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Ecological Design Strategy

13/12/2017

As part of the new proposed development at `The Coppice` on Park Lane, Knypersley, we have identified a number of ecological and environmental enhancements as part of the proposed scheme.

Under the initial application an environmental and ecological study was commissioned, it further identified an additional need for a study into the possibility of an existing habitat of Great Crested Newts. This further study has been commissioned by Middlemarch Environmental (enclosed) and has found that there are no newts present.

Proposed Enhancements;

1. Sedum Living Roofs

The proposed dwellings have been designed to incorporate a flat roof section at the rear of the property. It is proposed that Sedum mats will be laid in line with the suppliers guidance to these sections.

Living roofs can provide fresh areas for the local ecology to thrive and, with continued urban expansion absorbing the habitats of our indigenous plants, insect and birds; landscaping flat roofs offers an effective and practical use of space, whilst helping to sustain and replace lost habitats in the process.

Ecological

- Creating a natural habitat for flora and fauna – a living roof can create a local ecology in which the vegetation will establish and provide a home for smaller elements of wildlife as well as insects and invertebrates.
- Aiding biodiversity – the provision of a healthy habitat in a place that could otherwise be empty provides support for the natural colonisation of locally arising plants, birds and small animals, encouraging a wider spread of species in the area.

Environmental

- Storm water management – soft landscaping helps to reduce the risk of flood by retaining large proportions of annual rainfall and reducing rainwater run-off. This is particularly useful within Sustainable Urban Drainage (SUDs) schemes. The volume of water retained is dependent upon the depth of substrate utilised in the landscaping, the greater the depth, the more water is held back on the roof.
- Environmental masking – this assists in blending the building into its surroundings and in part replaces the permeable land surface otherwise lost to the construction.
- Improved air quality – the vegetation assists in reducing both gaseous pollutants and dust particles by removing a proportion of them from the immediate environment. Additionally, the natural evaporation of water from the plants and soil helps to cool and humidify the air, so lowering the ambient temperature and reducing the heat island effect.

- Photosynthesis - This is part of a plants' living process whereby they actively convert carbon dioxide to oxygen. Independent research suggests that, under maximal conditions, each square metre of single leaf surface on an established extensive type planted roof, with a 12 hour day length is estimated to take up (0.3024 x 48) 14.51g of carbon dioxide and release (0.3024 x 32) 9.68g of oxygen a day.
- Urban heat island effect is reduced - this is the difference in temperature between urban areas and the surrounding countryside. In large cities, this can be as much as 5°. This happens because large building surfaces will both reflect and radiate solar energy within a built up area, which does not dissipate fully overnight. The substrate of a green roof will absorb some of this heat and the natural evaporation of water from both the plants and the soil helps to cool and humidify the air, thus lowering the ambient temperature.

Financial and Technical

- Reduced carbon footprint through lowering building running costs – the thermal insulation on the building is improved providing a more balanced temperature within. This eases heating costs in the winter and air conditioning expenses during the summer.
- Reduced construction costs – depending on the landscaping selected, the following may be achieved; no requirement for screed on the deck so reducing the overall weight imposed, fewer rainwater outlets, decreased rainwater drainage system capacity and a reduced requirement for storm water attenuation within the SUDs scheme for the site.
- Increased life expectancy – research has shown that when protected by landscaping, the life expectancy of waterproofing membranes are substantially increased and can last the estimated design life of the building
- Aid to planning consent – many Local Authorities favour planning proposals that incorporate green roofs within the application, particularly if it meets their policies towards providing a sustainable environment
- Increased property value – the roof is an under-utilised development asset, which can be maximised for a number of purposes, including leisure, and offers a unique potential for replacing the land lost to the footprint of the building.

2. Wildlife Corridor

As part of our ecological enhancement design for the plot, we intend to introduce a `wildlife corridor` in the form of a mixed hedge line in order to maintain and improve the connectivity between the trees located at the front of the plot and the woodland to the rear.

Good hedges help wildlife by providing cover, food and 'connectivity' – they act as green corridors through urban areas. But this doesn't mean they have to be untidy. Tall hedges, besides being inconsiderate to neighbours, are unmanageable, and the shade they cast reduces the wildlife diversity of your garden.

Due the size and changing levels of the land we feel that it may be impractical to plant a hedge, but the alternative – a bare fence – can cause air turbulence and temperature extremes, neither of

which is beneficial to animals. Our proposal is to provide a 5ft slatted screen, raised off the ground and then we intend to cover the screen with climbers such as ivy, hops, clematis or dog rose, creating shelter for insects and spiders. These will not only climb the screen but also fall downwards over the retaining walls. In addition we will plant *Pyracantha*, *Berberis* and *Cotoneaster* beside the screen to provide berries for birds in the autumn, and also add rock piles and stacked logs to increase the wildlife value within the front woodland.

It is intended to retain the conifer hedges at the rear of the plot. These offer snug roosting sites for small birds on cold nights, and places where insects such as ladybirds can hibernate. Several species of garden bird nest in evergreens, too.

Further planting of additional Silver Birch Trees are also indicated on the plan and one will form part of the corridor also. These, along with the buildings will provide corridors for bats to commute from one area of countryside to another. These features will act as navigational landmarks and will also provide some protection from predators. As bats fly through the night, their echolocation calls bounce off these landscape features, helping the bats find their way to and from their roosts and foraging habitats.

3. Bat Boxes

Trees, woodlands and their associated shrubbery attract a wide variety of insects for bats to prey on. It is for this reason that we intend to introduce two Kent Bat Boxes to the woodland at the front of the property as indicated on the plan.

The Kent Bat Box design and constructed from rough sawn larch.



Two 25mm cavities provide plenty of roost space in this self-cleaning box which has been left untreated. The two protruding nail heads on the front of the box provide a handy anchor point when strapping the box to a tree or pole.

4. Hedgehogs

The rear of the plot backs onto a small woodland. We propose to provide two garden sheds to the properties against the conifer hedge line which will provide an ideal habitat for hedgehogs.

We will install behind each shed the below classic hedgehog box providing the perfect shelter for these garden critters. We will ensure that there is a gap maintained under the rear boundary treatment to assist with the movement of these animals.



4. Lighting

The exterior lighting scheme has been designed in order to illuminate low level walkways and access, and avoiding large flood lit areas.

The following lighting types have been identified;

1. Down Lights (rear and side of property)



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2. Post Lighting on PIR lighting low level along driveway



3. Porch Lighting on PIR

