Liss Forest Nursery, Greatham

Ecosystem Services Statement

1. INTRODUCTION

Purpose of the report

1.1 Ecological Planning and Research Ltd (EPR) were commissioned by Cove Construction Ltd to produce an Ecosystem Services Statement for submission in conjunction with an application for planning permission for a small-scale residential development at Liss Forest Nurseries in Liss, Hampshire.

1.2 As part of the planning process, the South Downs National Park Authority (SDNPA) requires all new developments to submit an 'Ecosystem Services Statement', for which they have produced guidance entitled *'Ecosystem Services Technical Advice Note (non-householder)*' (2018). The purpose of the Ecosystem Services Statement is to facilitate and report upon consideration of the way in which developments within the National Park can be designed to support the various benefits to people and the environment that are derived from the natural environment.

1.3 This Ecosystem Services Statement should be read in conjunction with the *Updated Ecological Impact Assessment* (EcIA)(EPR, 2021), which provides the comprehensive descriptions of the ecological baseline within the Zone of Influence of the proposals, sets out an assessment of the likely significant impacts of the proposals upon Important Ecological Features (IEFs) and prescribes appropriate mitigation, compensation and enhancement measures.

Site Description

1.4 The site comprises of a single residential bungalow, two garages, glasshouses, polytunnels, open-air growing areas, ornamental planting, escaped garden plants, mature mixed Hazel-dominated native hedgerows, and rows of mature Oak trees on the south-west boundary with small patches of grassland scattered throughout the site that range from improved to species-poor semi-improved in terms of diversity.

Development Proposals

1.1. The site is proposed to be redeveloped with the existing horticultural nursery to be replaced by 37 residential units and associated infrastructure and landscaping.

2. METHODOLOGY

Approach

2.1 Following the Defra Guidance set out in 2007, the key steps for establishing the ecosystem services present on site are as follows:

"1 Establish the environmental baseline.

2 Identify and provide qualitative assessment of the potential impacts of policy options on ecosystem services.

3 Quantify the impacts of policy options on specific ecosystem services.

4 Assess the effects on human welfare.

5 Value the changes in ecosystem services."

Study Area

2.2 The study area is primarily identified as the red line boundary of the development (**Map 1**), though some areas outside of this area were considered when reviewing the South Downs National Park Ecosystem Services Mapping tool. For the purposes of the Updated EcIA Report (EPR, 2021), the potential impacts of the development were considered over the wider 'Zone of Influence' (ZoI) of the proposals (which is the area over which the biophysical changes caused by the project or associated activities assert themselves). The ZoI of the project extends beyond the site boundary in certain circumstances (for example due to light spill or recreational activity undertaken by new residents). Further details of this are provided in the EcIA Report.

Baseline

2.3 The first step of this assessment is establishing the ecosystem services that may be present on site. A site visit was undertaken by Ben Kite and Jo Doolin of EPR on 29 April 2021 to assess the site and the habitats present and to help identify potential ecosystem services, and a desktop study was also undertaken to identify known nearby species, habitats and designated sites of nature conservation Importance.

2.4 Ecosystem services are split into four categories, defined in policy SD1 of the South Downs Local Plan policies (2019) as follows:

- Supporting services
- Provisioning services
- Regulating services
- Cultural services

2.5 These overarching services are broken down into a number of different distinct services in policy SD2 which are listed in **Appendix 1.**

2.6 A review of the South Downs National Park Ecosystem Services Mapping tool was undertaken to further identify potential ecosystem services present both within and directly surrounding the site.

2.7 Additionally, Defra's new 'Environmental Benefits from Nature' Tool (Beta Test Version, July 2021) was used to explore some of the likely changes in ecosystem service provision as a result of the conversion of habitats on site from the pre to post development situation. This was not carried out as a comprehensive fully quantified exercise, as the tool is still in its testing phase and for many of the habitats present on site prior to development (e.g. polytunnels and glasshouses) such a detailed quantification is disproportionate.

2.8 ECOSYSTEM SERVICES ASSESSMENT

Baseline

2.9 The site is located south-east of Petersfield Road and the settlement of Greatham, to the north of Liss town in East Hampshire. The location is shown on **Map 1.**

2.10 The application site is predominantly a collection of polytunnels, glasshouses and a small residential bungalow. There are some minor habitat features present on site (**Map 2**) which consist of:

- A small area of residential ornamental garden surrounding the bungalow
- A line of mature Oaks along the western boundary
- Mixed Hazel hedgerow along the western and southern boundary
- Small patches of grass scattered around the built structures that ranges from improved to species-poor semi-improved in terms of diversity (i.e. botanical diversity is low).

Ecosystem Services

2.11 Table 2.1 provides an assessment of ecosystem services provided by the habitat features present.

2.12 The South Downs National Park Ecosystem Services Mapping tool was used to identify features and areas around the site that may provide other ecosystem services. Using these maps, the site and the surroundings were identified as having the following:

- A low level of carbon storage capacity, likely due to the boundary features such as the tree line and hedgerows, along with a small amount from the plants grown on site.
- A high level of pollination capacity, likely due to the highly rural setting of the site and ornamental garden.
- Some level of water purification capacity potentially due to the hedgerow and tree line features.

2.13 The mapping tool only provides a coarse level of detail, and as such the above has been inferred using professional judgement.

Table 2.1: Ecosystem services present on site

Contribution of habitats to ecosystem services		
		Site habitats providing feature
Supporting Services	Soil formation	Negligible – boundary hedgerows, trees and grass patches will be making minor contributions to soil formation through leaf drop and accumulation of organic humus
	Primary production	None / negligible
	Nutrient Cycling	Negligible
	Water cycling	Negligible – boundary habitats (hedgerows, trees etc) will be making minor contributions through evapotranspiration

	Biodiversity	Buildings providing roosts for bats, boundary features providing habitat and food for birds and mammals, flowering plants providing pollinators with food
Provisioning Services	Water Supply	All habitats located on permeable soils will be contributing to groundwater recharge through infiltration of rainwater
	Food production	None
	Timber	None
	Energy	None
	Genetic diversity	Negligible – the species on site will exhibit a range of genotypes broadly common across southern England.
Regulating Services	Air quality	Tree line and hedgerow will regulate low levels of pollution
	Climate & carbon storage	Tree line and hedgerow will absorb carbon
	Water flow and flood	The tree line, hedgerows and grassland areas will all provide some attenuation for surface water and will provide permeable surfaces to enable infiltration to groundwater (to reduce surface water runoff)
	Erosion	The tree and hedgerows will prevent some level of erosion
	Soil quality	N
	Water quality	Vegetated habitats including grassland, trees and hedgerows will remove some pollution (e.g. nitrates and phosphates) from surface and groundwater, but the existing use of the site as a plant nursery (with associated fertiliser use) is likely to counteract this
	Disease and pest regulation	Habitats that support bird and mammal life will provide insect predators that will help regulate pests
	Pollination	Ornamental planting and flowers of trees, hedgerows species and grassland forbs will attract pollinators
Cultural Services	Recreation and tourism services	None
	Cultural heritage values	The Oak tree line is possibly a remnant of a farm track, but it is difficult to determine.
	Tranquillity	The area is quiet
	Inspirational/Spiritual values	None

3. IMPACTS OF PROPOSED DEVELOPMENT

3.1 The proposed development will involve the demolition of the current structures on site, and the construction of 37 units and associated landscaping (**Map 3**). Ecological enhancements will be provided as part of the development which will include:

- Bat and bird boxes installed on houses and trees
- Wildflower planting and grassland management to enhance the site for wildlife.
- SUDS and swales created and planted with wildflowers.

3.2 **Other enhancements/methods taken by other disciplines**

3.3 Table 3.1 provides a list of ecosystem services actions that will be taken and the section(s) of policy SD1 they relate to.

Table 3.1 Ecosystem service actions

Ecosystem Services Actions	Relevant Policy SD2 Criteria
SUDS and swales will be created on site to reduce the impact of surface water runoff, clean and improve the quality of surface water discharge as well as provide additional habitat for wetland species and those that prey upon them (e.g. bats and insects)	a, b, d, e, i
Planting of the boundary hedgerows to increase connectivity between nearby habitats, and subsequent positive management of hedgerows using traditional management techniques	a, b, f
Planting of wildflower areas within the SUDS and swale areas, along with enhancement of open space previously unavailable to the public.	a, b, k,
Installation of bat and bird boxes	b
The provision of new homes with vegetated gardens for use by residents	a, b, k
Efficient insulation, installation of energy efficient boilers, improved air-tightness and low energy lighting fitted as standard in the properties along with the installation of solar panels. Building materials will be sourced locally and from low impact materials.	e, h
Internal plumbing will be designed to reduce water usage	a, c

4. SUMMARY OF ECOSYSTEM SERVICES EFFECTS

4.1 The application site is a small area of land that currently has limited potential to provide a variety of ecosystem services. In its current state, the large expanses of polytunnels and greenhouses contain ornamental plants, so provide limited value to local wildlife. The boundaries provide good levels of connectivity between the site and surrounding areas. Additionally, the use of the site as a nursery is likely to be associated with the use of fertilisers and other agrochemicals, which will likely reduce once the development has taken place (although new gardens will have some degree of chemical use associated with them).

4.2 The proposed development will create sensitively landscaped areas of grassland in the form of both public recreation areas and wildflower grassland, along with other habitat enhancements. The increase in wildflower diversity in particular associated with the new wildflower grassland creation will provide a resource for use by pollinating invertebrates (both wild and domestic honeybees).

4.3 Additionally, supplementary planting of boundary hedgerows and new trees will increase the ability of the site to sequester and store carbon, as well as providing additional foraging and nesting resources for birds and bats, and improving connectivity to other habitats located offsite.

4.4 The proposed SUDs basin will store and attenuated surface water runoff from the proposals enabling a degree of cleaning before either infiltration to groundwater or discharge to surface water drainage. This will assist with groundwater recharge as well as provide habitats for aquatic wildlife such as invertebrates, which in turn will provide food for species such as bats and birds.

4.5 The new dwellings are associated with new vegetated gardens, which along with the public open space associate with the proposals will provide new outdoor spaces for people interact with nature for the benefit of both physical and mental wellbeing.

4.6 Sustainable building construction and design including solar panel and insulation installation minimises unnecessary CO2 emissions.

4.7 The above features will provide an overall positive increase in the number of ecosystem services available on site.

5. REFERENCES

DEFRA “An Introductory Guide To Valuing Ecosystem Services” 2007

Natural England – “The Environmental Benefits from Nature Tool - Beta Test Version (JP038)”

South Downs National Park Authority, “South Downs Local Plan 2014 - 33” Adopted July 2019

South Downs National Park Authority, “Mapping of Ecosystem Services within the South Downs National Park using the EcoServ GIS Tool” December 2016

South Downs National Park Authority “Ecosystem Services Technical Advice Note (non-householder) “

Southern Energy Consultants “Energy and Sustainability Statement” September 2021

PFA consulting “Flood Risk Assessment and Drainage Strategy” July 2021

APPENDIX 1

Figure 4.2 of Policy SD1 "Sustainable Development" of the South Downs Local Plan states that the types of ecosystem services present in the National Park can be separated into the following four categories defined in the policy as follows:

> ***"Supporting services** offered by flora and fauna and micro-organisms are essential for healthy soils, habitats and nutrient cycling, which underpin the environment's natural goods and services which benefit people. The National Park has a rich variety of species, landscapes, rivers and coastline which support the other ecosystems services, such as soil and water quality.*
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> ***Provisioning services** relate to the products and productivity of the natural environment. Approximately 85 per cent of the National Park is farmed and its soils support it being a major producer of cereal crops, which are grown mainly on the dip slopes. These soils also support grazing and biodiversity of important native habitats and species like the Duke of Burgundy butterfly. Approximately 25 per cent of the National Park is wooded, which contributes renewable fuel like biomass. The chalk hills, which sweep across the National Park, filter and store fresh water, providing us with high-quality drinking water.*
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> ***Regulating services** are the controls from the natural environment. For example, rivers which help to control water flow, drainage and flooding. Rivers such as the Meon, Ouse and Cuckmere support habitats and biodiversity. Enhancing species like bees and other pollinators are vital for food crops as well as other plants and wildflowers. Woodland also prevents soil erosion and is an important resource for carbon storage which helps to mitigate climate change. These services also regulate pollution in the air, water and on land. These include regulating carbon dioxide and air quality from cars and industry, chemicals from the treatment of agricultural fields or viticulture or surface water run-off and percolation from the urban environment into rivers and ground water.*
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> ***Cultural services** relate to people's enjoyment of the National Park and its special qualities. The distinctive landscape of the Western Weald, the chalk ridge, scarp and dip slopes and the dramatic Seven Sisters cliffs are of inspirational value through their sense of place and tranquillity, including dark night skies. Embedded in the landscape is important cultural heritage which is rich in arts and literature, archaeological remains, traditional historic towns and villages and architecture. These special qualities and an extensive network of bridleways and footpaths enhance people's health and wellbeing."*

Core Policy SD2 of the plan States the following:

> *1. Development proposals will be permitted where they have an overall positive impact on the ability of the natural environment to contribute goods and services. This will be achieved through the use of high quality design, and by delivering all opportunities to:*
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> *a) Sustainably manage land and water environments;*

b) Protect and provide more, better and joined up natural habitats;

c) Conserve water resources and improve water quality;

d) Manage and mitigate the risk of flooding;

e) Improve the National Park's resilience to, and mitigation of, climate change;

f) Increase the ability to store carbon through new planting or other means;

g) Conserve and enhance soils, use soils sustainably and protect the best and most versatile agricultural land;

h) Support the sustainable production and use of food, forestry and raw materials;

i) Reduce levels of pollution;

j) Improve opportunities for peoples' health and wellbeing; and

k) Provide opportunities for access to the natural and cultural resources which contribute to the special qualities.

2. Development proposals must be supported by a statement that sets out how the development proposal impacts, both positively and negatively, on ecosystem services.

The note issued by the South Downs National Park Authority covering Mapping of Ecosystem Services within the South Downs National Park using the EcoServ GIS Tool defines further defines ecosystem services as follows:

Supporting Services – Functions provided by ecosystems that underpin all of the other services	
Soil formation	Soil is formed by the interaction between plants, micro-organisms and the underlying geology. We depend on healthy soils for growing food. Soils are slow to form but can be quickly degraded by poor land management, erosion and the impacts of weather and climate.
Primary production	We rely greatly on processes such as photosynthesis where plant communities use solar energy to convert water and nutrient into biological growth, food and raw materials.
Nutrient Cycling	Plants, animals and micro-organisms are essential to the natural cycle of nutrients and help maintain soil and water quality. Increased levels of nutrients such as nitrates and phosphates from sewage and fertilisers can result in poor water quality.
Water cycling	We rely on the natural environment and its functions to provide us with fresh water.
Biodiversity	Plants and animals drive many of the processes that result in a healthy ecosystem, and the benefits we get from it. The richness and diversity of species and habitats are vital to conserve as they support and underpin many of the processes we rely on to sustain our lives
Provisioning Services - Products of ecosystems such as water, food, and the supply of raw materials	
Water Supply	Clean water is essential for life. The chalk aquifers and river catchments of the South Downs provides drinking water for 1.2 Million people and we rely on the supply for all our commercial and domestic uses.
Food production	Farmers in the South Downs produce food and other raw materials. The farmed environment of the South Downs is a major producer of cereals and wheat, oilseeds, sheep and cattle amongst other produce.

Timber	Woodland cover is around 24% of the total area of the National Park. Many estate woodlands in the central and western downs are under commercial management. There is great potential for bringing other areas of woodland into active management, through coppicing for example.
Energy	The South Downs has good conditions for a range of renewable energy, there is scope for developing resources such as wood fuel that also improve Landscape quality and Bio-diversity.
Genetic diversity	The Bio-diversity and seed bank within the National Park are a resource for the future. Local breeds of sheep and cattle help maintain important genetic diversity and contribute to both our cultural heritage and local distinctiveness.
Regulating Services - The results of natural processes such as water purification and air quality	
Air quality	Plants and trees are central to the cycle oxygen and carbon dioxide in the atmosphere, they have an important role to play in regulating levels of air pollution.
Climate & carbon storage	Plants and trees have an influence on climate at both local and global scales. They absorb and store carbon from the atmosphere. The thin mineral soils on the chalk also have limited capacity to capture and store carbon
Water flow and flood	The water catchments, rivers and streams help regulate the flow of water and drainage of the land through storage and reducing run-off. If properly managed they can help reduce flooding at time of high rainfall, and sustain river flows and surface water levels during droughts
Erosion	The light, shallow soils on the chalk ridge and the sandy soils in the west weald are unstable and can be prone to erosion. Erosion is reduced by tree and vegetation cover. On farmed land the risk of erosion can be managed by taking care over cultivation, particularly on slopes
Soil quality	Shallow, lime rich soils over chalk are free draining, which helps water infiltration and the recharge of the water aquifer. Soils are low in organic matter where they are under intensive cultivation.
Water quality	The soil structure and underlying chalk and greensand geology filters water and helps to regulate water quality in the underlying aquifer.
Disease and pest	Natural processes such as predation and climatic conditions help to control the spread of disease and pests.
Pollination	The effective pollination of crops by Bees and other pollinators is vital to the life cycle of many plants. We rely on this 'natural service' for growing food crops as well as other plants and wildflowers.
Cultural Services – 'Non-material' benefits that result from our interaction with the natural environment	
Inspirational/Spiritual values	The South Downs is renowned for the beauty of its landscapes and its sense of place. They have provided inspiration for many famous artists and writers. They continue to provide people with the opportunity to understand and enjoy its special qualities. To escape, be inspired, and find spiritual renewal.
Tranquility	The relative tranquillity is recognised as a special quality of the National Park. It provides a resource and a benefit that is greatly valued within such a busy and pressured region.
Cultural heritage values	The South Downs is renowned for the beauty of its landscapes and its sense of place. They have provided inspiration for many famous artists and writers. They continue to provide people with the opportunity to understand and enjoy its special qualities. To escape, be inspired, and find spiritual renewal.
Recreation and tourism services	Recreation and tourism is a significant feature of the area with an extensive network of access routes, popular beauty spots and visitor attractions. The area attracts 46 Million visitor trips per year and makes a significant contribution to the rural economy and the health and well-being visitors and residents alike.

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