sensitive receptors.	Clean rainwater and clean runoff are separated from greywater. Treated greywater goes to reedbed, polishing pond, infiltration and/or non-edible planting only. UDDT, urine, compost and nutrient application controls prevent raw waste or dirty runoff reaching ponds, ditches, woodland / LWS or watercourse.	Appendix J; Appendix L; Appendix M; Section 6; Section 7; Appendix O.
SAB / surface-water drainage route	Surface water and SuDS approval may require a separate statutory process.	Appendix K identifies the clean-water ponds / swales / infiltration / exceedance route and separates planning evidence from later SAB technical approval.	Appendix K; surface-water

Appendix T Mineral Resource and Mineral Safeguarding

This appendix provides the mineral-resource and mineral-safeguarding response for the OPD built cluster, access route and associated reversible infrastructure. It uses the site area, OS grid reference, built footprint and appendix structure adopted across the Management Plan.

T.1 Purpose and status of this appendix

The site lies within a Category 1 Aggregates Safeguarding Area for sand and gravel. The purpose of this appendix is to show that the OPD does not sterilise a mineral resource in any meaningful way because the built cluster is compact, the principal resource-sensitive areas are left undeveloped, infrastructure is low-impact and reversible, and the scheme is capable of removal / restoration through Appendix X if the OPD fails.

Current application fact	Corrected Appendix T figure
Site area	20,710 m2 / 2.071 ha / 5.12 acres; 20,700 m2 rounded audit basis
Central OS grid reference	SJ 47903 43889 / Easting 347903, Northing 343889
Built footprint	313 m2 / approx. 1.51% of the holding
Access, parking, turning and paths	256 m2 / approx. 1.24% of the holding; permeable / grass-reinforced where practical
Combined built + access footprint	Approx. 569 m2 / approx. 2.75% of the holding
Construction approach	WikiHouse timber-cassette building on screw-pile / raised low-impact foundations; demountable polytunnels and lightweight enterprise structures
Safeguarding response	No conventional estate road, concrete slab estate, deep foundations or permanent mineral-sterilising built spread across the holding

T.2 Mineral safeguarding designation and site-specific response

The site lies within the sand-and-gravel safeguarding layer. This Appendix T applies the Lower Wych site identity, site area and OS grid reference used across the Management Plan.

The design response is not to argue that the safeguarding designation is irrelevant. It is to show that the OPD layout has taken the constraint seriously: the building cluster and working areas are kept compact; the woodland, hedgerow, pond, meadow, coppice and habitat areas remain undeveloped or lightly managed; and the proposed structures use a reversible construction logic. The proposal therefore does not prevent any realistic future minerals assessment of the wider safeguarded resource.

T.2A Policy Framework: PPW, MTAN1, UDP MW9 and MW11

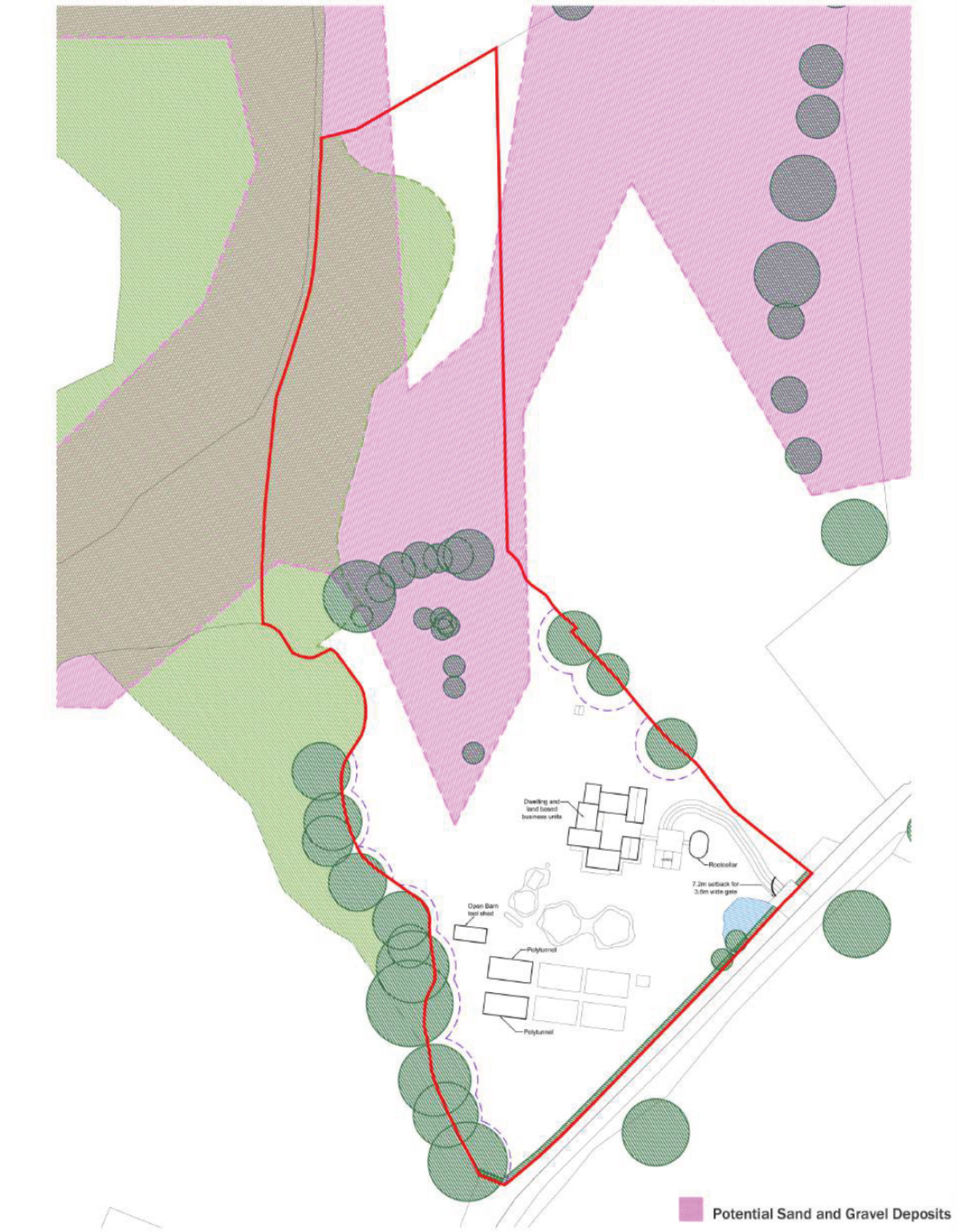
The minerals assessment is framed against the Welsh and Wrexham policy tests for avoiding unnecessary sterilisation of safeguarded mineral resources. It aims to show that the OPD layout is compact, reversible, avoids unnecessary permanent ground sealing, and does not materially prejudice any realistic future assessment of the wider sand-and-gravel resource.

Policy / guidance	Relevant safeguarding test	Lower Wych response
Planning Policy Wales minerals safeguarding principle	Planning should safeguard access to mineral resources that society may need and avoid unnecessary sterilisation by other forms of permanent development. Safeguarding does not create a presumption in favour of extraction.	The proposal recognises the safeguarding layer, keeps built form clustered, avoids estate-scale spread and retains most land in agricultural / ecological management.
MTAN1: Aggregates	MTAN1 provides Welsh technical advice on aggregates and supports safeguarding of sand-and-gravel resources for possible future generations. It also informs buffer / separation-distance logic for aggregates resources and mineral sites.	The application treats the Category 1 sand-and-gravel safeguarding designation as a real constraint and uses reversibility, small footprint and avoidance of permanent sterilisation as the design response.
Wrexham UDP Policy MW9 - Protection of Mineral Resources	Resources of sand, gravel and clay are safeguarded from non-mineral development to prevent sterilisation of unworked deposits. Non-mineral development is strongly resisted unless a resource assessment or other information demonstrates no exploitable reserves; where development materially prejudices resources, prior removal should be considered.	Appendix T provides the “other information” response: compact footprint, limited hardstanding, screw-pile / demountable construction, avoidance of sensitive resource areas where practicable, and a prior-extraction test.

T.2B Structured Prior-Extraction and Sterilisation Test

Test question	Planning-stage answer	Conclusion / action
1. Is the site affected by a safeguarded mineral resource or buffer?	Yes. The holding is identified within the Category 1 sand-and-gravel safeguarding layer / Aggregate Safeguarding Area context.	The issue must be addressed in Appendix T rather than ignored.
2. Is the development a large permanent urbanising scheme?	No. It is a single-household OPD with a 313 m2 built footprint and 256 m2 access / parking / paths, tied to a Management Plan and exit strategy.	Scale and reversibility materially reduce sterilisation risk.
3. Is the built form spread across the holding?	No. The dwelling / enterprise cluster is compact. Most of the holding remains in woodland, meadow, coppice, orchard, pasture, ponds and low-input productive or ecological management.	Future assessment of the wider safeguarded resource is not prevented by estate-scale spread.
4. Would prior extraction before the OPD be feasible or proportionate?	No, not on the planning-stage evidence. Prior extraction for such a small, dispersed, ecologically constrained footprint would require separate minerals access, stripping, haulage, stockpiling, processing / removal and restoration, with disproportionate landscape, traffic, carbon, soil, ecological and amenity impacts.	Prior extraction is not reasonable or proportionate for the OPD built cluster.

Figure T.2A-1: Mineral Safeguarding Context Plan - Potential Sand and Gravel Deposits



Note: Overlay of the application-site boundary and proposed development layout on the mapped potential sand and gravel resource layer. Pink hatching denotes mapped potential sand and gravel deposits. The mapping identifies a potential mineral safeguarding constraint but does not, by itself, establish the presence, thickness, quality, accessibility or economic viability of mineral resources beneath the site.

Test question	Planning-stage answer	Conclusion / action
5. Would omitting prior extraction materially prejudice minerals resources?	No, on the current layout. The small footprint, screw-pile / demountable construction, permeable access, absence of deep concrete slabs and exit/restoration strategy mean the scheme does not permanently sterilise the resource in any meaningful way.	No unacceptable sterilisation is identified.
6. What final evidence should be attached?	BGS / Welsh safeguarding map overlay of built cluster and access against the resource layer using the submitted site and landscape plans.	Attach as Appendix T figures
7. What happens if detailed design shifts?	If any later layout change moves permanent built form or hardstanding materially further into a resource-sensitive area, Appendix T and the prior-extraction test must be updated before that change is relied upon.	This keeps the minerals case controlled through monitoring / design change review.

T.3 Mineral safeguarding assessment

Minerals issue	Appendix T response
Published ASA covers the site	Accepted. The application treats the ASA as a material constraint and gives a dedicated response.
Raw mapped resource may affect part of the holding	Sensitive and potentially resource-relevant land is kept free from permanent building spread; woodland / habitat areas are retained and managed, not urbanised.
Sterilisation by new dwelling / enterprise buildings	The built footprint is 313 m2 and clustered. Foundations are screw-pile / raised low-impact rather than broad concrete footings. The layout does not create a settlement edge or conventional housing estate.
Sterilisation by access / parking	Access, parking, turning and paths are limited to 256 m2 and designed as permeable / grass-reinforced surfaces where practical. They are not equivalent to a permanent highway or estate road.
Prior extraction	Prior extraction would be disproportionate for a small, monitored OPD cluster and would cause greater harm to ecology, landscape, soil and OPD delivery than the reversible development proposed.
Reversibility	Appendix X secures removal / reuse / restoration if the OPD fails. WikiHouse, screw piles, PV, battery plant, polytunnels and lightweight structures are all capable of removal or reuse.

T.4 Design commitments to avoid sterilisation

- Keep the dwelling, enterprise building and support structures within the compact built cluster shown on the submitted drawings.
- Avoid new permanent building spread into woodland, pond margins, hedgerow corridors, habitat enhancement areas or the mapped mineral-resource-sensitive land.
- Use screw piles / raised construction and avoid broad concrete raft or strip foundations for the main WikiHouse structure wherever Building Regulations and structural design allow.
- Use permeable or grass-reinforced access, parking and turning surfaces wherever practical.
- Retain the exit and restoration method in Appendix X so that buildings, PV/battery plant, polytunnels and access

surfaces can be removed and land restored if OPD compliance fails.

- Keep a final Minerals Officer plan-pack consisting of the submitted layout, BGS mineral resource extract, built footprint table and reversibility statement.

T.5 Mineral evidence attachment schedule

Table T-3 identifies the controlled mineral-safeguarding evidence.

Table T-3: Mineral evidence attachment schedule

Evidence item	Submission treatment	Use in mineral safeguarding assessment
Overlay of built cluster, access, woodland, ponds and habitat areas against the potential mineral layer	Minerals attachment T-03 or incorporated into the Landscape Plan / minerals overlay.	Demonstrates that the permanent / semi-permanent land take is small and that wider land remains in agricultural / ecological management.
Submitted site plan, landscape plan and built-footprint table	Controlled by Appendix A plan schedule and Appendix B key assumptions.	Fixes the 313 m² combined built footprint, access area and reversible layout basis.

T.6 Conclusion

The Appendix T conclusion is that the OPD is compatible with minerals safeguarding because it is a clustered footprint, clustered, reversible, largely avoids permanent ground sealing, leaves the wider safeguarded land in agricultural / ecological management, and would not materially prejudice any future minerals assessment of the safeguarded resource. The structured prior-extraction test in T.2B explains why pre-extraction is not reasonable or proportionate for this OPD built cluster.

Appendix U Soil, Agricultural Land and Baseline Land Condition Evidence

U.1 Purpose and evidence status

This appendix records the soil, agricultural land and baseline land-condition evidence used to support land management, horticulture and annual monitoring.

Table U-1: Soil, ALC and baseline land-condition eviden

Evidence item	Current evidence	Planning / monitoring use
Site area and audit basis	20,710 m² actual title-deed area; 20,700 m² rounded land-use audit basis.	Controls land-use percentages, productive-area audit and monitoring comparisons.
RHS soil analysis	RHS Soil Analysis Service, sample FIELD 1; received 18 November 2025 and reported 26 November 2025. Texture: clay loam. Organic matter: 6.2% (medium). pH: 6.5. Available phosphorus: 33.2 mg/l, Index 3 (medium). Available potassium: 110 mg/l, Index 1 (low). Available magnesium: 108 mg/l, Index 3 (medium).	Provides Year 1 baseline for horticulture, soil-building and nutrient management. Main constraint is low available potassium; pH is suitable and lime is not required at the current test value.

Evidence item	Current evidence	Planning / monitoring use
Soil-management response	Use compost, mulches, green manures, low-disturbance cultivation, fertility cycling and careful potassium improvement. Avoid fertiliser inputs to species-rich grasslands and habitat areas.	Supports productive horticulture while protecting meadow / habitat enhancement areas.
Predictive Agricultural Land Classification	Welsh Government Predictive ALC Map 2 identifies the site as a mixture of Grade 3a and Grade 3b agricultural land. Grade 3a is treated as best and most versatile agricultural land for planning purposes.	The OPD retains and intensifies agricultural / land-based productive use rather than removing the holding from production. Built footprint remains compact at 313 m².
Baseline photographs and fixed photo points	Fixed photo points to be recorded before first habitation and repeated annually.	Tracks vegetation establishment, soil cover, access impact, habitat management and restoration / exit evidence.
Repeat testing	Repeat soil testing at Year 3 and Year 5, or earlier if nutrient imbalance, crop failure or pollution concern is identified.	Allows the Annual Monitoring Report to test whether soil condition is improving and whether nutrient applications remain proportionate.

U.2 Monitoring conclusion

The soil evidence supports the productive land-use case: the holding has a workable clay-loam soil, a suitable pH for mixed horticulture, medium organic matter and phosphorus, low potassium requiring management, and a monitoring route through repeat testing. The ALC position is addressed by retaining the site in productive land-based use and keeping permanent built footprint low.

Figure U.1: RHS Soil Analysis Results - Field 1, Lower Wych

Date Received	18-Nov-25
Date Reported	26-Nov-25

Laboratory Reference
Sample Number 75876/400827/25

RHS Log No. 4102

Recommendations requested for :
Fruit Vegetables

Sample Name : FIELD 1

SOIL ANALYSIS RESULTS

Soil Texture	Clay Loam
Organic Matter	6.2 % (Medium)
Soil pH	6.5
Available Phosphorus	33.2 mg/l (Index 3, Medium)
Available Potassium	110 mg/l (Index 1, Low)
Available Magnesium	108 mg/l (Index 3, Medium)

1. The provision of information by the RHS through its Soil Analysis Service to a subscriber is not an endorsement by the RHS of the competency, quality or otherwise of a subscriber to that service.

2. These results and recommendations are based entirely on the particular sample and information submitted. You are advised that to the fullest extent permitted by law we do not accept responsibility: firstly for any action other than those indicated in this report; secondly to anyone other than the subscriber to the RHS Soil Analysis Service for our results or recommendations or for the opinions we have formed.

Note: Original RHS Soil Analysis Service report for the Field 1 soil sample, received on 18 November 2025 and reported on 26 November 2025 (Sample No. 75876/400827/25). The sample was identified as clay loam with 6.2% organic matter, pH 6.5, available phosphorus of 33.2 mg/l (Index 3, medium), available potassium of 110 mg/l (Index 1, low), and available magnesium of 108 mg/l (Index 3, medium). The results provide baseline evidence for the soil-management, fertility and nutrient-monitoring measures set out in Appendix U. They relate to the submitted sample and should not be interpreted as a comprehensive survey of soil conditions across the whole holding.

Appendix V Food, Processing and Livestock Regulatory Pathway

This appendix records the practical regulatory pathway for food production, small-scale processing, fermentation, mushrooms, poultry and any later goat / micro-dairy element.

Activity	Planning-stage position	Registration / control route
Vegetables, fruit, CSA and local sales	Core land-based activity	Food-business registration where required before sales / processing; hygiene logs and traceability.
Fermentation and preserves	Small-scale enterprise activity	Food-business registration, HACCP-style process records, allergen control, jar-deposit / batch traceability.
Mushroom production	Indoor and outdoor production	Clean handling, substrate records, humidity/ventilation control, hygiene and traceability.
Poultry / eggs	Low-density rotational poultry only when welfare and registration requirements are in place	Keeper registration, welfare records, manure management and egg-handling controls.
Goats / micro-dairy	Secondary / optional activity only, not a submission blocker	Activated after skills/training, welfare setup, livestock registration and any dairy/food approval route is confirmed.
Veterinary medicines / fallen stock / sharps	Low-volume smallholding controls	Lawful storage, contractor / veterinary return route, clinical waste container where required; records in waste log.

Appendix W Annual Monitoring Report Template

This appendix provides the template for the Annual Monitoring Report. OPD Year 1 begins at first habitation. Reports are submitted within one month of each anniversary of first habitation, with full EFA reviews at Year 3 and Year 5.

AMR section	Evidence to include
Sole residence and household	Occupation confirmation, household composition and any material changes.
Business and income	Accounts summary, net land-based income, minimum-needs comparison, enterprise changes and sensitivity issues.
Food self-sufficiency	Crop/livestock/mushroom/fruit records, stored food, bought-in food, progress against Year 5 target.
Energy	PV generation, battery performance, imported / backup energy if any, heat and hot-water records.
Water	Rainwater storage levels, potable water use, water-quality tests, dry-spell response, irrigation pond levels.
Waste and sanitation	Compost, urine, UDDT solids, recyclables, residual waste, hazardous / veterinary waste records.
Transport	Trip log summary, mileage by purpose, mode split, visitor / event travel.
Ecology and land management	Habitat works, GCN RAMS compliance, lighting checks, soil records, fixed-point photographs.
Community impact	Events, visits, neighbour feedback, complaints or corrective action.
Red/yellow-card review	Triggers, corrective actions, timescales and whether any issue threatens OPD compliance.

Appendix X Exit and Restoration Method Statement

This appendix sets out how the site can be restored if the OPD fails to meet the essential characteristics of One Planet Development or if occupation ceases to comply with the Management Plan / legal agreement.

Element	Exit / restoration approach
WikiHouse dwelling	Remove residential fixtures, services and structure if required; reuse, resell or recycle timber cassette components where practical; remove screw piles and make good ground.
Enterprise building / open barn / tool stores	Retain only if lawful and useful for agriculture / land management; otherwise dismantle and remove.
PV, battery, ASHP and service plant	Disconnect safely, remove through specialist contractor, reuse or recycle.
Rainwater tanks and pipework	Remove or retain only if lawful for agricultural water storage; decommission safely.
Access / parking	Remove, narrow or restore permeable surface as required; decompact and reseed affected ground.
Polytunnels	Dismantle frames and coverings; recycle / reuse components; restore crop beds or retain as agricultural growing land if lawful.
Ponds, reedbed, meadow, orchard, hedges, coppice and habitat features	Retain where they deliver biodiversity / landscape benefit and do not create pollution or safety risk; otherwise restore by agreed method.
Waste / sanitation systems	Empty, clean, compost/cure or lawfully remove materials; decommission UDDT and greywater systems without pollution.