**SUSTAINABILITY CHECKLIST**

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| Key to Types of Development |  |
| **A** *Large scale* - residential - more than 5 houses  commercial - more than 235 sq. metres of floorspace |  |
| **B** *Small Scale* - residential - 5 houses or less  commercial - 235 sq. metres of floorspace or less | **✓** |
| **C** *Householder development* |  |
| **D** *Change of use of land or of buildings, or conversions* |  |
| **E** *Non building, such as car parking, landscaping, engineering operations* |  |
| **F** *Advertisements and Telecommunications* |  |

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| **(a) SITING AND LAND USE** |  |
| *How will the development satisfy the following criteria?* |  |
| 1. Use previously developed land as opposed to a green field site.  **(A,B,D,E)** | The site is undeveloped however, the site lies in between two adjacent existing housing plots. The site is suitable as a plot for a dwelling, with good access. There is a precedent for a new housing to be built along the street - a recent Planning approval was granted for the neighbouring property (no. 48), split into two, creating a new housing plot. |
| 2. Avoid the loss of urban open spaces and, designated sites for nature conservation, and damage to the Historic Environment. **(A,B,D,E,)** | The site is not an urban open space, nor a designated site for nature conservation. The proposal will not damage the historic environment but will instead enhance and secure it for the long term. The design is to be an exemplar for future living with an aim to encourage the preservation and expansion of our woodland through an educated approach – more on how this can be achieved is outlined below. |
| 3. Make use of any derelict, under-used, or vacant land or buildings **(A,B,D,E)** | The site is under-used and is vacant land. Careful management of the existing woodland in tandem with the proposed development will ensure that its established trees are protected and that the biodiversity of the site is enhanced. The proposed dwelling is an important part of ensuring this; it has been designed in such a way as to provide the trees with an additional function; they will contribute to the living standards of the house. This will help ensure that they are cared for by the future residents and that the residents will be aware of their importance in the wider context of the proposed site. |
| 4. Encourage a maximum lifespan for the development with the use of  durable construction unless there are extenuating circumstances requiring more flexibility. **(A,B,D)** | The proposal is designed to well exceed the average 80 year life span of housing in the UK. There are a number of reasons for this; The construction of the house (described in more detail below) will ensure it can be easily maintained – with materials readily available (timber) using local labour. The meticulous planning of the building footprint, alongside the wider landscape proposals (making use of forest garden principles) will add value; it will ensure that the site is used to its full potential and that investment in its continuing enhancements will continue, into the future. It is a sustainable model for living. |
| 5. Avoid areas of high quality agricultural land and floodplains. **(A,B,D,E)** | The site is private land and is not in a flood plain.  It is worth mentioning here that the proposal will encourage and promote more effective use of the land for growing than a typical agricultural plot.  The proposed forest gardens are closely linked to systems of ‘agroforestry’. Both forest gardens and agroforestry systems require minimal energy and effort when seen in comparison to traditional farming systems:  Conventional, mono-crop agricultural plots require the use of large machinery, fertilisers and sprays (to deter pests), all of which have a high carbon cost to the environment. In stark contrast, agroforestry and forest gardening rely upon biodiversity in order to maintain balance; ‘pests’ are kept ‘in check’ by natural predators by ensuring the correct habitat (such as ponds) is in place to support all the necessary wildlife.  These sustainable systems of food production are steadily gaining traction however they present challenges at a commercial level with regard to harvesting – the use of traditional large-scale machinery (used in monocrop farming) for harvesting are not viable.  Agroforestry systems are more nuanced, requiring a variety of plant types and species in order to provide the correct conditions for growth; harvesting is more complex process. This fact presents a unique opportunity for dwelling plots to make a valuable contribution to the production of food through the incorporation of forest gardens. The design of dwellings must be sensitive to these new requirements allowing a more direct connection to their immediate natural environment such that is facilitates the system and it comes with additional benefits; increased levels of health and well-being through a more direct contact with nature.  The proposal aims to integrate a more sustainable, symbiosis of dwelling and food production; A house that sits sensitively in its site, making provision for forest gardens, water storage and renewable technologies. |
| 5a Avoid the possible sterilisation of mineral resources identified in the  Adopted Minerals Local Plan. **(A,B,D,E)** | The site is not identified in the adopted minerals local plan. N/A |

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| **(b) IMPACT AND FUTURE USE OF THE DEVELOPMENT** |  |
| *How will the development satisfy the following criteria?* |  |
| **Minimisation of Pollution** |  |
| 1. Minimise noise, e.g. building design, use of quieter technology, operating hours and traffic reduction. **(A,B,D,E,F)** | Once constructed, the house will have minimal impact; it has been designed to sit harmoniously within its surroundings such that it will encourage more wildlife.  The driveway has been deliberately kept short; solely to serve its purpose of accessing the dwelling. There is secure bike storage which should encourage sustainable travel thereby reducing noise.  The woodland will offer visual protection and protection from noise to the house from nearby traffic. The house has been designed to sit within the tree canopies and so will be visually obscured from those looking into the site.  Any construction proposals will be required to include measures to minimise the impact on wildlife however, both the PEA and the comments from Graham Bell highlighted that the proposal will enhance the site with regard to biodiversity. |
| 2. Minimise light pollution, e.g. design of buildings, and lighting schemes, avoiding use of floodlighting. **(A,B,D,E,F)** | Refer to the PEA for guidance on lighting design parameters. |
| 3. Minimise odours from buildings and plant. **(A,B,D,E)** | Materials specified will be low ODP and have zero VOC’s. |
| **Management of Water Resources** |  |
| 4. Use local sources for the water supply and disposal of waste if possible.**(A,B,E)** | Water storage proposals are included.  Waste disposal proposals are included. |
| 5. Prevent pollution of ground and surface water and enhance water quality where possible e.g. renew sewers, waterway maintenance, reed beds for waste water treatment. **(A,B,D,E)** | The proposal includes for a Biodisc which will treat foul waste such that it can be taken to a soakaway within the site. |
| 6. Protect the hydrology of the site and the surrounding areas e.g. use  permeable surfaces for car parks, provide swells, and open water areas,  minimise road length, avoid water run-off into water courses. **(A,B,D,E)** | The driveway has been minimised as described above and is elevated (constructed on piles to minimise its footprint and protect the tree roots) such that it will allow water to percolate and wildlife to roam below.  The introduction of ponds will encourage additional wildlife and form a part of the water storage an management system. |
| 7. Minimise water consumption through the use of water efficient fixtures and fittings, reed bed systems, ponds, rainwater storage and recovery and grey water re-use. **(A,B,C,D,E)** | The Building Regulations require 125 litres per person per day. The proposal allows for 80 litres per person per day and will achieve this by including for a range of A rated white goods, dual flush WC cisterns and taps with flow restrictors and aerators.  Rainwater storage is integral to the design such that it will be made available around the site and building for re-use. |
| **Energy Efficiency** |  |
| 8. Maximise passive solar gain by considering the siting and microclimate of the individual buildings e.g. making best use of the sun, avoiding overshadowing, size and orientation of windows, use of earth sheltering **(A,B,C)** | The trees will provide shelter from wind, a microclimate which will keep local temperatures stable and will provide clean air for the benefit of the householders.  The raised roof garden will provide an opportunity for those species of plant to grow that might not have ordinarily done so at the woodland floor.  The proposal includes for felling of some Ash trees which have dieback – the removal of these trees will allow more sunlight into the site. The house will benefit from floor to ceiling glazing. This will mean that residents will not feel overshadowed by the trees in the way that a more conventional house might (with smaller windows). Instead, the large areas of glazing will allow the residents to enjoy an abundance of indirect light whilst maintaining privacy afforded by the trees alongside. They will be able to enjoy the wonders of the woodland throughout its seasons. |
| 9. Minimise heat loss and maximise energy efficiency through building design e.g. using sources of renewable energy, solar panels, insulation, using lobbies and conservatories as buffer zones, draught proofing, localised temperature controls, weather-breaking planting. **(A,B)** | It is proposed that triple glazing be used throughout alongside the highest levels of insulation (exceeding the building regulations) for external walls to reduce heating demand.  The existing trees will provide a natural buffer to wind which will help to minimise heat loss.  A target for air tightness levels have been set to at ≤ 3 m3/hr/m2 air loss at a pressure of 50 Pa.  Continuous Mechanical supply and extract with heat recovery (MVHR) to be included to recover heat from exhaust ventilation air. |
| 10. Reduce green house gas emissions through building design, e.g. use of condensing boilers. **(A,B,C,D)** | Air Source Heat Pump to be installed as part of heating system. |
| 11. Generate power efficiently from a local source e.g. combined heat and power plant, heat/methane recovery from waste and other forms of  renewable energy. **(A)** | Not sufficient scale |
| 12. Encourage energy efficient modes of transport e.g. cycling, walking and buses. **(A,B,D)** | Refer to statement from Planning Consultant. Secure bike storage included in the proposal with area for washing (using harvested rainwater water). |
| **Waste Management** |  |
| 12a Follow the Waste Strategy Hierarchy of Minimisation, Re-use, recovery,and disposal as a last resort. **(A,B,D,E)** | Trees that are to be felled – to be inspected by suitable professional to confirm how they can be incorporated as part of the construction and / or interior furniture / cabinetry. Wherever possible local craftspeople and tradespeople are to be employed – as approved by the architect.  Where soil is to be excavated, it is to be retained on site and utilised / relocated as part of the landscape proposal – as approved by the architect. |
| 13. Maximise facilities on site to help with recycling, including home  composting. **(A,B)** | Food waste - Composting area incorporated into site for food waste.  Recycling – plastic, aluminium, space for recycling bins incorporated into proposal.  Cardboard – can be used as mulch where appropriate and as part of garden maintenance / development where it is not recycled. |
| 14. Include facilities for separation and storage of different types of waste for collection. **(A,B,D)** | As above. Collection as per agreement with the Local Authority. |
| 15. Include public facilities for recycling of waste and consider the need for access by various disposal contractors. **(A,B)** | N/A |
| **Habitats and Species** |  |
| 16. Ensure that there will be no overall net loss of biodiversity i.e. the quantity and variety of species. **(A,B,D,E)** | The opposite. The plan is designed to increase species diversity. This is supported by Wychwood (ecological consultant) and by Graham Bell (internationally renowned expert on Permaculture and Forest Gardens). Refer to Graham Bell comments and the PEA. |
| 16a. Contribute to the priorities and targets set out in the Local BAP  (Biodiversity Action Plan). **(A,B,D,E)** | As above. |
| 17. Protect designated sites and other sites/features of nature conservation importance, including SSSIs, and County Wildlife Sites. **(A,B,D,E)** | Refer to Wychwood PEA report which supports the proposal.  The proposals will safeguard and enhance existing features. |
| 18. Conserve protected species where found.  **(A,B,D,E)** | Refer to PEA report. |
| 19. Make positive provision to nature conservation e.g. nature reserves,  naturally shaped watercourses, native planting to encourage wildlife, or  other wildlife- friendly landscape features. **(A,B,D,E)** | The house has been carefully designed to minimise its footprint on the site, safeguarding existing trees and allowing the wildlife to continue to thrive on to woodland floor by raising the building and avoiding strip foundations (as would be typically used in housing developments).  The forest garden principles are based upon a deep understanding of the delicate ‘balance of nature’ and so the commitment to providing a forest garden means a commitment to ensuring the broadest range of beneficial species is incorporated in a much smaller area than conventional agriculture and gardening. Refer to Graham Bell’s statements on the proposals, further publications and website for more information. |
| 20. Provide for the ongoing management of habitats where applicable.  **(A,D,E)** | Although the Local Plan does not apply this point (no.20) to ‘B Small scale’ residential, it is clear that the proposal makes a commitment to ongoing management of the site. Notwithstanding; the ‘forest garden’ is in essence a lower maintenance garden than other, more formal, gardens, relying upon; planting at a number of levels, continuous plant cover over the ground (ie. no need for turning over the soil), minimal weeding and no requirement for insecticides or other harmful chemicals. The aim instead is to provide a high yield of edible crop in a relatively small space. The forest garden is therefore well suited to single dwellings where harvesting doesn’t rely upon such efficiency as in commercial farming. It is deemed that most (if not all) houses in the local area will require dedicated gardeners that will therefore ensure the continued management of the site. |
| 21. Ensure that waste products do not harm wildlife. **(A,B,D)** | N/A All waste to be recycled. No harmful products are proposed. |
| 22. Encourage use of timber from sustainably managed sources. **(A,B,D,E,F)** | As above; Timber that is felled on site to be repurposed for the building and / or site. |
| **Community Provision and Equity** |  |
| 23. Involve the local community in the development of proposals.  **(A,B)** | The proposals are innovative and are a sensitive response to the site. It is hoped that the proposals will stimulate debate, locally and nationally, as to how housing, (even single dwellings) collectively, can make a positive contribution to global targets, in our combined efforts to reduce carbon emissions and to live sustainably.  It is perhaps a commonly held misconception that trees and ‘nature’ should present a problem to development. The proposal, if built, will demonstrate that, far from being a problem, trees can benefit our living conditions, health and well being; if only we would design our houses accordingly. Nature and dwellings can coexist in close proximity. We must stop building houses that push back nature to the periphery and allow nature to provide for us, at our ‘doorstep’. If successful, the proposal might encourage the local community to plant more trees and more edible crops thereby increasing local biodiversity on existing sites. If this were to happen it would set an important precedent for positive change. The aim is that the proposal will engage the community, encourage the expansion of natural habitat for wildlife locally and promote the ideas of on-site food production. Never have these ideas been more important than they are now. |
| 23a Contribute to the provision of education facilities where appropriate.  **(A)** | The innovative nature of the proposals mean that, if approved, the site would provide an important resource and could either; be made available to visit for educational purposes and / or documented such that its construction / development over the coming years can be analysed for the benefit of research. |
| 24. Provide affordable housing, or commuted payment for affordable/ social housing where appropriate. **(A)** | N/A |
| 25. Provide appropriate health and childcare facilities where appropriate to satisfy local demand. **(A)** | N/A |
| 26. Improve leisure and recreational facilities e.g. recreation grounds, playing fields, children’s play areas. **(A)** | N/A |
| 27. Make positive provision for open spaces e.g. provide parks, village  greens, and commuted sums for future maintenance. **(A)** | N/A |
| 28. Improve and maintain access to existing open space. **(A,B)** | N/A |
| 29. Improve community, cultural and social facilities e.g. community centres, public art. **(A)** | N/A |
| **Accessibility** |  |
| 30. Improve or enable convenient access to employment centres, shops,  recreation and community facilities and schools. **(A,B)** | The site is well located within the existing village and has good access to facilities and public transport – refer to the Planning Consultant statement for further information. |
| 31. Maximise access for the pedestrian and cyclist to and within the  development and give priority to footpaths and cycleways over private  transport modes. **(A,B,D)** | As above. Cycle storage incorporated into the design. |
| 32. Improve access to buildings for everyone (wheelchair users, people  with young children and disabled people). **(A,B,D)** | The design shall meet the requirements set by the building regulations section M4(2) ‘accessible and adaptable dwellings’. Note that these standards are ‘optional’ under current regulations and further demonstrate the commitment to providing an exemplar proposal. |
| 33. Give public transport priority over private transport modes. **(A,B)** | Yes - the proposal achieves this. |
| 34. Improve facilities and conditions for cycling especially safety aspects e.g. secure covered cycle storage, cycle paths, signals and lanes. **(A,B,D,E)** | Yes - the proposal achieves this. Refer to 31 and 1 above. |
| 35. Meet the requirements for the preparation and implementation of a Green  Transport Plan. **(A)** |  |
| 36. Minimise car parking e.g. appropriate levels/standards of parking, car free neighbourhoods, park and ride. **(A,B,D,E)** | Yes - the proposal achieves this. |
| **Contribution to the Economy** |  |
| 37. Increase job opportunities for local people e.g. training courses, inward investment, and small business units. **(A,B,D)** | Yes - the proposal achieves this. Refer to 23 and 23a above.  The proposed landscaping has the potential to raise the profile of forest gardening bringing with it an increased need for training and jobs. Additionally, the undertaking of a forest garden design in conjunction with the design of a dwelling is innovative and therefore will be a subject for future research and development. |
| 38. Demonstrate how the proposal will add to the generation of  income in the local area. **(A,B,D)** | Refer to 23 and 23a above. Use of local tradespeople and craftspeople for the construction of the house and landscaping. |
| 39. Promote socially and environmentally responsible business practice e.g. waste minimisation, office recycling, energy saving schemes, and noise reduction. **(A,B,D)** | Yes - the proposal achieves all of these. Refer to 23 and 23a above. |
| 40. Add to diversity of the local economy. **(A,B,D)** | Yes - the proposal achieves this. Refer to 23 and 23a above. |
| **Health and Safety** |  |
| 41. Minimise opportunities for crime through the layout of buildings and  Spaces e.g. natural surveillance of paths overlooking of paths, appropriate landscaping and mixed uses. **(A,B,D)** | The gate will provide a secure point of entry. The existing hedge bounding the road is to be maintained as a secure boundary albeit a more sustainable, native species. Windows and doors will be ‘Secure by Design compliant’. The house has been designed such that it has an active frontage. The inclusion of a water feature alongside the landscaping proposals and general planning of the house within the established trees all make an additional contribution to reducing crime. |
| 42. Segregate vehicles from all other modes of transport wherever possible. **(A,B,E)** | Yes - the proposal achieves this. Refer to 23 and 23a above. Separate and secure bike storage included. |
| 43. Store potentially hazardous materials safely. **(A,B,D)** | N/A |

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| **(c) CONSTRUCTION PERIOD** |  |
| *How will the development satisfy the following criteria?* |  |
| **Energy Efficiency** |  |
| 1. Demonstrate how the energy costs of developing the site will be minimised in terms of extraction, manufacture, transport, use and disposal in construction e.g. minimise changes in site levels during construction, avoid use of aluminium. **(A)** |  |
| **Minimisation of Pollution** |  |
| 2. Include a site investigation to identify areas of soil contamination and take correct measures for decontamination. **(A,B,D,E)** | N/A |
| 3. Minimise noise levels and light pollution during the building processes e.g. use of quieter technology, restriction of operating hours and traffic reduction. **(A,B,D,E)** | By its very nature, the site’s constraints negate the use of heavy machinery as tree roots are to be protected. This fact means that any construction plan will need to take into consideration methods that allow manual handling of structural members as much as possible. The detailed design of the building has yet to commence and will likely require a number of consultant engineers however it should be clear from the proposal that a deep commitment has been made that will result in a construction that is sensitive to all.  It is proposed that the structure of the house will bear on piles which (due to careful planning) should avoid most if not all roots of the existing trees to be retained. Careful excavation at specific locations will be required using tools that will not damage the roots and/or the tree in order to ascertain exact locations that piles can be located. |
| 4. Minimise air and dust pollution during construction. **(A,B,D,E)** | Off-site construction to be utilised wherever possible; for example post and beam manufacture and or cross laminated timber (CLT) – pending further consultation / site analysis as part of construction plan at a later date. Bolted connections to be used for any steel and timber structure - **No on-site welding to take place**. |
| 5. Prevent pollution of ground and surface water. **(A,B,D,E)** | N/A – natural materials to be used. Rainwater from the roof to below harvested. |
| 6. Minimise odours from buildings and plant. **(A,B,D,E)** | N/A – refer to 4 above. |
| **Waste Management** |  |
| 7. Identify the volumes and type of waste generated during development  through construction and occupation and take measures to minimise, reuse and recycle waste. **(A,B)** | Concrete proposed for the Pile foundations – to be confirmed by Engineer at pre-construction stage. All other wet trades typical of housing development (concrete, plastering, brickwork/ mortar) **are not proposed.** No significant waste is anticipated. |
| 8. Encourage the use of renewable recycled, recyclable and durable products e.g. building materials, salvage material for re-use/ recycling, use demolition materials for hardcore and aggregate. **(A,B,D,E)** | Timber structure and cladding is recyclable. Structure proposed to be demountable ie. bolted connections such that it could be reused. Timber from the site proposed to be utilised where possible.  Cladding to roof shall be recyclable. |
| 8a. Promote the use of local materials first, followed by low embodied energy materials, and finally high embodied energy imported materials.  **(A,B,C,D,E)** | As above. |
| **Habitats and Species** |  |
| 9. Ensure the protection of trees, hedgerows and other plants during  construction. **(A,B,D,E)** | It is proposed that, prior to construction, a method statement be submitted for approval by the local authority for ground works; protection and the exposing of the tree roots, piling for foundations and areas for storage of materials / protective barriers. |
| 10. Preserve wildlife habitats on site during construction either in situ or by translocation. **(A,B,D,E)** | Refer to PEA with regard to bats. |
| **Health and Safety** |  |
| 11. Use clean hazard-free technologies for plant and building operation and maintenance. **(A,B,D,E)** | N/A |
| 12. Store potentially hazardous materials safely. **(A,B,D,E)** | N/A |
| 13. Avoid unsafe building materials e.g. asbestos, lead paints,  organochlorides. **(A,B,D)** | N/A – none proposed. |
| 14. Encourage liaison with the local community as part of a‘ Considerate  Contractor’ approach to the construction phase. **(A,B,D,E)** | As above – It is proposed that a construction plan be submitted top the local authority prior to start on site. |

**SUSTAINABILITY CHECKLIST FOR HOUSEHOLDER APPLICATIONS**

**Please state how your proposal addresses the following criteria:**

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| 1. Minimise any impact on the daylight, sunlight and privacy enjoyed by any neighbouring property. | The existing tree canopies are already established at a higher level than the upper most level of the proposed building which steps gently responding to the slope of the site. As such there will be no overshadowing of the adjacent property (no. 48) over and above what the trees already impose.  The front part of the house (entrance and bedrooms) has a glazed section (wintergarden) to the south-east side, the tallest of the building’s facades, thereby maximising its potential benefit from some solar gain as the sun penetrates through some trees in winter months. The height of the ridge has been calculated to allow sun to penetrate the woodland floor on the west side courtyard, even as early as 11am in the morning.  The wintergarden faces the adjacent property however it does not create potential for overlooking that could be detrimental to the neighbouring property for the following reasons; it adjoins the bedrooms rather than living spaces, it is not fully open to the bedrooms (instead being separated visually and thermally by solid doors), it is set behind the existing trees and so will be partially obscured, it will incorporate some obscured glazing and the area that it is oriented towards is a driveway. |
| 2. Make best use of the sun’s energy to reduce energy costs e.g. south facing living room windows. | As above |
| 3. Maximise other opportunities for energy saving, such as cavity wall  insulation, double-glazing or loft insulation. | As above |
| 4. Use other sources of energy e.g. solar panels. | As above |
| 5. Use renewable recycled or second-hand materials during construction. | As above |
| 6. Design the building/extension so it is accessible for people with all levels of mobility, in particular people with disabilities, prams. | As above |
| 7. Use permeable materials for hardstandings or parking areas to reduce  Surface water run-off and evaporation. | As above |
| 8. Install water-efficient fixtures and appliances to conserve water (e.g. special showers, taps, cisterns) and equipment to recycle water (e.g. rainwater butts). | As above |
| 9. Preserve existing trees, hedges and other natural features. | As above |
| 10. Use landscaping and natural features externally which will increase  biodiversity e.g. planting native species, or species attracting wildlife and  including water features. | As above |
| 11. Use hedges rather than brick and concrete walls or fences as a means of enclosure, or soften the look of existing walls/fences with climbing plants. | As above |
| 12. Design the extension or building to include crime prevention measures e.g. avoid accessible flat roofs, avoid situating extensions/buildings close to footpaths, avoid solid fences giving easy access for burglars. | As above |
| 13. Minimise noise levels, and light and dust pollution during construction. | As above |
| 14. Considers the need for adequate storage for cycles and domestic  Recycling facilities. | As above |

**the checklist does not address aesthetic design issues.**

**Applicants are required to submit a separate statement on urban design,**

**showing how their development satisfies the design principles and**

**standards in the Plan.**