

# **Purbeck Forest Design Plan Heathland Restoration Proposals (2012-2026)**

## **Environmental Statement**

**Prepared by LUC  
in association with Mott MacDonalds and AC Archaeology**

**On behalf of Forestry Commission**

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Planning & EIA  
Design  
Landscape Planning  
Landscape Management  
Ecology  
Mapping & Visualisation

LUC BRISTOL  
14 Great George Street  
Bristol BS1 5RH  
Tel:0117 929 1997  
Fax:0117 929 1998  
bristol@landuse.co.uk

Offices also in:  
London  
Glasgow  
Edinburgh



Land Use Consultants Ltd  
Registered in England  
Registered number: 2549296  
Registered Office:  
43 Chalton Street  
London NW1 1JD  
LUC uses 100% recycled paper

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# **Chapter 1:**

# **Introduction**



# 1 Introduction

## Background

- 1.1 This Environmental Statement (ES) has been prepared by Land Use Consultants (LUC) on behalf of the Forestry Commission (Forest Enterprise) in relation to the revised Purbeck Forest Design Plan (FDP) (2013). The ES provides an assessment of the environmental impact of restoring 194.7 hectares (ha) of existing forest to heathland between 2012 and 2026. For the purpose of this ES, this is termed the 'heathland restoration proposals'.
- 1.2 A Forest Design Plan set out the short, medium and long term objectives and proposals for tree felling and forest management within a Forest Block over a specified timescale (usually 50-100 years). The Purbeck Forest Design Plan covers a group of Dorset woodlands, 2972ha in area, which lie in Purbeck, to the south of the A35/A31 between Poole Harbour and Puddletown. **Figure 1.1** shows the location of the forest blocks. The forest blocks include:
  - Purbeck– also known as Rempstone.
  - Wareham.
  - Gore Heath.
  - Hethfelton.
  - Affpuddle.
  - Moreton.
  - Puddletown.
- 1.3 The existing Purbeck FDP was consulted on and approved during 2003 and 2005. A mid –term review of the Purbeck FDP began in 2010 and revealed that 101ha of conifer restocking had not taken place in Purbeck Forest (Rempstone) due to political lobbying against the restocking of conifers on former heathland sites. The FDP review also coincided with the development and launch of the Open Habitat Policy and as a result the Forestry Commission (FC) was able to make a commitment to restore extensive heathland with the focus at Purbeck forest (Rempstone). Consultation on the revised FDP proposals was carried out in July 2010 (Forest Design Plan Forum) and September 2010 (Public consultation).
- 1.4 Around the same time that feed-back was being received on the revised Purbeck FDP, the Forestry Commission was developing its own Open Habitat Strategy for the Forestry Commission Estate in England. The Strategy set out that:

*“the Dorset lowland heathlands are identified as the single National Priority Area where an extensive and ambitious programme of open habitat restoration from former woodland and forestry will take place to create a resilient and sustainable landscape of open heath, mires, pools and patches of scrub, woodland and forestry.”*
- 1.5 The heathland restoration identified in the revised FDP has been proposed based upon the recommendations of the draft Open Habitat Strategy, a review of local constraints and opportunities and stakeholder feedback from the 2010 FDP Forum and Public consultation and subsequent further discussions with key stakeholders (in particular the RSPB and Natural England).
- 1.6 The revised FDP (2013) proposes restoring 399ha of heathland habitat within the Purbeck Forest blocks, in addition to the 1,067ha already proposed within the existing approved FDP (2003, 2005) covering a period to 2046 and beyond. Approval of the revised Forest Design Plan is given by the regulatory arm of the Forestry Commission – Forest Services. Forest Services grant consent pursuant to the Forest Act 1967 for the FDP to be implemented. This regulatory approval grants a 10 year felling licence.

## Legislative Requirements for Environmental Impact Assessment

- 1.7 Schedule 2 of *The Environmental Impact Assessment (Forestry) (England and Wales) Regulations 1999 [SI 1999/43]* set out the thresholds of the types of projects which may require EIA. It states that EIA is likely to be required where deforestation exceeds 0.5 hectare (within a sensitive area ie a National Park or Area of Outstanding Natural Beauty) or 1 hectare outside of a sensitive area.
- 1.8 In the case of the revised Purbeck FDP, Forest Services confirmed that an EIA is required for the following reasons:
- a) the scale of the proposed revisions exceed the EIA thresholds (as outlined above).
  - b) the revisions continue to extend the conversion of land from woodland to another land use type – ie open heathland.
- 1.9 This ES will accompany the submission of the FDP. Approval of the FDP grants a 10 year felling licence to undertake the deforestation set out in the revised Forest Design Plan.

## Timeframe for the Environmental Statement

- 1.10 This ES has been produced to assess the environmental impacts of felling and restoring to heathland the 194.7ha of forest that is proposed to be felled within the next 10 years (ie until 2023). As felling programmes are broken down into five year blocks ie 2012-2016, 2017-2021 and 2022-2026, it is not possible to identify what trees will be felled specifically between 2013 and 2023. This ES therefore covers the whole felling period from the beginning of 2012 until the end of 2026, amounting to a 15 year period. This extension of the ES to cover a 15 year period was agreed in consultation with Forest Services.
- 1.11 The ES does not assess the impact of proposals within the FDP to fell and restore heathland beyond 2026 (despite the fact the FDP sets out felling proposals up until 2046 and beyond). This falls beyond the scope of the 10 year felling licence for which approval is being sought.

## Responsibilities for the Environmental Statement

- 1.12 This Environmental Statement has been compiled by Land Use Consultants (LUC) on behalf of the Forestry Commission. Whilst LUC had overall responsibility for the ES, sub-consultants undertook specialist assessments where necessary:
- Mott MacDonald (hydrology, air quality, carbon balance)
  - AC Archaeology (historic environment)
- 1.13 LUC produced the introductory chapters (**Chapters 1 – 3**), Summary and Conclusions chapter (**Chapter 11**), and the chapters on Landscape and Visual Amenity (**Chapter 5**) and Land Use and Socio-Economics (**Chapter 6**).

## Structure and Presentation of the Environmental Statement

- 1.14 The Environmental Statement is divided into three main sections. The first part comprises the introductory chapters:
- **Chapter 1: Introduction** provides a brief introduction to the revised FDP and the legislative requirements of EIA and outlines the structure of the ES.
  - **Chapter 2: Approach to the EIA** provides more detail on the EIA process and outlines the consultation that has been undertaken in relation to the revised FDP.
  - **Chapter 3: Description of Proposals** provides a description of the heathland restoration proposals for 2012-2026.

- 1.15 The second part of the Environmental Statement describes the potential environmental impacts of restoring 194.7ha of existing forest to heathland in relation to the following topic areas:
- **Chapter 4: Ecology and Nature Conservation**
  - **Chapter 5: Landscape and Visual Amenity**
  - **Chapter 6: Land Use and Socio-Economics**
  - **Chapter 7: Hydrology**
  - **Chapter 8: Air Quality**
  - **Chapter 9: Carbon Balance**
  - **Chapter 10: Historic Environment**
  - **Chapter 11: Summary and Conclusions**
- 1.16 Within each of these chapters, the information is structured in a consistent way, as far as practicable, as follows:
- a) **Introduction:** identifies the key objectives and issues of the assessment and identifies the impacts that have been assessed in full and those that have been scoped out.
  - b) **Assessment Methodology:** outlines the methods used (desk study, surveys, consultations etc.) to undertake the assessment and sets out the criteria that have been used to assess the significance of the impacts.
  - c) **Existing Conditions:** summarises the baseline situation, including field survey results where relevant. ***In the context of this ES, the baseline conditions are taken to be the condition of the forest blocks at the beginning of 2012 (ie the beginning of the first felling period (2012-2017)).***

Where appropriate, the ES also refers to the '**Do nothing scenario**' – this is taken to be the predicted state of the environment as if there were no heathland restoration - ie the trees would be felled and restocked. It is important to reiterate that under the 'Do-nothing' scenario – felling would still take place.
  - d) **Impact Assessment.** This includes:
    - Predicted Impacts: a summary of the likely impacts (both negative and positive) of the heathland restoration proposals and an assessment of the significance of the impacts. Any uncertainty or risks associated with impact predictions are referred to in the text.
    - Proposed Mitigation: a summary of measures required to mitigate potential significant adverse impacts of the proposals.
    - Residual Impacts: a summary of impacts remaining following mitigation indicating the significance of the residual impacts.
  - e) **Further Survey Requirements and Monitoring:** outlines any further survey work that needs to be carried out and describes monitoring that will be undertaken.
  - f) **Summary of Impacts:** summarises in tabular format the significance of impacts, mitigation measures and residual impacts.
- 1.17 The assessment section of each topic chapter is structured in a way that is most logical for that particular topic area and, whilst maintaining the general structure identified above, may include other sections specific to that particular topic.
- 1.18 The survey area for each discipline has also been defined separately to reflect the likely extent of the impacts. For example, the predicted impacts associated with hydrology are more localised than the potential landscape and visual impacts.
- 1.19 The final part of the Environmental Statement, **Chapter 11: Summary and Conclusions**, presents the overall summary and conclusions of the EIA.
- 1.20 The Environmental Statement contains supporting appendices as listed in the contents page. A free-standing Non-Technical Summary (NTS) has also been produced.



# **Chapter 2: Approach to the EIA**



## 2 Approach to the EIA

### Introduction

- 2.1 This chapter sets out the broad approach that has been taken to EIA of the heathland restoration proposals. It provides an overview of the key stages in the EIA, in line with best practice advice. The chapter concludes with a summary of the consultation that was undertaken to inform the scope of the EIA.

### The EIA Process

#### EIA Regulations

- 2.2 The EIA has been conducted in accordance with the latest regulations and advice on good practice, comprising:
- *The Environmental Impact Assessment (Forestry) (England and Wales) Regulations 1999 [SI 1999/43].*
  - *The Environmental Impact Assessment (Forestry) (England and Wales) (Amendment) Regulations 2006 [SI 2006/3106].*
  - *Undertaking an Environmental Impact Assessment in Forestry and Preparing an Environmental Statement (Forestry Commission Grants and Licences IB14/19 (EIA) – GL – MDA – June 09).*
- 2.3 The *Environmental Impact Assessment (Forestry) (England and Wales) Regulations 1999* require that an Environmental Statement should include at least:
- A description of the project comprising information on the site, design and size of the project.
  - A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.
  - The data required to identify and assess the main effects which the project is likely to have on the environment.
  - An outline of the main alternatives studied by the applicant and an indication of the main reasons for the choice made, taking into account the environmental effects.
  - A non-technical summary of the above information.

#### Good Practice Guidance

- 2.4 The Forestry Commission's *Undertaking an Environmental Impact Assessment in Forestry and Preparing an Environmental Statement* (2009) explains the process and provides guidance regarding the key steps required in EIA of forestry projects. Some key recommendations from the guidance have been extracted and summarised as follows.

##### Scoping

- Undertake a scoping exercise to establish significant issues.

##### Baseline Studies

- Examine, through baseline studies, the current environmental character of the area likely to be affected by the development.
- Consider the 'without project scenario'.

### *Predicting and Assessing Impacts*

- Describe and quantify the significance of all the possible changes as accurately as possible.
- Divide the effects of predicated changes into categories (e.g. flora, fauna, people).
- Distinguish between short and long-term and permanent and temporary effects.
- Consider the possible interactions between the proposed development and both existing and future site conditions.

### *Mitigation*

- Consider mitigation for those impacts that have been identified as significant.
- Give full details of measures to lessen significant adverse effects.

## Identification of Key Impacts

- 2.5 To ensure that all the key impacts arising from the proposal were identified, the following principles were applied throughout the EIA process.

### **Significant Impacts**

- 2.6 An assessment of the significance of impacts arising from the proposed scheme is a key stage in the EIA process. It is this judgement that is key in informing the decision-making process. However, defining what is significant is not a simple task.
- 2.7 As the significance of impacts will differ depending on the context and the 'receptors' affected, there is no general definition of what constitutes significance. In EIA, the term significance reflects both its literal meaning of 'importance' and its statistical meaning where there is an element of quantification. This combination of judgemental/subjective and quantifiable/objective tests has become the standard approach to understanding and applying the test of 'significance'.
- 2.8 Specific significance criteria have been defined for the majority of topic areas, and these are listed within the topic chapters. As the specialists undertaking each element of the assessment have defined these criteria, there is some variation. However, each of the sets of criteria is based on the following, as appropriate:
- Type of impact (negative/ positive).
  - Extent and magnitude of impact.
  - Nature of impact (reversible, irreversible, long term, short term).
  - Sensitivity of the receptor.
- 2.9 Using the criteria set out in each chapter, the significance of the impacts arising from the proposed development has been categorised, wherever possible, as either:
- major;
  - moderate;
  - minor; or
  - negligible.
- 2.10 Impacts of 'major' or 'moderate' significance are both considered to accord with the 'significant' impacts highlighted in the EIA (Forestry) Regulations.

### **Interrelationships between Impacts**

- 2.11 For the purposes of the ES, the potential impacts of the proposal are considered in terms of impacts on each of the discrete environmental topic areas. In reality, topic areas such as hydrology and ecology are interrelated. The key interrelationships between the various topic areas are addressed within the ES and relevant chapters are cross-referred as appropriate.

## Cumulative Impacts

- 2.12 It is also important to consider the possible impacts that the proposal may have in combination with existing or consented developments or activities. The EIA (Forestry) Regulations state that types of impact identified "*should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects.*"
- 2.13 In the context of this ES, this involves consideration of the potential proposals for the afforestation of the Wild Purbeck Nature Improvement Area (NIA) as set out in the NIA Stage 2 Business Plan (2011). In March 2012, the Wild Purbeck Nature Improvement Area (NIA) proposal was one of 12 successful NIA bids selected from a national competition. The Forestry Commission is a partner in the Wild Purbeck NIA and the heathland restoration proposed in the Purbeck Forest Design Plan will contribute significantly to the large scale landscape reconnection and habitat restoration proposed in the bid. In addition the Wild Purbeck NIA will help with the delivery of the Forest Design Plan by:
- Providing capital to restore high quality heathland post clear fell over a three year period.
  - Producing a fire management plan to improve cross boundary, land ownership fire mapping.
  - Exploring technology and markets for heathland arisings.
  - Developing a large-scale grazing unit to help maintain heathland.
  - Looking for opportunities for new woodland creation within Purbeck and the Frome/Piddle catchment to replace woodland lost as a result of heathland clearance. The document details the proposals for the creation of 120ha of new woodland.
  - Provide a partnership approach in terms of community engagement and disseminating key messages.
- 2.14 The proposed woodland creation within the NIA means that the potential negative impacts of woodland loss associated with heathland restoration proposals will be partially offset by woodland creation elsewhere. In addition, it is likely that further new woodland establishment is likely to be grant aided under the English Woodland Grant Scheme (EWGS) in the NIA and County which, over the plan period, is likely to exceed the reduction of woodland cover proposed in the revised FDP.

## Mitigation and Enhancement

- 2.15 The EIA (Forestry) Regulations require mitigation measures to be included in an ES. These are the measures that may (in order of priority) prevent, reduce and where possible offset any significant adverse effects on the environment. In many cases, including the heathland restoration proposals, they may also provide opportunities for environmental enhancement, for example where existing ecological habitats have been degraded.
- 2.16 Under the EIA (Forestry) Regulations, mitigation needs to be considered in the context of likely significant impacts and not simply for any adverse impacts. Within this ES, particular attention has been placed on identifying mitigation measures for impacts predicted to be of major or moderate significance. In some instances, the opportunity has also been taken to set out mitigation for minor impacts, which therefore fall outside the requirements of the EIA Regulations.
- 2.17 In each topic chapter, impacts both before and after proposed mitigation are clearly set out. This demonstrates the extent to which impacts are avoided, reduced, or remedied through the appropriate application of mitigation measures, and the likely significance of impacts in the absence of these measures.

## Uncertainty

- 2.18 The EIA process is designed to enable informed decision making based on the best possible information about the environmental implications of a proposal. However, the EIA (Forestry) Regulations accept that difficulties may be encountered when undertaking an EIA, and where this is the case, states that such gaps should be clearly indicated in the ES.

- 2.19 In accordance with the EIA (Forestry) Regulations, this ES states where difficulties have been encountered in compiling information and if these could affect the predictions of likely significant environmental effects. The role of the ES is to ensure that decision makers have sufficient environmental information available to enable them to identify and assess the likely significant environmental effects of the proposal. Whilst some information gaps are identified within this ES, it is not considered in any case that there is insufficient information to enable an informed decision to be taken with regards to the identification and assessment of likely significant environmental impacts.

## Scope of the Environmental Statement

- 2.20 To decide which aspects of the proposal are likely to give rise to environmental impacts, and to determine the work needing to be undertaken for the ES, a scoping exercise was carried out on the 16<sup>th</sup> July 2010 by the Forestry Commission as part of the stakeholder consultation process. This comprised a Forest Design Plan Forum meeting of the following key consultees:
- Amphibian and Reptile Conservation Trust.
  - British Cycling Association.
  - British Herpetological Society.
  - Centre Ecology & Hydrology.
  - Dorset AONB Partnership.
  - Dorset County Council.
  - Dorset Nightjar Project.
  - Dorset Wildlife Trust.
  - Euroforest Ltd.
  - Forestry Commission.
  - National Trust.
  - Natural England.
  - Purbeck District Council.
  - RSPB.
  - Southern Counties Enduro Club (SCEC).
  - Southampton School of Biological Sciences.
  - Wessex Conservation Grazing.
  - Wool Parish Council.
  - Bere Regis Parish Council.
  - Other Specialists/Researchers.
- 2.21 Further details on the outcome of the Forest Design Plan Forum are provided below.
- 2.22 Forest Services confirmed that the exercise satisfies the Scoping Requirements of the EIA process and stated that the ES should address at least the following topics:
- Landscape.
  - Land use.
  - Air quality.
  - Climate and its change (existing and future).
  - Ecology and nature conservation.
  - Archaeology.

- Soils and the impact of timber harvesting on them.
- Hydrology and in particular site runoff/siltation.
- Disposal of harvesting arisings.
- Timber movements.
- Socio-economics.
- Tree planting.

## Consultation

- 2.23 The revised FDP proposals were consulted on through the Forest Design Plan Forum (as outlined above), which comprises a range of statutory consultees, NGOs and other stakeholders. Feedback from the public was also gathered through public consultation. The revised FDP proposals were subsequently amended to take account of the feedback received.

### FDP Forum

- 2.24 As outlined in paragraph 2.20 above, Consultation with the Forest Design Plan Forum took place in July 2010. This involved outlining the purpose of the FDP and progress made to date, and presenting the proposals for the revised FDP. Attendees submitted their comments to the Forestry Commission following the round table discussion.
- 2.25 In general, most participants were broadly happy with the plan proposals and there was no particular contention regarding any of the issues that were raised. Most discussions revolved around the advantages and disadvantages of increasing/decreasing the balance of woodland/heathland and maintenance issues. The conservation interest groups were very keen to see substantially more heathland than proposed while the timber and recreational groups felt that further heathland restoration should be limited. Some of the key points raised in relation to four of the forest blocks are summarised below.

#### *Purbeck (Rempstone) Forest Block*

- Most stakeholders were broadly supportive of heathland restoration at Purbeck given the issues with restocking and its location away from doorstep communities and low recreational pressure.
- Some stakeholders expressed concerned that timber resource needs to be sustained.
- Some stated they would like to see restoration achieved in the next 10 years.
- Some stated they not keen on large open areas as shown on heathland on plan. Would prefer a more intimate mosaic similar to that developed at Wareham.
- RSPB stated they would be supportive of even more heathland restoration at Purbeck (Rempstone) including an 80%/20% split.
- Concern was expressed at tree loss at a local level in Purbeck & Dorset.
- Concern raised regarding visual impact of tree loss from more distant views such as those from the other side of Poole Harbour.
- Noted that proposed restoration is good for and compatible with AONB.
- Requested that more consideration is given to northern edge and how that should be softened or graded into northern landscape. Some questioned any need for northern retentions at all.

#### *Wareham and Gore Heath*

- Noted that felling & habitat maps should/could be more specific in terms of dates. 20 years is too broad to make judgements.
- Concerned that there was still too much forest on the margins of mire in the main block. Not enough heath on rest for a 40-50 year plan.

- Heathland alongside roads is vulnerable to fire. Consider options such as wet ditches or trees.
- Known SAMs were stated not to be the key issue. It is the unknown archaeology that is the issue/concern. Need systems to mitigate.
- Concerned that increased recreational development/leisure development may be used to fund future heathland management.
- Noted that tree cover around edges of housing is very important including views to front/foreground and background.
- Question raised as to whether increased heathland creation increases the possibility of it being converted to CROW?
- Conflicting view expressed regarding the relative proportions of heathland/woodland balance. Conservation bodies wanted more/timber interests less.
- Requested that income from recreational development could be considered to fund other projects.
- Noted that Nightjars can be disturbed by dogs. Need to use creative options such cutting gorse to prevent dogs accessing the heath away from tracks.

#### *Affpuddle*

- Suggested that some heathland blocks look isolated. Question posed as to whether more connectivity be created?
- Suggested that there is potential for more heathland but this site is lower priority than other Purbeck Heaths sites.
- Noted that open habitats policy should provide policy context for step change in provision of heathland restoration which is not reflected in the plan.
- Suggested consideration should be given to replanting some of the open areas to provide sustainable woodland resource. Particularly important in new austere economic climate.
- Suggested that there is a need to restrict public access as it is threatening the heathland.

#### **Public Consultation**

- 2.26 On 18<sup>th</sup> September 2010, the Forestry Commission held a public consultation event on the draft FDP at the Sika Trail car park. The Sika Trail was selected because it was the best area to capture forest users. The event was advertised with notices placed at the entrances of all the Forest blocks within the Purbeck FDP and advertised elsewhere. The public were invited to fill in feedback forms or submit a letter.

In general the public were reasonably satisfied with the proposed FDP revisions and were supportive of the balance/mosaic of open and woodland habitats.

# **Chapter 3: Description of Proposals**



## 3 Description of Proposals

### Introduction

- 3.1 This chapter defines the origins of the Forest Design Plan within the context of national policy. A description is also provided of the seven forest blocks (Purbeck (Rempstone), Wareham, Gore Heath, Hethfelton, Affpuddle, Moreton and Puddletown) which form the focus of this Environmental Statement and the heathland restoration proposals within these blocks. The Chapter concludes with a description of the Operational Site Assessment process which will be used to translate the revised FDP prescriptions into detailed implementation plans.

### Policy Context

- 3.2 Consideration has been given to how the proposals considered in this ES fit with relevant Government and Forestry Commission policy. The most relevant and significant policies and strategies are considered below.

#### **Government Forestry and Woodlands Policy (January 2013)**

- 3.3 The Government recognises that England's trees, woods and forests are a vital national asset providing multiple economic, social and environmental benefits. The key objectives of government policy, in priority order are:
- Protecting the nation's trees, woodlands and forests from increasing threats such as pests, diseases and climate change.
  - Improving their resilience to these threats and their contribution to economic growth, people's lives and nature.
  - Expanding them to increase further their economic, social and environmental value.

#### **Forestry Commission England Corporate Plan 2012-13**

- 3.4 This document sets out the FC's plan, priorities and actions for the management of woodlands throughout England. It identifies the following priorities:
- Protection - Protecting the woodland resource and increasing its resilience to pests, diseases and the impact of climate change.
  - Improvement - Improving the woodland resource to enhance benefits including biodiversity, landscape quality and a range of other ecosystem services.
  - Expansion - Making it easier for landowners, business and local communities to choose woodland creation as a way of increasing benefits both to themselves and society.
  - Research and Evidence - It is vital that the management of England's woodland is based on high quality research and that management decisions are founded on clear and reliable evidence.
  - Corporate Programmes - Undertaking significant restructuring of current programmes to maintain capacity to carry out statutory regulatory functions, to support businesses and landowners and to manage the Public Forest Estate. Also includes the delivery of the FC's business sustainability programme.

### The Open Habitats Policy 2010

- 3.5 *When to convert woods and forests to open habitat in England: Government Policy* was published in March 2010. It recognises the value of open habitats such as grassland, heaths and moors, marshlands, fens and bogs and seeks to recover some of the loss of those habitats by converting selected woodland areas into open habitats. Dorset Heath is one of the species for which open spaces are recognised as being valuable.
- 3.6 The Framework states that:
- "when making decisions on felling licences and through environmental impact assessment, we must use a site-by-site approach using an objective assessment of the evidence each time. This site-by-site approach will take into account a wide range of issues that may be influenced by woodland removal such as access, landscape, water management, and the historic environment".*
- 3.7 Sites where the conversion of woodland to open habitat may be supported include locations where high quality habitat will be extended or buffered, and designated areas (e.g. where woodland is growing on a site with a national or international conservation designation, such as a site designated under the Habitats Directive for Annex 1 habitat types, as a Site of Special Scientific Interest or National Nature Reserve and the woodland adversely impacts on its open habitat characteristics).

### Draft Open Habitat Strategy for the Forestry Commission Estate in England

- 3.8 The Strategy provides the framework for planning the restoration of open habitat from existing forest across the FC estate in England. The Government Forestry and Woodlands Policy Statement (January 2013) confirmed that the Strategy is due to be reviewed and cited that its publication is a key action. However, due to the urgent operational requirement to get a revised Forest Design Plan in place, the recommendations of this Strategy were built into the Purbeck Forest Design Plan revision, notably:
- "Sites where the FC may support the conversion of woodland to open habitat include:*
- 1. **Extending or buffering high quality habitat.** When the new open habitat will extend or buffer areas of high quality existing open habitat, and there is evidence that fragmentation of the current habitat is having a detrimental impact on the wildlife in that habitat.*
  - 2. **Connecting high quality habitat.** When the new open habitat will form a viable wildlife link between areas of high quality open habitat (improving 'connectivity') and there is evidence that lack of connectivity is having a significant detrimental impact on the wildlife in that habitat.*
  - 3. **Designated areas.** When the woodland is growing on a site with a national or international conservation designation, such as a site designated under the Habitats Directive for Annex 1 habitat types, as a Site of Special Scientific Interest or National Nature Reserve and the woodland adversely impacts on its open habitat characteristics.*
  - 4. **Grazing.** When the new open habitat will extend or link areas of open habitat to allow a practical grazing area to form, and there is evidence that conservation grazing will be established and maintained once the open habitat is created.*
  - 5. **Threshold sizes.** When the new open habitat will add to the current area of open habitat to form a patch of continuous or well-connected open habitat that is significantly more viable in the long-term.*
  - 6. **Opportunities for species of conservation concern.** When there is evidence that converting the woodland to open habitat presents significant opportunities to enhance species of conservation concern."*

### **Keepers of Time**

- 3.9 'Keepers of Time' provides a statement of policy for England's ancient and native woodland and outlines the Government's commitment and 2020 vision for Ancient Woodland, notably that:

*"Ancient woodlands, veteran trees and other native woodlands are adequately protected, sustainably managed in a wider landscape context, and are providing a wide range of social, environmental and economic benefits to society."*

- 3.10 The document provides a number of key policies relating to the protection and management of Ancient Woodland.

### **United Kingdom Forestry Standard**

- 3.11 The purpose of the UK Forestry Standard is to set out standards for the sustainable management of all forests and woodlands in the UK. It is the centrepiece of a system to guide and monitor forestry. The Standard is linked to the developing international protocols for sustainable forestry. It is used in the UK as a basis for the development of forest monitoring and is the basis from which the UK Woodland Assurance Standard was developed. It can also be used for assessing compliance with management certification standards such as ISO 14000 and EMAS. Forest Design Plans need to uphold the standards set for sustainable forestry.

### **UK Forest Guidelines**

- 3.12 The UK Forest Guidelines help to link forest and woodland management with the UK Forestry Standard, and to improve the consistency of approach. The guidelines cover key areas relating to sustainable forest management including:

- Forests and Landscape.
- Forests and Historic Environment.
- Forests and Biodiversity.
- Forests and Soil.
- Forests and Climate Change.
- Forests and People.
- Forests and Water.

### **UK Woodland Assurance Scheme (UKWAS)**

- 3.13 The international timber products market is increasingly demanding assurance about the quality and environmental impact of woodland management. The UK Woodland Assurance Standard (UKWAS) is a certification standard which sets out the necessary requirements which woodland owners and managers and certification authorities can use to ensure that woodland management in the United Kingdom is being carried out responsibly. The Forestry Commission nationally has gained UKWAS certification and it a requirement of every Forest district to uphold UKWAS standards in order to maintain the accreditation. UKWAS addresses specific aspects of woodland management and types of operation, notably:

- Compliance with the law and conformance with the requirements of the certification standard.
- Management planning.
- Woodland design – creation, felling and replanting.
- Operations.
- Protection and maintenance.
- Conservation and enhancement of biodiversity.
- The community.
- Forestry Workforce.

- 3.14 It is necessary to take particular account of UKWAS standards when managing our FC woodlands and be able to demonstrate that the above aspects of woodland management are being adequately addressed.

### **Dorset Biodiversity Strategy (Dorset Biodiversity Partnership, 2003)**

- 3.15 The Dorset Biodiversity Strategy was prepared by the Dorset Biodiversity Partnership in order to provide a strategic framework for action over the next 10 years that contributes to achieving the targets set out in the UK BAP.
- 3.16 A programme of actions is set out for each of a range of habitat types, including for lowland heathland. The habitat statement recognises the international value of Dorset's lowland heathland and the potential threats it faces.
- 3.17 One of the objectives for this habitat type is to:
- "Restore functioning heathland ecosystems by linking heathland fragments through re-establishment of heathland or other appropriate habitats."

### **Wild Purbeck Nature Improvement Area**

- 3.18 In March 2012, the Wild Purbeck Nature Improvement Area (NIA) proposal was one of 12 successful NIA bids selected from a national competition. The Forestry Commission is a partner in the Wild Purbeck NIA and the heathland restoration proposed in the Purbeck Forest Design Plan will contribute significantly to the large scale landscape reconnection and habitat restoration proposed in the bid.

### **Dorset Recreation Plan**

- 3.19 A key FDP objective for the Purbeck Forests is to develop opportunities for informal and formal public recreation, especially in areas on the urban fringe or doorstep woodlands. An additional aim is to try and divert pressure away from more sensitive habitats in other parts of the Estate. In order to progress this objective a Recreation Plan has been drawn up for Dorset which identifies the woodlands in terms of their importance for recreation and notes the key priorities for informal and formal recreational development. This plan will be closely integrated with the relevant FDP for individual woodlands.

## **The Existing and Revised Purbeck Forest Design Plan**

- 3.20 Forest Design Plans define the long-term vision for a forest block and set out how it will be achieved on the ground and over what timescale (usually 50-100 years). The Purbeck Forest Design Plan which was originally consulted upon and approved during 2003 and 2005 covers a group of Dorset woodlands, 2972 hectares in area, which lie in Purbeck, to the south of the A35/A31 between Poole Harbour and Puddletown. It consists of the following seven forest blocks:
- Purbeck Forest (note that this is sometimes referred to as 'Rempstone' but for the purpose of this ES will be Purbeck Forest).
  - Wareham Forest.
  - Gore Heath.
  - Hethfelton.
  - Affpuddle.
  - Moreton.
  - Puddletown.
- 3.21 The existing FDP proposed to restore 1067ha of coniferous woodland back to heathland over a period to 2047 and beyond.

- 3.22 Although Forest Design Plans are valid for 10 years, they usually undergo a mid-term review to conform with the UK Woodland Assurance Scheme and to ensure that the policies and objectives are still valid and that the Design Plan is working on the ground.
- 3.23 As outlined in **Chapter 1**, a mid-term review of the Purbeck FDP commenced in 2010. This led to the Forestry Commission proposing to restore extensive areas of additional heathland at Purbeck. Consultation on the revised FDP proposals was carried out in July 2010 (Forest Design Plan Forum) and September 2010 (public consultation) as described in **Chapter 2**; however conservation stakeholders still felt that the Forestry Commission's initial proposals to create an additional 168ha of heathland, including 160ha at Purbeck Forest, did not go far enough.
- 3.24 The heathland restoration identified in the revised FDP has been proposed based upon the recommendations of the Open Habitat Strategy, a review of local constraints and opportunities and stakeholder feedback from the 2010 FDP Forum and Public Consultation.
- 3.25 Maps illustrating the design concepts, felling and habitat management and restocking proposals for the seven Forest Blocks are set out in the Forest Design Plan: Phase F document (2013) which accompanies this Environmental Statement.

## Description of Forest Blocks and Revised FDP Proposals

- 3.26 A description of the forest blocks and the areas proposed for heathland restoration between 2012 and 2026 are set out below. **Figure 3.1** provides an overview map of these areas.

### **Purbeck Forest**

#### *Description of Purbeck Forest Block and Surrounding Area*

- 3.27 Purbeck Forest block (also known as Rempstone) is the most easterly of the Purbeck forest blocks, covering 612ha (which includes land leased to Perenco) of land to the south of Poole Harbour. It is currently made up of a mosaic of conifer forest, heathland habitat and clearfell sites. The Wytch Farm oil field complex lies within and adjacent to the forest in the west (although this area is let to Perenco and not included within the revised FDP concept plans).
- 3.28 The B3351 Corfe Castle to Studland road runs east west approximately two kilometres to the south and a number of small country lanes provide access to the forest in a northerly direction from this road. The forest can also be reached from the A351 to the west of Corfe Castle where a road provides access via the Perenco oil installation gathering station. The town of Wareham is located approximately 7 kilometres to the west and Swanage is located approximately 6 kilometres to the south east.
- 3.29 The forest block lies entirely within the Dorset AONB and contains 57ha of land that is designated as a SSSI (Rempstone Heaths) for its valuable fragments of valley mire, wet, humid and dry heathland habitat. Godlingstone Heath SSSI is located adjacent to the forest boundary to the south east. Thrashers Heath and Brenscombe Heath SSSI are located to the south of the forest and Hartland Moor NNR is located approximately 1.5 kilometres to the west.
- 3.30 The forest gently slopes south to north from about 40 metres above sea level to 10 metres above sea level at the northern boundary. The forest is dominated on the podsollic soils by Corsican Pine which occupies the majority of the wooded area. Other pine species make up most of the remaining area although some broadleaves are present on the wetter lower lying areas and birch is present throughout the forest where it has naturally regenerated amongst the pine.
- 3.31 Rides and tracks within the forest are used for informal walking and cycling, and other recreational events such as orienteering and mountain bike events are occasionally granted permission. However, the relatively isolated nature of the forest block means that it does not come under the same recreation pressure as other sites being used as 'doorstep woodland'.

#### *Area Proposed for Heathland Restoration between 2012-2026*

- 3.32 This ES considers the restoration of 120.1ha of heathland within Purbeck Forest block between 2012-2026. This is in addition to the 213.6ha of existing heathland and 38.5ha of mire. This means there will be a total of 372.2ha of open habitat (taking into account existing heathland and mire) within the forest block by 2026. Over 86% of the area to be felled comprises Corsican pine, while 3.4% comprises Lodgepole Pine.
- 3.33 The proposed heathland restoration between 2012-2026 will take place within 22 parcels of land. The south west part of the forest, in addition to a smaller section in the north west, will continue to be predominantly comprised of continuous coniferous woodland cover. Elsewhere, the majority of the area will be permanently managed and maintained as open heathland. Detailed maps of the areas proposed for felling between 2012-2026 within the Purbeck Forest block are provided in **Figures 3.2 and 3.3.**

#### **Wareham**

##### *Description of Wareham Forest Block and Surrounding Area*

- 3.34 Wareham Forest block covers 1,340ha of land and is the largest of the Purbeck forest blocks. It is located approximately 10 kilometres west of Poole Harbour between the town of Wareham and the village of Bere Regis. The A35 trunk road is located to the north of the forest and the minor Wareham to Bere Regis road bisects Wareham Main Block as it runs north west to south east.
- 3.35 Morden Bog and Hyde Heath SSSI occupy a large part of Wareham forest block and are designated for their heathland and mire species communities. The area covered by Morden Bog and Hyde Heath SSSI is also designated as a Special Area of Conservation (SAC) and Special Protection Area (SPA). Morden Bog at the eastern section of the Wareham forest block is designated as a National Nature Reserve.
- 3.36 Topography across the forest undulates gently from between about 10 to 40 metres above sea level. The forest is dominated on the podsollic soils by Corsican and Scots Pine which occupy over three quarters of the woodland area. Much of the remaining wooded area is occupied by other pine species. Wetter areas adjacent to stream corridors have been planted with Norway Spruce in the past. Broadleaves account for less than 1% of the recorded woodland area and are generally limited to pockets of birch which have naturally regenerated amongst the pine. Some planted and naturally regenerated broadleaves are present in areas of more fertile soil along stream corridors and at the north western section of the forest block.
- 3.37 Informal and formal car parking occurs in gateways throughout the block and many local people use the forest for informal walking and dog walking. The Sika Trail, which lies in the south east of the forest block, is a particularly popular location for such activities. A large area of the south east of the forest block, which includes the Sika Trail, has been designated as a Recreation Zone which is particularly heavily used by the public.

#### *Area Proposed for Heathland Restoration between 2012-2026*

- 3.38 The ES considers the restoration of 22.8ha of heathland within Wareham Forest block between 2012-2016. This is in addition to the 270.8ha of existing heathland and 175.1ha of mire. This means there will be a total of 468.6ha of open habitat (taking into account the existing heathland and mire within the forest block by 2026). Over 74% of the area to be felled comprises Corsican Pine, while over 18% comprises Bishop Pine.
- 3.39 The proposed heathland restoration between 2012-2026 will take place within eight parcels of land. The majority of heathland within this forest block will be located in the south and east of the block, while large areas (particularly in the west) will remain as conifer woodland. Detailed maps of the areas proposed for felling between 2012-2026 within the Wareham Forest block are provided in **Figures 3.4 and 3.5.**

## Gore Heath

### *Description of Gore Heath Forest Block and Surrounding Area*

- 3.40 Gore Heath Forest block lies adjacent to the eastern edge of the Wareham Forest block, and covers 201ha of land. It exists as a discreet forest block to the east of Wareham main block, separated from it by the B3075 which is located on its western boundary.
- 3.41 There are no nature conservation designations within the forest block, although it is immediately adjacent to the Morden Bog and Hyde Heath SSSI which is located within the Wareham Forest block.
- 3.42 Gore Heath is one of the most heavily used sites in the area for informal recreation, particularly walking. Cycle routes circle much of the boundary of the forest block, as well as trailing through the forest from north to south.

### *Area Proposed for Heathland Restoration between 2012-2026*

- 3.43 The ES considers the restoration of 2.1ha of heathland within Gore Heath Forest Block between 2012-2016. This is in addition to the 24.1ha of existing heathland. This means there will be a total of 26.2ha of heathland (taking into account existing heathland) within the forest block by 2026. 57% of the area to be felled comprises Scots Pine, while 35% comprises Corsican Pine.
- 3.44 The proposed heathland restoration will be located in two parcels of land to the south of the block, while large areas of the north and centre will remain as conifer woodland. A detailed map of the area proposed for felling between 2012-2026 within the Gore Heath Forest block is provided in **Figure 3.6**.

## Hethfelton

### *Description of Hethfelton Forest Block and Surrounding Area*

- 3.45 Hethfelton covers a total area of 157ha and is located two kilometers north east of the village of Wool in south east Dorset. The woodland straddles the ridge between the river valleys of the Piddle to the north and Frome to the south. The A352 Dorchester to Wareham road forms the southern boundary of the woodland and the woodland stretches across the ridge to a minor public road in the north. The woodland rises from an altitude of 20 metres above sea level on its southern boundary to 55 metres above sea level on the ridge top in the north west corner.
- 3.46 Although the woodland lies across the ridge between the rivers Piddle and Frome it is not prominent in the landscape and lies just to the north of the Dorset AONB. Internally the woodland generally lacks visual diversity of structure and consists predominantly of even aged pine but there are mixed woodlands on the better soils in the south. The developing areas of heathland provide important points of visual interest in the woodlands.
- 3.47 Most of the current woodland in Hethfelton dates from the 1960s and was planted over a four year period. Today pines occupy approximately 65% of the woodland, Douglas Fir approximately 20% and broadleaves approximately 15%. A small part of the woodland (3.8ha) is designated as part of Stokeford Heaths SSSI and SAC/SPA. These areas are existing open spaces around archaeological features or where heathland has re-established following tree removal.
- 3.48 Hethfelton is not extensively used by the public for recreation and no formal facilities or waymarked paths currently exist. The main use is by local walkers and dog walkers who use the gateway splays alongside the A352 for parking and access. The gravel track and main rides provide a good network for walkers and circular routes through the woodland using this network are most heavily used. Occasionally horse riders use the woods but safe access to the woodland from neighbouring areas is limited.

### *Area Proposed for Heathland Restoration between 2012-2026*

- 3.49 The ES considers the restoration of 4.2ha of heathland within Hethfelton Forest Block between 2012-2016. This is in addition to the 18.6ha of existing heathland. This means there will be a total of 22.8ha of heathland (taking into account existing heathland) within the forest block by 2026. Over 90% of the area to be felled comprises Corsican Pine.
- 3.50 The proposed heathland restoration between 2012-2026 will take place within one parcel of land. The majority of heathland within this forest block will be located in the west and centre of the block, while large areas of the east and south will remain as conifer woodland. A detailed map of

the area proposed for felling between 2012-2026 within the Hethfelton Forest block is provided in **Figure 3.7**.

### **Affpuddle**

#### *Description of Affpuddle Forest Block and Surrounding Area*

- 3.51 Affpuddle forest block lies to the north west of Bovington Camp, towards the western side of the Purbeck forest area. It covers an area of 222ha and is immediately adjacent to the Moreton Forest block, which lies to the north. The B3390 Affpuddle to Warmwell road separates Affpuddle Heath from Bryantspuddle Heath and minor roads run along the northern and eastern boundaries of the forest.
- 3.52 The Forest lies between about 30-90 metres above sea level rising from south to north to Pallington and Affpuddle heaths which are located at the top of the ridge between the Piddle and Frome river valleys. Much of the woodland comprises conifer plantations established from between about 1950 to the mid-1960s. The forest lies on predominantly podsollic soils and this is reflected in the dominance of Pine species throughout much of the block. There is currently a significant proportion of open space within the woodland comprising areas of bog and heathland.
- 3.53 A small area in the south of the forest block includes part of the River Frome SSSI which is also designated as a Special Area of Conservation (SAC). Oakers Bog SSSI lies wholly within the adjacent Moreton Plantation and is designated for its wet and dry heathland plant communities. Turners puddle Heath SSSI lies partly within the forest block to the south of the forest and is designated for its heathland plant communities. A fragment of Turnerspuddle Heath SSSI lies further to the north adjacent to Moreton Drive and is noted for a colony of the rare Ladybird Spider (*Eresus Niger*). Oakers Wood SSSI, Culpeppers Dish SSSI and parts of Turners puddle Heath SSSI lie adjacent or close to Affpuddle and Moreton Forest.
- 3.54 There is free access by foot across the forest and two car parks are located on the minor road along the northern boundary, namely Cull-peppers Dish and Briantspuddle Car Parks and they are well used all year round, particularly at weekends by local dog walkers and visitors from further afield. A number of rights of way cross the forest and the long distance Jubilee Trail footpath runs through the forest from Cull-peppers Dish to Oakers Wood in the north, and carries on further south through Moreton Plantation. A bridleway runs through the northern part of the forest at Affpuddle and horse riding is allowed on other gravel tracks subject to the purchase of a permit.

#### *Area Proposed for Heathland Restoration between 2012-2026*

- 3.55 The ES considers the restoration of 39.4ha of heathland within Affpuddle Forest Block between 2012-2016. This is in addition to the 56.7ha of existing heathland. This means there will be a total of 96.1ha of heathland (taking into account existing heathland) within the forest block by 2026. 81% of the area to be felled comprises Corsican Pine.
- 3.56 The proposed heathland restoration between 2012-2026 will take place within 11 parcels of land. The majority of existing and proposed heathland within this forest block will be located in the south and centre of the block, while large areas of the north and east will remain as conifer woodland. A detailed map of the area proposed for felling between 2012-2026 within the Affpuddle Forest block is provided in **Figure 3.8 and 3.9**.

### **Moreton**

#### *Description of Moreton Forest Block and Surrounding Area*

- 3.57 Moreton Forest covers a total area of 190ha and is located on the southern side of a broad ridge between the River Piddle and the river Frome. Minor roads run along the northern and eastern boundaries of the forest and bisect Moreton Plantation from Clouds Hill to Waddock Farm. Bovington Camp lies to the south east of Moreton.
- 3.58 The woodland lies between about 30 to 90 metres above sea level rising from south to north. Much of the forest block is viewed as edges from the network of roads that run through it or adjacent to the forest boundaries.

- 3.59 Internally the woodland contains large open areas of bog and heathland and the current proposals aim to further develop the mosaic structure of woodland and open habitats. A national grid wayleave runs east to west through the northern section of the forest.
- 3.60 Much of the woodland comprises conifer plantations established from between about 1950 to the mid 1960s. The forest lies on predominantly podsollic soils and this is reflected in the dominance of Pine species throughout much of the block. Species diversity is currently limited to the north west of the forest block at Pallington Heath where more fertile soils have resulted in a mixed woodland structure as broadleaves have naturally regenerated among the plantation conifers.
- 3.61 There is currently a significant proportion of open space within the woodland comprising areas of bog and heathland. Heathland ride widening will provide important heathland links between open areas.
- 3.62 Oakers Bog SSSI lies wholly within Moreton Plantation and is designated for its wet and dry heathland plant communities. A fragment of Turnerspuddle Heath SSSI lies further to the north adjacent to Moreton Drive and is noted for a colony of the rare Ladybird Spider (*Eresus Niger*). Oakers Wood SSSI, Culpeppers Dish SSSI and parts of Turners puddle Heath SSSI lie adjacent or close to Moreton Forest.
- 3.63 The woodlands are freehold and there is free access by foot across the entire block. Two car parks are located on the minor road which runs adjacent to the northern boundary. These are known locally as Cull-peppers Dish and Briantspuddle Car Parks and they are well used all year round, particularly at weekends by local dog walkers and visitors from further afield.
- 3.64 Public rights of way run through Moreton Plantation to the south and the Jubilee Trail footpath runs through the forest from Cull-peppers Dish to Oakers Wood in the north and further south a section runs through the western part of Moreton Plantation.

#### *Area Proposed for Heathland Restoration between 2012-2026*

- 3.65 The ES considers the restoration of 1.9ha of mire within Moreton Forest Block between 2012-2016. This is in addition to the 9.0ha of existing heathland and 31.8ha of mire. This means there would be a total of 42.64ha of open habitat (taking into account existing heathland and mire) within the forest block by 2026. 90% of the area to be felled comprises Corsican Pine.
- 3.66 The proposed mire will be in one parcel of forest land. This will be located in the north east of the block, while large areas of the north west will remain as conifer woodland. A detailed map of the land proposed for felling between 2012-2026 within the Moreton Forest block is provided in **Figure 3.10**.

### **Puddletown**

#### *Description of Puddletown Forest Block and Surrounding Area*

- 3.67 Puddletown Forest covers a total area of 301ha and is located three miles north east of Dorchester and one mile south west of Puddletown village. The woodland lies on the ridge between the river valleys of the Frome to the south and the Piddle to the north. Puddletown Forest is now dissected by the deep cutting of the A35 dual carriageway trunk road.
- 3.68 Two ancient woodland sites lie adjacent to the forest. Yellowham Wood to the north west and Ilsington Wood to the east. Yellowham Wood is predominantly Oak with Hazel coppice but much of Ilsington Wood has been replanted with conifers.
- 3.69 The woodland on the more acidic soils is dominated by Douglas Fir, Corsican Pine and Scots Pine. North of the ridge the woodland becomes a mixture of conifers and broadleaves, with Beech and Ash more evident on the calcareous soils. Norway Spruce is planted on localised poorly drained soils in the valley bottoms. Overall Douglas Fir and Corsican Pine occupy approximately 75% of the woodland. 10% is comprised of broadleaves and the remainder is a mixture of other conifer species.
- 3.70 Most of the area leased from Puddletown LLP was planted between 1924 and 1927. Much of the original woodland has been felled from the late 70s until the early 90s and subsequently replanted with Douglas Fir and Corsican Pine.
- 3.71 The forest lies on the very edge of the Dorset Heaths Natural Area and forms the most westerly example of a Poole Basin Heath site. Remnants of heathland change from the Calluna/Ulex minor

mix found on the majority of the Poole basin to Calluna Gallii mix that is otherwise restricted to the Poole conurbation. Bilberry also occurs in abundance indicating the wetter conditions found in the westerly extremes of the Poole Basin. In addition, this site marks the natural western limit of some rare reptiles, notably the sand lizard and smooth snake.

- 3.72 Puddletown Forest is the largest woodland within ten minutes drive of Dorchester and is signposted from the A35. Retention of sporting rights by the estate limits the formal provision of recreation facilities in the forest. The forest is crossed by a number of bridleways and ancient trackways lying between historic boundary banks. The comprehensive gravel road network is well used by dog walkers, cyclists and horse riders. Most of the public access is from gateways situated along the Rhododendron Mile or through Black Bottom behind Hardy's Cottage.

#### *Area Proposed for Heathland Restoration between 2012-2026*

- 3.73 The ES considers the restoration of 4.1ha of heathland within Puddletown Forest Block between 2012-2016. This is in addition to the 42.0ha of existing heathland. This means there would be a total of 46.1ha of heathland (taking into account existing heathland) within the forest block by 2026. Over 68% of the area to be felled comprises Corsican Pine, while 19% comprises Norway Spruce.
- 3.74 The proposed heathland restoration between 2012-2026 will take place within two parcel of land on the western edge of forest block. The existing and proposed heathland within this forest block will be located in the centre, west and south of the block, while large areas of the north and centre will remain as conifer woodland. A detailed map of the area proposed for felling between 2012-2026 within the Puddletown Forest block is provided in **Figure 3.11**.

#### **Summary of heathland and mire restoration proposals**

- 3.75 **Table 3.1** provides a summary of the heathland and mire restoration proposals within the seven forest blocks between 2012 and 2026 (broken down by felling period).
- 3.76 **Table 3.1: Summary of the heathland and mire restoration proposals between 2012 and 2026.**

Woodland block	Open Habitat Type	Felling Period			Total
		2012-2016	2017-2021	2022-2026	
Purbeck	Heathland	55.5	39.7	24.9	<b>120.1</b>
Wareham	Heathland	15.6	7.2	0	<b>22.8</b>
Gore Heath	Heathland	1.2	0.9		<b>2.1</b>
Hethfelton	Heathland	0	0	4.2	<b>4.2</b>
Affpuddle	Heathland	8.2	16.4	14.8	<b>39.4</b>
Moreton	Mire*	0	1.9	0	<b>1.9</b>
Puddletown	Heathland	0	4.1	0	<b>4.1</b>
<b>Total</b>		<b>80.6</b>	<b>70.2</b>	<b>43.9</b>	<b>194.7</b>

Note: The proposed open habitat within Moreton is mire. For the purpose of the ES both heathland and mire are considered to be open habitats and the collective term of 'heathland' has been used to refer to the open habitat proposals ie heathland and mire.

## Future Heathland Management and Maintenance

- 3.77 On the majority of sites, following clearfell the excess brash will be raked and burnt to prevent excess nutrients building up on the site. The movement of machinery across the site can also help break down some of the ridge and furrow where this remains from past scarification. Old stumps usually break down within ten years and de-stumping is rarely carried out due to the levels of soil disturbance associated with de-stumping operations.

- 3.78 In subsequent years pine regeneration is likely to be an issue on restored sites due to the remaining seed bank in the soil. Pine regeneration will be dealt with using a variety of options depending on size and site specific conditions. Techniques include hand pulling, mechanical control or controlled burning.
- 3.79 Invading gorse and scrub also need control. Mechanical swiping or controlled burning are the techniques most commonly used. Bracken will be managed by forage harvesting or chemical control depending upon location and site sensitivity. Heather will be managed by controlled burning or mechanical cutting depending upon the location and sensitivity of the site.
- 3.80 The FC envisage managing scrub and pine within a dynamic, shifting rotational mosaic. The amount of scrub that will be tolerated will depend on the site itself, its value for biodiversity, fire management and whether any SSSI designation applies. For example, on SSSI sites, condition assessment prescriptions only allow <5% scrub and tree cover. In key locations, open sandy scrapes will also be created to form habitat niches for reptiles and invertebrates.
- 3.81 Grazing is also an important element of heathland management and the FC is in the process of establishing large scale grazing units. Cattle are the main stock used, generally at very low stocking densities of around 0.25 to 0.75 livestock units per hectare. Browsing helps to control the development of the rank molinia sward and encourages the development of a micro mosaic of heathland vegetation communities.
- 3.82 All the management techniques employed will aim to build up a dynamic mosaic of heathland communities including varying ages of heather stands. The FC will continue to explore markets and opportunities to use the heathland arisings.

## Operational Site Assessments

- 3.83 Prior to implementation of the revised Forest Design Plan, an Operational Site Assessments (OSA) document will be drawn up which will translate the broad Forest Design Plan prescriptions into a detailed work plans. These will provide:
- Information on the physical, archaeological, conservation and recreation features of the site.
  - Proposals for silvicultural, habitat restoration and public access treatments which will be site and time specific.
  - A clear approved plan of operations which will then be made accessible to all involved in working the site.
  - A historical record of work completed, changes in woodland structure and habitats and of issues encountered and how they were responded to.
- 3.84 Operational Site Assessments (OSAs) will be prepared for each woodland prior to work taking place. These will be produced by the Forestry Commission's planning and operational teams with input from a wide range of district team members. Woodlands will be allocated to operational working blocks and each woodland will be considered for intervention on a five year rotation. An OSA will be initiated for each working block in advance of operations.
- 3.85 The OSA will contain mapped details of site features relating to archaeological, conservation, public access and physical features of the site and will indicate how operations will take site specific factors into account to afford protection and/or to provide enhancement during the planning and execution of operations.

Information in the OSA will be archived after each working block intervention to provide an historic record of work undertaken and of issues encountered and how they have been dealt with for future reference.



# **Chapter 4:**

## **Ecology and Nature Conservation**



## 4 Ecology and Nature Conservation

### Introduction

- 4.1 This chapter considers the potential ecological impacts of the felling and heathland restoration that is proposed to take place between 2012-2026. It includes an assessment of these impacts on flora and fauna, such as habitat loss, and disturbance to species. This proposed heathland restoration covers 194ha spread across seven Forest Blocks and 46 individual compartments within these blocks.
- 4.2 The Chapter has been prepared by LUC and informed by ecological surveys undertaken by LUC ecologists and a desk study undertaken by Footprint Ecology.

### Impacts Assessed in Full

- 4.3 The impacts of felling operations and the post-felling heathland establishment have been assessed in full. Impacts caused by felling operations can cause:
- Habitat loss.
  - Physical disturbance.
  - Loss of life.
- 4.4 The impacts caused by heathland establishment relate to the changes to the species composition of the habitats present on heathland restoration areas. This in turn will have an impact on the species supported by this habitat.
- 4.5 The following ecological features have been considered when assessing these impacts:
- Habitats.
  - Invertebrates.
  - Badger.
  - Bats.
  - Birds.
  - Reptiles.

### Impacts Scoped Out

- 4.6 On the basis of the desk-based and survey work undertaken and professional judgement the impact of the heathland restoration proposals on dormouse have been scoped out. Almost all of the woodland compartments assessed were of negligible value to dormouse due to the scarcity of the understory and/or the lack of suitable food sources. The heathland restoration areas were therefore assessed as being of less than Site level ecological value for dormouse meaning that no significant impact on this species could be predicted.

### Consultation

- 4.7 As outlined in **Chapter 2**, consultation on the existing FDP proposals was carried out in July 2010 through the Forest Design Plan Forum, which comprised a range of statutory consultees, NGO's and other stakeholders. Detailed comments were raised on the proposed form of the heathland restoration proposals but no specific comments were raised on the scope of the EIA. Discussions also took place on an on-going basis between the Forestry Commission and a number of key stakeholders such as Natural England and the RSPB.

## Assessment Methodology

4.8 The assessment has been carried out as described below.

### Legislative, Regulatory and Policy Framework

4.9 This assessment has taken account of the following legislation regarding the protection of wildlife:

- The Conservation of Habitats and Species Regulations 2010 (as amended).
- The Wildlife and Countryside Act 1981 (as amended).
- The Countryside and Rights of Way Act 2000.
- Protection of Badger Act 1992.
- The Wild Mammals Protection Act 1996.
- Hedgerows Regulations 1997.

### Baseline Data Collection

4.10 Footprint Ecology undertook a detailed assessment of the biological records available for the woodland areas. This work has been used to inform this assessment. No new biological records were gathered by LUC during the production of this chapter.

4.11 Biological records provide a useful indication of the species present within a searched locality and this information has informed the scope of the field survey. It should be noted that the absence of a given species from the dataset cannot be taken to represent actual absence. Furthermore, species distribution patterns should be interpreted with caution, as they may reflect survey or recording effort.

4.12 Biological records prior to 1995 were not considered relevant to the current study as the habitats supported by the site are dynamic and changing and the species associated with them are also likely to change.

### Field Survey Methodology

4.13 A rapid assessment of each forestry compartment proposed for heathland or mire restoration between 2012 and 2026 was undertaken in April 2013. **Appendix 4.1** contains a copy of the proforma filled in for each compartment. During this survey general notes regarding the habitat present were taken and the potential of each forestry compartment to support notable or protected species assessed. The notable and protected species/group of species assessed were:

- Invertebrates.
- Badger.
- Bats.
- Dormouse.
- Birds.
- Reptiles.

4.14 Detailed species specific surveys were not undertaken as the assessment aimed to classify the potential of the habitat present to support notable species. The habitat present was assessed as being of high, medium, low and negligible potential to support each notable species/group of species.

4.15 In this context of this ES, the baseline conditions are taken to be the condition of the forest blocks at the beginning of 2012. However, the field survey assessment was undertaken in April 2013 and several forest compartments had been felled by this point. In these cases the composition of these compartments was considered to be similar to the remaining compartments of comparable age in the forest block under consideration.

## Assessing Significance

### Valuing Ecological Features

4.16 The ecological assessment takes the form of an Ecological Impact Assessment (EcIA) and was undertaken following guidelines set out by Institute of Ecology and Environmental Management (2006). The guidelines recommend that site sensitivity is best described as 'Ecological Value'. The Ecological Value of any given Study Area relates to its habitat assemblages and species populations and their importance to wider ecological processes. The Ecological Value of the Study Area is determined for each of its component habitats and species. The guidelines recommend that Ecological Value should be determined within a defined geographical context. The levels of geographical value adopted in this assessment are set as follows (and described further in **Table 4.1**):

- International.
- National.
- Regional.
- County.
- Local.
- Site.

**Table 4.1: Ecological Value Criteria**

Ecological Value	Qualifying Criteria	Relevant Context
International	<p>A Study Area is considered of international value when it supports:</p> <ul style="list-style-type: none"><li>• An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site, Biogenetic Reserve) or an area which Natural England (NE) has determined meets the published selection criteria for such designations, irrespective of whether or not it has yet been notified.</li><li>• A viable area of a habitat type listed in Annex 1 of the Habitats Directive, or smaller areas of such habitat which is essential to maintain the viability of that ecological resource on an international level.</li><li>• &gt;1% of the European Resource of an internationally important species, i.e. those listed in Annex 1, 2 or 4 of the Habitats Directive.</li></ul>	Europe

Ecological Value	Qualifying Criteria	Relevant Context
National	<p>A Study Area is considered of National Ecological Value when it supports</p> <ul style="list-style-type: none"> <li>• A nationally designated site (SSSI<sup>1</sup>, NNR<sup>2</sup>, Marine Nature Reserve<sup>3</sup>) or a discrete area which NE has determined meets the published selection criteria for national designation irrespective of whether or not it has yet been notified.</li> <li>• A viable area of a priority habitat identified in the UK BAP<sup>4</sup>, or smaller areas of such habitat which is essential to maintain the viability of that ecological resource at a national level.</li> <li>• &gt;1% of the National Resource of a regularly occurring population of a nationally important species, i.e. a priority species listed in the UK BAP and/or Schedules 1, 5 (S9 (1, 4a, 4b)) or 8 of the Wildlife and Countryside Act.</li> <li>• A regularly occurring and viable population of a UK Red Data Book species.</li> </ul>	UK
Regional	<p>A Study Area is considered of Regional Ecological Value when it supports:</p> <ul style="list-style-type: none"> <li>• A viable area of priority habitat identified in more than one local BAP within the region and which is essential to maintain the viability of that habitat resource at a regional level.</li> <li>• Any regularly occurring population of a nationally important species or species identified in more than one local BAP within the region and which is essential to maintain the viability of the resource at a regional level.</li> <li>• Ancient woodland greater than 0.25ha.</li> </ul>	South West England
County	<p>A Study Area is considered of County Ecological Value when it supports:</p> <ul style="list-style-type: none"> <li>• County sites and other sites which the designating authority has determined meet the published ecological selection criteria for designation, e.g. Local Nature Reserves.</li> <li>• Viable areas of legally protected habitat/habitat identified in Council BAP or smaller areas of such habitats which are essential to maintaining the viability of the resource at a county level.</li> <li>• Any regularly occurring population of an internationally/nationally important species or a species in a relevant UK/Council BAP which is important for the maintenance of the viability of the feature at a county level.</li> <li>• Semi-natural ancient woodland smaller than 0.25ha.</li> <li>• Networks of habitat which contribute to ecological connectivity at a county level.</li> </ul>	Dorset

<sup>1</sup> Site of Special Scientific Interest designated under UK law as being the best examples of the UK's flora, fauna, geological or physiographical features.

<sup>2</sup> National Nature Reserve designated under UK law as containing the best examples of natural or semi-natural ecosystems in Britain.

<sup>3</sup> Marine Nature Reserve designated under UK law to conserve marine flora, fauna and geological features.

<sup>4</sup> The Biodiversity Action Plan identifies targets for improving and protecting biodiversity in an area to meet the UK's commitments under the Rio Convention.

Ecological Value	Qualifying Criteria	Relevant Context
Local	<p>A Study Area is considered of Local Ecological Value when it supports:</p> <ul style="list-style-type: none"> <li>• Commonplace and widespread semi-natural habitats, e.g. scrub, poor semi-improved grassland, coniferous plantation woodland, intensive arable farmland etc. which, despite their ubiquity, contribute to the ecological function of the local area (habitat networks etc.).</li> <li>• Very small, but viable, populations of internationally/nationally important species or a species in a relevant UK/Council BAP which is important for the maintenance of the viability of the population at a local level.</li> <li>• Networks of habitat which contribute to ecological connectivity at a local level.</li> </ul>	Within a 5 km radius of the development site
Site	<p>A Study Area is considered of Site Ecological Value when it supports:</p> <ul style="list-style-type: none"> <li>• Habitats of limited ecological value, e.g. amenity grassland, but which contribute to the overall function of the application site's ecological function.</li> </ul>	Development site

### *Magnitude*

4.17 All potential impacts are assessed against standard parameters set out by IEEM. Via this approach, a scientific and repeatable method is applied whereby all aspects of a potential impact are considered. Impacts are considered with reference to the following parameters:

- Positive or negative.
- Extent.
- Duration.
- Reversibility.
- Frequency.

4.18 A degree of confidence is also used to assess the likelihood of an impact occurring. The following scale is referred to:

- Certain/near-Certain: probability estimated at  $\geq 95\%$ .
- Probable: probability estimated at 50 – 95%.
- Unlikely: probability estimated at 5 – 49%.
- Extremely unlikely: probability estimated at  $\leq 5\%$ .

### *Significance of Impacts*

4.19 Based on these parameters and magnitude levels, an impact is then considered to be either significant or not significant. An impact is considered to be significant if it has the potential to affect the integrity of a habitat or the conservation status of a species. The significance of a potential impact is considered, using professional judgment, within the context of the geographically-based Ecological Value of the feature. For example, the significance of a potential impact on a habitat of local Ecological Value is considered at a local level.

4.20 Significant impacts are considered 'significant' in the context of the EIA Regulations, irrespective of their geographical context.

4.21 Technical definitions of integrity and conservation status follow IEEM guidance.

4.22 IEEM guidance recommends that impact significance is not defined as 'major', 'moderate' or 'minor' due to the complexities of ecological processes.

## Limitations

- 4.23 The interpretation of the biological records was provided by Footprint Ecology, the original data sources were not observed and it has been assumed that this interpretation was accurate.
- 4.24 No species specific or nationally recognised habitat surveys have been undertaken for this assessment. Therefore the interpretation of the potential distribution of habitats and species across the site is based on the data available as biological records and the judgement of the ecologist carrying out the site surveys.

## Existing Conditions

- 4.25 This section details the findings of the ecological surveys undertaken to determine the Ecological Value of the site.
- 4.26 The heath restoration proposals cover an area of 194.7ha and are located in south Dorset broadly distributed between Dorchester and Poole. The proposals are spread across 46 discrete forest compartments. All the land is managed by the Forestry Commission.

## Designated Sites

### Statutory Designations

- 4.27 Two Special Protection Areas (SPAs) are found within 2km of the site. These are Dorset Heathlands SPA and Poole Harbour SPA shown in **Figure 4.1**.
- 4.28 The Dorset Heathlands cover an extensive complex of heathland sites at the western edge of the Hampshire Basin in southern England. It is designated as a SPA because it supports notable breeding populations of Dartford Warbler *Sylvia undata*, Nightjar *Caprimulgus europaeus* and Woodlark *Lullula arborea*. It also supports important overwintering populations of Hen Harrier *Circus cyaneus* and Merlin *Falco columbarius*.
- 4.29 Poole Harbour is a bar-built estuary of nearly 4,000ha located on the coast of Dorset. It is designated as a SPA as it supports a large number of notable bird populations. These include important breeding populations of Common Tern *Sterna hirundo* and Mediterranean Gull *Larus melanocephalus*, and important passage communities of Aquatic Warbler *Acrocephalus paludicola* and Little Egret *Egretta garzetta*. Avocet *Recurvirostra avosetta*, Little Egret *Egretta garzetta*, Black-tailed Godwit *Limosa limosa islandica* and Shelduck *Tadorna tadorna* all overwinter within this SPA in significant numbers and the SPA as a whole regularly supports over 20,000 individual waterfowl over winter.
- 4.30 Four Special Areas of Conservation (SAC) are found within the vicinity of the sites and their distribution is shown in **Figure 4.2**. These are:
- Dorset Heaths.
  - Dorset Heaths (Purbeck & Wareham) & Studland Dunes.
  - Isle of Portland to Studland Cliffs.
  - St Albans Head to Durlston Head.
- 4.31 Dorset Heaths SAC covers 5730.73ha spread across 37 SSSIs. It supports large areas of three Annex 1 habitats and these are the primary reason for its designation. These habitats are:
- Northern Atlantic wet heaths with *Erica tetralix*.
  - European dry heaths.
  - Depressions on peat substrates of the *Rhynchosporion*.
- 4.32 This SAC also supports a small population of Southern damselfly *Coenagrion mercurial* an Annex II species which is another primary reason for its designation.

- 4.33 Dorset Heaths (Purbeck & Wareham) & Studland Dunes SAC covers 2221.94ha. It supports 10 different Annex I habitats that are the primary reason for its designation as an SAC. These are:
- Embryonic shifting dunes.
  - Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’).
  - Atlantic decalcified fixed dunes (*Calluno-Ulicetea*).
  - Humid dune slacks.
  - Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*).
  - Northern Atlantic wet heaths with *Erica tetralix*.
  - Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*.
  - European dry heaths.
  - Depressions on peat substrates of the *Rhynchosporion*.
  - Bog woodland.
- 4.34 Like the Dorset Heaths SAC, the site also supports a small population of Southern damselfly an Annex II species which is another primary reason for its designation.
- 4.35 The Isle of Portland to Studland Cliffs SAC, including the detached peninsula of Portland, with St Albans Head to Durlston Head SAC, forms a single unit of cliffed coastline some 40 km in length. Both of these SACs support two Annex I habitats that are the primary reason for their designation as SACs. These are:
- Vegetated sea cliffs of the Atlantic and Baltic coasts.
  - Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*).
- 4.36 Both sites also support important long-standing populations of early gentian *Gentianella anglica*, an Annex II species that is another primary reason for the designation of these sites.
- 4.37 There are two Ramsar sites within the vicinity of the site, these are Dorset Heathlands and Poole Harbour both shown in **Figure 4.3**.
- 4.38 Dorset Heathland Ramsar site covers the extensive and fragmented heathland centred around the estuary of Poole Harbour. It is designated as a Ramsar site for a number of reasons:
- It contains particularly good examples of northern Atlantic wet heaths with cross-leaved heath *Erica tetralix* and acid mire with *Rhynchosporion*.
  - It supports 1 nationally rare and 13 nationally scarce wetland plant species, and at least 28 nationally rare wetland invertebrate species.
  - It has a high species richness and high ecological diversity of wetland habitat types and transitions, and lies in one of the most biologically-rich wetland areas of lowland Britain.
- 4.39 Poole Harbour Ramsar site is the best and largest example of a bar-built estuary with lagoonal characteristics (a natural harbour) in Britain. It supports two species of nationally rare plant and one nationally rare alga. There are at least three British Red data book invertebrate species present within the site. The site includes examples of natural habitat types of community interest including Mediterranean and thermo Atlantic halophilous scrubs, in this case dominated by *Suaeda vera*, as well as calcareous fens with *Cladium mariscus*. Transitions from saltmarsh through to peatland mires are of exceptional conservation importance as few such examples remain in Britain. The site supports nationally important populations of breeding waterfowl including Common tern, and Mediterranean gull. Over winter the site also supports a nationally important population of Avocet.

### Biological records

- 4.40 A detailed analysis of the biological records was carried out by Footprint Ecology. A copy of this report can be made available on request. A summary of this work is included below.
- 4.41 Biological records of 21 bird notable or protect birds, of relevance to the site, were provided. These included five birds listed on Annex 1 of the Birds Directive. These were nightjar, Dartford warbler, honey buzzard, hen harrier and woodlark.
- 4.42 There are records for a range of notable and protected plants species in and around the forestry compartments considered in this ES. Biological records also listed a range of notable invertebrates including grasshoppers, butterflies, moths, beetles, bees, wasps, flies and spiders.
- 4.43 Biological records for mammals were composed of badger, dormice and a range of bat species. These included brown long-eared *Plecotus auritus*, pipistrelles *Pipistrellus* sp., noctule *Nyctalus noctula*, Natterer's *Myotis nattereri*, whiskered *Myotis mystacinus* and Brandt's *Myotis brandtii*.
- 4.44 There are records for the full assemblage of all six native reptiles across the Purbeck Forest blocks and four of the native amphibian species have also been recorded.

### Habitats and site surveys

- 4.45 A description of the forest blocks and the areas proposed for heathland restoration between 2012 and 2026 are set out below. Maps of each forest block showing the heathland restoration proposals are included in **Chapter 3: Figures 3.2-3.11**.

#### Purbeck Forest

##### Habitats

- 4.46 Purbeck Forest block (also known as Rempstone) is the most easterly of the Purbeck forest blocks, covering 612ha. The proposed heathland restoration between 2012-2026 will cover 120.1ha and for the purposes of this ecological assessment these areas have been split into 22 forest compartments (shown in **Figures 3.2 and 3.3**).
- 4.47 The majority of these compartments are formed of mature Corsican pine plantations, although areas of lodgepole pine and Scots pine are also present. Generally the structure of these woodland is quite open with a relatively sparse understory consisting of varying quantities of rhododendron, gorse, holly and pine regeneration. The ground layer of these compartments were formed of heathland vegetation with frequent to abundant ericoids although in places they were dominated by bracken or purple moor-grass. The exceptions to this were Compartments 5, 6, 9 and 12 where the mature Corsican pine plantation formed a closed canopy creating a much shadier woodland with a very sparse understory composed of occasional gorse. The ground layer was similar to the other woodland compartments. Compartment 18 was also different as it was composed of a dense semi-mature Corsican pine plantation with no understory and a ground layer formed of bare ground.

##### Invertebrates

- 4.48 The potential value of these woodland compartments to invertebrates depended to a large degree on their openness. Thus Compartments 1, 2, 4, 17 and 21 were considered to be of moderate value for invertebrates as these were the most open woodlands. All the other compartments were considered to be of low invertebrate potential except Compartment 18 which was considered to be of negligible potential for invertebrates.

##### Badger

- 4.49 The majority of these compartments were considered to be of low potential for badgers due to the lack of topographic features suitable for sett creation. The exceptions to this were Compartments 2, 7, 8, 12, 15 and 16 where gentle slopes and a dry ground conditions were considered to be of moderate potential for badger.

### *Bats*

- 4.50 Almost all of these compartments contained trees that were large enough to support bat roosting features. The frequency of these large trees were rare to occasional. Only in the young dense plantation of Compartment 18 were there no trees large enough to support bat roosting features. All these compartments provided and foraging and commuting resource for bats. The density of the trees in Compartments 3, 12 and 18 reduced the internal foraging opportunities for bats in these areas.

### *Birds*

- 4.51 The coniferous woodland compartments surveyed within the Purbeck Forest block are likely to support a relatively low diversity of nesting bird species, due largely to the homogenous nature of the habitat. Compartments 2 and 4 were of particular interest as they were adjacent to large areas of open heathland and supported a distinctly open canopy, allowing the development of a luxuriant ground layer of dense heather and gorse scrub. As a result, these compartments provide potential nesting opportunities for the annex 1 species dartford warbler and nightjar, in addition to typical scrub nesting species such as dunnock and linnet.
- 4.52 Compartments 18 and 22 comprised densely planted pine and therefore provided suitable nesting habitat for song thrush, dunnock and willow warbler. All the remaining compartments comprised mature pine plantation, with secluded areas away from footpaths and bridleways. Subsequently, these areas provide potential nesting opportunities for secretive raptor species, including goshawk, honey buzzard and hobby.
- 4.53 All of the Purbeck woodland compartments have the potential to support birds of conservation importance, including crossbill, woodcock, green woodpecker, song thrush, spotted flycatcher, tree pipit, and willow warbler. However, given the extent, abundance and widespread distribution of optimal nesting habitat for these species within the wider landscape, the Purbeck woodland compartments surveyed are considered unlikely to be of notable importance.

### *Reptiles*

- 4.54 Compartments with high potential for supporting reptiles within the Purbeck block included 2, 4 and 8. Each of these compartments supported an open canopy allowing much light to reach the ground layer, thereby allowing the development of dense shrub vegetation interspersed with bare ground and frequent pile of deadwood and brash. These conditions provided optimal conditions for reptile basking, shelter and hibernation and these compartments are likely to support permanent populations of all six reptile species.
- 4.55 Other compartments within the Purbeck woodland block were typically too shaded or lacked the vegetation structure at ground level required to support permanent reptile populations. Nevertheless, these compartments did not represent barriers to reptile movement and are likely to support transitory reptiles in relatively low numbers.

## **Wareham**

### *Habitats*

- 4.56 Wareham forest block covers 1,340ha of land and is the largest of the Purbeck forest blocks. The proposed heathland restoration between 2012-2026 will take place within eight parcels of land 22.8ha (shown in **Figures 3.4 and 3.5**). The majority of these compartments are formed of mature Corsican pine plantations with very little understory over a ground layer composed of heathland vegetation. The two compartments in the east of the site Compartment 7 and Compartment 8 were slightly different. Half of Compartment 7 was similar to the previously described habitats, however the other half was formed of a failing semi-mature Corsican pine plantation. There was no understory here and the ground layer was dominated by ericoids forming a mature heathland community. Compartment 8 was composed of a dense, un-thinned Corsican pine plantation. Here again there was no understory and the ground layer was formed of bare ground.

### *Invertebrates*

- 4.57 In general the simplistic structure of the woodland blocks combined with their limited species diversity represented low quality habitat for invertebrates. The exceptions to this were Compartments 7 and 8. The dying trees in the northern half of Compartment 7 were doing so badly as to cast minimal shade on the heathland vegetation below. This area was considered to be of moderate potential for invertebrates. Compartment 8 was so dense and shady that it was considered to provide negligible potential for invertebrates.

### *Badger*

- 4.58 The majority of the Wareham forest block compartments were flat and wet at ground level reducing their potential to support badger setts to a minimum. The exceptions to this were Compartments 5 and 6, which were moderately sloping and dry. These compartments were considered to be of moderate potential for badger. Compartment 8 was generally flat, however it was dry at ground level and was considered of low potential for badgers. No signs of badger or badger activity were observed during the surveys.

### *Bats*

- 4.59 In general the trees located within the Wareham Forest compartments were considered to be too small to contain features suitable for supporting roosting bats. The exceptions to this were Compartments 3 and 4 where occasional trees were recorded that were large enough to support bat roosting features. All these compartments provide foraging and commuting habitat for bats, although in Compartments 7 and 8 the density of the trees is considered so high as to reduce the internal foraging opportunities for bats, although the edges of these woodland would still provide a sheltered environment suitable for foraging.

### *Birds*

- 4.60 The coniferous woodland compartments of the Wareham Forest block are also likely to support a relatively low diversity of nesting woodland bird species. Mature woodland compartments provide suitable nesting habitat for hobby and honey buzzard. However, these raptors are sensitive to disturbance and suitable nest locations are likely to be restricted to compartments 2 and 3, which form part of larger forestry blocks and provide relative seclusion away from well used access routes.
- 4.61 Compartments 7 and 8 comprised young, scrubby coniferous plantation and are therefore likely to provide particularly suitable nesting habitat for dunnock, song thrush and willow warbler. Of the remaining woodland compartments surveyed within Wareham Forest, the mature woodland of compartments 2, 3, 4, 5, and 6, are likely to support the highest diversity of birds of conservation importance, providing optimal habitat for woodcock, and suitable, albeit sub-optimal nesting habitat for crossbill, green woodpecker, song thrush, spotted flycatcher, tree pipit, and willow warbler. Optimal habitat for these species is plentiful within the Wareham Forest and wider area, and therefore the woodland compartments surveyed are unlikely to be of any notable importance for these species.

### *Reptiles*

- 4.62 Forestry compartments within the Wareham block were generally too shaded or lacked the ground flora typically required to support permanent populations of reptiles. However, the forestry compartments do not represent a barrier to movements and given the close proximity of extensive areas of optimal reptile habitat, are likely to support low numbers and transitory individuals.

## **Gore Heath**

### *Habitats*

- 4.63 Gore Heath covers 201ha and is one of the smaller Purbeck forest blocks. The proposed heathland restoration will be located in two forest compartments to the south of the block, while large areas of the north and centre will remain as conifer woodland. These compartments cover a combined area of 2.14ha (shown in **Figure 3.6**).

- 4.64 Both forest compartments were formed of mature, open pine plantations. In Compartment 1 the canopy was entirely composed of Corsican pine whereas in Compartment 2 there were also areas of Scot's pine. The understory in these woodland was sparse and consisted primarily of young Corsican and/or Scot pine regeneration, with occasional holly. The ground layer for both compartments supported heathland vegetation with abundant ling, bell heather, purple moor-grass and red fescue.

#### *Invertebrates*

- 4.65 Both woodlands included large mature trees over established heathland ground flora although the trees would cause some shading of this habitat. Therefore both woodlands were thought to provide moderate quality habitat for invertebrates.

#### *Badger*

- 4.66 The topography of both compartments included moderate slopes and the ground was generally dry. These compartments were considered to be of moderated potential for badger. No signs of badger or badger activity were observed during the surveys.

#### *Bats*

- 4.67 Occasional trees in these compartments were considered large enough to support bat roosting features although no such features were observed. Both compartments provided habitat suitable for foraging and commuting bats.

#### *Birds*

- 4.68 Both of the forestry compartments within the Gore Heath woodland block supported mature pine woodland with a high canopy and a shrub understorey. Compartment 1 is dissected by several well used footpaths, which is likely to reduce the abundance and diversity of bird species present, particularly those species sensitive to disturbance such as raptors. Compartment 1 is therefore likely to support species more tolerant of disturbance including song thrush and dunnock.
- 4.69 Compartment 2 is relatively secluded and provides suitable nesting habitat for raptors including goshawk, honey buzzard and hobby. In addition, the presence of a high canopy and shrub layer provides suitable nesting habitat for a range of species, including dunnock, song thrush, woodcock, green woodpecker, spotted flycatcher, tree pipit and willow warbler.

#### *Reptiles*

- 4.70 The two forestry compartments in Gore supported a relatively well developed ground flora comprising abundant Molinia and heather with frequent gorse scrub. As a result they provided suitable habitat for supporting all species of reptiles. However, both compartments were characterised by a relatively closed canopy and the subsequent lack of suitable basking sites is likely to reduce the likelihood of supporting permanent reptile populations. Instead, these habitats are likely to support low numbers of transitory individuals at any given time during the reptile active period.

### **Hethfelton**

#### *Habitats*

- 4.71 Hethfelton covers a total area of 157ha and is the smallest of the Purbeck forest blocks. The proposed heathland restoration between 2012-2026 will take place within one compartment within this forest block covering 4.2ha (shown in **Figure 3.7**). This compartment was composed of a mature Corsican pine plantation with no signs of being thinned in the recent past. The understory was formed of dense continuous rhododendron and the ground layer was formed of bare ground.
- 4.72 This dense shady woodland with limited species diversity was considered to provide low quality habitat for invertebrates. The gently sloping topography of the compartment coupled with its dry ground layer meant it was considered to be of moderated potential for badger. No signs of badger or badger activity were observed during the surveys.

- 4.73 The trees within this compartment were too small to support bat roosting features and the density of the woodland and the rhododendron understory meant there were very limited internal foraging opportunities for bats. The edges of this woodland provided a sheltered environment suitable for foraging and commuting bats.

#### *Birds*

- 4.74 The single forestry compartment within the Hethfelton block consisted of mature dense pine plantation with a dense shrub understorey dominated by Rhododendron. This dense structure provides an effective barrier against recreational disturbance and this compartment therefore provides suitable nesting habitat nesting raptors including hobby, goshawk and honey buzzard. The damp woodland floor and dense shrub layer also provides optimal habitat for nesting woodcock, and possibly cuckoo. In addition, the presence of Rhododendron also provides suitable nesting habitat for a number of typical scrub nesting species such as dunnoek, song thrush, and willow warbler.

#### *Reptiles*

- 4.75 The single compartment within Hethfelton is largely unsuitable for supporting reptiles, consisting almost entirely of a dense Rhododendron understorey resulting in dense ground shading and an absence of suitable vegetation. An exception is the southern edge of this compartment, which provides a south facing embankment offering optimal opportunities for basking, shelter and hibernation.

#### *Affpuddle*

##### *Habitats*

- 4.76 Affpuddle covers an area of 222ha and is immediately adjacent to Moreton forest block. The proposed heathland restoration between 2012-2026 will cover 39.4ha and be spread across 11 forest compartments (shown in **Figure 3.8 and 3.9**).
- 4.77 The majority of these woodlands compartments were composed of mature, open Corsican pine plantations with relatively sparse understories. These were formed of varying quantities of rhododendron, Corsican pine regeneration, gorse and holly. The ground layers were typically composed of heathland vegetation with abundant ling, bell heather, cross leaved heath, purple moor-grass and bracken. The exceptions to this description were Compartments 8 and 10 which were formed of young, dense Corsican pine plantation with no discernible understory because the trees are so young and a ground layer dominated by bare ground. Compartment 11 was also slightly different as although it was formed of mature Corsican pine, it was a woodland with a closed canopy and abundant understory dominated by young silver birch with frequent holly and rhododendron. The ground layer was dominated by bare ground with frequent bracken and purple moor-grass.

##### *Invertebrates*

- 4.78 The open structure of the majority of woodlands and the heathland vegetation that forms the ground layer results in a habitat that was judged to be of low to moderate quality for invertebrates. The exceptions to this were the young dense woodlands of Compartments 8 and 10 which were thought to be of almost negligible value for invertebrates.

##### *Badger*

- 4.79 The forest compartments of Affpuddle comprise a range of topographical conditions. The highest quality habitat for badger were recorded in Compartments 2, 3, 8 and 11. Here the sloping ground and dry soil provided habitat considered to be of moderated potential for badger. The other compartments were considered to be too flat and/or wet to provide anything beyond low potential habitat for badger.

### *Bats*

- 4.80 The majority of the forest compartments contained occasional trees large enough to support bat roosting features. The exceptions to this were Compartment 11 which these sized trees were rare and Compartment 8, 9 and 10 where there were no trees of this size. The density of the trees in Compartments 8, 10 and 11 were considered high enough to reduce the internal foraging opportunities within these woodlands. All the other woodland compartments provided good foraging and commuting habitat for bats.

### *Birds*

- 4.81 The Affpuddle woodland block supported a number of distinctive stages of forestry. Compartments 1 to 5 were characterised by mature pine woodland with a relatively open canopy. As a result of the increased light levels, these compartments supported frequent shrub species and a well-developed ground flora of heather, bracken and purple moor grass. These areas provided optimal habitat for a range of bird species including woodcock, green woodpecker and tree pipit, whilst also being likely to support song thrush, dunnock, and spotted flycatcher. In addition, compartments 1-5 provided suitable nesting habitat for hobby, being situated upon raised ground adjacent to open areas of wet heath and blanket bog which represent preferred foraging habitats. However, these compartments are likely to be too open and regularly frequented by recreational visitors to support either goshawk or honey buzzard. Compartment 11 was similar to 1-5 but was encompassed by a larger block of mixed woodland and was noticeably more secluded. As a result, compartment 11 provided particularly suitable habitat for nesting goshawk and honey buzzard.
- 4.82 Compartments 8 and 10 comprised dense young plantation and therefore provided suitable nesting habitat for scrub nesting species such as song thrush, dunnock and willow warbler.

### *Reptiles*

- 4.83 Compartments 1, 2 and 3 within the Affpuddle block had high potential to support reptiles, incorporating a relatively open canopy and a ground layer formed of a mosaic of dense wet heath and bracken.

### *Moreton*

- 4.84 Moreton Forest covers a total area of 190ha directly south of Affpuddle forest block. This is the only woodland where mire rather than heathland communities are the target of the restoration proposals. A single compartment in the north east of the block covering 1.92ha will be converted to mire (shown in **Figure 3.10**). This compartment is currently formed of a semi-mature to mature Corsican pine plantation with little evidence of thinning operations taking place in the past. The woodland is now formed of dense and rather spindly trees over a dense rhododendron understory. This kind of habitat is considered to be of negligible value for invertebrates and the flat and wet nature of the site means it is also of negligible value for badgers.
- 4.85 No trees large enough to support bat roosting features were present and the density of the trees means that bats are unlikely to forage within the woodland. The woodland edges provide good foraging and commuting habitat for bats.
- 4.86 The single forestry compartment within the Moreton woodland block comprised dense young plantation, typically unsuitable for supporting the majority of bird species considered within this assessment. However, this habitat type provided suitable nesting opportunities for song thrush, dunnock, common crossbill, willow warbler, and woodcock.
- 4.87 The single forestry compartment within this block comprised dense young plantation considered unsuitable for supporting reptiles.

## **Puddletown**

### *Habitats*

- 4.88 Puddletown Forest block covers a total area of 301ha. The proposed heathland restoration between 2012-2026 will take place within two compartments in the west of this woodland block. The combined area of these two compartments is 4.1ha (shown in **Figure 3.11**). These compartments were formed of mature but quite dense, closed plantations. The principle tree species was Corsican pine however there were also areas of Norway spruce. The understory in these compartments were generally patchy and composed of varying quantities of rhododendron, gorse and holly. The ground layer was generally dominated by purple moor-grass or bracken.
- 4.89 The dense shady nature of these woodland and their limited species diversity results in a habitat that is considered to be of low potential value for invertebrates. The topography of both compartments included some moderate slopes and the ground was dry. For these reasons the habitat was considered to be of moderate potential for badger. Trees large enough to support bat roosting features were rare and the density of the of the trees means that bats are unlikely to forage within the woodland. The woodland edges provide good foraging and commuting habitat for bats.
- 4.90 Compartment 1 within the Puddletown block consisted of densely shaded mature spruce plantation. Given the absence of a notable understorey and dense shading, this compartment provided suitable habitat for relatively few species, except for woodcock and common crossbill. Compartment 2 comprised a mature pine canopy with a dense shrub understorey. This compartment provided suitable nesting habitat for a range of bird species, including woodcock, cuckoo, dunnock, hobby, green woodpecker, song thrush, spotted flycatcher, and willow warbler.
- 4.91 Both of the compartments within the Puddletown block were generally too shaded to support reptiles. Compartment 1 lacked any ground vegetation and was therefore also likely to present a deterrent to reptile movements. Compartment 2, despite extensive shading, supported a relatively diverse ground flora within more open areas including scrub, bracken and heathland shrub species. This compartment therefore does not represent a barrier to reptile movements and may support low numbers of slow worm which are more able to inhabit woodland habitat.

### **The 'Do Nothing' Scenario**

- 4.92 The 'Do Nothing' scenario relates to the continued management of the site for forestry and as such the areas proposed for heathland restoration would be restocked with trees in due course. If this were to occur, there would be no change in the land use of these areas. Although the impacts of the felling operations would remain, the impacts resulting from heathland establishment would differ. In the 'Do Nothing' scenario the coniferous plantation woodland would be restocked after felling and would be expected to support a similar community of species as described above in the 'Existing Conditions' section. The proposals include the restoration of 194.7ha of heathland which would be noticeably different to this coniferous plantation and would be expected to include a higher proportion of the protected and notable species dependent on open heathland habitats.

## **Ecological Value**

### **Local and Site Considerations**

- 4.93 A local nature conservation value is assigned where an ecological feature is considered important within the geographical context of a 5km radius.

### *Habitats*

- 4.94 The habitats supported across the proposed heathland recreation areas were widespread in the surrounding areas and the various stages of plantation woodland maturity will continue to be represented within the dynamically managed Purbeck forest blocks. The heathland restoration areas are therefore assessed as being of **Site level** ecological value for these habitats.

### *Invertebrates*

- 4.95 The great majority of protected and notable invertebrates provided in the biological records are associated with heathland as either their sole or primary habitat, or in the context of other open habitats. The wooded nature of the proposed heathland restoration areas are therefore likely to be of limited value to these species. The heathland restoration areas are therefore assessed as being of **Site level** ecological value for invertebrates.

### *Badger*

- 4.96 The majority of the proposed heathland restoration sites are too flat and wet to provide habitat suitable for badger sett building, although some of these areas were assessed as being suitable for this activity. The historically disturbed nature of plantation woodland reduces the probability of large main setts being present. Coniferous plantations do not provide high quality foraging habitat for badgers however they will still be used for this purpose. Overall the heathland restoration areas are assessed as being of **Site level** ecological value for badger.

### *Bats*

- 4.97 In general the trees present within the proposed heathland restoration areas were too small to support bat roosting features. Pine trees rarely decay in a manner that creates bat roosting features until the trees become over-mature or ancient. Trees in these age categories were not seen during the site surveys and are unlikely to be present within plantation woodlands. The primary value of these woodland for bats would be as foraging and commuting habitat. Given the abundance of this habitat type in the surrounding areas, the heathland restoration areas are therefore assessed as being of **Local level** ecological value for bats.

### *Birds*

- 4.98 The value of forestry compartments ranges from Negligible to Local for birds, depending on the species involved. The majority of bird species of conservation concern considered within this assessment are more typically associated with scrub, and woodland which supports a more diverse structure and species assemblage, such as semi-natural broadleaved or mixed woodland. Therefore, whilst the forestry compartments may support these species, examples of more suitable habitat is relatively abundant and widespread within the Local area, and the forestry compartments are considered to be of **Site value** at most for the majority of bird species.
- 4.99 Annex 1 bird species of National/International value occurring within the wider area include nightjar, woodlark and Dartford warbler. With regard to nightjar, the forestry compartments are likely to contribute to providing the habitat mosaic, foraging niches and movement corridors preferred by this species. Forestry compartments are therefore likely to contribute to maintaining the viability of the nightjar population at the Local level and are subsequently considered of Local value for nightjar. Dartford warbler and woodlark are not dependent upon forestry habitats either for nesting, foraging, or movement. Forestry compartments are considered of **Negligible value** for Dartford warbler and woodlark.
- 4.100 Forestry compartments comprising mature pine woodland provide suitable nesting habitat for scarce raptor species, including goshawk, hobby and honey buzzard. These forestry habitats are common and widespread in the wider area, and those surveyed are likely to represent only a small proportion of this resource at the local and regional scale. Nevertheless, these species nest at low densities and are therefore dependent upon a relatively large habitat network. As a result the forestry compartments surveyed are considered to be of **Local value** for goshawk, hobby, and honey buzzard because they are likely to be dependent on maintaining viable populations of these species at the Local level.

### *Reptiles*

- 4.101 Dorset is a UK hotspot for reptiles and amphibians, and large expanses of lowland heathland situated adjacent to forestry compartments represent optimal habitat for these species. The edges of forestry compartments, and those with an open canopy and vegetated ground layer provide suitable habitat for reptiles, but such habitats were typically sub-optimal in comparison to adjacent areas of open heathland, and forestry compartments are unlikely to support permanent herptile populations. Nevertheless, the forestry compartments do not represent a barrier to herptile movement and southern edges may provide dry sheltered habitat niches and potential

hibernation sites. The proposed heathland restoration areas are likely to be important in maintaining herptile populations at the site level, and are therefore considered of **Site value**.

### International and National Considerations

- 4.102 The desk study has identified the Dorset Heaths SAC, Dorset Heaths (Purbeck & Wareham) & Studland Dunes SAC, Isle of Portland to Studland Cliffs SAC and St Albans Head to Durlston Head SAC and along with Dorset Heathland and Poole Harbour SPA and Ramsar sites in the vicinity of the proposed heathland restoration areas. These are valued at the international level. Approximately 5.5ha of these sites are included within the heathland restoration areas. However the habitats these areas currently support are not the listed designating features for these sites. The majority of the proposed heathland restoration areas are bordering or within 500m of and SPA, SAC and/or Ramsar site.

## Impact Assessment

### Sources of Potential Impact

- 4.103 The assessment of impacts is based upon the scheme description outlined in **Chapter 3: Description of Proposals**. Impacts predicted in this section are prior to mitigation.

### Predicted Impacts – Felling Operations

#### Habitats

##### *Habitat loss*

- 4.104 The impacts of the proposed heathland restoration will be the removal of the plantation forestry and its replacement with heathland communities.
- 4.105 Plantation forestry will continue to be abundant in all of the Purbeck forestry blocks. The largest area of proposed heathland restoration is located within the Purbeck block. Here the current proposals include the restoration of 120.1ha of heathland in addition to the 213.65ha of existing heathland and 38.49 of existing mire. This means there will be a total of 372.24ha of open habitat within the forest block by 2026. As Purbeck forest covers 612ha this means that over 60% of the site will be open habitat by this point. Plantation woodland will make up the majority of the other habitat in this forest block. In the other Purbeck forest blocks the overall amount of heathland restoration is notably less than in Purbeck Forest itself.
- 4.106 Given plantation woodlands are abundant within and around the Purbeck Forest blocks and the inherent value of this habitat, the loss of this habitat is predicted to be **not significant**.

##### *Physical disturbance*

- 4.107 Physical disturbance of the habitats that surround the proposed heathland restoration areas is likely to be limited as there are forestry tracks providing direct access to almost all of the affected forest compartments. Physical disturbance will be a negative impact of unlikely likelihood. The duration of the impact will be temporary, being reversible in the medium term. Based on the above, the physical disturbance of habitats is predicted to be **not significant**.

##### *Invertebrates*

- 4.108 Virtually all of the notable invertebrates for which there are biological records within this area are dependent on heathland or other mainly open habitats, including bare sandy ground. The removal of coniferous plantation woodland is therefore considered not to present any notable risk to invertebrate survival. Therefore, impacts on invertebrates are predicted to be **not significant**.

### *Badger*

- 4.109 If badger setts are present within any of these woodland compartments the felling operations will result in habitat loss, physical disturbance and potentially loss of life. The frequency of these impacts will be limited to one or more individual occasions. The duration and reversibility of this impact needs to be considered with regard to the badger population at the Local level. Therefore, this impact will be temporary in duration and reversible, primarily as a result of the ability of the local badger population to recover in the medium term.
- 4.110 These impacts will be **negative**, however the degree of confidence that these impacts will occur vary between the different woodland compartments. **Appendix 4.2** shows the potential of the habitat of each compartment to support badger setts. Where compartments have been assessed as having moderate potential the likelihood of these impacts is unlikely, where the habitat has low or negligible potential the likelihood of these impacts is extremely unlikely.
- 4.111 Taken as a whole the impacts on badger of the felling operation are predicted to be **significant at the Site level (prior to mitigation)**.

### *Bats*

- 4.112 Felling operations will result in habitat loss, physical disturbance and potentially loss of life. The impacts of the felling operations on bats can be split into the impacts on bat roosts, and impacts on foraging and commuting habitats. Felling operations will potentially result in habitat loss, physical disturbance and loss of life. Where this impact does occur it will be negative, however this impact will be temporary in duration and reversible, primarily as a result of the ability of the local bat population to recover in the medium term.
- 4.113 Trees large enough to support bat roosting features were infrequent across all the forest compartments. At their most frequent this size of tree was occasional. Therefore across all the proposed heathland restoration sites the likelihood of impacts on bat roost occurring is unlikely. On many woodland compartments there were no trees large enough to support bat roosting features here the likelihood of impacts on bats is extremely unlikely. Therefore, impacts on bats as a result of roost loss or disturbance during felling are predicted to be **not significant**.
- 4.114 The sheltered nature of woodland edges encourages invertebrates to accumulate in these areas. These areas therefore provide a useful foraging resource for bats which feed on these invertebrates. All of the woodland blocks provide foraging habitat for bats. Bats often forage large distances from their roosts. They therefore need to be able to move freely across the landscape to get from their roosting sites to their foraging sites. Many species of bat preferentially follow linear features such as woodland edges and are reluctant to cross wide open spaces. The value of the woodland compartments for bats is therefore as commuting as well as foraging habitat. The removal of this woodland will result in the loss of this habitat and the potential fragmentation of bat populations. This impact will be negative. However coniferous woodland plantation will remain abundant within the Purbeck Forest blocks as a whole. The extent of this impact will vary between the different forest blocks. In Wareham, Puddletown, Moreton, Hethfelton and Gore Heath the percentage of woodland proposed for removal is so small that this impact is considered extremely unlikely to occur. In Affpuddle the proposed heathland restoration will cover an area of 39.4ha, this is almost 18% of the forest block. In Purbeck the heathland restoration will cover 120.1ha which almost 20% of the entire forest block. In these two forest block the likelihood of this impact is probable. Where it does occur this impact will be **negative** and permanent.
- 4.115 The interpretation of the significance of these impacts is based on the precautionary principle as without detailed survey work the exact nature of the impact of foraging and commuting habitat is unknown. Given the scale of the habitat loss in Purbeck and Affpuddle, this is predicted to be **significant at the Local level (prior to mitigation)**. In the other forest blocks impacts predicted as a result of the loss of foraging and commuting habitat are **not significant**.

### *Birds*

#### *Habitat loss*

- 4.116 The bird species considered within this assessment do not generally display high levels of site-fidelity, often preferring specific successional stages of woodland. As a result, such species are typically well-adapted to the dynamic changes provided by rotational forestry operations. Given the extent of woodland habitats retained within the wider landscape, the impact of habitat loss as a result of the proposed felling is only considered significant at a site level for typical woodland birds such as woodcock and common crossbill. This impact will be **negative** and permanent and certain to occur. Therefore for woodland specialist birds habitat loss is predicted to be **significant at the Site level**. For all other bird species the predicted impacts associated with habitat loss is **not significant**.

#### *Disturbance and loss of life*

- 4.117 The removal of trees will result in disturbance and potentially loss of life impact for any bird species nesting in affected areas. This impact will be **negative**, and certain to occur if nesting birds are present at the time of felling. However the duration of this impact will be temporary and the frequency will be limited to one or more individual occasions. Therefore for birds disturbance and loss of life is predicted to be **significant at the Site level (prior to mitigation)**.

### *Reptiles*

- 4.118 The proposed felling operations have the potential to result in habitat loss, disturbance and loss of life for reptiles. This is a **negative**, though temporary impact where the frequency will be limited to one or more individual occasions. The extent and likelihood of this impact occurring will vary considerably across the different forest compartments. In those forest compartments that have high potential to support reptiles the likelihood of these impacts is probable, in other compartments it is unlikely or extremely unlikely. Taken as a whole the impact of habitat loss, disturbance and loss of life on reptiles are predicted to be **significant at the Site level (prior to mitigation)**.
- 4.119 Please note that the felling impacts outlined above would also occur under the 'Do-nothing' scenario as felling would still take place.

## **Predicted Impacts – Heathland Establishment**

### *Habitats*

- 4.120 The heathland restoration proposals will result in the establishment of over 194ha of heathland. Overall, heathland restoration will lead to an increase in the area of heathland habitat listed in Annex 1 of the Habitat directive, including European dry heaths, Northern Atlantic wet heaths with *Erica tetralix* and temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*. The key management objectives for this heathland will include the establishment of heather stands of varying ages providing good structural diversity. Areas of bare ground, scrub in various stages of development and scattered individual and groups of trees will also be important components of the proposed habitat mosaic.
- 4.121 Heathland establishment is a **positive** and permanent impact that is certain to occur. According to the descriptions in **Table 4.1** the geographical scale at which the proposed heathland restoration will be significant lies somewhere between Local and County Level. Taking into account the target communities for these proposals are Annex 1 habitats and in places they will provide habitat buffers and reduce the fragmentation of the existing heathland SACs, SPAs and Ramsar sites in the area, it is concluded that the heathland establishment will be **significant at a County level** for habitats.

### *Invertebrates*

- 4.122 The permanent removal of plantation woodland and its replacement with heathland habitats will increase the coverage of heathland within the area and join together existing heathland fragments. As the majority of the notable invertebrate species listed in the biological records are associated with heathland and open habitats it is predicted heathland establishment will have a **positive** and permanent impact of certain likelihood. The on-going active management of the heathland areas will include the regular creation of areas of bare sand patches, a habitat

requirement for various notable invertebrates, especially solitary wasps and bees. The impact of heathland establishment on invertebrates is predicted to be **significant at the Local level**.

#### *Badger*

- 4.123 Neither dense coniferous woodland or heathland provides high quality foraging habitat for badger. Therefore the impact of the establishment of heathland vegetation on badger is predicted to be **not significant**.

#### *Bats*

- 4.124 Heathland habitats do not provide roosting opportunities for bats. Heathland vegetation provides a broadly similar foraging resource compared with plantation woodlands however its value is more dependent on the habitat mosaic that surrounds the heathland. Heathland vegetation provides a negligible resource for commuting bats. Therefore the impact of heathland establishment on bats is predicted to be **not significant**.

#### *Birds*

- 4.125 The establishment of heathland vegetation, particularly the development of dwarf shrub heath with have a **positive** impact on many species of notable conservation importance such as nightjar, woodlark, Dartford warbler, linnets and yellowhammer. This impact will be permanent and of certain likelihood. The impact of heathland establishment on birds is predicted to be **significant at the Local level**.

#### *Reptiles*

- 4.126 Given the scale of the planned restoration, the expected increase in size and distribution of reptile populations would be notable. The restoration of heathland will have a **positive** impact on reptile populations. With appropriate heathland management this impact will be permanent and of certain likelihood. The impact of heathland establishment on reptiles is predicted to be **significant at the Local level**.

## Proposed Mitigation

- 4.127 Mitigation is only required where the impact assessment has recorded a significant negative impact.

#### **Badger**

- 4.128 The Forestry Commission (FC) guidance on forest operations and avoiding impacts on badger setts<sup>5</sup> sets out some basic principles for avoiding damage to setts and badgers. This includes:
- survey the site for setts and ask local groups/visitors for information.
  - design should incorporate setts within larger retained areas, where possible, to avoid risks of trees being blown down following the work and advertising the presence of the sett; if not possible then clear fell is preferable.
  - timing of work near a sett is best outside of the breeding season (Dec – Jun).
  - no heavy machinery should be used within 20m minimum of a sett.
  - felling within 20m must be done with utmost sensitivity.
- 4.129 The site specific badger surveys will be implemented as part of the normal Operational Site Assessment (OSA). See **Chapter 3: Description of Proposals** for more information on OSAs.

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<sup>5</sup> Forestry Commission. (1995). *Forest Practice Guidelines 9: Forest Operations and Badger Setts*. Forestry Practice Division.

## Bats

- 4.130 FC Bat European Protected Species (EPS) Guidance will be followed at all times during the felling operations. Operational Site Assessments will assess the likelihood that stands of trees support roosting bats. Where it is deemed necessary this will be followed by site surveys. Where these surveys identify roosts (including bat boxes) these will be retained within a buffer of trees, ideally linked to other wooded areas. Retaining commuting routes between known roosts and the wider landscape e.g. lines of trees, hedges, etc. is also important.
- 4.131 The best time to fell with regard to bats is October and November, before the bats become torpid and are unable to escape. Felling will be avoided between May and September, in areas where bats may be roosting, when females are in maternity roosts.
- 4.132 The phasing of felling operations will be spread between 2012 and 2026 reducing the impact of the removal of foraging and commuting habitat on bats and allowing them to adjust to the changing landscape.

## Birds

- 4.133 Operational Site Assessment prior to felling work will ensure that known nesting sites are not felled while in use and disturbance of Schedule 1 birds is avoided.
- 4.134 Measures will be taken to route visitor paths away from areas that are likely to hold populations of sensitive breeding birds post-restoration. Felled material can be used to discourage people and pets from wandering off paths into heathland areas.
- 4.135 A culture of keeping dogs under control will help prevent disturbance to ground-nesting birds. The FC currently encourages dogs to be kept under control, but resource limitations make this hard to enforce. Strategic management of access, for example providing dedicated areas that are dog-friendly will enable stricter controls to be enforced on sensitive heathland areas. Visitors will be advised of the problems of disturbance to ground nesting birds through education including positive signage and literature.

## Reptiles

- 4.136 The negative impacts of felling operations will be minimised by following the FC smooth snake and sand lizard EPS Guidance. The threat to important reptile sites relates both to the manner of tree clearance and the methods employed to remove the trees and in places treat cut stumps. However, these threats are likely to be localised and they will be minimised by:
- Scheduling clearance during the overwintering months.
  - Identifying and preserving known hibernacula and their surrounding vegetation.
  - Sensitively removing trees along edge habitats.
  - Choosing fire sites away from areas likely to be used by reptiles.
  - Creating open areas on slopes, banks and tumuli with southern and western aspects and ensure the features are not levelled and the residuals are carefully placed so as not to shade these areas.
  - Storing residuals away from sandy open tracks and areas of bare ground.
  - Careful consideration of any potential new access patterns to direct visitors away from known or artificially created hibernacula and open sandy patches. This should to minimise potential disturbance to recently emerged snake species and in situ sand lizard clutches.
  - Small pockets of vegetation will be left in areas where there are records of reptiles, to provide some shelter post emergence from their over wintering sites.

## Residual Impacts

4.137 The following section summarises the potential residual impacts of the heathland restoration proposals once the proposed mitigation measures have been implemented.

### Felling operations

- The removal of woodland habitats will have a **significant negative impact** on woodland birds at a **Site level**.
- The loss of foraging and commuting habitat will have a **significant negative impact** on bats at a **Site level within Purbeck and Affpuddle Forest blocks**.

4.138 Please note that these impacts would also occur under the 'Do-nothing' scenario as felling would still take place.

### Heathland establishment

- The proposed heathland restoration will have a **significant positive impact** on habitats at a **County level**.
- Heathland establishment will have **significant positive impact** on invertebrates at a **Local level**.
- Heathland establishment will have **significant positive impact** on birds at a **Local level**.
- Heathland establishment will have **significant positive impact** on reptiles at a **Local level**.

## Further Survey Requirements and Monitoring

4.139 No monitoring or further survey are required as part of this EIA. However the FC are supportive of research, survey and monitoring to determine the impacts of proposals of this kind. Opportunities will be sought with individuals and research organisations or through funded project opportunities to increase the FC understanding of the habitats and species affected.

## Summary of Impacts

4.140 **Table 4.3** below summarises the predicted impacts of the heathland restoration proposals on ecology.

**Table 4.3: Summary of Ecological Impacts**

Ecological feature	Predicted impact	Significance	Mitigation	Significance of residual impact
<b>Felling Operations</b>				
Badger	Habitat loss, physical disturbance and loss of life	Negative impact at a Site level	Follow standard Operational Site Assessment and Forestry Commission guidelines	None
Bats	Loss of foraging and commuting habitats	Negative impact at a Local level (Purbeck and Affpuddle)	Phase works to minimise impacts on bats. Retention of vegetation in buffer zones around known roosts	Negative impact at a Site level (Purbeck and Affpuddle)

Ecological feature	Predicted impact	Significance	Mitigation	Significance of residual impact
Birds (woodland specialists)	Habitat loss	Negative impact at a Site level	None possible	Negative impact at a Site level
Birds (all others)	Physical disturbance and loss of life	Negative impact at a Site level	Avoid felling operations during breeding bird season	None
Reptiles	Habitat loss, physical disturbance and loss of life	Negative impact at a Site level	Follow standard Operational Site Assessment and Forestry Commission guidelines	None
<b>Heathland Establishment</b>				
Invertebrates	Habitat creation	Positive impact at a Local level	None	Positive impact at a Local level
Habitats	Habitat creation	Positive impact at a County level	None	Positive impact at a County level
Birds	Habitat creation	Positive impact at a Local level	None	Positive impact at a Local level
Reptiles	Habitat creation	Positive impact at a Local level	None	Positive impact at a Local level

# **Chapter 5: Landscape and Visual Amenity**



## 5 Landscape and Visual Amenity

### Introduction

- 5.1 This chapter considers the potential impacts of the heathland restoration proposals on landscape and visual amenity. The landscape and visual impact assessment (LVIA) was undertaken by LUC. It details the potential impacts of restoring 194.7 hectares of heathland habitat within the seven forest blocks between 2012 and 2026.

### Impacts Assessed in Full

- 5.2 The following impacts have been assessed in full:
- Short and long term impacts on the landscape character caused by the removal of tree and scrub and the restoration of heathland.
  - Short and long term impacts on the visual amenity of potential viewers and viewing groups caused by the change in the appearance of the landscape as a result of the removal of tree and scrub and restoration of heathland.
  - The implications of these changes in relation to the special qualities of designated landscapes.
- 5.3 On the basis of the desk-based and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, **no topic areas have been 'scoped out' in this ES.**

### Consultation

- 5.4 As outlined in **Chapter 2**, consultation on the existing FDP proposals was carried out in July 2010 through the Forest Design Plan Forum, which comprised a range of statutory consultees, NGO's and other stakeholders. Issues raised by consulted parties that related specifically to the Landscape and Visual Impact Assessment (LVIA) are set out in **Table 5.1** below.

**Table 5.1: Consultee responses to FDP Scoping**

Consultee	Summary of Comment	LUC Response
General comments collated from FDP Forum 16/07/2010	<p><i>Landscape – In the AONB management plan there is text specifically referring to Rempstone*. So need to review this text and ensure that proposals complement what is written.</i></p> <p><i>Views, character and historic character needs to be included – not just views.</i></p> <p><i>Need to include users of Poole Harbour and inhabitants/visitors to the western edge of Poole as receptors in the EIA. They currently have a view that includes an attractive mix of woodland and heathland.</i></p> <p>With regard to Rempstone*:</p> <p><i>Concern at visual impact of tree loss from more distant views such as those from the other side of Poole Harbour. Would need to be compatible with surrounding landscape plans and strategies. Need to look at Purbeck landscape assessment. Landscape character of Rempstone* area needs to be maintained.</i></p>	<p>The assessment has considered both landscape character and views.</p> <p>Visual receptors from the western edge of Poole have been included.</p> <p>LUC has assessed impacts on landscape character and visual impact including from the other side of Poole Harbour.</p>

Consultee	Summary of Comment	LUC Response
<p>Joint RSPB and Natural England Responses to Forest Design Plan 30/09/10</p>	<p>The comments highlight some themes which are common to all forest blocks and should be considered - <i>There should be more emphasis on restoring landscape character including the context of ancient monuments, such as Woolsbarrow (where the present Hill fort is mostly surrounded by plantation) and a number of tumuli</i></p> <p>RSPB and NE are in favour of the existing plans for Rempstone*, and indicate that the proposal would have a positive effect on the landscape of the Dorset AONB. They also make a note about the historic landscape context of this area of Rempstone* Forest- which comprises <i>more intimate landscape of smaller fields and some small woods to the south contrasting with a wild and open landscape to the north at OWER and Fitzworth. Thus much of the land within the peninsulas of Ower and Fitzworth was heathland at the time forest was established; the boundary between the heath/forest and agricultural land to the north is a recent and artificial one.</i></p> <p>With regard to Affpuddle, comments on landscape character highlight that <i>the clearance of plantation from area along Oakers Wood is positive, revealing the original heath/woodland interface. A dominant feature of the block is the ridge spanning the entire north part; its original heathland character revealing the dramatic topography would be mostly obscured by plantation. Of the 12 tumuli (9 SAMs) along the ridge, the setting of 6 is essentially still within plantation in the draft FDP (draft existing FDP). Only those at the western end would be within their original heathland setting.</i></p>	<p>The setting of heritage assets is covered in Chapter 10: Historic Environment.</p> <p>LUC notes the positive response with regards to heathland restoration in these areas.</p>
<p>Purbeck District Council August 2010</p>	<p>These comments state that in landscape terms, the proposals for Rempstone* generally accord well with "Conserving Character - Landscape <i>Character Assessment and Management Guidance for the Dorset AONB</i>". The comments also highlight the overall objective of the character area in which the proposed site lies and the planning and management guidelines.</p> <p>The comments briefly highlight the management and development objectives covered in the Draft Landscape Character Assessment and Management Guidance for Purbeck, which relates to Wareham Forest. It notes that the key objectives within the document include promoting restoration of heathland in areas identified in the Strategic Nature Map. It also mentions the role of trees to screen urban and industrial uses, and states that further heathland restoration will assist with the implementation of the management objectives identified in the document.</p> <p>The comments mention the network of bridleways and tracks running through Rempstone* Forest, which provide a popular location for cycling and walking. It also notes that Rempstone* ride is enjoyed by a wide variety of users</p>	<p>LUC have referred to the Conserving Character - Landscape Character Assessment and Management Guidance for the Dorset AONB and Draft Landscape Character Assessment and Management Guidance for Purbeck.</p> <p>LUC have considered the possibility of tree loss opening up views to urban and industrial areas.</p> <p>LUC have considered these rights of way when assessing impacts on visual receptors.</p>

\* Purbeck Forest as named in the Forest Design Plan is known locally as Rempstone Forest. Any reference to 'Rempstone' Forest in this table is to be taken as meaning Purbeck Forest to be consistent with the rest of this LVIA chapter, the wider ES and the Purbeck Forest Design Plan.

## Assessment Methodology

### Data Sources and Guidance

- 5.5 The following guidance informed the landscape and visual impact assessment:
- Landscape Institute and the Institute of Environmental Management and Assessment (2002) *Guidelines for Landscape and Visual Impact Assessment, 2nd Edition*.
  - Landscape Institute and the Institute of Environmental Management and Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition*.
  - Former Countryside Agency/SNH (2004) *Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity*.
  - Forestry Commission (2009) *Undertaking an Environmental Impact Assessment in Forestry and preparing an Environmental Statement*.
- 5.6 The work to inform this report included examination of maps and aerial photographs (Ordnance Survey, Google Earth and Street View); analysis of published material; and field surveys of the proposed heathland restoration sites. The following documents were specifically used for this study:
- *National Character Area: NCA 135: Dorset Heaths Key Facts & Data*.
  - *Former Countryside Agency, 1999, Countryside Character Volume 8: South West*.
  - *The Dorset Landscape Character Assessment (2009)*.
  - *Conserving Character Landscape Character Assessment & Management Guidance for the Dorset AONB (2008)*.
  - *Purbeck District Council: Draft Landscape Character Assessment and Management Guidance (Areas outside the AONB) 2008-ongoing*.
  - *Dorset AONB Management Plan - A framework for the future (2009- 2014)*.
  - *Existing Forest Design Plans (2003/2005)*.
  - *Revised Forest Design Plans (2012)*.

### Study Area

- 5.7 The study area was identified through the desk and site field surveys. It extends as far as potentially significant impacts could occur in the surrounding landscape (up to 10km from each of the forest blocks).

### Field Survey

- 5.8 Site visits were undertaken on 28<sup>th</sup> June 2012 and 26<sup>th</sup> April 2013. The site survey enabled examination of the local landscape character and landscape features, as well as sensitive visual receptors throughout the landscape. Records during the field survey were made in the form of field notes and photographs. Reference photographs for the assessment were taken using a Nikon D7000 digital SLR camera and a Canon EOS 400D digital SLR camera.

### Approach

- 5.9 The methodology is divided into the two separate topic areas for the assessment – landscape character and visual amenity. This LVIA follows the recommendations as set out in the Guideline for Landscape and Visual Impact Assessment, 2<sup>nd</sup> & 3<sup>rd</sup> Edition (GLVIA2 & GLVIA3). LUC were commissioned to carry out this assessment before the publication of GLVIA3 and as such the methodologies and terminology used are based broadly on the principles as set out in GLVIA2. However, the application of GLVIA3 guidance would not alter the findings of this assessment.

### *Landscape baseline*

- 5.10 For the purposes of this assessment the landscape resource includes:

- landscape character – the distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape and creates the particular sense of place.
- landscape designations – areas designated for their landscape quality or value at the national, regional or local level, e.g. National Parks, AONBs, Heritage Coasts and locally designated landscapes.

### Visual baseline

- 5.11 The visual baseline includes a brief introduction to the visual character of the area, identification of key visual receptors and their projected views/visual amenity in relation to the condition of the forest block at the beginning of 2012 (the baseline), and accompanying photographs to illustrate the current character of views representative of these receptors.

## Assessment of Sensitivity, Magnitude and Significance

- 5.12 The assessment of landscape and visual impacts is typically based on three stages:
1. Classification of the sensitivity of the landscape and visual receptors to the development proposed.
  2. Prediction of the magnitude of change in the landscape or the view.
  3. Evaluation of the significance of landscape and visual effects depending on the sensitivity of the landscape or viewer to change and the magnitude of change.

### Sensitivity of landscape and visual receptors

- 5.13 The sensitivity of a landscape is judged based on the extent to which its key characteristics are vulnerable to the type of change being proposed. In this case the presence of heathland historically, and the desire to create more heathland as set out in the management objectives/guidelines indicate low sensitivity to heathland restoration.
- 5.14 Viewer sensitivity depends on the type of receptor and the occupation of viewer - for example residents are considered to have a higher sensitivity to their visual environment than say motorists passing at speed through the landscape.
- 5.15 Sensitivity is described as low, medium or high as defined in **Table 5.2**.

**Table 5.2: Definitions of receptor sensitivity**

Sensitivity	Receptor	Definition
<b>High</b>	Landscape	A landscape character area/type in which defining characteristics are susceptible to being changed by heathland restoration.
	Visual	Viewers whose attention or interest is focussed on the landscape such as occupiers of residential properties, local communities and visitors to popular recreational destinations within AONBs.
<b>Medium</b>	Landscape	A landscape character area/type in which some defining characteristics may be susceptible to being changed by heathland restoration.
	Visual	Viewers with a moderate interest in their environment such as walkers on local footpaths outside AONBs or motorists on local roads.
<b>Low</b>	Landscape	A landscape character area/type in which defining characteristics are less susceptible to being changed by heathland restoration.
	Visual	Viewers with a passing interest in their surroundings and whose interest is not specifically focussed on the landscape e.g. people at their place of work or travellers on main roads or mainline railways.

- 5.16 Landscape designations can be an indicator of the recognised value of a landscape. Nationally and locally designated landscapes have been identified using GIS mapping. The baseline description considers the special qualities of these areas as set out in management plans and/or development plans. In relation to registered historic parks and gardens, this assessment focuses on the impact of the heathland restoration proposals on views from these designated landscapes. **Chapter 10: Historic Environment** considers the impact on the historic interest of these designations, although no impacts are predicted.

### Magnitude of Change

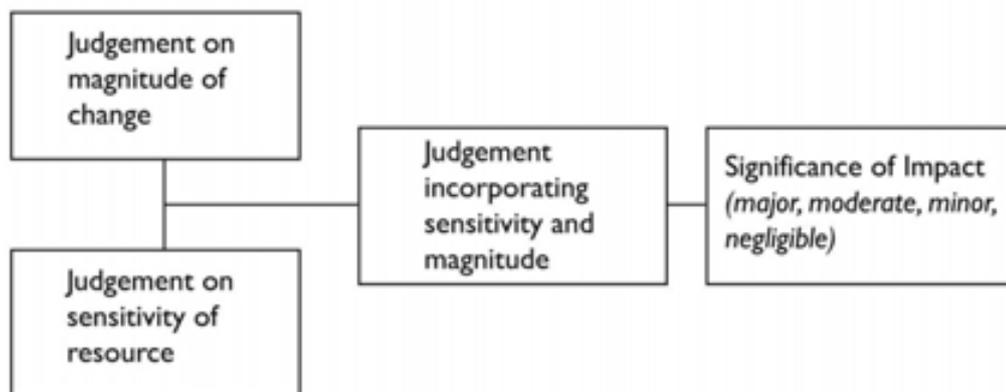
- 5.17 The magnitude of change affecting a landscape or visual receptor depends on the nature and scale of the particular change that is expected to occur. Magnitude of landscape change depends on the change in landscape characteristics and qualities caused by the proposed development. The change is assessed in terms of both positive and negative impacts. Magnitude of visual change considers the scale of the change in the view (relating to extent of change and angle of view).
- 5.18 Magnitude of change is described as being *low, medium or high* as defined in **Table 5.3** below.

**Table 5.3: Definitions of magnitude of change**

Magnitude	Receptor	Definition
<b>High</b>	Landscape Character	An obvious change in landscape characteristics and character.
	Visual	Large change in view, perhaps where the change is in close proximity in a direct line of vision, or affecting a substantial part of the view.
<b>Medium</b>	Landscape Character	Discernible changes to landscape characteristics and character.
	Visual	Clearly perceptible change in view, perhaps where the change is relatively close but at an oblique angle or further away in the direct line of vision. Change is likely to affect only part of the view.
<b>Low</b>	Landscape Character	Small changes to landscape characteristics and character.
	Visual	Small change in view, perhaps where the change is at a distance or oblique angle, and affects a small part of the view.
<b>Imperceptible</b>	Landscape Character	An imperceptible change to landscape characteristics and character.
	Visual	An imperceptible visual change.

### Significance of Effects

- 5.19 The level of significance of an impact depends on both the magnitude of change and the sensitivity of the resource or receptor. A higher level of significance is generally attached to higher magnitude changes affecting higher sensitivity resources or receptors. **Diagram 5.1** represents the process by which the significance of impacts will be determined:



**Diagram 5.1: Judging Significance of Impact**

5.20 **Table 5.4** illustrates the general relationship between the sensitivity of the receptor and the magnitude of change, although it should be noted that there is a gradual transition between categories and the two axes are not necessarily evenly weighted and therefore the final decision on significance is a professional judgement.

**Table 5.4: Identifying impact significance**

		Magnitude of Change			
		Imperceptible	Low	Medium	High
Sensitivity of Receptor	Low	Negligible	Minor	Minor / moderate	Moderate
	Medium	Negligible	Minor / moderate	Moderate	Moderate / major
	High	Negligible	Moderate	Moderate / major	Major

5.21 Impacts which are graded as being major are those which should be given, relatively speaking, greatest weight in decision making. They usually concern the immediate landscape around the site and close views from sensitive locations. Moderate levels of impact are also significant in EIA terms, but they are of progressively reducing importance. Impacts graded as minor or minor/moderate are those which the decision maker should be aware of, as they constitute noticeable changes in the landscape or views, but are unlikely to warrant as much weight in the decision making process.

5.22 The remainder of this chapter is structured as follows:

- Baseline conditions.
- Designed in mitigation.
- Impact assessment.
- Mitigation
- Residual Impacts

5.23 **Please note that in this chapter as Wareham and Gore Heath Forest blocks and Affpuddle and Moreton Forest blocks are adjacent to each other, they have been considered together.**

## Baseline Conditions

- 5.24 **Appendix 5.1** sets out the landscape and visual baseline for the seven forest blocks. For the purposes of this assessment, **the baseline conditions are taken to be the condition of the forest blocks at the beginning of 2012 (ie the beginning of the first felling period (2012-2016))**. It covers the forest blocks and their component elements, as well as the wider landscape character (as set out in published landscape character assessments) and special qualities (as set out in the statement of significance within the Dorset AONB Management Plan). It also describes the visual context and views into the forest blocks.

### Landscape Baseline

- 5.25 The landscape baseline for the study area is described in terms of:
- the forest blocks, their components and their condition;
  - landscape character of the forest blocks and their surrounds (with reference to the National Landscape Character Areas, the Dorset Landscape Character Assessment and the Dorset AONB Landscape Character Assessment);
  - how the forest blocks are experienced and any value attached to them, including landscape designations.
- 5.26 The landscape character context is shown on **Figures 5.1 – 5.2**, and landscape designations are shown on **Figure 5.3**.

### Key Visual Receptors

- 5.27 A summary is also provided in **Appendix 5.1** of the key visual receptors and their projected views/visual amenity according to the baseline. Representative photographs illustrating these views are provided in **Figures 5.4 and 5.5**. Key receptors include the public or community at large such as residents, workers, visitors and travellers through the landscape.

### The 'Do Nothing' Scenario

- 5.28 The 'do nothing' scenario is taken to be the predicted state of the environment as if there were no heathland restoration - ie the trees would be felled and restocked. The short term impacts relating to the felling of the woodlands would be as set out in the impact assessment below.

## Designed-in Mitigation

- 5.29 The landscape design within the Forest Design Plan encompasses the principles of forest landscape design set out in the Forest Service publications:
- *Forest Design Planning – A Guide to Good Practice* (1998).
  - *Forests and landscape – UK Forestry Standard Guidelines* (2011).
- 5.30 The development of the Purbeck FDP has considered the key aspects that are important in lowland forest design, where the internal landscape of the forest is of high importance to forest users. When the forest blocks were first established there was little structure and diversity but thinning and felling over the last twenty or so years has helped to start the process of restructuring the forest, making the landscape much more interesting from a visual point of view. This restructuring has continued through the latest FDP. Studies over the years have indicated that forest users have distinct preferences in terms of visual aspects, notably:
- Diversity of structure and composition.
  - Organic rather than geometric shapes in relation to clearfell and restock coupes.
  - Variety of tree size and species.
  - Views under the woodland canopy.
  - Ephemeral effects of colour, light and seasonal change.

- Still or flowing water enhancing the attractiveness of a wooded landscape.

5.31 The Forest design principles of shape, landform, scale, diversity, unity and spirit of place have all been considered within the design of each woodland block. Some key design aspects which have been incorporated into the FDP are as follows:

- Developing an intimate mosaic of trees and open habitat developed at a scale which suits the size and composition of the forest.
- Maintaining a framework of trees (sometimes by conversion to wooded heath) to frame the setting of the open heathland.
- Where possible the visual intrusion of structures (e.g. powerlines, masts, dereks, buildings) both within and outside the forest have been screened by tree retentions.
- Small groups of character trees or individual trees have been retained within areas of open habitat to enhance the visual interest (and protect raptor nesting areas or bat roosts).
- Maintaining Scheduled Ancient Monuments, particularly burial mounds, in an open setting to try and preserve their historic visual context.
- Opening up key viewpoints to allow the forest user to experience views either across the wider internal forest landscape or beyond the bounds of the forest.
- Linking the forest design with the adjacent landscape setting and softening the edges of the forest blocks to allow them to blend more effectively into the wider landscape.
- Enhancing topographic features through removal of trees.
- Using a combination of trees and topographic features to frame larger views within the forest.

### **Purbeck Forest**

5.32 Site specific designed-in mitigation for Purbeck Forest includes:

- The leasehold conifer coupes at the western and northern edges have to be retained as screening to the Wytch Farm site. Where possible the FDP has retained elements of woodland adjacent to the "hard screening" to give flexibility to try and soften and blend in the hard edges.
- Certain coupes along the northern edge have been retained to screen the dereks from Wytch Farm.
- Topographic features have been opened up both to add interest to setting of the open heathland while trees have been retained elsewhere to provide a frame to the larger areas of Heathland.
- Coupes are being clearfelled from the edges first to reconnect the landscape with the neighbouring Godlington Heath and to open up the views of the Purbeck Hills.
- Certain coupes are being removed to open up uninterrupted views across Poole Harbour.
- A screen of trees are being retained along the edge of Burnbake campsite and this will convert to mixed woodland over time.

### **Wareham Forest**

5.33 Site specific designed-in mitigation for Wareham Forest includes:

- Converting coupe to wooded heath to maintain the framework that the trees and topography provide to the setting of Moreton Bog.
- Peeling trees away from the edge of Moreton Bog to enhance the setting of the heathland and mire.
- Maintaining key sites such as Woolsbarrow Hill Fort in an open setting.
- Maintaining tree cover around the Sika trail at the request of our forest users. The trees within the recreation zone around the car park are to be managed to increase the diversity of species and age ranges along with ride edge enhancement.

- Opening up streamside corridors.
- Screen the pylons and towers where possible

### Gore Heath Forest

5.34 Site specific designed-in mitigation for Gore Heath Forest includes:

- Specifically retained the large, mature conifers around the Lawson Clump Car Park at the request of our forest users.
- Link the open habitats around the western, southern and eastern edges with the neighbouring heathland outside the forest boundary.

### Affpuddle Forest

5.35 Site specific designed-in mitigation for Affpuddle Forest includes:

- Tried to create large landscape linkages with the heathland to the east and west and the woodland to the north and south of the ridge.
- Maintaining the barrows in an open historic setting.
- The trees within the recreation zone around the car park are to be managed to increase the diversity of species and age range and to create areas of open space.

## Impact Assessment

5.36 This section sets out the assessment of impacts of the revised Forest Design Plan against the baseline as set out in **Appendix 5.1**.

### Predicted Impacts

#### *Sources of Impacts*

5.37 The key source of impact relating to the revised Forest Design Plan on landscape and visual amenity is the additional clearance of trees and scrub resulting in:

- Additional plant movements e.g. harvesters, forwarders, timber lorries etc. over short periods of time (in phases).
- Change in pattern of land cover and habitats across the site in the long term.

### Predicted Impacts on Purbeck Forest Block

5.38 There will be localised removal of coniferous plantation across the site and restoration of a further 120.1 hectares of heathland. Open habitat will make up over 60% of the total area of the forest block. The south west part of the forest will continue to be predominantly comprised of continuous coniferous woodland cover which will produce a permanent tree cover in this part of the site and retain an enclosed dense character. A smaller section in the north west will also be retained and managed as continuous coniferous cover, retaining an enclosed character. Elsewhere, the majority of the area will be permanently managed and maintained as open heathland.

5.39 Some patches of wooded heathland, which will comprise of heathland with up to 20% tree cover, will be developed in smaller pockets, particularly along the northern edge of the forest. Although this will contain isolated groups or individual trees, it will result in a greater openness in character compared to the conifer plantation cover proposed in the existing baseline. The development of mire habitats, particularly in the west, will also result in a more open character compared to the current baseline conditions. **Figure 3.1** shows the overview of the forest blocks and areas proposed for heathland restoration between 2012 and 2026, **Figures 3.2 and 3.3** illustrate the areas proposed for felling between 2012-2026 for the Purbeck Forest block.

*Predicted Impacts on Landscape Character of the Site and its Surrounds*

5.40 **Table 5.6** below summarises the predicted impacts on landscape character with reference to the Landscape Character Assessments (LCAs) and Landscape Character Types (LCTs) as described in **Appendix 5.1**.

**Table 5.6: Predicted Impacts on Landscape Character - Purbeck**

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance and Nature of Impact
<b>LCT/LCA in which the site is located</b>		
<i>Country Perspective</i>		
<p><i>Lowland Heathland LCT</i></p> <p><b>Low Sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the lowland heathland landscape character type. A mosaic of coniferous plantation and open heathland already forms part of the character of this landscape.</p> <p>The restoration falls in line with the overall management guidelines for the character type which aims to <i>conserve and enhance existing heathland habitats and restore important former heathland sites. Enhance the balance of other heathland mosaics through improved management of scrub. Protect important conifer plantations that mitigate intrusive developments and provide for strategic recreation.</i></p> <p>The landscape character will be positively affected by the restoration and strengthening of character, through the increase in area of open heathland and the maintenance of screening of unsightly built development, such as Wytch Farm oil field complex. This will open up views to the surrounding landscape, for example potential views to Poole Harbour in the north and the Purbeck Ridge in the south.</p> <p>Although there will be a greater proportion of open heathland to woodland, the overall mosaic of conifer plantation and open heathland will remain. The key characteristics of the landscape will be retained and strengthened (i.e. <i>An undulating lowland landform with a distinctive open, exposed and uniform character; A complex, diverse and often fragmented mosaic of heather carpets, grassland, birch/pine wood and scrub, which combine to create a blend of textures and colours; Wide, expansive and open views especially from elevated areas; Important European designated habitats and species</i>).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings.</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>
<i>Local Perspective</i>		
<p><i>Chalk Ridge/Escarpment LCT</i></p> <p><b>Low Sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the South Purbeck Heaths landscape character type.</p> <p>The restoration falls in line with the overall guidelines for the character area which aims to <i>conserve and enhance existing open heathland habitats and restore important former heathland sites. Enhance the balance of other heathland mosaics through improved management of scrub. Protect and enhance important woodlands that mitigate intrusive developments and provide for strategic recreation (P50).</i></p> <p>The landscape character will be strengthened through the increase in area of open heathland whilst maintaining screening of unsightly built development, such as Wytch Farm oil field complex. This will open up views to Poole Harbour in the north and the Purbeck Ridge in the south.</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance and Nature of Impact
<p><i>South Purbeck Heaths LCA (Lowland heathland LCT)</i></p> <p><b>Low sensitivity</b></p>	<p>Although there will be a greater proportion of open heathland to woodland, the overall mosaic of conifer plantation and open heathland will remain. The key characteristics of the landscape will be retained and strengthened (<i>i.e. Undulating and exposed heathland landscape with dense heather carpets, valley mires, gorse and isolated Scots pine; Occasional small birch and oak woodlands; Patches of rough acidic grassland and small rough enclosed pastures; Mosaics of patchy heathland and scrub with woody thickets; Reed beds and marshes grading towards Poole Harbour; Wide open views of colourful and textured heathlands with tranquil experience; Straight roads flanked by broadleaved woodlands and surrounding open heathlands; Occasional isolated linear and clustered settlements – P52</i>).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

#### LCA's/LCT's covering the wider surroundings

- 5.41 The revised heathland restoration at Purbeck Forest will not directly affect any other LCAs/LCTs. Although views from some of the surrounding LCAs/LCTs contribute to the character of these landscapes, the proposed heathland restoration will not significantly change the perceptual character of these areas (impacts of heathland restoration on views and visual amenity are considered below).

#### Implications for Designated Landscapes

- 5.42 Designated landscapes can be an indicator of the recognised value of a landscape. **Table 5.7** discusses the implications for designated landscapes.

**Table 5.7: Implications for Designated Landscapes - Purbeck**

Designation	Approx. distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>AONB</b>	Purbeck Forest located within AONB	A mosaic of coniferous plantation and open heathland already forms part of this landscape. The proposed restoration will not prejudice the special qualities (panoramic views, numerous individual landmarks, a sense of tranquillity and remoteness, dark night skies and an undeveloped rural character, exceptional undeveloped coastline, rich historic and built heritage and a legacy of cultural associations) or the integrity of this designated landscape, but instead have a positive impact on its character through the increase in area of open heathland, and generation of the open quality associated with heathland.
<b>Views from Registered Historic Parks and Gardens</b>		
<b>Grade II* Encombe</b>	Approx. 4.5km south west	No views – see Appendix 5.1.
<b>Grade II* Creech Grange</b>	Approx. 5.8km west	<p>There may be some views east towards Purbeck forest which contributes the mosaic of heathland and woodland of the landscape which surround Creech Grange park. The site slopes steeply from south to north and there are extensive northerly views across heathland north of the site from Grange Arch on the summit of Grange Hill, and from walks within Great Wood.</p> <p>A mosaic of coniferous plantation and open heathland already forms part of this landscape and views from this designated landscape. The change to views will be imperceptible.</p>
<b>Grade II Durlston Castle Historic Landscape</b>	Approx. 5.5km south east	No views – see Appendix 5.1.

Designation	Approx. distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>Grade II Poole Park</b>	Approx. 5.8km north.	The park is generally level with extensive views from the principal walks and drives and there are views south-west across Poole Harbour to the Purbeck Hills. The heathland restoration will be visible in some distant views from this park. A mosaic of coniferous plantation and open heathland already forms part of this landscape and views from this designated landscape. The change to views will be imperceptible.

### Predicted Visual Amenity Impacts

5.43 **Table 5.8**, below describes changes in views from sensitive receptors and the significance/nature of impact on these receptors.

**Table 5.8: Impacts on Views and Viewers - Purbeck**

Visual Receptor and Sensitivity	Change in View:	Significance & Nature of Impact
<i>Residents of isolated scattered farms and dwellings around the forest</i>  <i>High sensitivity</i>	Views from surrounding properties/dwellings will vary locally, depending on the location of properties to the forest, however the composition of these short distance views will remain a mix of heathland and woodland. As a band of coniferous plantation will remain along the south west of the forest, views focusing on this part of the forest will not change. Views from the north will be more open from some properties, where restoration of heathland and removal of trees will be visible from outside of the site. There will be some short term disruption to views, with increased plant movements e.g. harvesters, forwarders, timber lorries (in phases), which will cause some temporary low negative impacts on these views.  Scattered properties along the western stretch of the B3351 before reaching Studland will look across a greater expanse of open heathland and fewer areas of coniferous forest. There will be some short term disruption to views, with increased plant movements e.g. harvesters, forwarders, timber lorries (in phases), which will cause some short term low negative impacts on these views.  A mosaic of heathland and woodland will be retained and restoration of heathland will not open up any views to surrounding unsightly modern development. In general changes to views will be imperceptible, except for some properties to the north and along the western stretch of the B3351, who will experience short term low negative impacts and long term low positive impacts.	<b>Minor/moderate negative short-term impact</b> on some properties to the north and along the western stretch of the B3351  <b>Minor/moderate positive long-term impact</b> on some properties to the north and along the western stretch of the B3351  <b>Negligible long-term impact</b> on the remainder of viewers.
<i>Residents and visitors to villages in the surrounding area (Stoborough, Stoborough Green, Ridge and Studland).</i>  <i>High sensitivity</i>	Views from villages will remain largely restricted by undulating topography and vegetation which surrounds the forest. Views from Stoborough, Stoborough Green and Ridge are likely to remain unchanged. Views from these villages will remain largely screened the south west of Purbeck Forest will remain coniferous plantation, and views will continue to comprise of coniferous woodland edge.  From isolated properties along the edge of Studland, some residents will experience views of removal of woodland (including harvesters and timber lorries) in the short term and views of an increased proportion of heathland in the long term. Since views will still comprise a mosaic of heathland and woodland, any change in view will be low.  A mosaic of heathland and woodland will be retained in any views from villages and the removal of woodland and restoration of heathland will not open up views to surrounding unsightly modern development.	<b>Minor/moderate negative short-term impact</b> on some properties on the edge of Studland  <b>Minor/moderate positive long-term impact</b> on some properties on the edge of Studland  <b>Negligible long-term impact</b> on the remainder of viewers.

Visual Receptor and Sensitivity	Change in View:	Significance & Nature of Impact
<p><i>Residents and visitors to towns including Wareham and Poole.</i></p> <p><i>High sensitivity</i></p>	<p>Distant views from occasional properties on the edge of Wareham will continue to comprise of a mosaic of heathland and woodland from both within the site and the surrounding landscape, which will result in an imperceptible change.</p> <p>Although the removal of trees may be visible in the distance in views from the edge of Poole across Poole Harbour, at this distance any change will be imperceptible. In the long term the view will continue to comprise a mosaic of heathland and woodland and the view will remain largely unchanged. Brownsea Island restricts views to the eastern edge of the site where the most significant removal of trees will occur.</p> <p>The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	<p><b>Negligible long-term impact</b></p>
<p><i>Travellers on local roads between farms and villages, including the B3351 to the south, a number of country lanes, and Ferry Road to the east.</i></p> <p><i>Medium sensitivity</i></p>	<p>Views from country lanes to the south and west of the site will be largely unchanged. These views will remain largely restricted by tall roadside hedgerows, trees, wooded copses and undulating topography, and woodland along the south west of the site will remain.</p> <p>From the western part of the B3351, which is elevated above the site, travellers will experience views of removal of woodland (including harvesters and timber lorries) in the short term and views of an increased proportion of heathland in the long term. Since views are already long distance and panoramic from here, any magnitude of change in view will be low.</p> <p>From Ferry Road to the east of Purbeck Forest travellers will experience views of removal of woodland (including harvesters and timber lorries) in the short term and views of an increased proportion of heathland in the long term. Magnitude of change in views will be low.</p> <p>The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	<p><b>Negligible long-term impact</b> on viewers from local roads</p> <p><b>Minor negative short-term impact</b> on viewers from the eastern part of the B3351 and Ferry Road.</p> <p><b>Minor positive long-term impact</b> on viewers from the eastern part of the B3351 and Ferry Road.</p>
<p><i>Travellers on main roads through the surrounding landscape, specifically the A351</i></p> <p><i>Medium sensitivity</i></p>	<p>Views from main roads, including the A351, will remain largely screened by vegetation and topography (including the earth embankment which runs along part of this road). Although there are some potential glimpses to the western edge of Purbeck Forest, this edge will be retained as woodland, therefore, there will be no change in views.</p>	<p><b>Negligible long-term impact</b> on these viewers</p>
<p>Travellers on the Swanage Railway (a tourist railway line which runs from Wareham to Swanage)</p> <p><i>High sensitivity</i></p>	<p>Travellers will continue to experience some glimpsed views of the western coniferous edge of Purbeck Forest, along the stretch of railway to the north east of Corfe Castle. Screening from surrounding vegetation and topography limits these views. Further south these views will be completely screened by Purbeck Ridge. There will be no change to views.</p>	<p><b>Negligible long-term impact</b> on these viewers</p>
<p><i>Recreational users of local footpaths, cycle routes and bridleways through the forest</i></p> <p><i>High sensitivity</i></p>	<p>Recreational users of these public rights of way will experience close views of removal of woodland (including harvesters and timber lorries) in the short term and more open, expansive views across heathland and out to the surrounding landscape in the longer term. However, these changes will be seen in the context of an existing mix of heathland and woodland and forestry operations, which will result in a medium magnitude of change.</p> <p>The removal of woodland and restoration of heathland will not open up views to surrounding unsightly modern development.</p>	<p><b>Moderate/major negative short-term impact</b> as a result of restoration operations.</p> <p><b>Moderate/major positive long-term impact</b> on these viewers.</p>

Visual Receptor and Sensitivity	Change in View:	Significance & Nature of Impact
<p><i>Recreational users of footpaths, cycle routes and bridleways surrounding the site (including the Purbeck Way long distant footpath).</i> <i>High sensitivity</i></p>	<p>To the south east, east and north, recreational users of a number of footpaths in the area will experience close views of removal of woodland (including harvesters and timber lorries) in the short term and more open, expansive views across heathland in the longer term, through restoration of much of the eastern part of the site. However, these changes will be seen in the context of an existing mix of heathland and woodland and forestry operations, which will result in a medium magnitude of change.</p> <p>Recreational users of rights of way immediately south and west of the Forest also have close views of Purbeck Forest, but these are more restricted by scattered copses, hedgerows, topography and trees in the surrounding landscape and woodland will be largely retained along the south west edge = imperceptible change in these views.</p> <p>Although many views from the Purbeck Way are restricted by woodland, to the south west of Purbeck Forest the opening in woodland together with high elevation allows for panoramic views over the mosaic of heathland and woodland. Implementation of the heathland restoration proposals will result in views of removal of woodland (including harvesters and timber lorries) in the short term, but this will be seen in the context of a baseline that assumes existing harvesting operations. In the long term open heathland comprise a greater proportion of the view, although the view will still comprise a mix of heathland and woodland. At this distance the change to the view will be small, but perceptible.</p> <p>The removal of woodland and restoration of heathland will not open up views to surrounding unsightly modern development.</p>	<p><b>Moderate/major negative short-term impact</b> as a result of restoration operations on viewers to the south east, east and north.</p> <p><b>Moderate/major positive long-term impact on</b> viewers to the south east, east and north.</p> <p><b>Negligible impact</b> on viewers immediately south and west.</p> <p><b>Moderate negative short-term impact</b> as a result of restoration operations on viewers on parts of the Purbeck Way</p> <p><b>Moderate positive long-term impact</b> on viewers on parts of the Purbeck Way</p>
<p><i>Recreational users of Burnbake camp site immediately to south.</i> <i>High sensitivity</i></p>	<p>Recreational users of Burnbake camp site will be surrounded by woodland immediately adjacent to Purbeck Forest which encloses views, and woodland along this part of Purbeck Forest will be retained. There will be no change in views from recreational users of Burnbake camp site.</p>	<p><b>Negligible long-term impact</b> on these viewers</p>
<p><i>Visitors to Corfe Castle remains</i> <i>High sensitivity</i></p>	<p>There will be no change in views from Corfe Castle as woodland will be retained along the western edge of the forest.</p>	<p><b>Negligible long-term Impact</b> on these viewers</p>
<p><i>Recreational visitors to Bownsea Island.</i> <i>High sensitivity</i></p>	<p>Views from the southern edge of Brownsea Island will continue to be towards a mosaic of heathland and woodland. The removal of trees may just be visible in views in clear conditions but at this distance will go unnoticed in the view, and result in an imperceptible magnitude of change. In the long term the view will continue to be characterised by a mosaic of heathland and woodland, although there will be a lower coverage of coniferous plantation particularly in the east, and this will result in a low magnitude of change).</p> <p>The removal of woodland and restoration of heathland will not open up views to surrounding unsightly modern development.</p>	<p><b>Moderate long-term positive impact</b> on visitors to Brownsea Island</p>
<p><i>Travellers on ferries and catamarans across Poole Harbour</i> <i>Medium sensitivity</i></p>	<p>Views from the harbour will be similar to those reported for Brownsea Island, although some will be closer and therefore the magnitude of impact will be greater. Nevertheless, impact is likely to be no more than low and Brownsea Island will restrict views from parts of the harbour, between Hamworthy and Sandbanks.</p>	<p><b>Minor/moderate short-term negative impact</b> on travellers on boats across harbour as a result of felling operations.</p> <p><b>Minor/moderate positive long-term impact</b> on travellers on boats across the harbour.</p>

## Predicted Impacts on Wareham and Gore Heath Forest Blocks

- 5.44 There will be removal of coniferous plantation across the site and restoration of a further 25 hectares of heathland (22.8ha in Wareham and 2.1ha in Gore Heath). Open habitat will make up 35% of the total area of the forest block in Wareham and 13% in Gore Heath. Relatively small areas or parts of woodland blocks are being removed and restored as either open heathland or wooded heath (managed as heathland but containing up to 20% tree cover, whether in isolated groups or individual trees), which will result in a similar mosaic of woodland and heathland.
- 5.45 The restoration of areas as heathland will however result in an overall more open character. The most noticeable changes will occur along the south of Gore Heath where the removal of woodland and development of wooded heath and open heathland will result in a greater sense of openness. In addition, in the eastern part of Wareham Main block and along this eastern edge the removal of small areas of conifer and development of continuous open heathland and wooded heathland will create a large area of open space. Elsewhere, a similar mosaic of heathland and coniferous plantation will prevail, with only slight changes occurring. **Figures 3.4 – 3.6** show the areas proposed for felling between 2012-2026 for the Wareham and Gore Heath forest blocks.

### *Predicted Impacts on Landscape Character of the Site and its Surrounds*

- 5.46 **Table 5.10** below summarises the predicted impacts on landscape character.

**Table 5.10: Predicted Impacts on Landscape Character – Wareham and Gore Heath**

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance & Nature of Impact
<b>LCT/LCA in which the site is located</b>		
<i>Country Perspective</i>		
<p><i>Heath/Forest Mosaic</i></p> <p><i>LCT</i></p> <p><b>Low Sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the Heath/Forest Mosaic landscape character type. A mosaic of coniferous plantation and open heathland already forms part of the character of this landscape.</p> <p>The restoration falls in line with the overall management guidelines for the character type which aims "to improve and enhance the hard geometric edges to conifer plantations, continue to vary landscape and forestry operations to create diversity and multi functional mosaic landscapes and enhance the ecological value of heathland. Key features that need to be conserved and enhanced include skyline trees and trees which help to soften urban development, the designated sites of nature conservation and cultural heritage interest and the heathland areas to reduce fragmentation".</p> <p>The proposals will restore and strengthen character through the increase in area of open heathland.</p> <p>Overall the area will remain a mosaic of conifer plantation and open heathland. The key characteristics of the landscape will be retained (i.e. <i>An extensive and expansive landscape with an unspoilt feel over a large proportion; A mosaic of heath, forest and scrub on impoverished sandy soils; Extensive stands of conifer plantation on former heathland sites; Varied landform but generally on elevated areas subdivided by a series of river valley; Forms a 'buffer' between the chalk landscapes, river valleys and other heathland landscape types; Straight roads lined by woodland/forest/grass/scrub mosaic; Significant impacts created by urban development such as industrial, military use, quarrying, housing and transport corridor; Important open vistas from key viewpoints; Area popular for informal recreation activities as well as for nature conservation</i>).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings.</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance & Nature of Impact
Local Perspective		
<p>North Wareham Heath/Forest LCA (Lowland Heath/Forest Mosaic LCT)</p> <p><b>Low sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the North Wareham Heath/Forest landscape character area. A mosaic of coniferous plantation and open heathland already forms part of the character of this landscape.</p> <p>The restoration falls in line with the relevant guidelines for the character area which include; <i>"Promote restoration of heathland in areas identified through Strategic Nature Maps; Improve/enhance hard/geometric edges to conifer plantations; Continue to enhance forestry operations to add diversity; Continue to promote and manage recreational use of the forest/heathland areas; Retain/enhance conifer blocks as landscape features and for screening value in selected locations; Manage urban fringe edges to minimise impacts"</i> (P37).</p> <p>The proposals will restore and strengthen character through the increase in area of open heathland.</p> <p>The area will remain a mosaic of conifer plantation and open heathland, and the key characteristics of the landscape will be retained (i.e. <i>"An undulating, open and expansive heathland landscape; Unspoilt across much of the area with patchwork of heath, forestry, scrub and farmland; Conifer plantations create hard edges but act as screening and landscape features; Recreational use and conservation management a key feature across the area; Urban/industrial impacts along the south east parts of the area; Straight and fast roads often lined with plantation wood/forest; Morden Bog is a distinctive and open landscape feature; Woolsbarrow Fort and Woodbury Hill (both scheduled ancient monuments) are key local landmarks; The area around Keyworth Farm forms a locally distinctive parkland landscape"</i> – P35).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

#### LCA's/LCT's covering the wider surroundings

- 5.47 The revised heathland restoration at Wareham Forest and Gore Heath Forest will not directly affect any other LCAs/LCTs. Although views from some of the surrounding LCAs/LCTS contribute to the character of these landscapes, the proposed heathland restoration will not significantly change the perceptual character of these areas (impacts of heathland restoration on views and visual amenity are considered below).

#### Implications for Designated Landscapes

- 5.48 Designated landscapes can be an indicator of the recognised value of a landscape. **Table 5.11** discusses the implications for designated landscapes.

**Table 5.11: Implications for Designated Landscapes – Wareham and Gore Heath**

Designation	Approx. distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>Dorset Area of Outstanding Natural Beauty</b>	Wareham Forest and Gore Heath Forest located under 1km from AONB to the north west	<p>The restoration of heathland will not detract from the distinctive attributes and special qualities of the AONB which are described in the management plan, which include panoramic views, numerous individual landmarks, a sense of tranquillity and remoteness, dark night skies and an undeveloped rural character, exceptional undeveloped coastline, rich historic and built heritage and a legacy of cultural associations.</p> <p>The revised restoration will not prejudice the values or the integrity of this designated landscape.</p>

Designation	Approx. distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>Registered Historic Parks and Gardens</b>		
<b>Grade II* Charborough Park</b>	Approx. 4.5km to north	No views – see Appendix 5.1
<b>Grade II Anderson Manor</b>	Approx. 4.5km north west	No views – see Appendix 5.1
<b>Grade II* Creech Grange</b>	Approx. 8km to the south east	The site slopes steeply from south to north and there are extensive northerly views across heathland north of the site from Grange Arch on the summit of Grange Hill, and from walks within Great Wood. There will be some views from parts of the park, where gaps in vegetation and elevated perspective allows for views towards Wareham and Gore Heath Forest. However, a mosaic of coniferous plantation and open heathland already forms part of views from this designated landscape, and the heathland restoration will form a small part of the views in the context of surrounding heathland and woodland. The change to views will be imperceptible.

### Predicted Visual Amenity Impacts

5.49 **Table 5.12** below describes changes in views from sensitive receptors and the significance/nature of impact on these receptors.

**Table 5.12: Impacts on Views and Viewers – Wareham and Gore Heath**

Visual Receptor and Sensitivity	Change in View:	Significance & Nature of Impact
<i>Residents of scattered farms and dwellings around the forest</i> <i>High sensitivity.</i>	<p>There will be no change to the majority of views from surrounding properties/dwelling, which will remain limited, often partly or completely screened by vegetation and or topography in the surrounding landscape.</p> <p>One or two properties on the south west corner which is located close to a small area of intended heathland (previously wooded heath). This will mean some short term low negative impacts from the removal of wooded heath (including harvesters and timber lorries) and an increase in open heathland in the long term.</p> <p>A mosaic of heathland and woodland will be retained and restoration of heathland will not open up any views to surrounding unsightly modern development. In general change in magnitude to views will be imperceptible, with some small changes to individual properties to the south west.</p>	<p><b>Minor/moderate negative short-term impact</b> on individual properties to the south west</p> <p><b>Minor/moderate positive long-term impact</b> on individual properties to the south west</p> <p><b>Negligible Long Term impact</b> on the remainder of viewers</p>
<i>Residents and visitors to villages in the surrounding area</i> <i>High sensitivity</i>	The will be no change to views from surrounding villages. Intervening vegetation and localised changes in topography mean that views from surrounding villages are restricted.	<b>Negligible long term impact</b> on these viewers
<i>Residents and visitors to surrounding towns</i> <i>High sensitivity</i>	<p>There will continue to be limited views from residents and visitors to surrounding towns towards Wareham and Gore Heath Forest. Distant glimpses of the site from some elevated parts of Wareham to the south of the A351, and occasional properties the edge of Lychett Matravers continue to comprise of a mosaic of heathland and woodland.</p> <p>There may be more open views from the edge of Sandford from isolated properties towards the southern part of Gore Heath which will be opened up through the removal of woodland. However, these views are only glimpses to the site and from occasional properties and therefore there the change will be imperceptible.</p>	<b>Negligible long term impact</b> on these viewers

Visual Receptor and Sensitivity	Change in View:	Significance & Nature of Impact
	<p>A mosaic of heathland and woodland will be retained in any views. The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	
<p><i>Travellers on local roads surrounding the site.</i> <i>Medium sensitivity</i></p>	<p>There will be little change to views from travellers on local roads surrounding the site. Wareham Forest and Gore Heath Forest will continue to be viewed largely as edges and glimpses into the forest from the network of roads that run through it or adjacent to the forest boundaries. Many of these roads are lined by roadside hedgerows and trees and thus views will be limited.</p> <p>From the B3075 which runs between Wareham Main Block and Gore Heath travellers will experience views of the removal of woodland (including harvesters and timber lorries) in the short term and views of an increased proportion of heathland in the long term. Change in views will be small. As much of the road will continue to be lined with roadside vegetation which will limit views, however these changes will occur to views to the south of Gore Heath, which will be restored as open heath, as well as parts of the eastern edge of Wareham Forest, which will be changed from small areas of coniferous woodland to heathland. Overall views along this road will remain typically short distance and terminated by woodland within Gore Heath and Wareham Forest or roadside vegetation.</p> <p>From the Wareham to Bere Regis road which bisects Wareham Main Block north west to south east, travellers will experience some views of the removal of small areas of woodland (including harvesters and timber lorries) in the short term and views of an increased proportion of heathland in the long term. However this change will be small and short distance, direct views into the edges of Wareham Forest which continue to comprise of woodland and/or heathland.</p> <p>There will be no change to views of the site from smaller country lanes to the west, south west and east or from Puddletown Road to the south and Rye Hill to the west.</p> <p>The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	<p><b>Minor negative short-term impact</b> on viewers from the parts of the B3075 and the Wareham to Bere Regis Road</p> <p><b>Minor positive long-term impact</b> on viewers from the parts of the B3075 and the Wareham to Bere Regis Road</p> <p><b>Negligible long term impact</b> on the remainder of viewers</p>
<p><i>Travellers on main roads through the surrounding landscape.</i> <i>Low sensitivity</i></p>	<p>Views to Wareham Forest and Gore Heath Forest will remain be viewed largely as edges and glimpses into the forest from main roads surrounding the site, such as the A35. Views from traveller along this road will be largely restricted by roadside vegetation, which lines much of this stretch. Very occasional glimpses of the forest will continue to be achieved from the A351 to the east and south east of the site, through gaps in vegetation and settlement, but these will be occasional and short lived, and will be seen in the context of surrounding vegetation to the site. There will be no change to views</p>	<p><b>Negligible long term impact</b> on these viewers</p>
<p><i>Recreational users of local footpaths, cycle routes and bridleways through the forest.</i> <i>High sensitivity</i></p>	<p>Recreational users of some parts of public rights of way will experience close views of removal of woodland (including harvesters and timber lorries) in the short term and more open, expansive views across heathland in the longer term. However, these changes will be limited to a few areas, such as from part of the Wareham Forest Way, westwards near to Woolbarrow Hill Fort, from the Sika Trial will looking east, and in the south of Gore Heath. These changes will be seen in the context of an existing mix of heathland and woodland and forestry operations, and result in a medium magnitude of change.</p>	<p><b>Moderate/major negative short-term impact</b> as a result of restoration operations, to viewers along some parts of these rights of way.</p> <p><b>Moderate/major positive long-term impact</b> to viewers along some parts of these rights of way.</p>

Visual Receptor and Sensitivity	Change in View:	Significance & Nature of Impact
	The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.	<b>Negligible long term impact</b> on the remainder of viewers
<i>Recreational users of footpaths, cycle routes and bridleways and surrounding the site</i> <i>High sensitivity</i>	Recreational users of public rights of way surrounding the site will continue to experience a range of views, with areas of open heathland allowing for open distant views to Wareham Forest and Gore Heath Forest, and area of woodland and intervening vegetation limiting these views; no change to views. Overall a mosaic of heathland and woodland will be retained in views, and the removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.	<b>Negligible long term impact</b> on these viewers
<i>Visitors to Woolbarrow Iron Hill Fort, which allows for elevated views across the forest.</i> <i>High sensitivity</i>	Visitors to Woolbarrow Iron Hill Fort will experience elevated views which look immediately across open heathland and then over the tops of coniferous woodland. Restoration of greater areas of open heathland to the south east will result in close views of removal of woodland (including harvesters and timber lorries) in the short term and more open, expansive views across heathland in the long term. Overall views will continue to look over immediate open heathland and then over the tops of coniferous plantation, which will result in a low magnitude of change.	<b>Moderate negative short term impact</b> on the viewers as a result of restoration operations <b>Moderate positive long-term impact</b> on these viewers
<i>Visitors to the well-used Lawson Clump car park and Sika Trial Car park.</i> <i>Medium sensitivity</i>	The immediate surroundings of Lawson cark will not change from wooded heath, however restoration of heathland beyond this will open up views slightly. However views will remain largely unchanged and therefore there will be an imperceptible magnitude of change  There will be no change to views from the Sika Trail car park.	<b>Negligible long term impact</b> on these viewers

## Predicted Impacts on Hethfelton Forest Block

- 5.50 It is proposed that there will be the removal of 4.2ha of coniferous plantation between 2012-2026 within Helfelton as shown on **Figure 3.7**. When restored, heathland will make up 15% of the total area of the forest block. Dense woodland cover will remain to the north, east and south of the forest block and this part of the forest will retain an enclosed dense character. A relatively small area in the west will be transformed from conifer to heathland, which will have a moderate impact on perceptual characteristics of the forest as this area will link into the existing area of heathland which divides the forest into northern and southern sections. Here, a sense of openness and exposure will prevail, and long uninterrupted views will be achieved within the site.

### *Predicted Impacts on Landscape Character of the Site and its Surrounds*

- 5.51 **Table 5.18** below summarises the predicted impacts on landscape character.

**Table 5.18: Predicted Impacts on Landscape Character - Hethfelton**

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance & Nature of Impact
<b>LCT/LCA in which the site is located</b>		
<i>Country Perspective</i>		
<p><i>Heath/Forest Mosaic</i></p> <p><i>LCT</i></p> <p><b>Low Sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the Heath/Forest Mosaic landscape character type. A mosaic of coniferous plantation and open heathland already forms part of the character of this landscape.</p> <p>The restoration falls in line with the overall management guidelines for the character type which aims <i>"to improve and enhance the hard geometric edges to conifer plantations, continue to vary landscape and forestry operations to create diversity and multi functional mosaic landscapes and enhance the ecological value of heathland. Key features that need to be conserved and enhanced include skyline trees and trees which help to soften urban development, the designated sites of nature conservation and cultural heritage interest and the heathland areas to reduce fragmentation"</i>.</p> <p>The landscape character will be positively affected by the restoration and strengthening of character, through the increase in area of open heathland.</p> <p>Although there will be an increase in proportion of open heathland to woodland, the overall mosaic of conifer plantation and open heathland will remain. The key characteristics of the landscape will be retained and strengthened (i.e. <i>An extensive and expansive landscape with an unspoilt feel over a large proportion; A mosaic of heath, forest and scrub on impoverished sandy soils; Extensive stands of conifer plantation on former heathland sites; Varied landform but generally on elevated areas subdivided by a series of river valley; Forms a 'buffer' between the chalk landscapes, river valleys and other heathland landscape types; Straight roads lined by woodland/forest/grass/scrub mosaic; Significant impacts created by urban development such as industrial, military use, quarrying, housing and transport corridor; Important open vistas from key viewpoints; Area popular for informal recreation activities as well as for nature conservation</i>).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings.</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance & Nature of Impact
Local Perspective		
<p><i>Bovington/ Affpuddle Heath/Forest LCA (Lowland Heath/Forest Mosaic)</i></p> <p><b>Low sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the Bovington/ Affpuddle Heath/Forest landscape character area.</p> <p>The restoration falls in line with the relevant guidelines for the character area which include; <i>"Promote restoration of heathland in areas identified through Strategic Nature Maps; Continued variation in forestry and landscape operations to create diversity and improve public edges; Increase opportunities for access and recreation; Retain skyline trees; Improve/enhance hard/geometric edges to conifer plantations"</i> (P32-33).</p> <p>The landscape character will be strengthened through the increase in area of open heathland. This will potentially create more open views within and out of the heathland to the surrounding landscape.</p> <p>Although there will be a greater proportion of open heathland to woodland, the overall mosaic of conifer plantation open heathland will remain. The key characteristics of the landscape will be retained and strengthened (<i>i.e. "The patchwork of heath, scrub, plantation and farmland; Large scale blocks of conifer plantation create hard edges but act as screening and landscape features in place; Open expansive heathland with wide views; Open views from elevated positions across the area; Recreational use and conservation management a key feature across the area; There are localised industrial/urban and military use impacts in the area; Straight and fast roads often lined with plantation wood/forest; Bounded by the Piddle and Frome valleys; Acts as a buffer between the two valleys particularly at its eastern end; The wooded ridgeline to the north is a key feature"</i> – P31).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

*LCA's/LCT's covering the wider surroundings*

- 5.52 The revised heathland restoration at Hethfelton Forest will not directly affect any other LCAs/LCTs. Although views from some of the surrounding LCAs/LCTs contribute to the character of these landscapes, the proposed heathland restoration will not significantly change the perceptual character of these areas (impacts of heathland restoration on views and visual amenity are considered below).

*Implications for Designated Landscapes*

- 5.53 Designated landscapes can be an indicator of the recognised value of a landscape. **Table 5.19** discusses the implications for designated landscapes.

**Table 5.19: Implications for Designated Landscapes - Hethfelton**

Designation	Approx. distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>Dorset Area of Outstanding Natural Beauty</b>	Hethfelton Forest is located approximately 0.4km from AONB at its closest point in the south	The restoration of heathland will not detract from the distinctive attributes and special qualities of the AONB which are described in the management plan, which include panoramic views, numerous individual landmarks, a sense of tranquillity and remoteness, dark night skies and an undeveloped rural character, exceptional undeveloped coastline, rich historic and built heritage and a legacy of cultural associations. The revised restoration will not prejudice the values or the integrity of this designated landscape.

Designation	Approx. distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>Registered Historic Parks and Gardens</b>		
<b>Grade II Lulworth Castle located 4.2km to the south</b>	Approx. 4.2km km to the north west	The site rises slightly from east to west with possible distant views north and east gained from the eastern extent of the Estate adjacent to B3071. It may be possible to gain distance and partial views from this designated landscape towards the Hethfelton Forests. Views from this distance will not be effected by the restoration of coniferous plantation to heathland.

### Predicted Visual Amenity Impacts

5.54 **Table 5.20**, below describes changes in views from sensitive receptors and the significance/nature of impact on these receptors.

**Table 5.20: Impacts on Views and Viewers - Hethfelton**

Visual Receptor and sensitivity	Change in View:	Significance & Nature of Impact
<i>Residents of scattered farms and dwellings around the forest</i> <i>High sensitivity</i>	Views from surrounding scattered properties/ dwellings will continue to be limited by the sloping landform and surrounding vegetation, with occasional views achieved from scattered dwellings from the south east to the edges of woodland. Pastoral farmland and woodland will be retained in views. This will result in an imperceptible magnitude of change to views.	<b>Negligible long-term impact</b> on these viewers
<i>Residents of villages in the surrounding area</i> <i>High sensitivity</i>	There will be no change to views from surrounding villages. Intervening vegetation and localised changes in topography mean that there will continue to be limited views from surrounding villages. Views to woodland edge from isolated properties on the edge of Stokeford, Winfrith Newburgh, East Burton and East Stoke will continue to look towards the edge of coniferous woodland. Mixed farmland and deciduous tree cover will be retained in views. This will result in an imperceptible magnitude of change to views.	<b>Negligible long-term impact</b> on these viewers
<i>Residents of towns surrounding the area</i> <i>High sensitivity</i>	There will continue to be limited views from surrounding towns due to intervening vegetation and landform. Although removal of some coniferous forest may be visible from the edge of Bovington Barracks, the change will be imperceptible to views, as only occasional properties will have a view towards the forest, from this distance any change will be imperceptible. Pastoral farmland, deciduous tree cover and coniferous woodland will be retained in views.	<b>Negligible long-term impact</b> on these viewers
<i>Travellers on local roads between farms and villages</i> <i>Medium sensitivity</i>	Due to significant vegetative screening and hedgerow field boundaries to roads around the forests, Hethfelton Forest will continue to be viewed largely as edges from the network of local roads that run around and adjacent to the forest boundaries. Views from the minor road to the west of the site will continue to be of pastoral farmland, deciduous vegetation and Monkey World Ape Rescue Centre. There will be an imperceptible change in views from this location. Views from minor roads to the east and north will be unchanged. The mineral workings site, pastoral farmland and mixed deciduous/coniferous woodland will remain.	<b>Negligible long term impact</b> on these viewers
<i>Travellers on main roads through the surrounding landscape</i> <i>Low sensitivity</i>	Views from the A352, B3071 and B3070 will remain unchanged due to intervening vegetation from this location. Views of the forest edge, pastoral farmland and deciduous woodland will be retained from the A352.	<b>Negligible long term impact</b> on these viewers

Visual Receptor and sensitivity	Change in View:	Significance & Nature of Impact
<p><i>Recreational users of local footpaths, cycle routes and bridleways through the forest including forestry tracks</i>  <i>High sensitivity</i></p>	<p>There are no public rights of way in Hethfelton Forest. Recreational users of the forestry track will experience close views of removal of woodland (including harvesters and timber lorries) in the short term and more open, expansive views across heathland in the central part of the site. There will be a medium magnitude of change to these views.</p> <p>Views within the northern, eastern and southern stretch of the forest will remain unchanged, with views contained largely within remaining woodland, which will result in an imperceptible magnitude of change.</p> <p>A mosaic of heathland and woodland will be retained in views from the forestry tracks, with a greater proportion of open heathland comprising views in the middle of the site. The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	<p><b>Moderate/Major negative short term impact</b> on viewers in the middle of the site as a result of restoration operations</p> <p><b>Moderate/Major positive long term impacts</b> on viewers in the middle of the site</p> <p><b>Negligible long term impact</b> on viewers in the middle of the site</p>
<p><i>Recreational users of footpaths, cycle routes and bridleways and surrounding the site</i>  <i>High sensitivity</i></p>	<p>Recreational users of public rights of way surrounding the site will experience no change in views as surrounding vegetation, landform and development screens views into the site. Longer distance views, such as from the south west or the elevated perspectives along the Purbeck Ridge to the south will continue to see the tops of woodland which remains in the south of the forest and surrounding woodland and therefore any change will be imperceptible. Farmland, deciduous woodland, heathland and conifer plantations will be retained in views from public rights of way. The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	<p><b>Negligible long term impact</b> on these viewers</p>

## Predicted Impacts on Affpuddle and Moreton Forest Blocks

- 5.55 There will be removal of coniferous plantation across the site and restoration of a further 41ha of heathland. Taking account of existing open habitats, the restoration of heathland within Affpuddle Forest will mean that 43% of the total area of the forest block will be open habitat and 22% of Moreton Forest block. Along the north of the forest dense woodland cover will remain and this part of the forest will retain an enclosed dense character. A relatively significant area in the north west of Affpuddle Forest will be transformed from conifer to heathland, which will have a medium impact on perceptual characteristics of the forest. With the removal of forest in this area, views will be opened up looking south over the River Frome valley.
- 5.56 The forest extends further south on the eastern side, and in this area there will be a more significant change in character, with the majority of woodland removed and transformed into open heathland. Here, a sense of openness and exposure will prevail, and long uninterrupted views will be achieved within the site. **Figures 3.8 - 3.10** illustrate the areas proposed for felling between 2012-2026 for the Affpuddle and Moreton forest blocks.

### *Predicted Impacts on Landscape Character of the Site and its Surrounds*

- 5.57 **Table 5.14** below summarises the predicted impacts on landscape character.

**Table 5.14: Predicted Impacts on Landscape Character – Affpuddle and Moreton**

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance & Nature of Impact
<b>LCT/LCA in which the site is located</b>		
<i>Country Perspective</i>		
<p><i>Heath/Forest Mosaic</i></p> <p><i>LCT</i></p> <p><b>Low Sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the Heath/Forest Mosaic landscape character type. A mosaic of coniferous plantation and open heathland already forms part of the character of this landscape.</p> <p>The restoration falls in line with the overall management guidelines for the character type which aims <i>"to improve and enhance the hard geometric edges to conifer plantations, continue to vary landscape and forestry operations to create diversity and multi functional mosaic landscapes and enhance the ecological value of heathland. Key features that need to be conserved and enhanced include skyline trees and trees which help to soften urban development, the designated sites of nature conservation and cultural heritage interest and the heathland areas to reduce fragmentation"</i>.</p> <p>The landscape character will be positively affected by the restoration and strengthening of character, through the increase in area of open heathland.</p> <p>Although there will be a greater proportion of open heathland to woodland, the overall mosaic of conifer plantation and open heathland will remain. The key characteristics of the landscape will be retained and strengthened (i.e. <i>An extensive and expansive landscape with an unspoilt feel over a large proportion; A mosaic of heath, forest and scrub on impoverished sandy soils; Extensive stands of conifer plantation on former heathland sites; Varied landform but generally on elevated areas subdivided by a series of river valley; Forms a 'buffer' between the chalk landscapes, river valleys and other heathland landscape types; Straight roads lined by woodland/forest/grass/scrub mosaic; Significant impacts created by urban development such as industrial, military use, quarrying, housing and transport corridor; Important open vistas from key viewpoints; Area popular for informal recreation activities as well as for nature conservation</i>).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings.</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance & Nature of Impact
Local Perspective		
<p><i>Bovington/Affpuddle Heath/Forest LCA (Lowland Heath/Forest Mosaic)</i></p> <p><b>Low sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the Bovington/Affpuddle Heath/Forest landscape character area.</p> <p>The restoration falls in line with the relevant guidelines for the character area which include; <i>"Promote restoration of heathland in areas identified through Strategic Nature Maps; Continued variation in forestry and landscape operations to create diversity and improve public edges; Increase opportunities for access and recreation; Retain skyline trees; Improve/enhance hard/geometric edges to conifer plantations"</i> (P32-33).</p> <p>The landscape character will be strengthened through the increase in area of open heathland. This will potentially create more open views within and out of the heathland to the surrounding landscape.</p> <p>Although there will be a greater proportion of open heathland to woodland, the overall mosaic of conifer plantation open heathland will remain. The key characteristics of the landscape will be retained and strengthened (i.e. <i>"The patchwork of heath, scrub, plantation and farmland; Large scale blocks of conifer plantation create hard edges but act as screening and landscape features in place; Open expansive heathland with wide views; Open views from elevated positions across the area; Recreational use and conservation management a key feature across the area; There are localised industrial/urban and military use impacts in the area; Straight and fast roads often lined with plantation wood/forest; Bounded by the Piddle and Frome valleys; Acts as a buffer between the two valleys particularly at its eastern end; The wooded ridgeline to the north is a key feature"</i> – P31).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

*LCA's/LCT's covering the wider surroundings*

- 5.58 The revised heathland restoration at Affpuddle Forest will not directly affect any other LCAs/LCTs. Although views from some of the surrounding LCAs/LCTS contribute to the character of these landscapes, the heathland restoration will not significantly change the perceptual character of these areas (impacts of heathland restoration on views and visual amenity are considered below).

*Implications for Designated Landscapes*

- 5.59 Designated landscapes can be an indicator of the recognised value of a landscape. **Table 5.15** discusses the implications for designated landscapes.

**Table 5.15: Implications for Designated Landscapes – Affpuddle and Moreton**

Designation	Approx. distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>Dorset Area of Outstanding Natural Beauty</b>	Affpuddle Forest and Moreton Forest are located approximately 3.6km from AONB at its closest point in the south	<p>The restoration of heathland will not detract from the distinctive attributes and special qualities of the AONB which are described in the management plan, which include panoramic views, numerous individual landmarks, a sense of tranquillity and remoteness, dark night skies and an undeveloped rural character, exceptional undeveloped coastline, rich historic and built heritage and a legacy of cultural associations.</p> <p>The revised restoration will not prejudice the values or the integrity of this designated landscape.</p>

Designation	Approx. distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>Registered Historic Parks and Gardens</b>		
<b>Grade I Athelhampton located 2.3 to the north west</b>	Approx. 2.4km km to the north west	The south the site is separated by a mixture of walls, fences, and hedges. The site is generally level, with views northwards across water meadows and agricultural land. To the south, beyond the former A35 road, the ground rises towards High Wood, Cowpound Wood, and Henroost Wood. This therefore restricts views towards Affpuddle Forest and there will be change to views.

### Predicted Visual Amenity Impacts

5.60 **Table 5.16**, below describes changes in views from sensitive receptors and the significance/nature of impact on these receptors.

**Table 5.16: Impacts on Views and Viewers – Affpuddle and Moreton**

Visual Receptor and sensitivity	Change in View:	Significance & Nature of Impact
<i>Residents of scattered farms and dwellings around the forest</i> <i>High sensitivity</i>	Views from surrounding scattered properties/ dwellings will continue to be limited by topography and surrounding vegetation, with occasional views achieved from scattered dwellings from the south west of Affpuddle and west of Moreton to the edges of woodland. A mosaic of farmland, heathland and woodland will be retained in views, and the restoration at Moreton will not open up any views to surrounding unsightly modern development. This will result in an imperceptible magnitude of change to views.	<b>Negligible long-term impact</b> on these viewers
<i>Residents of villages in the surrounding area</i> <i>High sensitivity</i>	There will be no change to views from surrounding villages. Intervening vegetation and localised changes in topography mean that there will continue to be limited views from surrounding villages. Views to woodland edge from isolated properties on the edge of East Burton to the south, and from properties within Tolpuddle to the north will continue to look towards the edge of coniferous woodland. A mosaic of heathland and woodland will be retained in views. The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development. This will result in an imperceptible magnitude of change to views.	<b>Negligible long-term impact</b> on these viewers
<i>Residents of towns surrounding the area</i> <i>High sensitivity</i>	There will continue to be limited views from surrounding towns. Although removal of some coniferous forest will be visible from the edge of Crossways and Moreton, the change will be imperceptible to views, as only occasional properties will have a view towards the forest, and at this distance any change will be slight.  A mosaic of heathland and woodland will be retained in views. The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.	<b>Negligible long-term impact</b> on these viewers
<i>Travellers on local roads between farms and villages</i> <i>Medium sensitivity</i>	Due to significant vegetative screening around the forests, Affpuddle Forest and Moreton Forest will continue to be viewed largely as edges from the network of local roads that run through it or adjacent to the forest boundaries.  Views from the B3390 Affpuddle to Warmwell road which separates Affpuddle Heath from Bryants Puddle Heath, and along the minor road which runs along the northern boundary will be unchanged and imperceptible. Views will continue to be short, over heathland and woodland, with occasional longer views through gaps in the woodland.  Views from minor roads to the east and south will be changed as a result of the removal of woodland from the	<b>Moderate negative short-term impact</b> on viewers from minor roads to the east and south as a result of restoration operations  <b>Moderate positive long-term impacts</b> on viewers from minor roads to the east and south

Visual Receptor and sensitivity	Change in View:	Significance & Nature of Impact
	<p>southern part of Affpuddle Forest. This will result in the restoration of this part of the forest as open heathland and allow for more open, longer distance views across the forest. Travellers will experience views of removal of woodland (including harvesters and timber lorries) in the short term and views of an increased proportion of heathland in the long term. This will result in a medium magnitude of change to views.</p> <p>A mosaic of heathland and woodland will be retained in views from local roads to the north and west, and a greater proportion of open heathland will form views from the east and south. The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	<p><b>Negligible long term impact</b> on remaining viewers</p>
<p><i>Travellers on main roads through the surrounding landscape</i> <i>Low sensitivity</i></p>	<p>Although the removal of trees may occur in views, from main roads, including the A352 and A35, the remaining woodland in the north, and extensive surrounding woodland, together with the distance will result in an imperceptible magnitude of change to views.</p> <p>A mosaic of heathland and woodland will be retained in views. The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	<p><b>Negligible long term impact</b> on these viewers</p>
<p><i>Recreational users of local footpaths, cycle routes and bridleways through the forest</i> <i>High sensitivity</i></p>	<p>Recreational users of public rights of way in the western and also in the eastern and southern part of Affpuddle Forest will experience close views of removal of woodland (including harvesters and timber lorries) in the short term and more open, expansive views across heathland (for example from part of the Jubilee Trial). There will be a medium magnitude of change to these views.</p> <p>Views within the northern stretch of Affpuddle and Moreton Forest will remain largely unchanged, with views contained largely within remaining woodland, which will result in an imperceptible magnitude of change.</p> <p>A mosaic of heathland and woodland will be retained in views from public rights of way, with a greater proportion of open heathland comprising views in the south. The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	<p><b>Moderate/Major negative short term impact</b> on viewers in the south of the site as a result of restoration operations</p> <p><b>Moderate/Major positive long term impacts</b> on viewers in the south of the site</p> <p><b>Negligible long term impact</b> on viewers in the north of the site</p>
<p><i>Recreational users of footpaths, cycle routes and bridleways and surrounding the site</i> <i>High sensitivity</i></p>	<p>Recreational users of public rights of way surrounding the site will experience little change in views as surrounding vegetation limits views into the site. Longer distance views, such as from the south west or the elevated perspectives along the Purbeck Ridge to the south will continue to see the tops of woodland which remains in the north of the forest and surrounding woodland and therefore any change will be imperceptible. A mosaic of heathland and woodland will be retained in views from public rights of way. The removal of woodland and restoration of heathland will not open up any views to surrounding unsightly modern development.</p>	<p><b>Negligible long term impact</b> on these viewers</p>
<p><i>Visitors to the well-used Cull-peppers Dish and Briantspuddle Car Parks on the northern boundary.</i> <i>Medium sensitivity</i></p>	<p>There will be imperceptible changes to views from visitors of these two well used car parks, which will remain largely enclosed by surrounding woodland, with occasional glimpses through the woodland to open heathland will be possible.</p>	<p><b>Negligible long term Impact</b> on these viewers</p>

## Predicted Impacts on Puddletown Forest Block

- 5.61 There will be removal of coniferous plantation across the site and restoration of 4.1ha of heathland. Heathland will make up 15% of the total area of the forest block. Along the north, east and south of the forest dense woodland cover will remain and this part of the forest will retain an enclosed dense character. A relatively small area in the north west will be transformed from conifer woodland to heathland, which will have a small impact on perceptual characteristics of the forest.
- 5.62 The area to be restored to heathland will connect into areas of adjacent existing heathland. This may potentially open up views out of the forest from elevated positions to the south east, and long uninterrupted views will be achieved within the site. The forest extends further south on the eastern side, and in this area the forest will be retained. **Figure 3.11** shows the areas proposed for felling between 2012-2026 for Puddletown Forest.

### *Predicted Impacts on Landscape Character of the Site and its Surrounds*

- 5.63 **Table 5.22** below summarises the predicted impacts on landscape character.

**Table 5.22: Predicted Impacts on Landscape Character- Puddletown**

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance & Nature of Impact
<b>LCT/LCA in which the site is located</b>		
<i>County Perspective</i>		
<p><i>Heath/Forest Mosaic</i></p> <p><i>LCT</i></p> <p><b>Low Sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the Heath/Forest Mosaic landscape character type. A mosaic of coniferous plantation and open heathland already forms part of the character of this landscape.</p> <p>The restoration falls in line with the overall management guidelines for the character type which aims "to improve and enhance the hard geometric edges to conifer plantations, continue to vary landscape and forestry operations to create diversity and multi functional mosaic landscapes and enhance the ecological value of heathland. Key features that need to be conserved and enhanced include skyline trees and trees which help to soften urban development, the designated sites of nature conservation and cultural heritage interest and the heathland areas to reduce fragmentation".</p> <p>The landscape character will be positively affected by the restoration and strengthening of character, through the increase in area of open heathland.</p> <p>Although there will be a greater proportion of open heathland to woodland, the overall mosaic of conifer plantation and open heathland will remain. The key characteristics of the landscape will be retained and strengthened (i.e. <i>An extensive and expansive landscape with an unspoilt feel over a large proportion; A mosaic of heath, forest and scrub on impoverished sandy soils; Extensive stands of conifer plantation on former heathland sites; Varied landform but generally on elevated areas subdivided by a series of river valleys; Forms a 'buffer' between the chalk landscapes, river valleys and other heathland landscape types; Straight roads lined by woodland/forest/grass/scrub mosaic; Significant impacts created by urban development such as industrial, military use, quarrying, housing and transport corridor; Important open vistas from key viewpoints; Area popular for informal recreation activities as well as for nature conservation</i>).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings.</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

LCT/LCA Name & Sensitivity	Magnitude of Change	Significance & Nature of Impact
Local Perspective		
<p><i>Puddletown Forest and Clyffe House LCA (Lowland Heath/Forest Mosaic)</i></p> <p><b>Low sensitivity</b></p>	<p>There will be direct removal of trees and restoration of heathland within the Puddletown Forest and Clyffe House landscape character area.</p> <p>The restoration falls in line with the relevant guidelines for the character area which include; <i>“straight edges of tree blocks and coniferous plantations appear unnatural the landform and some heathland is poorly maintained and does not link with surrounding heath habitats”</i> (P73).</p> <p>The landscape character will be strengthened through the increase in area of open heathland and reconnecting fragment areas of heathland. This will potentially reduce the appearance of straight edges creating a more natural appearance.</p> <p>Although there will be a greater proportion of coniferous woodland to heathland, the overall mosaic of conifer plantation open heathland will remain. The key characteristics of the landscape will be retained and strengthened (<i>i.e.</i> <i>“Extensive tree cover at Puddletown Forest and Southover Heath dominates the area consisting of varied irregular shaped blocks of coniferous and mixed deciduous woodland and patches of lowland heath at Duddle Heath and Bhompston Heath will remain”</i> – P72 -73).</p> <p>There will be a <b>low</b> magnitude of change to the character of the landscape of the site and its immediate surroundings</p>	<p>The significance of impact on landscape character is predicted to be <b>Minor</b>.</p> <p>The nature of the impact will be <b>direct, positive and long-term</b>.</p>

#### LCA's/LCT's covering the wider surroundings

- 5.64 The revised heathland restoration at Puddletown Forest will not directly affect any other LCAs/LCTs. Although views from some of the surrounding LCAs/LCTS contribute to the character of these landscapes, the proposed heathland restoration will not significantly change the perceptual character of these areas (impacts of heathland restoration on views and visual amenity are considered below).

#### Implications for Designated Landscapes

- 5.65 Designated landscapes can be an indicator of the recognised value of a landscape. **Table 5.23** discusses the implications for designated landscapes.

**Table 5.23: Implications for Designated Landscapes - Puddletown**

Designation	Approximate distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>Dorset Area of Outstanding Natural Beauty</b>	Puddletown Forest located approximately 3.3km from AONB at its closest point in the south	The restoration of heathland will not detract from the distinctive attributes and special qualities of the AONB which are described in the management plan, which include panoramic views, numerous individual landmarks, a sense of tranquillity and remoteness, dark night skies and an undeveloped rural character, exceptional undeveloped coastline, rich historic and built heritage and a legacy of cultural associations.  The revised restoration will not prejudice the values or the integrity of this designated landscape.
<b>Registered Historic Parks and Gardens</b>		
<b>Grade II* Kingston Maurward</b>	Approx. 900m to the west	An early 18 century park and pleasure grounds. The site slopes to the south and the banks of the River Frome. The varied topography and localised changes in landform prevent views from the southern part of the grounds to Puddletown Forest. Partial views may be gained from the northern extent of the ground where elevated ground provides views over vegetation towards the edge of Puddletown Forest. Changes in views from the grounds of Kingston Maurward will be imperceptible due to intervening vegetation.

Designation	Approximate distance to proposed heathland restoration	Discussion of implications for Designated Landscapes
<b>Grade I Athelhampton located 2.3 to the north west</b>	Approx. 3.9km to the north east	The south the site is separated by a mixture of walls, fences, and hedges. The site is generally level, with views northwards across water meadows and agricultural land. To the south, beyond the former A35 road, the ground rises towards High Wood, Cowpound Wood, and Henroost Wood. This therefore restricts views towards Puddletown Forest and there will be change to views.
<b>Grade II Waterston Manor</b>	Approx. 2.3km to the north	Late 20 century garden, in a simplified form of earlier gardens is situated adjacent to the River Puddle. There are no views from the garden to Puddletown Forest due to localised intervening landform and vegetation. As the topography rises to the south between Waterston Manor and Puddletown Forest, therefore there will be no change in views as a result of the heathland restoration.

### Predicted Visual Amenity Impacts

5.66 **Table 5.24**, below describes changes in views from sensitive receptors and the significance/nature of impact on these receptors.

**Table 5.24 Impacts on Views and Viewers - Puddletown**

Visual Receptor and sensitivity	Change in View:	Significance & Nature of Impact
<i>Residents of scattered farms and dwellings around the forest</i> <i>High sensitivity</i>	Views from surrounding scattered properties/ dwellings will continue to be restricted by topography and surrounding vegetation, with occasional views achieved from scattered dwellings from the east, south and west to the edges of woodland. Pastoral farmland, deciduous woodland and coniferous plantation will be retained in views.	<b>Negligible long-term impact</b> on these viewers
<i>Residents of villages in the surrounding area</i> <i>High sensitivity</i>	There will be no change or minor changes to views from surrounding villages. Intervening vegetation and localised changes in topography mean that there will continue to be limited views from surrounding villages. Views to woodland edge from isolated properties on the edges of Stiensford, West Stafford, Lower Bockhampton, Tolpuddle, Athelhampton, Bockhampton and Higher Bockhampton. Pastoral farmland and mixed woodland will be retained in views. This will result in an imperceptible magnitude of change to views.	<b>Negligible long-term impact</b> on these viewers
<i>Residents of towns surrounding the area</i> <i>High sensitivity</i>	There will continue to be restricted and glimpsed views from surrounding towns. These change will be imperceptible to views, as only occasional properties will have a view towards the forest, and at this distance any change will be slight. Mixed farmland, hedgerows, field boundary trees, heathland and mixed woodland will be retained in views.	<b>Negligible long-term impact</b> on these viewers
<i>Travellers on local roads between farms and villages</i> <i>Medium sensitivity</i>	Due to significant vegetative screening around the forest, Puddletown Forest will continue to be viewed largely as edges from the network of local roads that run through it or adjacent to the forest boundaries. Views from minor roads to the south and west of the forest will be unchanged. Views will continue to be short, over pastoral farmland and woodland, with occasional longer views through gaps in the woodland.	<b>Negligible long term impact</b> on remaining viewers
<i>Travellers on main roads through the surrounding landscape</i> <i>Low sensitivity</i>	From the A35, B3143 and the A352 views of Puddletown will remain unchanged. Pastoral farmland and mixed woodland will be retained in views.	<b>Negligible long term impact</b> on these viewers

Visual Receptor and sensitivity	Change in View:	Significance & Nature of Impact
<p><i>Recreational users of local footpaths, cycle routes and bridleways through the forest</i></p> <p><i>High sensitivity</i></p>	<p>Recreational users of public rights of way in the north western part of the site will experience close views of tree removal (including harvesters and timber lorries) in the short term and more open, expansive views across heathland. External views to the east and south east will be temporary opened up from footpaths in elevated locations, until neighbouring forest blocks are restocked. There will be a medium magnitude of change to these views.</p> <p>Views within the northern stretch of the forest will remain unchanged, with views contained largely within remaining woodland, which will result in an imperceptible magnitude of change.</p> <p>A mosaic of heathland and woodland will be retained in views from public rights of way, with a greater proportion of open heathland comprising views in the west.</p>	<p><b>Moderate/Major negative short term impact</b> on viewers in the south of the site as a result of restoration operations</p> <p><b>Moderate/Major positive long term impacts</b> on viewers in the south of the site</p> <p><b>Negligible long term impact</b> on viewers in the north of the site</p>
<p><i>Recreational users of footpaths, cycle routes and bridleways and surrounding the site</i></p> <p><i>High sensitivity</i></p>	<p>Recreational users of public rights of way surrounding the site will experience little change in views as surrounding vegetation limits views into the site. Longer distance views, such as from the other side of the Frome valley to the south will continue to see the tops of woodland which remains in the north of the forest and surrounding woodland and therefore any change will be imperceptible. Pastoral farmland and mixed woodland will be retained in views from public rights of way.</p>	<p><b>Negligible long term impact</b> on these viewers</p>
<p><i>Visitors to the Thorncombe Wood well used Car Park to the west of the site.</i></p> <p><i>Medium sensitivity</i></p>	<p>There will be no change to view from visitors of this well used car park, which will remain enclosed by surrounding deciduous woodland.</p>	<p><b>Negligible long term Impact</b> on these viewers</p>

## Proposed Mitigation

- 5.67 No further mitigation measures are proposed for landscape and visual impacts.

## Residual Impacts

- 5.68 As no further mitigation has been proposed, residual impacts will remain the as those predicted for each of the forest blocks above.

## Further survey requirements and Monitoring

- 5.69 This assessment has not identified the need to undertake any further landscape and visual assessment.

## Summary of Impacts

- 5.70 The revised heathland restoration at Purbeck Forest, Wareham Forest, Gore Heath Forest, Affpuddle Forest, Moreton Forest, Hethfelton Forest and Puddletown Forest will have an **overall direct, positive and long term impact** on the character of the landscapes in which they lie. There will be direct removal of trees and restoration of heathland within these landscapes, all of which are already made up of a mosaic of coniferous plantation and open heathland, resulting in a strengthening of character. Unsightly built development will continue to be screened.

- 5.71 Purbeck Forest is located within the Dorset AONB, and Wareham Forest is located 750m, Gore Heath Forest 1.4km, Affpuddle Forest 4.3km, Moreton Forest 4km, Hethfelton Forest 400m and Puddletown Forest 3.4km of the designated boundary, respectively. The restoration of heathland will not detract from the distinctive attributes and special qualities which are described in the management plan. The restoration of Purbeck Forest will instead have a positive impact on its character through the increase in area of open heathland and generation of the open quality associated with heathland.
- 5.72 In relation to the **Purbeck Forest** block, the Purbeck Ridge limits distant views from the south, while there are some distant views achievable from the edge of Poole, to the North. The following are significant impacts on visual receptors (note that for the purposes of the EIA, moderate or major impacts are deemed to be significant):
- **Moderate/major negative short-term impact and moderate/major positive long-term impact** on recreational users of public rights of way through the forest; and recreational users of public rights of ways surrounding the site to the south, east and north.
  - **Moderate negative short-term impact and moderate positive long-term impact** on parts of the Purbeck Way.
  - **Moderate positive long-term impact** on visitors to Brownsea Island.
- 5.73 **Wareham Forest and Gore Heath Forest blocks** are viewed largely as coniferous woodland edges, although there are some glimpses into the forest from the network of roads that run through it or close to the forest boundaries. More distant views are achieved from the south, however views from public receptors are often partly or wholly screened. The list summarises significant impacts on visual receptors:
- **Moderate/major negative short-term impact and moderate/major positive long-term impact** on viewers along some parts of public rights of way through the site;
  - **Moderate negative short term impact and moderate positive long-term impact** on visitors to Woolbarrow Iron Hill.
- 5.74 **Affpuddle Forest and Moreton Forest blocks** are viewed largely as coniferous woodland edges from the network of roads that run through it or close to the forest boundaries. There are occasional distant views to and from the Purbeck Hills in the south. The following list summarises significant impacts on visual receptors:
- **Moderate negative short-term impact and moderate positive long-term impacts** on travellers along minor roads to the east and south.
  - **Moderate/major negative short term impact and moderate/major positive long term impacts** on recreational users of public rights of way through the site.
- 5.75 **Hethfelton Forest block** is viewed largely as coniferous woodland edges. Partial and glimpsed views from Wool and East Stoke from the south can be gained for the woodland. No public rights of way exist within the forest although the forest tracks are used informally by local walkers, dog walkers and horse riders.
- **Moderate/major negative short term impact and moderate/major positive long term impacts** on recreational users of forest tracks the forest.
- 5.76 **Puddletown Forest block**, is viewed on top of a broad ridge, mainly as coniferous woodland edge from the network of minor road and settlements around the forest. There are occasional distant views from Stiensford, West Stafford, Lower Bockhampton, Tolpuddle, Althelhampton, Bockhampton and Higher Bockhampton and form elevated position on the opposite side of the Frome valley.
- **Moderate/major negative short term impact and moderate/major positive long term impacts** on recreational users of public rights of way through the forest.
- 5.77 The proposals have been designed to maximise positive impacts on landscape and views and minimise negative impacts (for example retaining screening of Wytch Farm oil field complex). No further mitigation measures are proposed and therefore the residual impacts are as outlined above. Please note that the short term negative impacts relating to the felling of the woodland would also occur under the 'Do-nothing' scenario as felling would still take place.

# **Chapter 6: Land Use and Socio-Economics**



## 6 Land Use and Socio-economics

### Introduction

- 6.1 This chapter considers the potential impacts of the heathland restoration proposals on land use and on the socio-economic functions that the forestry blocks provide. The assessment has been undertaken by LUC.

#### Impacts Assessed in Full

- 6.2 The following impacts have been assessed in full.
- Change to woodland and heathland cover and land use significance at a local, county and national level.
  - The impact on timber production and related economic effects.
  - The impacts of additional livestock grazing on the agricultural sector and on additional income to Forest Enterprise.
  - The potential impacts of the proposals on the risk of forestry diseases.
  - Changing patterns of recreational use and any indirect impacts associated with recreational use on heathland habitats.
  - The impact of the proposals on the risk of wildfire.

#### Impacts Scoped Out

- 6.3 On the basis of the desk based and survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, the following topic area has been 'scoped out' and is therefore not considered in detail in this ES:
- Detailed assessment of the financial and other silvicultural impacts arising from a change from a rotational clearfell-and-restock regime to a continuous cover or natural regeneration regime.
- 6.4 This has been excluded from the assessment because this EIA is only looking at the impact of the heathland restoration proposals and not other elements of the Purbeck FDP such as restocking etc.

#### Consultation

- 6.5 As outlined in **Chapter 2**, consultation on the proposed FDP was carried out in July 2010 through the Forest Design Plan Forum, which comprised a range of statutory consultees, NGO's and other stakeholders. Issues raised by consulted parties that related specifically to land use and socio-economic considerations are set out in **Table 6.1** below.

**Table 6.1: Summary of issues raised by consultees**

Consultee	Summary of Comment	LUC response
Scoping of EIA – General comments	Former Rights of Way Officer – observed that with substantial heathland restoration there is the potential for the whole land area to be designated as Open Access under CRoW. Andrew Nicholson confirmed that CRoW would be likely to be reviewed in 1 to 2 years and new areas designated, but that there is no fixed % woodland cover/open habitat that triggers designation (can be variable). So possible implications for the Estates where FC are the tenant (Purbeck, Wareham etc.).	No announcement has been made about a review of access land under the CRoW Act and as such the EIA is not able to assess the potential impact of unknown Government policy changes.

Consultee	Summary of Comment	LUC response
Scoping of EIA – Land use	Rate of change of felling and heathland restoration– this may be important in the EIA as it will potentially mitigate effects of impacts (by spreading out over time).	The assessment considers the timing of felling and heathland restoration.
	Increased antisocial behaviour – suggested increase in fires and motorbikes. Others in groups disputed this issue.	The assessment considers this issue.
	Recreation may increase (and therefore disturbance issues) as the area becomes better publicised / promoted through tourism etc.	The assessment considers this issue.
	Deer management – changing landscape and therefore use by deer needs to be considered. Cross-boundary management implications need to be included.	No evidence was found that heathland restoration will increase the deer population, so this issue is not covered in the assessment.
	Fire – increased fuel load of heathland, with associated increased risk to remaining trees. Trees should be retained in such a way as to serve as fire breaks on site.	The assessment considers this issue.
	The restoration of heathland compromises the future land management options for this site – several people made comments that would fall within this general description. (Costs of managing, implications for development close by, recreational use & disturbance, future need for trees and woods etc.).	The assessment considers this issue.
	Loss of timber production – in addition to loss of sustainable product also implications for FC income stream.	The assessment considers this issue.
Scoping of EIA – Socio-economic	Changes in employment and the production of saleable products from this area of land.	The assessment considers this issue.

## Assessment Methodology

### Data Sources and Guidance

- 6.6 The assessment has used three principle sources of evidence to address the topics covered in this Chapter.
- Forest Enterprise’s two Forest Design Plans (covering the original Forest Design Plan dated 2003-2005 and the revised Forest Design Plan dated 2013) provided GIS data on the area of woodland that is planned to be restored to heathland and the associated Production Forecasts provided data on the timber crop that will be felled from these areas.
  - Forest Enterprise staff provided information on the current and planned uses of the sites. These staff were Tim Dicker, Harvesting Manager, Simon Smith, District Recreation Manager and Mark Warn, Wareham Beat Forester.
  - Reports from independent research that shed light on the likely impacts of the proposed heathland restoration were reviewed. These reports are referenced in endnotes at the appropriate places in the text.

### Field Survey

- 6.7 A site visit to Purbeck Forest and Wareham Main Block took place on 4 May 2012 in the company of Jane Smith and Mark Warn from the Forestry Commission.

## Assessing Significance

- 6.8 There are no guidelines or established criteria for assessing the significance of land use and socio-economic impacts. For the purpose of this assessment, professional judgement has therefore been used to assess the significance of the impacts with reference to the county and local context as appropriate. Major and moderate impacts are considered significant in accordance with the EIA Regulations.

## Existing Situation

- 6.9 This section describes the current situation in relation to the following topics:
- Woodland and heathland cover at a local, county and national level.
  - Timber production in the forest blocks.
  - Silvicultural diseases present in the forest blocks.
  - Livestock grazing in the locality and the income generated from livestock grazing
  - Recreational use in the forestry blocks and adjacent areas.
  - The risk of fire.
- 6.10 The section concludes by describing the 'do-nothing' or 'default' situation that would occur if the proposed heathland restoration does not take place.
- 6.11 Please note that in this chapter, the areas (in hectares) of proposed heathland restoration have been rounded up or down to one decimal place accordingly (i.e. 195ha not 194.7ha).

### Woodland and heathland cover at a local, county and national level

- 6.12 The forest blocks lie within the Dorset Heaths National Character Area (NCA), which defines the local context to the EIA. Woodland is a significant feature of the NCA, accounting for 23% of the total area. Nearly half of this woodland cover consists of extensive conifer plantations (approximately 6,000ha). Much of these plantations were established on heathland during the early 20<sup>th</sup> century. The current area of heathland in the NCA is 3,952ha or 6% of the total area<sup>i</sup>.
- 6.13 Both woodland and heathland are less significant as land uses in the county of Dorset and in England as a whole. Woodland accounts for 10.6% of Dorset's area, with broadleaves, usually located on farmland in relatively small blocks, being the predominant form of woodland cover<sup>ii</sup>. Lowland heathland occupies 1.2% of the area of the county, almost all of it occurring in the Dorset Heaths NCA<sup>iii</sup>. Across England as a whole, woodland accounts for 8.4% of land cover, with broadleaves again providing the predominant type of woodland<sup>iv</sup>. Lowland heathland covers 0.4% of England's land area<sup>v</sup>.
- 6.14 There are currently 2,092ha of woodland cover in the seven forest blocks under consideration in this EIA. This amounts to 14.7% of the woodland cover in the NCA, 7.4% in the county and 0.19% in England.
- 6.15 The area of heathland and valley mire within the seven forest blocks is currently 880ha. This represents 26% of the heathland area in the NCA and 27% of the heathland in the county and 1.5% of lowland heathland in England as a whole.

### Timber production in the forest blocks

- 6.16 Timber production has been the main driver of woodland management in the Purbeck Forest since the blocks were purchased or leased by the Forestry Commission during the 1930s and 1950s (and on most blocks before this under the previous tenure). Corsican Pine is the species best suited for commercial production on the shallow dry (podsollic) soils and accounts for 62% of planted land. Other species, which with Corsican Pine, account for 90% of planted land, are Scots Pine (14%), Douglas Fir (8%) and Bishops Pine (5%). Most of the forestry is managed under a clear fell and replant system, although continuous cover forestry is being introduced to several blocks, particularly to Purbeck Forest.

- 6.17 The production of saleable timber typically amounts to 400m<sup>3</sup> per ha over the full cycle which can be split, roughly into 40m<sup>3</sup>/ha produced at the first thinning (around 20 years after planting), 60m<sup>3</sup>/ha during later thinnings (at regular intervals to harvesting) and 300m<sup>3</sup>/ha at final harvesting (typically 60 to 70 years after planting). The disease Dothistroma Needle Blight is having a serious impact on Corsican Pine and this is likely to reduce future productivity (covered further below).
- 6.18 The costs of forestry production occur mainly at the planting, first thinning and harvesting stages. Labour accounts for the majority of the cost in earlier stages, with machinery costs being more significant at harvesting. While costs are relatively predicable, the income from harvested timber is not, due to significant fluctuations in market values which are mainly the result of volatile global supply and demand. Nevertheless, forestry production in the Purbeck Forest blocks has been a profitable enterprise, helping to cover the Forestry Commission's management of the area for other uses such as amenity, recreation and biodiversity.
- 6.19 The following information is taken from the draft Forest Design Plan, describing the distribution and age of the existing timber crop in each of the forest blocks.

#### *Purbeck*

- 6.20 The woodland is dominated by Corsican Pine which occupies over 90% of the wooded area. Other pine species make up most of the remainder although some broadleaves are present on the wetter lower lying areas and birch is present throughout the forest where it has naturally regenerated amongst the pine. There is a relative even spread of ages of woodland, although there are fewer trees in the 21 to 40 year age class than other periods.

#### *Wareham and Gore Heath*

- 6.21 The forest is dominated on the podsollic soils by Corsican and Scots Pine which occupy approximately 77% of the woodland area. A further 18% of the wooded area is occupied by other pine species. Wetter areas adjacent to stream corridors have been planted with Norway Spruce. Broadleaves account for less than 1% of the recorded woodland area and are generally limited to pockets of birch which have naturally regenerated amongst the pine. Some planted and naturally regenerated broadleaves are present in areas of more fertile soil along stream corridors and at the north western section of the forest block.
- 6.22 The previous Forest Design Plan began a process of age class diversification and this is reflected in the fairly even distribution of woodland between 1 and 60 years of age (with a peak in the youngest age class of 0-20 years). There is a relatively small proportion of woodland greater than sixty years of age which reflects past practice in felling crops as they reached economic maturity.

#### *Hethfelton*

- 6.23 Most of the current woodland in this forest dates from the 1960s and was planted over a four year period, resulting in the majority of trees being in the 41-60 year age class. There is a small proportion of broadleaves dating from before Forestry Commission acquisition. Compared to the other forest blocks, the generally drier soils mean that Corsican pine is less significant, with Douglas Fir being more common than in other areas.

#### *Affpuddle and Moreton*

- 6.24 The forest lies on predominantly podsollic soils and this is reflected in the dominance of Pine species throughout much of the block. Species diversity is currently limited to the north west of the forest block at Pallington Heath where more fertile soils have resulted in a mixed woodland structure as broadleaves have naturally regenerated among the plantation conifers. Much of the woodland comprises conifer plantations established from between about 1950 to the mid-1960s and as a result two age classes dominate (0-20 years and 41 to 60 years), with very little in other age classes.

#### *Puddletown*

- 6.25 The woodland on the more acidic soils is dominated by Douglas Fir, Corsican Pine and Scots Pine. North of the ridge the woodland becomes a mixture of conifers and broadleaves, with Beech and Ash more evident on the calcareous soils. Norway Spruce is planted on localised poorly drained soils in the valley bottoms. Overall Douglas Fir and Corsican Pine occupy approximately 75% of

the woodland. 10% is comprised of broadleaves and the remainder is a mixture of other conifer species. Open space is increasing as a result of felling for heathland restoration.

- 6.26 Overall, the forest has a relatively even-aged structure (with a peak in the 21 to 40 age class). The age structure of individual coupes is linked to the date of the original leases and their subsequent management.

### **Silvicultural diseases present in the forest blocks**

- 6.27 Dothistroma needle blight (also called red band needle blight or RBNB) is an economically important disease affecting a number of coniferous species, in particular pines. The Purbeck plantations were amongst the first areas of the UK to experience the disease (first being recorded in 1955), but it was relatively rare until the late 1990s when the incidence of the disease in the UK increased, particularly on Corsican pine. The disease causes premature needle defoliation, loss in yield and sometimes tree mortality.
- 6.28 RBNB is present in significant areas of the Purbeck forest blocks and is regarded as commercially damaging by Forest Enterprise<sup>vi</sup>. The disease typically results in a loss of yield rather than the death of trees. However, infection over a significant area can result in an economically important loss of yield. A survey of RBNB infection of Corsican Pine in the New Forest district, which includes the Purbeck plantations, found that 90% of young stands (30 years old or less) are affected to some degree<sup>vii</sup>. None of the young stands with the highest levels of infection (over 80% of crown infection when no further timber productivity can be expected) occurred in the Purbeck plantations, but overall young stands in the Purbeck plantation have an impact factor of around 50% which will have a significant effect on productivity. All stands of Corsican Pine over 30 years old in the Purbeck plantations are also affected but no detailed survey on degree of infection has been carried out<sup>viii</sup>.
- 6.29 RBNB represents a serious threat to the profitability of timber production in the Purbeck Forests. The Forestry Commission's RBNB Management Plan for the New Forest<sup>ix</sup> addresses this issue. In the Purbeck Forests there are relatively few alternative commercially viable species, the most suitable being Western Red Cedar and Western Hemlock, with recent research suggesting that Macedonian pine and Maritime pine also show promise.
- 6.30 Other nationally significant tree diseases such as *Phytophthora ramorum* (which affects larch, amongst other species) and *Chalara fraxinea* (ash) are not of significant concern in the Purbeck Forests because of the relative scarcity of the host trees.

### **Livestock grazing in the locality and the income generated from livestock grazing**

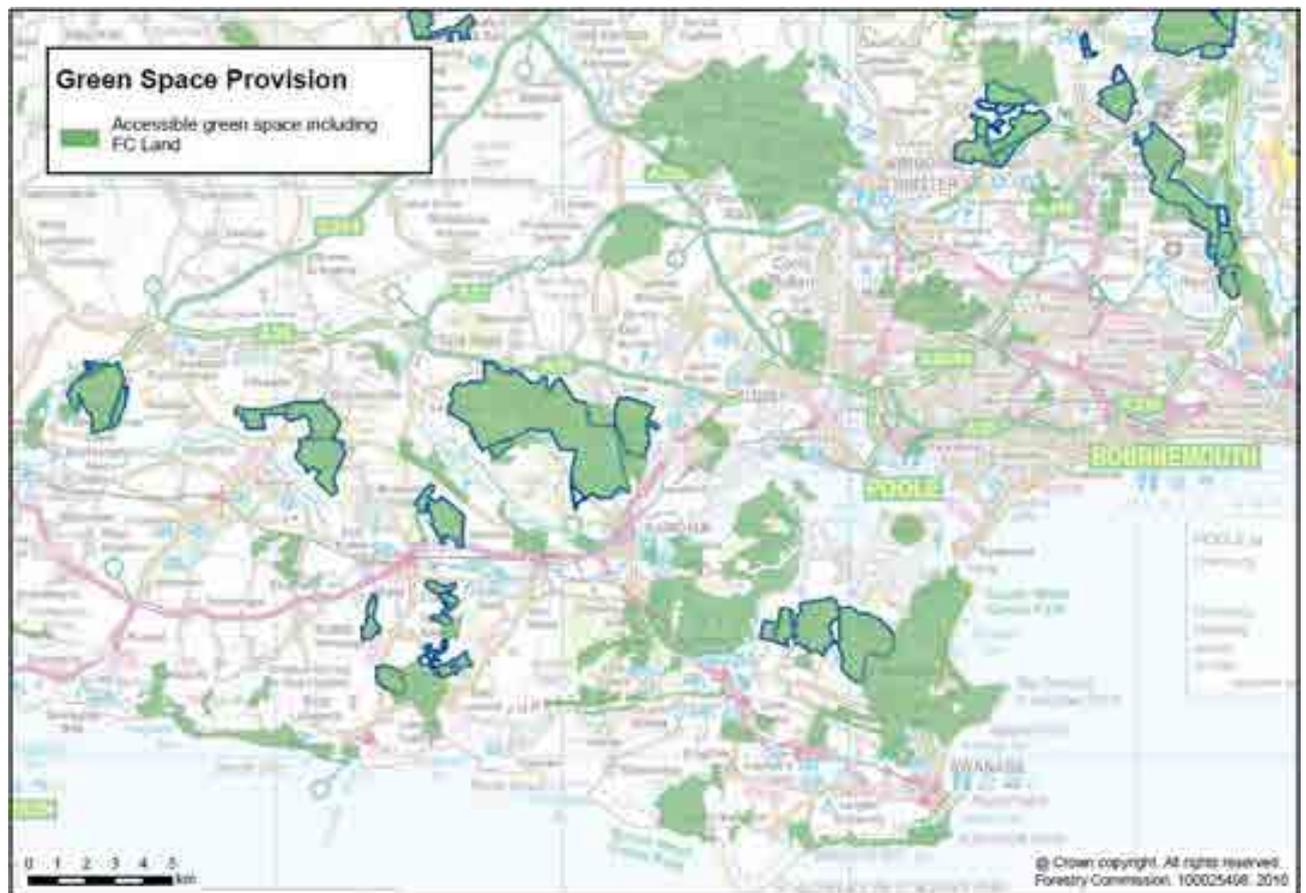
- 6.31 The low agricultural productivity of the heathland soils and vegetation means that grazing of these sites has not been economically viable for farmers for several decades, compared to the productivity of sites on improved agricultural pasture in the locality. Grazing of heathland and wooded heath therefore currently, and in the foreseeable future, relies on public subsidy for it to be viable.
- 6.32 Using payments from agri-environment schemes (the Countryside Stewardship Scheme and latterly Environmental Stewardship), grazing of the existing heathland areas within the forest blocks has been introduced in the last ten years, focussing particularly on the areas designated as Sites of Special Scientific Interest, to maintain and enhance the nature conservation interest and as an alternative to mechanical vegetation control to prevent succession to scrub and woodland. Grazing by beef cattle is preferred to sheep or ponies because their grazing habits are more suited to the rough heathland vegetation and because they are more easily managed.
- 6.33 Several grazing tenants are involved under Farm Business Tenancies issued by Forest Enterprise. Initially, based on guidance from Natural England, hardy breeds of cattle such as White Park and Beef Shorthorn were preferred since it was assumed they would be better suited to the coarse and relatively unproductive vegetation. However, graziers have preferred more commercial cross-bred cattle and these have performed well.
- 6.34 Fencing is required to retain the cattle but the grazing blocks enclosed by fencing are relatively large (typically 150-200 ha) and often include areas of conifer plantation. Grazing densities are low at around 1 beef animal to every 4ha and the cattle rarely come into contact with recreational users.

6.35 Forest Enterprise has encouraged the grazing tenant to enter the Higher Level of the Environmental Stewardship scheme (England’s primary agri-environment scheme which is administered by Natural England and is part of the Rural Development Programme for England). The additional income to the tenant from this scheme, and the costs borne by Forest Enterprise, have been reflected in an increased rent being paid by the tenant to Forest Enterprise on land under Higher Level agreement. Separately, the Purbeck Estate has recently entered into a Higher Level agreement, so that, together with Forest Enterprise land under agreement, all of the heathland in the Purbeck Forest block will be grazed.

**Recreational use in the forestry blocks and adjacent areas**

6.36 Analysis of publically accessible green space in the region around the Purbeck Forests shows that Forestry Commission managed land is an important recreational resource. Spatial modelling of accessible natural green space (ANGS) shows that in the Dorset and South Wiltshire, FC managed woodland accounts for around 67% of all accessible woodland and 26% of all accessible open space. **Figure 6.1.**, which is taken from the Forestry Commission’s Management Plan for Dorset and South Wiltshire (July 2010), shows that in the area between Poole, Swanage and Dorchester (which lies just to the west of the map), the Purbeck Forests account for a large proportion (around 50%) of all publically accessible green space.

**Figure 6.1. Map of accessible natural green space (ANGS) in the area around the Purbeck Forests (FC land bordered in blue)**



6.37 Six of the seven forest blocks are accessible on rights of way, including both footpaths and bridleways (the exception being Hethfelton, which is accessed from the A352 along its southern boundary). There are waymarked trails through Purbeck Forest (The Rempstone Ride), Wareham Forest (the Sika trail for cycles and on foot) and Affpuddle and Moreton Forests (the Jubilee Trail).

6.38 Access on foot off footpaths on a network of informal tracks is permitted in all blocks except Purbeck Forest, where there is no agreement with the lessor regarding provision of informal

public access. In Puddletown Forest, the retention of sporting rights by the lessor limits the formal provision of recreation facilities off rights of way. Horse riding off the bridleways is permitted in all forest blocks except Purbeck Forest to people who have obtained a riding permit. Areas close to the public car parks in the southern part of Wareham Forest, the northern part of Affpuddle Forest and Puddletown Forest have a particularly priority for recreation in their management by Forest Enterprise.

- 6.39 Information provided by Forest Enterprise shows that recreational use is currently relatively low in Hethfelton and Purbeck Forest and has moderate levels of use at Affpuddle and Moreton Forests, particularly in the northern area close to the two car parks. There is a higher level of use in Puddletown Forest, which is close to Dorchester, and in the Wareham and Gore Heath Forests where access is actively promoted by Forest Enterprise along the Sika trail (which runs for 7 miles around Wareham Forest and connects with the Northport Greenway in Wareham) and along a 2 mile long self-guided trail which starts at the main car park in the Forest.
- 6.40 The large majority of users (estimated by Forest Enterprise's District Recreation Manager at around 80%) are local people making repeat visits for dog walking and general exercise. The bridleways are also regularly used by locally resident riders and cycling has been growing in popularity, with an increasing number of people travelling to the area from nearby conurbations such as Bournemouth. Use of the forest blocks for off-road cycling events organised by cycle clubs is permitted by Forest Enterprise.

### The risk of fire

- 6.41 The Forestry Commission's Open Habitat's Policy recognises the risk that the conversion of forestry to open habitats, particularly lowland heathland, may pose. It states "Evidence indicates that open habitats generally present greater wildfire risk than woodland. This is a particular issue for lowland heathland".
- 6.42 The Forestry Commission's Fire Plan for the New Forest District covering the period 2010 – 2014 makes clear that existing areas of both open heathland and conifer plantations on heathland soils have a significant fire risk associated with them, particularly where there are high levels of public access and recreational use (with the use of barbecues by the public throughout the summer posing one of the greatest dangers). However, it also states that the presence of the public provides a major deterrent against malicious fire starts and can also lead to the rapid reporting of fires.
- 6.43 The Plan states that coniferous plantations over 40 years of age are at less risk due to the wider spacing between trees. Where heathland is concerned, the presence of older woody material (such as older gorse and heather stands) in large or contiguous blocks poses a greater risk than shorter younger material in small areas separate by wide rides or other breaks.
- 6.44 Other issues which are taken into account in the preparation of fire risk assessments by the Forestry Commission are the presence and exposure to disruption from fire of major public infrastructure and the location of adjoining areas which themselves pose a fire risk. Major public infrastructure likely to be exposed to disruption from fire in the Purbeck Forests includes the A35 south coast trunk road and the Wytch Farm oil processing facility. Adjoining areas which pose a fire risk include the Godlingstone and Studland Heath.
- 6.45 A range of preventative measures are already used by the Forestry Commission in close liaison with the Dorset Fire and Rescue Service, to address this risk. These measures include raising public awareness and education, including through membership of the New Forest Arson Forum, through press releases, local publications, and leaflets, and directly through walks and talks led by the District Ranger Team. The Forestry Commission Byelaws make it an offence for members of the public to light fires on Forestry Commission land and these are enforced by all staff.
- 6.46 The Forestry Commission also routinely uses land management practices that help reduce the risk of wildfires starting and spreading. These include:
- An open habitat management programme which ensures that the heathland retains a patchwork structure of heather and gorse of varying age.
  - Maintenance of a road and ride network which provides both fire breaks and access routes.

- The development and maintenance of a diverse woodland structure through the forest design plan process which limits the spread of fire.

6.47 The Wild Purbeck Nature Improvement Area programme, which encompasses the Purbeck Forests, includes a Wild Fire Management Project which is involving the preparation of a site specific risk assessment, an assessment of the impacts of wildfires in different fire management zones and constraints and opportunities mapping.

### The 'Do Nothing' Scenario

6.48 The 'Do Nothing' scenario involves maintaining current regular management but with no action to take forward the FDP proposals and thus no heathland restoration. It is assumed that normal forestry practices under clear fell and replant systems will continue, with a switch from RBNB susceptible species such as Corsican and Scots Pine to other species potentially including Western Red Cedar and Macedonian pine. Objectives for biodiversity and landscape, within the constraints of sustainable forestry production, will continue to be an important factor in forest management. Grazing, under agri-environment scheme agreements to maintain and enhance the conservation value of heathland and other open habitats will continue on the areas where it is currently practiced. Recreation will continue to be encouraged on public rights of way and, where the Forestry Commission's legal tenure allows, on other tracks as well. The risk of fire will continue to be managed using the actions described in the Forestry Commission's Fire Plan for the District.

## Impact Assessment

6.49 This section assesses the impact of the proposed heathland restoration over the period to 2026, addressing the topics in the same order as the previous section.

### Land use change to woodland cover and significance at a local, county and national level

- 6.50 This issue is important, not least because it is a requirement of the Forestry Commission's Open Habitats Policy (para. 3.5) that the loss of woodland cover, and the increase in open habitats should be considered at different scales, and that proposals for compensatory woodland creation should be considered. The issue of land use change can also be important for local residents and other stakeholders and deserves attention for that reason.
- 6.51 Compared to the existing situation, the proposed heathland restoration during the period 2012-2026 would see the wooded area in the seven blocks reduced by 195ha to 1,897ha and would increase the area of heathland and valley mire by a similar area to 1,075ha.
- 6.52 The significance of this land use change can be assessed in comparison to the areas of these habitats in the Dorset Heaths NCA, the county of Dorset and for England (described above). The reduction in woodland cover would account for 1.4% of woodland in the NCA, 0.7% of woodland in the county and 0.02% nationally. The increase in heathland area would account for an additional 5.8% of heathland in the NCA, 5.9% in the County and an increase of 0.34% of lowland heathland in England. On this basis, the increase in heathland has a greater positive significance than the reduction in woodland area has a negative significance.
- 6.53 The reduction of woodland cover is judged to be of **negligible negative significance** at all scales from NCA to national. The increase in heathland area is considered to have a **minor positive significance on the heathland area at the local and county level and a negligible impact at the national scale.**

### *Cumulative impact on land use*

6.54 The Wild Purbeck Nature Improvement Area (NIA), which encompasses the areas covered by this EIA will see a range of landscape restoration projects take place over the period to 2015, and includes a commitment to plant 120ha of woodland by 2015, specifically to offset the loss of woodland area due to heathland recreation (NIA action LMAS4). This new planting will partly offset the reduction in woodland cover of 195ha proposed in the revised FDP to 2026. The NIA planting therefore offsets nearly two thirds (62%) of the reduction in the woodland cover from

the revised FDP, and means that woodland cover at the local NCA level would fall by 0.8% less than it would have done without the NIA planting.

- 6.55 In addition, it is likely that further new woodland establishment, most of it in small blocks of broadleaved planting on privately owned land, is likely to be grant aided under the English Woodland Grant Scheme (EWGS) across the NCA and the County. Over the 15 years under consideration in this EIA, it is considered likely that the 'shortfall' of woodland reduction (taking account of the committed 120ha of NIA planting) of 75ha is likely to be offset by new planting under the EWGS at the County scale. For this to happen, the average area of new planting grant aided by the EWGS (or any successor scheme) across the County would need to be just 5.7ha a year. While planting under the EWGS within the NCA cannot be guaranteed to equal or exceed this amount, it is considered that it will significantly reduce the overall shortfall at this local level.
- 6.56 Another issue that needs to be taken into account is the sensitivity of woodland loss to local residents and other stakeholders in the area, in relation to their passive amenity and sense of place (as opposed to the impact on active recreation, which is covered separately below). The consultation process conducted in July 2010 did not highlight concerns about the amenity impacts of land use change. This is in contrast to similar consultation processes which have taken place in East Dorset around the urban areas of Christchurch and Bournemouth where loss of woodland cover has been raised as a concern by local communities. As a result, the issue of woodland loss in the Purbeck Forests is considered to be of lower sensitivity.
- 6.57 It is worth noting that, elsewhere in the country significant concern from local communities has been voiced about proposals to increase open space in woodland, particularly where there is a strong sense of public 'ownership' (in a community not legal sense) of land, such as sites that are registered common land. One such example is Odiham Common in North East Hampshire where action to return secondary broadleaved woodland to open wooded heath was vigorously opposed by local residents and recreational users<sup>xi</sup> and has now been resolved through a process of engagement and involvement<sup>xii</sup>. The lesson from this and other cases is that a process of public engagement and consultation with local residents and users can successfully take account of their concerns
- 6.58 Cumulatively, taking account of the additional planting planned to occur under the NIA and likely to occur under the EWGS, the impact at a local (NCA) level of the removal of woodland as a result of the proposed heathland restoration is judged to be reduced to be of **negligible significance**.

### **Impact on timber production and subsequent economic effects**

- 6.59 The proposed felling of commercial timber crops and their replacement with heathland will have a number of negative effects on the volume of harvested timber and the income that this generates. These negative effects may be as follows:
- The loss of value in the standing crop due to early harvesting (where the full value of the crop is not met).
  - The loss of long term productive land due to it not being available for replanting.
- 6.60 A number of factors may reduce these negative effects, such as:
- The poor quality of existing crops due to issues such as Dothistroma Needle Blight, meaning that crops that are harvested early might not have gone on to provide significant income.
  - The receipt of alternative sources of income (such as from agri-environment schemes received by tenants) on land that is not replanted.
- 6.61 A factor that may increase these negative effects is:
- Increased capital or revenue costs involved in the management of the restored heathland.
- 6.62 The net economic impact of the proposed changes to timber production can be assessed in three ways:
1. Reduction of direct employment (staff employed or contracted by the Forestry Commission) from timber production and harvesting (involved in planting, establishment, thinning and harvesting).

2. Reduction in indirect employment and value addition in the local economy from timber haulage and processing.
  3. Reduction in the overall viability of management of the Purbeck Forests, with profitability from timber production being used to support management for other uses such as amenity, recreation and biodiversity.
- 6.63 The first two of these impacts are directly recognised in the existing FDP (2003, 2005) which seeks, as one of its headline objectives, *"To provide a regular supply of quality timber to support local employment and local timber processing industries"*. The third impact is increasingly important to the Forestry Commission as it seeks to be cost neutral in its operations.
- 6.64 Before making an assessment of the magnitude and significance of the proposals on each of these three impacts, the following section takes each of the woodland blocks in turn and describes how the proposals will affect timber production.

#### *Purbeck Forest block*

- 6.65 Two thirds of the area proposed for felling for heathland restoration between 2012-2026 is in Purbeck Forest (a total of 120ha). This area amounts to 20% of the area of Purbeck Forest and to 37% of the currently forested area. The proposed felling for heathland restoration will take place relatively evenly over the next 15 years, with 46% of the area felled during the period 2012-2016, 33% during 2017-21 and 21% during 2022-26. Almost all the areas proposed for felling are of Corsican Pine, the exceptions being 5.9ha of Lodgepole Pine and 0.6ha of Scots Pine. Most of the timber proposed for felling is at maturity (having been planted in the 1950s or before), the exceptions being 8ha planted in the 1990s.

#### *Wareham Forest and Gore Heath*

- 6.66 A total of 25ha of forestry are proposed to be felled for heathland restoration in these blocks. In combination, these areas amount to 1.6% of the area of the blocks and 6.1% of the existing forested area. It is proposed that the felling for heathland restoration takes place during the next eight years, with two thirds of this during 2012-16 and one third during 2017-21. Most of the proposed felling is of Corsican Pine, with a small area of Bishops Pine. The large majority of the area proposed is at maturity, with a small area planted during the 1970s.

#### *Affpuddle and Moreton Forest*

- 6.67 A total of 41ha of forestry, equivalent to a fifth of the area in all blocks, are proposed for felling to create heathland. This area is 10% of the area of these two forest blocks and 17% of the currently forested area in these blocks. The proposed felling will take place relatively evenly over the next 15 years, with 20% of the area felled during the period 2012-2016, 44% during 2017-21 and 36% during 2022-26. The large majority of trees proposed for felling are Corsican Pine (the exception being 0.2ha of Scots Pine). Three quarters of the area is at maturity, with 20% (6.7 ha) having been planted in the 1990s and smaller areas in the 1980s and 2000s.

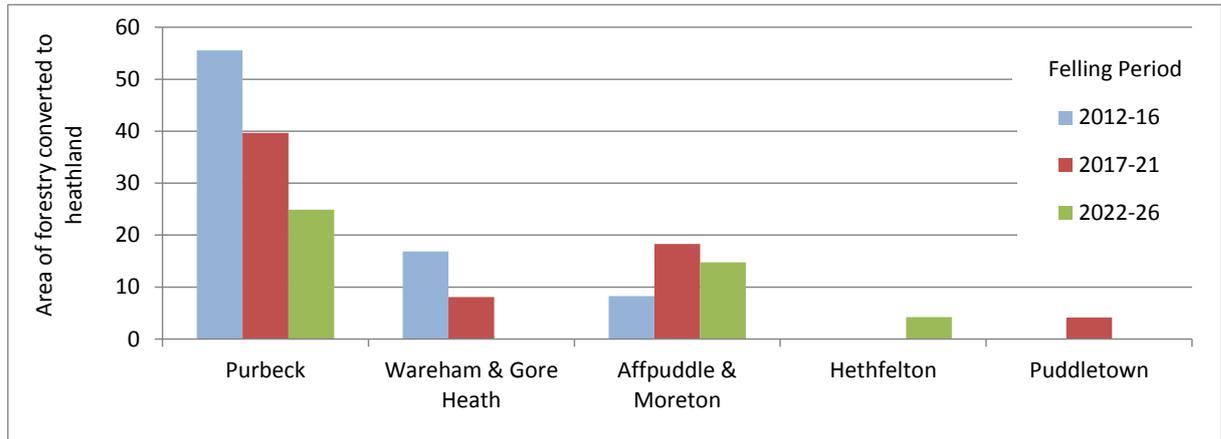
#### *Hethfelton and Puddletown*

- 6.68 The areas of felling proposed for these two blocks are very small at just over 4ha in each block. These areas represent a small proportion (4% and 2% respectively) of the existing forestry in each block. The coupes proposed for felling in Puddletown are at or near maturity whereas the coupe proposed for felling in Hethfelton is younger, having been planted in the 1970s.

- 6.69 **Overall**, the following conclusions can be made:

- The area proposed for conversion to heathland in the FDP to 2026 amounts to 9% of existing forestry but is heavily concentrated in Purbeck and Wareham Forests, particularly the former where it will reduce the forested area by one third. In the Wareham Forest, conversion to wooded heath will be a significant change in practices, reducing future timber production.
- Almost all of the trees proposed for felling are Corsican Pine which is the main commercial species but is also under significant threat from *Dothistroma* needle blight.
- The large majority of areas proposed for felling are at or near maturity (84% of the area having been planted before 1970).

**Figure 6.2: Areas and periods of felling for heathland restoration in each of the forest blocks**



6.70 In the following section, the impacts of these proposals are assessed against the three economic issues described earlier (para. 6.62).

*Reduction of direct employment*

- 6.71 As noted earlier (para. 6.18) the highest labour input occurs during the establishment and thinning stages of the forestry cycle (front loaded in year 1 and at first thinning around year 20). These operations are undertaken by Forestry Commission teams working across the New Forest district area. Site preparation and planting has a standard labour requirement of about 25 hours per ha<sup>xiii</sup> which is equivalent to 2.9 standard labour years for the 195ha of forestry that is proposed to be converted to heathland and will not, therefore, require planting.
- 6.72 The other peak in forestry work takes place at the thinning and final harvesting stages when timber is cut, then hauled to the roadside and the sawmill. It is possible to estimate the labour that would be involved in the harvesting and haulage of timber, were the 195ha of forestry covered by this EIA to be replanted, by assuming that each hectare would have produced 400m<sup>3</sup> of saleable timber (para. 6.17) and that 2 people can harvest an average of 500m<sup>3</sup> a week and one person can haul 60m<sup>3</sup> of timber a day to local sawmills<sup>xiv</sup>. These operations would have created a labour requirement, over all 195 ha, of 6.5 labour years for harvesting and 5.8 labour years for haulage (a total of 12.3 labour years). Not replanting this area would mean that this labour would not be required.
- 6.73 The reduction in forestry establishment, thinning and harvesting labour requirements needs to be offset by new inputs for heathland management. This will involve the initial erection of fencing and on-going care of grazing livestock (the latter undertaken by the grazing tenant) as well as any necessary mechanical vegetation management required for nature conservation or fire risk management purposes (likely to be undertaken by Forestry Commission staff). This vegetation management is likely to involve regular mowing of wide rides and the rotational cutting of gorse and other shrubs to create a matrix of different ages. The labour requirement for this initial and on-going heathland management can be estimated by applying the £200 per ha standard cost that is applied by the Forestry Commission to heathland management. Assuming 75% of these costs are labour related (the other 25% being machinery and materials), and based on a total full-time equivalent labour cost of £45,000 per year, the on-going annual heathland labour requirement arising from the proposed heathland restoration is likely to be in the order of 0.65 full time equivalent workers. This requirement will be shared between the farming tenant and Forestry Commission staff.
- 6.74 Comparing the net effect of the reduction in forestry employment and increase in heathland management employment over the 15 year period covered by this EIA is difficult. The reduction in forestry employment (12.3 labour years) takes place at the start of the production cycle and at the end (which will be outside the 15 year period), whereas the additional employment in heathland management is on-going each year (0.65 fte each year or 9.7 labour units over the 15 years).

6.75 Some indication of the significance of this change in labour can be gained from employment in the land-based sector in the local area. The results of the 2001 population census show that 423 people were employed in agriculture, forestry and fishing in Purbeck District (the majority of these are likely to be involved in agriculture). At first sight the reduction of 2.5 labour years for planting and 11.3 labour years for harvesting and hauling looks relatively significant. However, it should be noted that both of these apply only to one year. The additional on-going employment in heathland management (0.65 fte per year) is a very small proportion (0.15%) of current employment in the sector. Taking these factors into account, the change in direct employment and the effect on the local labour market is therefore judged to be a **negligible impact**.

*Reduction in indirect employment and value addition in the local economy*

6.76 Assuming that the employment of hauliers has been included in the section above, the greatest indirect input to the local economy from timber production arises in the processing of the timber in sawmills. The closest major sawmill to the Purbeck Forests is RG Giddings at Bartley near Southampton. The Forestry Commission sells its timber as a standing crop through open tenders and recent sales have taken place to timber merchants from across the country, so it is not possible to predict how much of the timber from the 195ha of forestry covered by this EIA would have been processed by this local sawmill.

6.77 However, even if it is assumed that all of the timber that would be foregone from the conversion of the 195ha to heathland (potentially 77,867m<sup>3</sup>, assuming all areas were to yield 400m<sup>3</sup> per ha – see para. 6.17), would have been processed locally, this does not necessarily mean that this reduction would have an impact on these local businesses. Timber is a globally marketed commodity and the timber business is demand driven. It is likely that lower production from the Purbeck Forests would be met by increased imports from other timber producing areas such as the Baltic. Even if this were not to be the case, it is considered that the 72,000m<sup>3</sup> of timber foregone from the Purbeck Forests (many decades in the future) would represent an insignificant proportion of the total amount processed in local sawmills.

6.78 The impact of the proposed felling on indirect employment and the local economy is therefore considered to have **negligible impact**

*Reduction in the overall viability of management of the Purbeck Forests*

6.79 The final area where the proposed conversion of forestry to heathland may have an economic impact is over the reduction in income received by the Forestry Commission. As noted earlier (paras. 6.16-6.18), timber production over the full forestry cycle has returned a profit which has helped to offset the costs of management to provide other public benefits such as recreation and nature conservation. However, it is important to note that the net income is only received at the end of the cycle (50 to 60 years after planting) and that the planting and establishment phase has a net cost. The risk posed by Dothistroma needle blight to future planting of Pine species also needs to be taken into account (covered further below). The re-establishment and management of heathland may also attract payments from agri-environment schemes (currently the Higher Level of Environmental Stewardship), although there is no guarantee that these will continue at current levels once the existing 10 year agreements come to an end. Capital payments from these schemes may be used for necessary grazing infrastructure such as fencing and water bowsers, while annual payments, which are likely to be received by the grazing tenants, allow the Forestry Commission to receive a rent from the grazing tenants. This rent is still small however, reflecting the marginal agricultural quality of the grazing.

6.80 As noted above, a value can be assigned to the on-going costs of heathland management, estimated by the Forestry Commission as a standard cost of £200/ha. For the 195ha of new heathland, this comes to £39,000 a year, some of which would be met by the grazing tenant (using their own labour, livestock costs and machinery) and some by the Forestry Commission (in labour, machinery and materials).

6.81 The impact of the proposed heathland restoration on the viability of the Forestry Commission's management therefore varies depending on the period over which the impact is assessed. Over a period of the next 15 years, the proposals may have a minor positive impact (avoiding forestry planting and establishment costs and introducing a small level of new income from grazing rents which would be offset by increased heathland management costs) whereas over the full 50 to 60

year forestry cycle, the proposals are likely to have a negative impact from the loss of harvested timber, depending on future disease risk and timber markets.

- 6.82 Given this temporal variation in impact, the uncertainty involved in long term factors and the relatively small sums involved, compared to the continuing costs and income from remaining areas of forestry, it is not possible to make a firm judgement on the level of impact of the proposed felling on the overall viability of management of the Purbeck Forest. However, within the range of potential variation, the impact is most **unlikely to be significant**.

#### **The risk or potential impacts of disease in remaining woodland**

- 6.83 As noted earlier, Dothistroma Needle Blight (or Red Band Needle Blight RBNB) has become prevalent in the forest blocks in the last ten years. Clearly, the felling of woodland and restoration of heathland under the proposed FDP will remove the risk of this disease from the felled areas. It may also have a small impact on the risk of disease in other areas by reducing the overall emission of fungal spores in Purbeck Forest as a whole.
- 6.84 The main long term strategy for dealing with RBNB in the remaining forested areas involves replacing susceptible species, particularly Corsican Pine, with less susceptible species. The low fertility of the soils limits the choice of productive species. Species which offer potential and are being considered for the Purbeck Forests are Macedonian pine, Maritime pine, Western Red Cedar and Western Hemlock (para. 6.28). The latter two species set seed on the dry sandy soils and would pose a significant risk of colonising cleared areas of heathland. Research is still being undertaken on the long term suitability of the former two species. Heathland restoration can therefore constrain management to address RBNB in adjoining areas of forestry. The Forestry Commission have sought to take account of this, selecting areas for conversion to heathland that have lower productivity. On balance, the impact of the proposed heathland restoration on silvicultural practices as a result of restricting RBNB management is considered to have **minor negative significance**.

#### **The impacts of additional livestock grazing on agricultural production at a county or local scale and on additional income to Forest Enterprise**

- 6.85 On similar areas of lowland heath where grazing has been introduced to deforested areas<sup>xv</sup> optimum stocking densities to deliver nature conservation objectives are 0.28 Livestock Units (LU) per ha on dry heathland and 0.36 LU/ha on wetter heathland and dry grassland. These are overall annual figures which need to be adjusted to take account of specific grazing regimes. If most of the animals are taken off the sites during the winter months, higher stocking levels are appropriate. In theory, a hectare grazed at 0.3 LU over the entire year could carry 1.2 LU for three months. In reality this will vary considerably according to the season and growing condition of the vegetation (an English Nature research note<sup>xvi</sup> quotes stocking densities of between 0.03 and 0.50 LUs/ha/year recorded from conservation grazing schemes operating on lowland heathland across the country).
- 6.86 One Livestock Unit is equivalent to one beef cow or 18 month old steer/heifer of a commercial breed (fewer for small breeds such as Dexter or Welsh Black). On the basis that the proposals covered by this EIA will result in an additional 195ha of heathland being created, all of which will require grazing, this additional area will be capable of supporting 55 additional beef animals over a year. It is understood that these cattle are likely to be cross-bred steers and heifers grazed on the heathland before being finished for slaughter on more agricultural productive ground, or possibly breeding beef cows.
- 6.87 The economic impact of these additional livestock can be assessed by comparing their numbers with the number of cattle farmed in the Dorset Heaths National Character Area (NCA) and the county of Dorset. The results of the June agricultural survey<sup>xvii</sup> for 2010 (the latest for which detailed data are available) shows that 19,888 head of cattle were kept on farms in the Dorset Heaths NCA (this includes dairy cattle – the figure for beef cattle is not available) and 39,387 head of beef cattle were kept on farms in Dorset County. The 55 additional cattle on the restored heathland is therefore very small (0.3% and 0.1% respectively) and needs to be seen in the context of recent annual falls in the number of cattle kept in these areas of around 2% a year. The economic impact of these additional cattle (both in terms of direct outputs of meat and in the

additional economic activity involved in their husbandry) is therefore considered to be of **negligible significance**.

### **Changing patterns of recreational use and any indirect impacts associated with recreational use on heathland habitats**

- 6.88 The Purbeck Forests provide a locally important recreational resource (forming a significant proportion of the publicly accessible natural green space in the area – see para. 6.36). The proposed areas of restored heathland will continue to be accessible for public recreation and the issue is therefore whether the quality of the access would be better or worse as heathland compared to staying as forestry plantation.
- 6.89 Recently concluded pan-European research (part of the EFORWOOD programme<sup>xviii</sup>) examined the impact of silvicultural processes on the recreational value of forests in Europe. The research found that the silvicultural characteristics such as the size of trees, variation in tree spacing, the proportion of open space and the density of vegetation had an impact on the recreational use and enjoyment of woodlands. Broadly speaking, variation in forest structure is deemed a positive attribute. A moderate level of tree cover in woodland is considered more valuable than very low or very high tree cover (moderate, low and high levels of tree cover are not defined).
- 6.90 However, this does not imply that open areas (with no or very low tree cover) are of less recreational value than woodland. It is likely that perceptions of the recreational value of heathland are determined by a different set of criteria than woodland. In other words, recreational users judge an area's value based on the type of land cover.
- 6.91 Research on the recreational value of different ecosystems for the UK National Ecosystems Assessment<sup>xix</sup> gave a higher co-efficient of value for mountain and heathland ecosystems than it did for grasslands, farm & woods, or freshwater, marine & coastal ecosystems. Although this research did not distinguish between upland and lowland heath, or different types of woodland, it suggests that the recreational value of lowland heath is not likely to be significantly less than that of conifer woodland – if anything it is likely to be higher.
- 6.92 It is well known<sup>xx</sup> that recreational users who are familiar with a site tend to regard significant change to the land cover or management of the site as undesirable but that, over time, the change comes to be accepted. Thus there is often resistance from communities local to a site to proposals to fell trees and to erect new fencing. Experience from many heathland restoration sites suggests that, when users are kept informed about the rationale for change and when the changes are made sensitively and to a high standard, there is a greater level of acceptance.
- 6.93 A survey of recreational use on existing areas of heathland in south Dorset<sup>xxi</sup> suggests that the types of use of the restored heathlands, once these are established, will be similar to the current types of use experienced in Wareham Forest block. The survey found that 80% of visitors were using the heaths to walk their dogs, 10% were 'just taking a walk', 2% were jogging, 2% were cycling and 1% were horse-riding. In most areas surveyed, recreational use took place throughout the week with only slightly higher levels at the weekend. Ninety-two percent of those surveyed said they visited the heath 'all year round'. In terms of the disturbance to areas of heathland away from tracks, 80% of those surveyed said that they kept to the main tracks, roughly half of all dogs wander off the main tracks.
- 6.94 A small piece of additional evidence on the recreational users attitudes to increasing open space in the Purbeck Forests is provided from an exercise conducted during the 2010 public consultation on the Forest Design Plan. Users attending the event were asked to place a dot on a diagram of a seesaw to show their opinion of whether there was currently too much or too little open habitat in the Forest. The large majority of participants (20 out of 24) placed their dot at or close to the middle of the seesaw, no one chose the 'too little open habitat' side, and four people chose the 'too much open habitat side'. Although based on a small sample, this suggests that there is not strong appetite from recreational users to increase the area of open habitat.
- 6.95 There is insufficient evidence to judge whether the overall levels of recreational use will rise once heathland restoration has taken place, particularly in the areas such as Purbeck Forest, where levels of use are currently low. The research cited earlier<sup>xxii</sup> found that, for sites that are not within walking distance of residential areas (as all the sites covered by this EIA area), the number of users is closely correlated with the availability of car parking spaces at access points. Thus it

would appear that levels of use may be controlled or encouraged by varying the size of parking areas. Given that Purbeck, where there is the greatest area of heathland restoration proposed, has few car parking spaces, this suggests that there will be no change in the level of recreational activity.

- 6.96 A secondary issue that arises from this conclusion is whether there will be any relocation of existing recreational activity between the forested and open heathland areas. A factor in this is likely to be the presence of grazing cattle on the restored heathland. It is possible that dog walkers may perceive a risk from the cattle to their dogs and use the remaining forested areas in preference to the new heathland when cattle are obviously present. In practice, evidence from other heathland restoration projects, where docile breeds of cattle have been used at low densities for conservation grazing (such as the schemes on the Surrey and North Hampshire heaths and Malvern Hills) is that the cattle seek to avoid dogs and that confrontation is extremely rare. Nevertheless, it is considered likely that there would be a small shift in recreational use from the restored heathland to remaining wooded areas which might be considered as an impact of **minor significance**, with the potential to mitigate this (see below).

### **The risk of fire**

- 6.97 There is already a significant fire risk attached to the conifer plantations in the Purbeck Forests which is being addressed through the Forestry Commission's Fire Plan for the District. As noted earlier, the Forestry Commission's Open Habitats Policy identifies fire as an issue that should be considered, particularly where the open habitat being created is lowland heath. Three issues have the potential to affect whether the proposed heathland restoration would alter the risk of fire. These issues are:
- Recreational use.
  - The location and size of the areas.
  - The type of vegetation that would be established.

#### *Recreational use*

- 6.98 The large majority of the new heathland areas will be in three of the forest blocks (Purbeck Forest, 120ha or 62% of the new heathland area), Affpuddle (39ha or 20%) and Wareham (23ha or 12%). These areas have relatively low, moderate and high levels of recreational use respectively (para. 6.39) and the majority of this use is from informal walking rather than activities such as camping or barbecuing (which are not allowed under the Forest Byelaws). There is no evidence that recreational use will change as a result of the proposed heathland restoration (para. 6.93). The low levels of public use in Purbeck are likely to mean that the risk of fires starting is less than in other areas with higher levels of use. However, it also means that if fire does start, it is likely to take longer before it is reported to the Fire Service and may become more established. Conversely, recreational use in the Wareham Forest, and in part of Affpuddle Forest, is higher, particularly along the promoted Sika Trail and the recreation zone in Wareham Forest and in the recreation zone in the northern part of Affpuddle Forest. This may have a minor increased risk of fires being started in these areas, but should result in them being reported more quickly. Overall, the presence and types of recreation is not considered to be a significant factor that will alter the fire risk in the proposed areas of heathland restoration.

#### *Location and size of areas*

- 6.99 Another factor, which is considered to have greater potential to affect fire risk, is the location and size of the heathland restoration areas relative to other areas of high fire risk, to wide rides and other potential fire breaks, and to major public infrastructure that would be seriously disrupted by fire. As noted earlier the risk of fire causing a significant hazard is greater where heathland occurs in large blocks with few fire breaks. These factors are considered separately for each of the three blocks.
- 6.100 **Purbeck Forest block:** In this block, much of the area proposed for heathland restoration occurs in eastern part of the block where it is continuous with existing heathland within the Purbeck forest and adjacent to the extensive area of Godlingstone Heath (**Figure 3.2 and 3.3**). A public bridleway crosses this area. Another large area of new heathland would be created in the centre of the forest block which would be bordered to the west and north by areas of mire vegetation

(which has a low fire risk, being a wetland habitat), pasture to the east (Claywell Farm) and forestry and existing heathland to the south. A cycle route crosses this area. Other areas of proposed heathland in this block are more isolated and will remain surrounded by mire or forestry. None of the proposed areas of heathland restoration adjoin the Wytch Farm oil processing facility and none of the areas are beside public roads. There is an extensive network of rides including wide rides that are already managed as fire breaks and these would continue to be managed in this way under the FDP proposals.

- 6.101 **Affpuddle Forest:** All of the proposed heathland restoration in this forest block lies adjacent to existing areas of heathland and the resulting area of heath would be over 96ha in size. Several of the areas would lie alongside minor roads but none are close to the larger B3390. None of the blocks lie in the recreation zone, although two are located on the southern edge of this zone. As with the Purbeck Forest block, the existing network of rides will continue to be managed to provide fire breaks.
- 6.102 **Wareham Forest:** The areas proposed for heathland restoration in this area are widely dispersed, several occurring beside existing areas of wetland mire and others occurring as relatively small additions to already significant areas of heathland. None of these areas occur in or immediately adjacent to the recreation zone which has highest levels of public use, but most are close to areas which experience open public access.

#### *The type of vegetation that would be established*

- 6.103 The proposals for heathland restoration will lead to a significant change in the type of vegetation, and its characteristics as a potential fuel source for fire. Most of the forestry that will be felled is relatively mature with wide spacing and relatively little understorey, whereas the heathland that will be allowed to naturally regenerate will, over time, create more continuous cover of potentially flammable material, interspersed with clumps of scattered or individual trees. As noted above, it is assumed that current practices to maintain a network of wide rides as fire breaks will continue. The way in which the new heathland vegetation will be managed is covered separately under the section on mitigation proposals and the initial judgement on the significance of the proposals for fire risk is made without taking account of these mitigating actions.
- 6.104 Based on a review of the Forestry Commission's Fire Plan for the District<sup>xxiii</sup>, on national guidance<sup>xxiv</sup> and on brief consultation with Forest Services<sup>xxv</sup>, this Environmental Statement judges that the proposal for heathland restoration has a **moderate negative significance** at a local scale for increased fire risk. This impact is the result of the creation of large areas (particularly in the Purbeck and Affpuddle Forest blocks) of more potentially flammable vegetation.
- 6.105 The Forestry Commission's Open Habitat's Policy states "*Where we require an environmental statement, and wildfire risk is identified as an issue, the practitioner should liaise with the local fire authority to agree appropriate mitigation and control measures*"<sup>xxvi</sup>. This will be undertaken as part of the mitigation measures that will address this impact, described further below.

## Proposed Mitigation

- 6.106 No mitigation measures are proposed for the predicted impacts relating to the change in land use from woodland to heathland, the economic effects, the additional livestock grazing or the risk of disease.

### Recreation

- 6.107 It was noted above that the presence of grazing cattle may encourage some recreational users, such as dog walkers, to use the remaining forested areas in preference to the restored heathland. This can be mitigated through a process of interpretation and communication of the new management that is being introduced. As noted earlier, dog walkers using the site tend to be local residents who make regular visits to the forest. Experience from other heathland restoration projects suggests that a positive relationship can be developed with many regular visitors in person through dialogue with beat managers and also through the use of 'newsletter' signs (in which information about management is updated on a regular basis). It is understood

that the Forestry Commission do this as a matter of course and will ensure that beat and recreation managers seek to explain the purpose of the deforestation to recreational users and to local people both in person and through appropriate signs and wider publicity such as through press releases to local media. The Wild Purbeck Nature Improvement Area's Community Gateway project will also act as an information hub for communities.

### Mitigating fire risk

- 6.108 The processes that will be used to mitigate the increased risk of fire in the Purbeck and Affpuddle Forest blocks are already in place through the Forestry Commission's Fire Plan for the New Forest District which follows national guidelines and these are being supplemented through the Wild Fire Management Project being delivered through the Wild Purbeck Nature Improvement Area programme (para. 6.47). Liaison between the Forestry Commission, the Dorset Fire and Rescue Service and neighbouring landowners will continue. Under these organisational structures, new measures will be adopted to take account of the increased fire risk arising from heathland restoration. These measures include:
- Rotational cutting and possibly controlled burning of heathland vegetation to prevent the build-up of woody material across large areas.
  - Widening some of the existing large rides to create enhanced fire breaks, particularly in large heathland blocks
  - Increasing the frequency of surveillance during periods of enhanced fire risk (periods of hot, dry and windy weather)
  - Liaison with the National Trust who own Godlingstone Heath, which is adjacent to the Purbeck Forest block, to agree a proactive approach to fire prevention and fire fighting.

### Residual Impact

- 6.109 There is no change in the predicted residual impacts for land use change, economic effects, additional grazing and the risk of disease.
- 6.110 With regard to recreation, as outlined above it is considered that the presence of grazing cattle on the restored heathland will discourage some recreational users, particularly dog walkers, to use remaining areas of forestry in preference to new heathland, especially when cattle are present. Although this will be mitigated by informing and reassuring users about management, there is likely to be a remaining residual impact which is judged to be of **minor significance**.
- 6.111 With regard to fire risk, it is judged that the mitigation measures outlined above will reduce the significance of the impact at a local scale from moderate significance to **minor significance**.

### Further Survey Requirements and Monitoring

- 6.112 This chapter has noted that there is a lack of information on recreational activity within the forest blocks. It will be important that patterns of recreational activity are monitored, distinguishing between the remaining forested areas and new heathland. It is expected that this need can be partly met by a new recreation project that is being established the Wild Purbeck Nature Improvement Area to gather information about key sites in the NIA area, one of which is Wareham Forest.

## Summary of Impacts

6.113 **Table 6.3** below summarises the predicted impacts of the heathland restoration proposals on land use and socio-economic factors.

**Table 6.3: Summary of Land Use and Socio-Economic Impacts**

Predicted Impact	Significance	Mitigation	Significance of Residual Impact
Reduction in woodland cover	Negligible at all scales from local to national scale	None proposed	Negligible at all scales from local to national scale
Increase in heathland	Minor positive at a local and county scale, Negligible at national scale	None proposed	Minor positive at a local and county scale, Negligible at national scale
Cumulative change in woodland cover with FDP and NIA proposals	Negligible at all scales	None proposed	Negligible at all scales
Reduction in direct employment	Negligible	None proposed	Negligible
Reduction in indirect employment and value addition in the local economy	Negligible	None proposed	Negligible
Reduction in the overall viability of management of the Purbeck Forests	High level of uncertainty, but impact is most unlikely to be significant	None proposed	High level of uncertainty, but impact is most unlikely to be significant
Addition of livestock grazing	Negligible	None proposed	Negligible
Risk/ impact of disease in remaining woodland	Negligible	None proposed	Negligible
Relocation of recreation into forestry areas	Minor negative	Communication and interpretation with recreational users	Minor negative
Fire risk	Moderate negative	Measures to reduce fire risk	Minor negative

# Chapter 7: Hydrology



# 7 Hydrology

## Introduction

- 7.1 This chapter considers the potential impacts of the proposed heathland restoration proposals on hydrology. This chapter details the water features which may be affected by the land use change and discusses the potential impacts and mitigation measures which will be put in place to reduce these impacts. The hydrology assessment was undertaken by Mott MacDonald.
- 7.2 Hydrology and ecology are intrinsically linked and as such, the ecology chapter should be referred to for the potential impacts that changes in the water regime may have on ecology.

### Impacts Assessed in Full

- 7.3 Felling and heathland establishment impacts have been assessed in full. Felling impacts are those which arise during the felling period. Heathland establishment impacts are those which occur once the areas have been felled. In the short term this relates to bare ground establishing as heathland, and in the long term the established heathland.
- 7.4 Felling impacts can occur from:
- Chemical and fuel spills.
  - Vehicle movements.
  - Felling debris and waste.
  - Site compound activities.
- 7.5 Heathland establishment impacts can occur from:
- Changes in vegetation type and absorption of water, and subsequent changes in run-off rates.
  - Nutrient transport into surface and groundwater.

### Impacts Scoped Out

- 7.6 On the basis of the desk-based and survey work undertaken, professional judgement, experience from other relevant projects and policy guidance or standards, the following topic areas have been 'scoped out' and are therefore not considered in detail in this chapter:
- Culverts, bridges and other structures.
  - Groundworks to drainage pipes.
  - Impact on mires.
  - Flood risk.
- 7.7 These have been scoped out as it is understood that there are no plans to build culverts or bridges in order to carry out the heathland restoration, and any groundworks to land drainage to help re-establish mire habitat will not be taking place in the proposed heathland restoration areas.
- 7.8 Impacts on soils have also been largely scoped out of the assessment as it is not expected that the restoration of heathland will have any significant impact on soils. The impacts on soils will mainly relate to changes in overland flow and rates of soil erosion as a result of changes in forestry cover and these impacts have been considered throughout this chapter in the context of hydrology. In addition, there may be impacts relating to changes to the soil carbon content, which have been considered in **Chapter 9: Carbon Assessment**.

## Consultation

- 7.9 As outlined in **Chapter 2**, consultation on the existing FDP proposals was carried out in July 2010 through the Forest Design Plan Forum, which comprised a range of statutory consultees, NGO's and other stakeholders. The main comment raised on hydrology was that the Purbeck FDP and EIA should consider the effects on adjacent SSSIs due to changed hydrology. It was suggested that whilst rate of run-off is likely to be similar, the total volume of water leaving a heathland will be greater than woodland. Surface water runoff has been considered in the following assessment.

## Assessment Methodology

- 7.10 The assessment has been carried out as described below.

### Data Sources and Guidance

- 7.11 Data sources used in this assessment were:

- Environment Agency's What's in your backyard?<sup>xxvii</sup>
- Environment Agency licensed abstraction data.

- 7.12 Guidance documents used in the assessment are:

- Forestry Commission report: Forests and water: UK Forestry Standard Guidelines.<sup>xxviii</sup>
- RSPB report: Updating the EIA from tree removal from heathlands.<sup>xxix</sup>
- Forestry Commission information note: Water use by trees.<sup>xxx</sup>

### Field Survey

- 7.13 A walkover survey was carried out on 27<sup>th</sup> and 28<sup>th</sup> June 2012 to identify the water features and hydrological patterns in the different forest blocks. Springs, water courses and the patterns of surface run-off were identified where possible. There had been heavy rainfall prior to the site visit. **Figures 3.2-3.11** show the proposed heathland areas which are being assessed.

### Assessing Significance

- 7.14 The predicted significance of the impact was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change. The significance of potential impacts on the water environment was assessed by evaluating the sensitivity of the baseline environment and the potential magnitude of the predicted impacts.
- 7.15 The sensitivity of the water environment was determined through a combination of professional judgement and consideration of the environmental value of receptors (as recognised or determined by criteria such as Environment Agency water quality ratings, ecological designation and groundwater vulnerability). Each element of the water environment, or receptor, may be categorised as being of low, moderate or high sensitivity.
- 7.16 The criteria used to determine magnitude are shown in **Table 7.1**.

**Table 7.1: Magnitude Criteria**

Magnitude of Impact	Description
Major	Total loss of, or alteration to, key features of the baseline resource such that post-development characteristics or quality will be fundamentally or irreversibly changed.
Medium	Loss of, or alteration to, key features of the baseline resource such that post-development characteristics or quality will be partially changed.
Low	Small changes to the baseline resource. The changes are detectable but the underlying characteristics or quality will be similar to pre-development conditions.
Negligible	A very slight change from the baseline conditions. The change is barely distinguishable, and approximates to the 'no-change' situation.

- 7.17 A matrix was then used to determine the significance of each impact, as shown in **Table 7.2**. Major and moderate impacts are considered to be significant in accordance with the EIA Regulations.

**Table 7.2: Significance Matrix**

Significance of Impact	Sensitivity		
Magnitude	High	Moderate	Low
Major	Major	Major	Moderate
Medium	Moderate	Moderate	Minor
Low	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible

## Existing Conditions

- 7.18 This section details:
- The current surface water conditions.
  - The current groundwater conditions.
  - Statutory designations.

### Surface Water

- 7.19 Information about current and predicted water quality is available for the main rivers which have been assessed by the Environment Agency in its River Basin Management Plans. In Wareham and Gore Heath Forests, there are two main rivers, Sherford River and Wareham Forest Stream which have been assessed as having moderate current ecological quality under the Water Framework Directive's (WFD) South West River Basin Management Plan<sup>xxxi</sup>. Both are predicted to be of moderate status in 2015. These rivers have not been assessed for their chemical status. Sherford River runs into the Piddle and then into Poole Harbour, and Wareham Forest Stream runs directly into Poole Harbour.
- 7.20 Within the proposed heathland restoration areas in the Purbeck Forest block, there are three main rivers. Brenscombe Stream – Wytch and Greenland Stream have been assessed as being of good ecological status and are predicted to be of good ecological status in 2015. Burnbake Stream has both a current and predicted ecological status of moderate. These streams have not been assessed for chemical status. All three streams run into Poole Harbour. There are no main rivers within 500m of the Hethfelton, Puddletown, Affpuddle and Moreton forest blocks. All watercourses within these areas run into nearby rivers and on into Poole Harbour.
- 7.21 During the site visit, all of the forest blocks considered in this assessment were visited. All of the blocks had very sandy, well-drained soil with little evidence of surface run-off from either heathland or forested areas. Some of the rides within the blocks had drains along each side, and there was pooled water and ponds in the valley bottoms. Puddletown Forest, and Affpuddle were on steeper slopes and there was evidence of channels formed by surface water run-off. Wareham, Gore Heath and Purbeck Forests were either flat or on gentle slopes and no evidence of surface run-off, other than the man-made drains, was found. Hethfelton and Moreton are also considered predominately flat or on gentle slopes.
- 7.22 Despite the heavy rainfall prior to the site visit, there was only a small amount of surface water in the drains and ponds, and in some areas where it had pooled on fire tracks and rides.
- 7.23 There are two known sites where surface water abstraction is licensed to take place within 1km of the proposed heathland restoration boundary. A licensed point surface water abstraction is located within 1km of the Wareham Forest (NGR: SY869906), for agricultural purposes (Licence number: 13/44/045/S/011). The second surface water abstraction site is located within 1km of the Purbeck Forest boundary (NGR: SY96728483, NGR2: SY96688425), water is abstracted for agricultural purposes (Licence number: 13/44/090/S/014). In addition, there may be unlicensed abstractions in the area which have not been identified.

## Groundwater

- 7.24 Some of the areas proposed for heathland restoration within Affpuddle and Moreton are within a Stream Protection Zone (SPZ) 1<sup>xxxii</sup>. Areas of Puddletown are within an SPZ 1, 2 and 3. SPZs are set up to protect drinking water sources from pollution. SPZ 1s have a 50 day travel time from any point below the water table to the source, SPZ 2s have a 400 day travel time, and SPZ 3 is defined as the area around a source which contains groundwater discharged at that source. There are no SPZs within the Wareham, Gore Heath, Hethfelton or Purbeck Forest blocks.
- 7.25 The Purbeck proposed heathland restoration area is underlain by secondary A bedrock aquifer. There are also scattered secondary A and B superficial deposits aquifers. Secondary A aquifers are those which were previously known as minor aquifers and can support local water supplies. They can also support base flow of rivers in some places. Secondary B aquifers were previously known as non-aquifers and contain localised fissures or other features containing groundwater. Principal aquifers can support water supply on a strategic scale. They were previously known as major aquifers.
- 7.26 There is no known groundwater abstraction within 1km of any of the forest blocks. However there may be unlicensed abstractions in the area which have not been identified.
- 7.27 During the site visit, no springs were found.

## Designated Sites

- 7.28 The Affpuddle, Wareham and Purbeck Forest blocks are within the Dorset Heathlands Ramsar site and Special Protection Area (SPA), and the Dorset Heaths and Studland Dunes Special Area of Conservation (SAC). The Ramsar site is designated for its wet heaths and mire and wetland flora and fauna, while the SPA is designated for populations of Annex I birds on predominantly heathland habitats. The SAC is designated partly because of its wet heaths, dry heaths and peat habitats. The designated sites are shown in **Figures 4.1- 4.3**.
- 7.29 There are a number of Sites of Special Scientific Interest (SSSIs) within all of the forest blocks. These SSSIs together form the Dorset heathlands, one of the major lowland heathland areas in Britain<sup>xxxiii</sup>. While none of the proposed heathland areas are within the boundaries of SSSIs, some are immediately adjacent and so would have interrelated hydrological regimes.
- 7.30 In addition, all of the forest blocks are within the Purbeck Nature Improvement Area (NIA), one of the aims of which is high quality heathland restoration over the next three years.

## The 'Do Nothing' Scenario

- 7.31 The 'Do Nothing' scenario relates to the implementation of the existing Forest Design Plan and would mean that the areas proposed for heathland restoration between 2012-2026 would be restocked with trees in due course. If this were to occur, there would be no change in the land use of these areas, and so no alteration in run-off rates or erosion, or change to the hydrology of the areas. The short term impacts relating to the felling of the woodlands would be the same as discussed below.

## Impact Assessment

- 7.32 The potential impacts are considered to be similar within each forest block. The following impacts section therefore refers to all forest blocks unless stated otherwise.

### Predicted Impacts – Felling Operations

#### *Water pollution*

- 7.33 During felling operations, water pollution could occur through chemical and fuel spills, felling debris and waste leachates and from waste and chemicals stored on site. Water pollution may affect surface water drains, streams and ponds as well as groundwater and any associated water abstractions. All of the water features on site are assessed as being of high sensitivity due to their proximity to designated sites across the area.

- 7.34 During felling operations, a range of substances such as fuels, oils, urea and lubricants may be used and stored on site. Accidental spillages of these are likely to affect the quality of surface and groundwater. Pollutants can be spilled directly into surface water bodies, or can enter surface or groundwater indirectly by overland flow or through ground seepage. Due to the small quantities of these substances that would be used, impacts would be expected to be short term. There are no known drinking water abstractions in the Purbeck area, and the SPZ 1 in the Affpuddle Forest block is unlikely to be affected by the small volumes which may be stored on site. There is an area of streamside corridor in Purbeck Forest, and this will be managed in accordance with the Forestry Commission's Forests and water guidelines<sup>xxxiv</sup>.
- 7.35 The ground and surface waters are considered to be of high sensitivity within all blocks and the magnitude of impacts on water pollution without any mitigation measures is assessed as being medium. Therefore the impact of felling operations on water pollution is of **moderate significance (prior to mitigation)**.

#### *Sedimentation*

- 7.36 Sedimentation could occur from vehicle movements and felling activities churning up the soil, and from felling debris and waste entering the surface water. While limited earthworks will take place, the removal of roots and tracking across sandy soils may create loose sediment. During periods of high rainfall, any sediment which becomes loose can then enter surface run-off and flow into streams and drains, increasing turbidity and smothering aquatic communities. The impact on surface waters is reduced due to the small size of the forest blocks to be felled, and the mosaic of mature forest and established heathland surrounding them which will intercept much of the run-off.
- 7.37 The surface waters are considered to be of high sensitivity within all blocks. The magnitude of impacts from sedimentation prior to any mitigation measures is considered to be low, and so the impact of felling operations on sedimentation is of **minor significance (prior to mitigation)**.

### **Predicted Impacts – Heathland Establishment**

#### *Changes in water absorption*

- 7.38 Coniferous forests absorb more water than bare ground or established heathlands, and they intercept more water in their canopies resulting in less water reaching the ground<sup>xxxv</sup>. Therefore once the trees have been removed, there may be more excess water, which could lead to the creation of surface water run-off. This may lead to more sedimentation as the surface water picks up soils and carries them by overland flow into streams and rivers. However, as the forest blocks all have predominantly well-drained sandy soils, it is expected that most surface water will drain through the soil and so will not greatly increase sedimentation or surface water run-off. This increase in the potential water available for drainage may lead to an increase in groundwater recharge.
- 7.39 There is a risk that during periods of high rainfall, run-off channels will form in the bare soil and cause transportation of sediment. There is already evidence of this on the slopes of the Affpuddle Forest block, and so this could increase in the short term, before the heathland becomes established.
- 7.40 The impact on surface and groundwater is likely to be limited due to the small size of the forest felled, and the mosaic of mature forest and established heathland surrounding them.
- 7.41 Once the heathlands are mature, the vegetation will intercept rainfall and absorb surface water. There will be little bare soil and so during periods of heavy rainfall there is little potential for surface water run-off to form channels. The impacts of changes in water absorption are therefore considered to be short term.
- 7.42 The watercourses and groundwater are considered to be of high sensitivity in all forest blocks. In Wareham, Gore Heath, Purbeck Forest, Helthfelton, Moreton and Puddletown, the impacts are considered to be of low magnitude and minor significance. In Affpuddle, where slopes are steeper, the magnitude is considered to be medium and the impact will be of **moderate significance (prior to mitigation)**.

- 7.43 The Forestry Commission have been carrying out a programme of drain blocking across restored heathland and this will continue at new sites. This could alter surface water hydrology by controlling the level of the water table.

#### *Nutrient transport*

- 7.44 Decomposing brash can leach nutrients into surface and groundwaters, reducing water quality, causing eutrophication and sometimes a change in pH which can affect aquatic communities. Felling debris and brash would either be removed from the site or burnt in the autumn/winter following felling and therefore nutrients will not be able to leach into surrounding waters.
- 7.45 Nitrates can also be released into the soil from tree roots following felling<sup>xxxvi</sup>. It is unlikely that the tree stumps would be removed, due to the carbon impact, but key sites would be raked and burnt. Once felling is complete the site would not be worked intensively and intervention would only take place for maintenance, such as bracken control, seedling pine control or occasional controlled burning (~30 year rotation). Nutrients released may enter the groundwater or surface waters. However, the impact to surface water and groundwater is reduced due to the small size of the forest compartments to be felled, and the mosaic of mature forest and established heathland surrounding them. These vegetated areas will absorb run-off and reduce the levels of nutrients reaching groundwater or water courses.
- 7.46 The watercourses and groundwater are considered to be of high sensitivity in all forest blocks. The impact of nutrient release from tree roots is considered to be of low magnitude, and the impact of **minor significance (prior to mitigation)**.

### Proposed Mitigation

- 7.47 No mitigation measures are proposed for the impacts of sedimentation or nutrient transport, as the significance of these impacts has been assessed as minor.

#### **Water pollution**

- 7.48 Water pollution can be caused by felling operations. Best practice and following pollution prevention guidelines can reduce this potential impact. UK Forest Standards – Forests and Water, and Forest and Soil<sup>viii</sup> (Forestry Commission, 2011) will be followed.
- 7.49 The Forestry Commission's own Pollution Control Plan will be followed in the event of a pollution incident. All appropriate personnel working on site will be trained in its implementation. The Control Plan sets out standard procedures to deal with any pollution incident, minimising any risk of damage that may occur. It provides details on preventative measures in relation to fixed facilities and stores for fuel, oil, urea and pesticides and transport of substances that have the potential to pollute the forest site. It details a working checklist which contains points on all operations, ground preparation, riparian management, harvesting, pesticide, fertiliser and sewage sludge application and road/track construction and maintenance. It also contains actions to be taken in the event of a spillage, including an action plan that should be followed.
- 7.50 Toilet facilities will be located within a site compound or away from water courses or features. The effluent from these facilities will be tankered away for off-site disposal.
- 7.51 The Forestry Commission are ISO14001 compliant and have a general Waste Management Plan that covers operations and disposal of the various types of waste, which will be followed.

#### **Changes in water absorption**

- 7.52 The steep slopes in Affpuddle Forest block may cause surface water channels to form, causing sedimentation of surface waters. This is only a very low possibility and is only likely to occur in the period between felling and heathland becoming established. Mitigation will be undertaken and will include raking and burning the ground after felling to encourage the growth of heathland.

## Residual Impacts

### Water pollution

- 7.53 Implementing the mitigation measures described, and following best practice guidelines, will reduce the magnitude of the impact to low and the significance of the impact from **moderate to minor**.

### Changes in water absorption

- 7.54 Implementing the mitigation measures described above will reduce the magnitude of an impact to low and the significance of the impact from **moderate to minor**.

## Further Survey Requirements and Monitoring

- 7.55 Following this assessment, it is not perceived that there will be a need for any additional specific monitoring by the Forestry Commission. Regular inspection of drains, sediment traps and watercourses would be carried out as per the Forest and Water guidelines, with inspection frequencies increased during periods of extreme wet weather.

## Summary of Impacts

- 7.56 **Table 7.3** below summarises the predicted impacts of the proposed heathland restoration proposal on hydrology.

**Table 7.3: Summary of Impacts**

Predicted Impact	Significance	Mitigation	Significance of Residual Impact
Water pollution	Moderate	Following best practice and pollution prevention guidelines. Implement measures to reduce the risk of spills.	Minor
Sedimentation	Minor	None necessary	Minor
Changes in water absorption	Minor for Wareham, Gore Heath, Purbeck Forest, Hethfelton, Puddletown Forest and Moreton.  Moderate for Affpuddle.	Stagger tree felling; rake and burning of the ground after felling to encourage heathland growth.	Minor
Nutrient transport	Minor	None necessary	Minor



# **Chapter 8: Air Quality**



## 8 Air Quality

### Introduction

- 8.1 This chapter assesses the potential impacts of the heathland restoration proposals on local air quality. It considers the potential impacts associated with the felling and restoration of heathland. The air quality assessment was undertaken by Mott MacDonald Ltd.

#### Impacts Assessed in Full

- 8.2 The following potential impacts have been assessed in full:
- Temporary impacts from dust during felling operations.
  - Emissions from plant and vehicles during felling and site maintenance.
  - Impacts from project traffic on local air quality.
  - The potential for increased risk of forest fires and associated emissions that heathland has compared to coniferous forest.

#### Impacts Scoped Out

- 8.3 On the basis of the desk based work undertaken, the professional judgement, experience from other relevant projects and policy guidance or standards, the following topic area has been 'scoped out' and is therefore not considered in detail in this chapter:
- The potential 'scrubbing' of atmospheric pollutants (for example by absorption or particulate trapping) by trees.

#### Consultation

- 8.4 As outlined in **Chapter 2**, consultation on the existing FDP proposals was carried out in July 2010 through the Forest Design Plan Forum, which comprised a range of statutory consultees, NGO's and other stakeholders. No specific comments were raised on air quality issues.

### Assessment Methodology

- 8.5 This section outlines the assessment methodologies employed in assessing the air quality impacts associated with the felling and restoration and maintenance of heathland between 2012-2026.

#### Data Sources and Guidance

- 8.6 The following data sources have been used in this assessment:
- Purbeck District Council's (PDC) air quality monitoring data.
  - West Dorset Council's (WDC) air quality monitoring data.
  - Background pollutant concentration data from Defra's archive.
  - Information relating to proposed felling and maintenance works at the site and schedules.
- 8.7 The assessment has used the following guidance documents:
- Defra's Local Air Quality Management - Technical Guidance LAQM.TG(09)<sup>xxxvii</sup>.
  - EPUK's Development Control: Planning for Air Quality (2010 Update)<sup>xxxviii</sup>.

## Assessing Significance

- 8.8 The proposals have the potential to generate dust during felling operations, and oxides of nitrogen (NO<sub>x</sub>), nitrogen dioxide (NO<sub>2</sub>) and particulates (as PM<sub>10</sub> and PM<sub>2.5</sub>) as a result of emissions from plant and vehicles.
- 8.9 The primary air quality issue associated with dust is the loss of amenity and/or nuisance caused by, for example, soiling of vegetation, buildings and cars and reduced visibility. Dust deposition is expressed in terms of mass per unit area per unit time, e.g. mg.m<sup>-2</sup>.day<sup>-1</sup>. UK guidance suggests that most non-toxic dusts will begin to be perceived as a nuisance when deposition reaches 200 mg/m<sup>2</sup>/day<sup>xxxix</sup>. This figure represents a threshold for significant nuisance. A range of criteria from 133 to 350mg/m<sup>2</sup>/day is found outside of the UK. However, there is no formally recognised methodology for determining these impacts and no statutory standards against which quantified dust levels can be compared.
- 8.10 Assessment of dust, therefore, focuses on qualitative consideration of the potential for dust generation and associated loss of amenity and/or nuisance, based on proposed activities and proximity to sensitive receptors (typically considering receptors within 200m of activities). **Table 8.1** summarises the approach for the assessment of significance of dust impacts and is based on guidance provided by the Mayor of London<sup>xl</sup>.

**Table 8.1: Significance of Impacts – Assessment of Dust**

Dust Emission Potential	Receptor Sensitivity		
	Low	Medium	High
Low	Negligible	Minor	Minor
Medium	Minor	Moderate	Moderate
High	Minor	Moderate	Major

- 8.11 With regard to ecological receptors, the impacts of dust differ according to the vegetation type. However in general, impacts can include: changes in plant growth, increased transpiration, increased permeability, blocked stomata, leaf injury, and reduced vegetative and reproductive growth. Published Literature<sup>xli</sup> suggests that the most sensitive species appear to be affected by dust deposition at levels above 1000mg/m<sup>2</sup>/day which is five times greater than the level for nuisance described above. Most species appear to be unaffected until dust deposition rates are at levels considerably higher than this<sup>xlii</sup>.
- 8.12 Applicable air quality standards for the remaining key pollutants are presented in **Table 8.2**, hereafter referred to as 'air quality objectives' (AQO). Air quality standards apply at locations where members of the public might be regularly exposed for the applicable averaging period.

**Table 8.2: Relevant Ambient Air Quality Objectives (AQO)**

Pollutant	Averaging Period	AQO and Allowances
Oxides of nitrogen (NO <sub>x</sub> )	Annual	30µg/m <sup>3</sup> <sup>(a)</sup>
Nitrogen dioxide (NO <sub>2</sub> )	1 Hour	200µg/m <sup>3</sup> (not to be exceeded >18 times pcy)
	Annual	40µg/m <sup>3</sup>
Particulates (as PM <sub>10</sub> )	24 Hour	50µg/m <sup>3</sup> (not to be exceeded >35 times pcy)
	Annual	40µg/m <sup>3</sup>
Particulates (as PM <sub>2.5</sub> )	Annual	25µg/m <sup>3</sup>

Note: <sup>(a)</sup> For the protection of vegetation and/or ecosystems. pcy = per calendar year

- 8.13 A number of approaches can be used to determine whether the potential air quality impacts of a scheme are significant. However, there remains no universally recognised definition of what constitutes 'significance'. For the purposes of this assessment, significance has been determined on the basis of the magnitude of change in pollutant concentrations assessed, as summarised in **Table 8.3**.

**Table 8.3: Significance Criteria**

Significance of Impact	Description (Annual Mean Concentrations)
Major (Large)	Increase / decrease >10% of AQO
Moderate (Medium)	Increase / decrease 5 – 10% of AQO
Minor (Small)	Increase / decrease 1 – 5% of AQO
Negligible (Imperceptible)	Increase / decrease <1% of AQO

- 8.14 Major and moderate impacts are considered significant in accordance with the EIA Regulations.
- 8.15 Guidance provided by Defra<sup>xliii</sup> advises that where the annual mean NO<sub>2</sub> concentrations are below 60µg/m<sup>3</sup>, the hourly air quality objective (of 200µg/m<sup>3</sup> not to be exceeded more than 18 times per year) will also be met. This guidance has been applied within this assessment.

## Existing Conditions

- 8.16 Information on air quality in the UK can be obtained from a variety of sources including Local Authorities and national network monitoring sites. For the purposes of this assessment, data have been obtained from Purbeck District Council (PDC) and West Dorset Council's (WDC) Review and Assessment work (including monitoring data)<sup>xliiv</sup> and Defra<sup>xliv</sup>.

### Purbeck District Council Review and Assessment

- 8.17 PDC's most recent Air Quality Progress Report (June 2011) confirmed the findings of all its previous assessments, concluding that none of the air quality objectives were being exceeded in the Purbeck area.
- 8.18 The Progress Report states that NO<sub>2</sub> monitoring in Purbeck has recorded concentrations significantly lower than long term air quality objective levels. **Table 8.4** summarises measured annual mean NO<sub>2</sub> concentrations at diffusion tube monitoring sites classified by PDC as 'urban background'. 'Background' monitoring locations are broadly representative of wider background conditions e.g. residential areas. However, these sites are likely to be affected by road traffic since they are all located within two metres of kerbsides and, therefore, strictly classified as 'roadside' sites<sup>xlvi</sup>.

**Table 8.4: Monitored Annual Mean NO<sub>2</sub> Concentrations – Purbeck DC (µg/m<sup>3</sup>)**

Monitoring Location	2010	2009	2008
Wareham B3070	14.5	15.9	16.3
Swanage Queens Road 1	8.9	11.3	13.0
Swanage Queens Road 2	9.2	11.5	13.2
Swanage Gilbert Road	13.3	16.1	16.0

Note: Data capture rates: 100% in 2008 (except for Swanage Queens Road 2 with 92%); 100% in 2009; and 92% in 2010.

All data are bias adjusted.

- 8.19 There are no PDC monitoring sites classified as 'kerbside' or 'roadside' close to the proposed heathland restoration sites.
- 8.20 No particulate monitoring is undertaken within PDC's area since previous assessments have predicted that ambient concentrations are low.

### West Dorset Council Review and Assessment

- 8.21 WDC's most recent Air Quality Progress Report (July 2011) reported that, whilst elevated annual mean concentrations have been measured close to busy roads in Dorchester, Bridport and Chideock, it is unlikely that there will be exceedences of any AQOs in any other areas of West Dorset.

- 8.22 **Table 8.5** summarises the measured annual mean NO<sub>2</sub> concentration at WDC's single 'background' diffusion tube monitoring site.

**Table 8.5: Monitored Annual Mean NO<sub>2</sub> Concentrations – West Dorset Council (µg/m<sup>3</sup>)**

Monitoring Location	2010 <sup>(a)</sup>
Dorchester Borough Gardens	16.2

Note: <sup>(a)</sup> 75% data capture.

All data are bias adjusted.

- 8.23 There are no WDC 'kerbside' or 'roadside' monitoring sites close to the proposed heathland restoration sites.
- 8.24 No particulate monitoring is undertaken within WDC's area since previous assessments have predicted that ambient concentrations are below the AQOs.

### Defra Estimated and Projected Background Pollutant Concentrations

- 8.25 Defra provides estimates of pollution concentrations for NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> across the UK for each one kilometre grid square for a variety of years. The most recent data available from Defra are based on 2010 data and have been used to determine baseline conditions in the Purbeck FDP area. An average of pollutant concentrations attributed to the grid squares which cover each of the forest areas is presented in **Table 8.6**.

**Table 8.6: Defra Annual Mean Background Pollutant Concentrations (µg/m<sup>3</sup>)**

Forest Area	NO <sub>x</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Purbeck Forest (Rempstone)	12.0	9.3	12.4	8.8
Wareham	10.3	8.0	12.5	8.7
Gore Heath	11.4	8.8	12.5	8.8
Hethfelton	9.7	7.5	12.7	8.7
Affpuddle	8.6	6.7	12.6	8.6
Moreton	8.7	6.8	12.4	8.6
Puddletown	8.7	6.8	13.0	8.7

### Summary

- 8.26 Measured annual mean NO<sub>2</sub> concentrations within PDC's area are low compared with the AQO of 40µg/m<sup>3</sup> and these are likely to be affected by road traffic since they are all located within two metres of kerbsides. Similarly, the measured annual mean NO<sub>2</sub> concentration at WDC's background monitoring site is also low.
- 8.27 Since the Purbeck FDP sites are rural and predominantly located away from road sources, it has been deemed more appropriate to use the background data available from the Defra archive for the purposes of this assessment.

### The 'Do Nothing' Scenario

- 8.28 The 'Do Nothing' scenario would mean that the areas currently proposed for heathland restoration would be restocked with trees in due course. If this were to occur, the impacts on air quality would relate predominately to the felling of the existing forestry.

## Impact Assessment

### Predicted Impacts

#### Dust Impacts during Felling

- 8.29 Felling is scheduled to take place on small, fragmented parcels of land interspersed within other forest areas that will not be felled simultaneously. Once felling has taken place the forest compartment will be restored to heathland. Felling activities carried out between 2012-2026 will mean less mechanical intervention (and therefore potential for dust emissions) in approximately 15 years when less felling is required.
- 8.30 Felling will involve the potential dust-generating activities listed in **Table 8.7**. **Table 8.7** also lists the dust emission potential of each activity, the assumed receptor sensitivity, and the assessed significance of impacts which results from consideration of dust emission potential and receptor sensitivity.

**Table 8.7: Assessment of Dust Impacts during Felling**

Dust-Generating Activity	Dust Emission Potential	Receptor Sensitivity	Significance of Impacts
Resuspension of dust / soil on unsurfaced roads by vehicles and plant	Low – wet weather High – dry weather	Low – Medium	<b>Negligible – Moderate</b>
Sawing and generation of sawdust	Low	Low – Medium	<b>Negligible - Minor</b>
Excavation/raking	Low	Low – Medium	<b>Negligible – Minor</b>

Note: Receptors classed as 'low' include: farms, light and heavy industry, outdoor storage, ecological designations and forestry workers. Receptors classed as 'medium' include: forest users, such as walkers, cyclists and campers, schools, residential areas, food retailers, glasshouses and nurseries, horticultural land, offices. Receptors classed as 'high' include: hospitals and clinics, retirement homes, high-tech industries, food processing.

- 8.31 The predicted significance of dust impacts ranges from **negligible** to **moderate**. These impacts will only be experienced by sensitive receptors located within 200m of the activities listed and the impacts will be temporary. Dust impacts are not anticipated to be significantly different than would have been the case for the Existing Forest Design Plan.
- 8.32 There are many ecologically designated sites within the Purbeck FDP areas. Dust impacts on these sites are expected to be **negligible**, however, the dust mitigation measures presented in paragraph 8.49 should be strictly followed in these areas.

#### Emissions from Plant and Vehicles on Site

- 8.33 Plant and vehicles used for felling and site maintenance activities will emit NO<sub>x</sub> (which is partially converted to NO<sub>2</sub>) and particulates (as PM<sub>10</sub> and PM<sub>2.5</sub>) from their exhausts. Felling equipment with the potential to generate emissions could include harvesters, forwarders, chain saws, excavators and scarifiers.
- 8.34 Site maintenance will involve the use of equipment for:
- Management of coniferous and broadleaved woodlands.
  - Clearance of trees and scrub from mire (bog / marsh) and restoration of hydrological systems.
  - Restoration and maintenance of heathland using traditional techniques including bracken control and gorse swiping.
- 8.35 Given the spatial and temporal variation in felling and maintenance activities, it is not possible to quantify the likely emissions from plant and vehicles associated with the activities. Given that the heathland restoration will be spread over a period of 15 years, the intensity of activity will be such that emissions are not expected to be significant.

- 8.36 Existing background pollutant concentrations all represent less than 40% of the relevant AQOs and hence there is no significant risk of an exceedence of any AQO as a result of plant and vehicle emissions within or around the forest sites. Based on professional experience, it is anticipated that any increase in pollutant concentrations would represent less than 1% of the relevant annual mean AQOs and hence would be classed as **negligible** in accordance with the significance criteria presented in **Table 8.3**.
- 8.37 Plant and vehicle emissions are not anticipated to be significantly different than would have been the case for the existing FDP.

#### Impacts from Project Traffic

- 8.38 Traffic generated as part of the Purbeck FDP has the potential to impact on traffic flows and hence air quality close to the local road network.
- 8.39 Data provided by the Forestry Commission indicate that the typical configuration of machines that would be working on a felling site would be one harvester and one forwarder, which could together clear 600 - 800m<sup>3</sup> (2 - 3ha) of timber in a week.
- 8.40 Typically timber lorries have a capacity of 25 - 28t. With common UK timber species having a density of between 0.384t/m<sup>3</sup> and 0.689kg/m<sup>3</sup><sup>xlvii</sup>, the maximum number of lorry movements generated per week by a felling site would be 13 or 26 when considering two way flows, calculated as follows:

Minimum timber density	0.384t/m <sup>3</sup>
Maximum area felled	800m <sup>3</sup>
Maximum mass felled	307.2t (0.384t/m <sup>3</sup> x 800m <sup>3</sup> )
Minimum lorry load	25t
Number of lorries	12.3 (307.2t / 25t)

Note: t = tonnes  
Density is at 12% moisture content.

- 8.41 Using the Highways Agency's DMRB Screening Method spreadsheet tool<sup>xlviii</sup>, emissions from 260 lorries per week (assuming ten felling site operating simultaneously) travelling at 64kph (40mph) along a B Road is predicted to result in an increase in annual mean concentrations of pollutants at five metres from the road centreline as follows:
- NO<sub>x</sub>: 0.27µg/m<sup>3</sup>;
  - NO<sub>2</sub>: 0.10µg/m<sup>3</sup>; and
  - PM<sub>10</sub>: 0.01µg/m<sup>3</sup>.
- 8.42 Predicted pollutant contributions are presented to two decimal places to illustrate the small change in concentrations, this is not an indication of accuracy of the spreadsheet tool. These concentrations are considered conservative as they represent the worst case vehicle emissions from ten felling sites operating simultaneously. In reality a maximum of two felling sites would be worked at any given time.
- 8.43 Regardless, based on the assumed lorry generation figures, impacts are predicted to be **negligible** in accordance with the significance criteria presented in **Table 8.3**.
- 8.44 Based on existing background concentrations of pollutants (see **Table 8.6**) there is no significant risk of any AQO being exceeded.

#### Potential Risk of Forest Fires

- 8.45 'Controlled burning' will form part of the management measures to assist with the planned regeneration heathland. These 'controlled burns' will be carefully planned and managed by experienced staff, and usually carried out during the winter to minimise damage to heathland wildlife. Controlled burns occur over an average of 2 to 3 hectares in total across whole of

Purbeck FDP per winter with a 30 year rotation for each burn site. Relevant mitigation measures applicable to controlled burning are included in the mitigation section below.

- 8.46 Uncontrolled or deliberately set wildfires have very different consequences from 'controlled burns' and can be very destructive, especially during periods of hot and sunny weather when the grass and undergrowth is particularly dry. Fire can travel through gorse and dry undergrowth at a rapid rate, particularly during strong winds and hence the replacement of broadleaved or coniferous forest with heathland will increase the area through which fire can spread rapidly.
- 8.47 Forest fires have implications for local air quality and public health in that they emit pollutants, primarily in the form of particulates. Prediction of the likelihood, frequency and severity of such fires is not possible and hence not feasible to assess in air quality terms. Fire risk has been assessed in **Chapter 6** of this ES with relevant mitigation measures for the prevention of fire.

## Proposed Mitigation

- 8.48 The phasing strategy developed as part of the revised Purbeck FDP will spread activities spatially and temporally in order to minimise the impacts of the proposed activities.
- 8.49 In addition, the following mitigation measures will be employed for the minimisation of local air quality impacts:

### Site Planning

- Works will be planned such that machinery and dust-causing activities will be located away from sensitive receptors where practicable. If this is not possible, health & safety signage will be placed in the forest to warn of possible danger and operational areas should be accessible to authorised personnel only.
- Local residents will be informed of the responsible person in charge.
- No burning of wastes will be undertaken.

### Felling Activities, Plant and Vehicles

- All vehicles and plant will be switched off when not required, there will be no idling vehicles.
- Vehicles and plant will be regularly maintained and comply with legislative requirements or in accordance with manufacturers recommendations.
- Water will be used as a dust suppressant where applicable.

### On-going Management

- A programme of public awareness, such as publication on the Forestry Commission website and the local media, will be maintained in relation to the protection against forest fires.
- Adequate management measures will be maintained for the raising of alarm, and the treating of forest fires should they occur.
- The Fire Plan<sup>xiii</sup> will be followed, reviewed and reissued in March 2014 following its expiration.
- Fire risk will be identified, managed and controlled using the Vegetation Fire Risk Management and Risk Management Control Measures<sup>xv</sup> Toolkit for Practitioners and Advisors.
- Controlled burning will not be undertaken in close proximity to residential receptors.
- Controlled burning will be managed and undertaken by experienced staff, with all necessary safeguards in place for the prevention of uncontrolled spread of fire.

## Residual Impacts

- 8.50 With the implementation of the proposed mitigation measures listed above, the residual impacts the proposed heathland restoration proposals will be reduced to **negligible – minor** with respect to dust. The on-site emission impacts from plant and vehicles and off-site traffic impacts on the local road network will remain **negligible**.
- 8.51 There is no significant risk that any AQO will be exceeded as a result of the proposed heathland restoration.

## Further Survey Requirements and Monitoring

- 8.52 This assessment has not identified the need to undertake any air quality surveys or monitoring.

## Summary of Impacts

- 8.53 **Table 8.8** below summarises the predicted impacts of the heathland restoration proposals on local air quality.

**Table 8.8: Summary of Impacts**

Predicted Impact	Significance	Mitigation	Significance of Residual Impact
Dust nuisance to humans within 200m of felling activities.	Negligible – Moderate	Site planning and dust mitigation measures as listed under paragraph 8.49.	Negligible – minor
Emissions from plant and vehicles on site.	Negligible	Site planning and plant / vehicle use and maintenance measures as listed under paragraph 8.49.	Negligible
Impacts from traffic on the local road network.	Negligible	Not applicable.	Negligible

# **Chapter 9: Carbon Assessment**



## 9 Carbon Balance

### Introduction

- 9.1 This chapter considers the carbon balance of the heathland restoration proposals. It is proposed that 194.7 ha of land will be restored to heathland within seven blocks in Purbeck between 2012-2026, instead of being restocked with trees. This chapter assesses the impact on the carbon balance of this change in habitat cover. The carbon balance assessment was undertaken by Mott MacDonald and its scope discussed and agreed with the Forestry Commission.

### Impacts Assessed in Full

- 9.2 The following impacts have been assessed in full:
- The carbon balance of the trees and soils due to the changes in replanting and felling timetable associated with revised FDP between 2012 and 2026.
  - Carbon emissions from transport to and from the site.
- 9.3 The following impacts have been considered qualitatively:
- Carbon emissions from plant and vehicles during establishment and site maintenance.
  - The effects of controlled burning of heathland on the carbon balance.

### Impacts Scoped Out

- 9.4 On the basis of the desk based work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, the following topic has been 'scoped out' and is therefore not considered in detail in this chapter:
- Potential beneficial reduction in emissions from the use of removed trees for other purposes (e.g. fuel) in place of fossil fuel products.

### Consultation

- 9.5 As outlined in **Chapter 2**, consultation on the existing FDP proposals was carried out in July 2010 through the Forest Design Plan Forum, which comprised a range of statutory consultees, NGO's and other stakeholders. The main comment raised on the carbon assessment was that loss of timber as store of carbon should be assessed. This has been considered in this assessment.

### Assessment Methodology

- 9.6 This section outlines the methodology used to quantify the change in the carbon balance associated with:
- a) the restoration of the heathland areas between 2012-2026 as proposed in the revised Purbeck FDP;
  - b) the restocking of conifer woodland within the areas proposed for heathland restoration.

### Policy Context

- 9.7 The UN Framework Convention on Climate Change (UNFCCC)<sup>xlix</sup> includes provisions for reporting net changes in greenhouse gases through forest activity. In 1997, the UK approved an addition to the treaty – the Kyoto Protocol<sup>l</sup> – which contains more powerful, legally binding measures. The Protocol entered into force in 2005 and sets targets for industrialised countries to reduce their combined emissions to 5% below 1990 levels by 2008 – 2012. It takes account of carbon stores

in forests and net changes due to afforestation, reforestation and deforestation since 1990. These data are included when calculating the reduction in emissions.

- 9.8 The Climate Change Act 2008<sup>li</sup> sets a legally binding target for reducing total greenhouse gas emissions in the UK. Taking 1990 as the baseline, it commits the UK to a reduction of at least 80% by 2050. A framework of five-year carbon targets has been set, which includes a 34% reduction by 2020. However, these targets are not applicable at a project level.
- 9.9 The practice of planting trees and forests to sequester carbon from the atmosphere to compensate for greenhouse gas emissions has become increasingly popular. The Forestry Commission (and partners) has developed the Woodland Carbon CO<sub>2</sub>e (WCC)<sup>lii</sup> which sets out voluntary standards for woodland projects in the UK that sequester carbon. Aspects of the code relevant to the heathland restoration proposals have been considered within this assessment.
- 9.10 The UK Forestry Standard (UKFS)<sup>liii</sup> defines a standard of practice to help ensure that forests and woodlands in the UK are well managed. The UKFS defines the approach of the UK government to sustainable forest management, based on commitments to international agreements and conventions, and provides a framework for the delivery of forestry policies. With reference to climate change mitigation, the UKFS states the following: '*Forest management should contribute to climate change mitigation over the long term through the net capture and storage of carbon in the forest ecosystem and in wood products*'.

### Estimation of Carbon and the Carbon Balance

- 9.11 Growth of woodlands and forests together with natural soil processes can remove carbon from the atmosphere, thereby acting as 'sinks' or stores of CO<sub>2</sub> emissions. In all types of vegetation, the growth of plants (and associated additions of organic matter to soils and peat) can act as a carbon sink and provide some carbon storage in plant tissues and soil. The rate at which different types of vegetation grows affects the amount of carbon that might be sequestered in any year. In any given area of vegetation, the yield class and spacing of trees also affects the overall amount of carbon sequestered. Carbon sequestration is most rapid when trees or vegetation are growing, and slowly reduces as trees or vegetation reach maturity, until decay processes or fire reverse the situation.
- 9.12 The heathland restoration proposals could have an impact on the potential carbon sink by replacing some trees with heathland and other general changes in the vegetation mix. A revised felling programme means that these changes also occur at different times. This assessment examines the potential changes to the carbon balance that could occur as a consequence of the change in woodland land use between 2012 and 2026 for the following scenarios:
- **Base Case** (ie 'do-nothing' scenario) of felling and restocking with conifer (assumed to be Scots Pine).
  - **Project Case** of felling and restoring to heathland.
- 9.13 The Forestry Commission's WCC recommends that the following carbon pools should be included in the assessment of carbon balance for forestry projects:
- Tree biomass (above and below ground).
  - Litter and deadwood.
  - Non-tree biomass.
  - Soil.
  - Greenhouse gas emissions from woodland management.
- 9.14 The WCC provides 'carbon lookup tables'<sup>liiv</sup> containing data as tonnes of carbon dioxide equivalent per hectare per year (tCO<sub>2</sub>e/ha/y) sequestration, or emissions, for each of the elements listed above. Input data for the calculation of overall tCO<sub>2</sub>e/ha sequestered annually at five yearly age groups for a range of woodland types includes the following:
- Species (including 17 major UK forest species).
  - Initial spacing (in metres ranging from 1.2m to 3.0m).

- Yield class (ranging from four to 30 and derived from the FC's online Ecological Site Classification (ESC) database)<sup>lv</sup>.
  - Management (thinning of the crop regularly to the standard 5-yearly thinning regime, or no thinning).
  - Information on soil type and method for preparing for new plantations.
- 9.15 The Guidance to the Lookup Tables suggests that a margin of 20% accuracy should be applied to values in the Tables indicating that there is a degree of uncertainty in the data. It has also been assumed that felling occurs in the middle year of the appropriate felling period (e.g. felling in 2012-2016 occurs in 2014) and that a 'no thinning' regime is in place, in order to complete the calculation.
- 9.16 The 'carbon lookup tables' do not contain information on the sequestering rates of heathland. The Forestry Commission reports that the quantity of carbon captured and retained above ground by heathland is typically 10tC/ha (or 36tCO<sub>2</sub>/ha) over a life cycle<sup>lvi</sup> but could be higher which an average rate of 1.83tCO<sub>2</sub>/ha/y also reported<sup>lvii</sup>.
- 9.17 For this assessment, a rate of 1.59tCO<sub>2</sub>/ha/y has been adopted as a conservative estimate, based on 36tCO<sub>2</sub>/ha over a 15 year period. Since no information is available on how the rate changes over the heathland's lifecycle, it is assumed that the rate is linear.
- 9.18 Woodland as a land use tends to have high levels of soil organic carbon which increases over time, with high inputs of decomposable material from large woody material, foliage and fine roots. Disturbance of the soil can lead to greenhouse gas emissions. Since the total area of forest land that will undergo disturbance is the same for both the 'Base Case' or 'Project Case' (i.e. whether the sites were restored to heathland or replanted with conifers), the impact of soil disturbance will be equal, and hence has not been assessed.

#### Emissions from Plant and Transport on Site

- 9.19 Plant and vehicles used for felling and site maintenance activities will emit CO<sub>2</sub> from their exhausts. Felling equipment with the potential to generate emissions could include harvester, forwarder and chainsaws where manual cutting is required. Where possible the project will try and use biofuels to power such machinery, avoiding this potential source of emissions.
- 9.20 Site maintenance will involve the use of equipment for:
- Management of coniferous and broadleaved woodlands.
  - Clearance of trees and scrub from mire (bog / marsh) and restoration of hydrological systems using drain blocking and bed level raising.
  - Restoration and maintenance of heathland using techniques to control conifer regeneration, scrub, bracken and gorse.
  - Replanting and restocking of felled areas.
- 9.21 Emissions from this source will be the same in the 'Base Case' and 'Project Case' as the same felling of existing habitats would occur in both cases.

#### Impacts from Project Traffic

- 9.22 As discussed in **Chapter 8** (Air Quality), there will be traffic and associated emissions generated as part of the revised Purbeck FDP. The expected number of lorry removal movements per week by a felling site would be 13. Since both the 'Base Case' and 'Project Case' would include the same amount of felling of existing habitats, this is provided to put into context the emissions associated with the traffic movements. Information on the source or destination of these lorries is not known and hence calculation of the overall CO<sub>2</sub> emissions that will arise has not been possible. However an estimate has been provided in the assessment based on potential buyers as an indication of this impact, using emission rates from the Defra/DECC GHG Conversion Rates<sup>lviii</sup> and an assumption of a transport distance of 60km.

### Controlled Burning of Heathland

- 9.23 The sequestration factor used in the calculation of heathland carbon sequestration takes account of management measures such as burning, grazing and scrub clearance and hence a separate assessment is not required.

### Data Sources and Guidance

- 9.24 The following data sources (all supplied/obtained in April 2013) have been used in the compilation of the assessment:
- Data provided by the FC in relation to woodland / forest composition throughout various phases of the Purbeck FDP and corresponding age profile data.
  - Data from the FC's ESC database.
  - Information relating to proposed felling and maintenance works at the site and schedules.
- 9.25 The assessment has used the following guidance documents:
- The FC's Woodland Carbon CO<sub>2</sub>e (2011).
  - The UK Forestry Standard (2011).

### Assessing Significance

- 9.26 No criteria exist for the assessment of significance of carbon emissions or sequestration. The impact of the 'Base Case' has been compared to the 'Project Case' in order to assess whether there is a positive or negative change in the carbon balance as a result of the proposed heathland restorations.

## Existing Conditions

- 9.27 The existing conditions relate to the carbon balance of the 'Base Case' and have been taken into consideration as part of assessment.

### The 'Do Nothing' Scenario – 2003/5 FDP

- 9.28 In the absence of the heathland restoration proposals, the areas would be restocked as conifer forest (i.e. the Base Case'). The outcome of assessing this 'Base Case' has been used as the basis upon which the heathland restoration proposals have been compared.

## Impact Assessment

- 9.29 This section summarises the results of the carbon balance assessment.

### Estimation of Carbon and the Carbon Balance from Biomass

- 9.30 **Table 9.1** presents the total sequestration (in terms of tonnes of carbon equivalent) associated with each of the forest blocks for the 'Base and Project Case' between 2012 and 2026.

**Table 9.1: Total Sequestration (tCO<sub>2</sub>) for Each Block between 2012 and 2026**

Area	Base Case replanting with conifer	Project Case heathland restoration
Affpuddle	1055	1130
Gore Heath	91	128
Hethfelton	163	167
Moreton	249	270
Puddletown	277	306
Purbeck	1665	2057
Wareham	603	762
<b>Total</b>	<b>4103</b>	<b>4819</b>

- 9.31 The results show that for the period of 2012 to 2016, there is a larger amount of sequestered carbon for the 'Project Case' compared with the 'Base Case'. However this difference is small and should be considered in the context of the general sensitivities inherent in the assumptions on which the assessment is based.
- 9.32 A key consideration in interpreting the result of the assessment is that in the 'Base Case' where conifer is planted, in years after the assessment period, the sequestration rate would increase with the 'carbon lookup tables' suggesting that the highest sequestration rates are attained in years 30-45 (for Scots Pine). Due to a lack of data, the profile of growth for heathland has been assumed to be linear. Therefore in the longer term (assuming no other intervention), the heathland restoration may achieve lower overall sequestration rates, but this would be dependent on future management in the areas considered.
- 9.33 In light of results of the assessment, the impact is considered to be **positive** in the 15 year timeframe considered but there may be an impact of negligible significance between the schemes in the long term depending on the future management of the areas considered.

#### Emissions from Plant and Transport on Site

- 9.34 As outlined above, plant and vehicles used for felling and site maintenance activities will emit CO<sub>2</sub> from their exhausts. Under both scenarios, felling would occur. Given the spatial and temporal variation in felling and maintenance activities, it is not possible to quantify the likely emissions from plant and vehicles associated with the activities but they are not considered to be materially different between the two scenarios. The impact is therefore concluded to be of **negligible significance**. Recommended mitigation measures for the minimisation of emissions from these sources are nevertheless included in paragraph 9.38.

#### Impacts from Project Traffic and Transport off site

- 9.35 Estimates from transport emissions have been based on an average of 13 traffic movements per week for the duration of the felling period (15 years to 2026) serving suppliers that are within a 60km radius of the felling locations.
- 9.36 Based on these assumptions, the total amount of CO<sub>2</sub> emissions associated with the transport movements are estimated to be around 605tCO<sub>2</sub> over the duration of the project.
- 9.37 Recommended mitigation measures for the minimisation of emissions from these sources are nevertheless included in section 9.38.

#### Cumulative impacts

- 9.38 As outlined in **Chapter 6**, The Wild Purbeck Nature Improvement Area (NIA) will see a range of landscape restoration projects take place, including a commitment to plant 120 ha of woodland, specifically to offset the loss of woodland area due to heathland recreation (NIA action LMAS4). This new planting will partly offset the reduction in woodland cover of 194.7 ha arising from the heathland restoration proposals. In addition, it is likely that further new woodland establishment is likely to be grant aided under the English Woodland Grant Scheme (EWGS) in the NCA and County which, over the plan period, is likely to exceed the reduction of woodland cover proposed in the revised FDP. These proposals will increase the level of carbon sequestration in the area, although it is not possible to estimate the extent of this increase and the overall impact on the net carbon balance.

## Proposed Mitigation

- 9.39 The following UKFS Guidelines for climate change mitigation will be integral to the Purbeck FDP:

#### Carbon in Soils

- Necessary soil disturbance to secure management objectives will be minimised, particularly on organic soils.

- The potential impacts of soil disturbance will be considered when planning operations involving cultivation, harvesting, drainage and road construction.
- Removal of forest products from the site, including non-timber products, will be undertaken in a manner that does not deplete site fertility or soil carbon over the long term and maintains the site potential.

### Carbon in Forest Ecosystems

- A proportion of standing and fallen deadwood will be left: it will be concentrated in areas of high ecological value, where there is existing deadwood and where linkages can be provided between deadwood habitats –uniform distribution across the forest management unit will be avoided.
- Burning brash and harvesting residues will be avoided unless it can be demonstrated that it is a management necessity, all the impacts have been considered, and the necessary approvals obtained.

### Operational Carbon Footprint

- Forest operations, civil engineering and timber transport will be planned to minimise energy use; and sustainable biofuels considered where feasible.
- The use of pesticides and fertilisers will be minimised in accordance with FC and Forest service guidance.

## Residual Impacts

9.40 This residual impacts will be as set out in the impact assessment above.

## Further Survey Requirements and Monitoring

9.41 This assessment has not identified the need to undertake any surveys or monitoring.

## Summary of Impacts

**Table 9.2** below summarises the predicted impacts of the proposed heathland restoration on the carbon balance.

**Table 9.2: Summary of Impacts**

Predicted Impact	Significance	Mitigation	Significance of Residual Impact
Change in carbon balance from biomass stock in the assessment period	Positive – there will be a small change in the amount sequestered during the assessment period	Management and maintenance activities to accord with UKFS.	Positive -there will be a predicted net increase in carbon sequestration during the assessment period
Change in carbon balance taking into account cumulative impacts from NIA proposals	Unknown	Unknown	Unknown
Change in carbon balance from plant and transport on site	Negligible	Forest operations, civil engineering and timber transport will be planned to minimise energy use and/or use biofuels where possible	Negligible
Change in carbon balance from transport off site	Negligible		Negligible

# **Chapter 10: Historic Environment**



# 10 Historic Environment

## Introduction

- 10.1 This chapter considers the potential impacts of the heathland restoration proposals on the historic environment. It considers the importance of, and likely impacts on, all heritage assets that together form part of the historic environment. The historic environment is defined in the National Planning Policy Framework (NPPF) (2012) as:

*"All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora."*

- 10.2 A heritage asset is defined in the NPPF (2012) as:

*"A building, monument, site, place, area or landscape identified as having a degree of significance<sup>6</sup> meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing)."*

- 10.3 A designated heritage asset is defined in the NPPF (2012) as:

*"A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation."*

- 10.4 The historic environment assessment was undertaken by AC archaeology Ltd.

## Impacts Assessed in Full

- 10.5 The following impacts have been assessed in full:

- Direct physical impacts, on buried or upstanding heritage assets, of forestry operations to fell and remove trees, and to clear ground following felling.
- Indirect impacts on the setting of heritage assets within the revised heathland restoration proposals area.

## Impacts Scoped Out

- 10.6 On the basis of the desk-based and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, the following topic areas have been 'scoped out' and are therefore not considered in detail in this ES:

- Indirect impacts on the setting of heritage assets outside the heathland restoration proposals area, except in the case of designated assets within a specific buffer zone.
- Important Hedgerows, World Heritage Sites, Protected Wreck Sites, Registered Park and Gardens and Conservation Areas, as there are either none within the study areas, or the nearest examples are too distant for their settings to be impacted.

## Consultation

- 10.7 As outlined in **Chapter 2**, consultation on the existing FDP proposals was carried out in July 2010 through the Forest Design Plan Forum, which comprised a range of statutory consultees, NGO's and other stakeholders. The main comment raised in relation to the historic environment was

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<sup>6</sup> Please note that within this chapter, 'significance' as described in the NPPF, is referred to as 'importance'. Significance for the purpose of EIA assessment relates to both the magnitude of the impact and the importance of the heritage asset.

that the possibility of discovering previously unrecorded features when removing tree cover should be considered. This has been evaluated in this assessment.

## Assessment Methodology

- 10.8 The scope of the historic environment in this assessment included designated and non-designated heritage assets as defined in Sections 10.2 and 10.3 above.

### Data Sources and Guidance

- 10.9 The identification of heritage assets used data acquired from the following sources:
- The Dorset County Council Historic Environment Record.
  - The English Heritage Archive (formerly the National Monuments Record, Swindon).
  - Historic maps and documents held by the Dorset History Centre.
  - The National Heritage List for England.
  - The MAGIC website.
  - LiDAR imaging provided by the Forestry Commission.
  - Other published sources and 'grey literature'.
  - Dorset County Council Historic Landscape Character mapping.
  - Site inspections (FC managed areas only) during April, June and July 2012 and May 2013.
- 10.10 Data was acquired for all of the Purbeck forest blocks under consideration. For designated assets, whose importance may be affected by alterations to setting, data generally was acquired for an additional 100m around the Purbeck forest block boundaries. An exception to this is Puddletown Forest where, due to the very limited area of proposed felling, data was collected only from a limited zone around the actual restoration area. An assessment of the importance of all recorded heritage assets has been undertaken and described in **Appendix 10.1 (Tables 1-6)**.
- 10.11 The following statutory and non-statutory legislation, policies and guidance are of relevance to this assessment:
- Ancient Monuments and Archaeological Areas Act (1979).
  - Planning (Listed Buildings and Conservation Areas) Act (1990).
  - Conservation Principles: Policies and Guidance, English Heritage (2008).
  - Design Manual for Roads and Bridges, Volumes 10 & 11, Highways Agency (2009).
  - National Planning Policy Framework, Department for Communities and Local Government (DCLG) (March 2012).
  - The Setting of Heritage Assets, English Heritage Guidance, English Heritage October (2011).
  - Purbeck District Council Local Plan: Final Edition (2011).
  - Draft West Dorset, Weymouth & Portland District Council Plan (2013).

### Field Survey

- 10.12 The field inspection comprised a rapid walkover survey of the forestry blocks that form the focus of this EIA. The principal aims of the walkover surveys were:
- to identify and record the present condition and vulnerability of any recorded heritage assets within forested areas.
  - to identify and record any evidence for previously unrecorded heritage assets or areas of archaeological potential within forested areas, and assess vulnerability.
  - to record the current conditions of the forested areas and to consider the extent to which previous ground disturbance has affected the potential for archaeological features to survive.

- 10.13 Site visits were undertaken April 2012, June and July 2012 and May 2013; these areas are referred to as the detailed survey areas on **Figures 10.3-10.12** Weather conditions were generally overcast and vegetation high, but reasonable confidence in results was achieved. No site visits were made to Hethfelton.

### Assessing Significance

- 10.14 The assessment of significance is calculated by considering the 'importance' of the heritage asset in conjunction with the 'magnitude of change' that is likely to occur to that asset.

#### Importance

- 10.15 The criteria used for assessing the importance of each heritage asset uses advice contained in the NPPF and English Heritage's Conservation Principles; the resulting value is based on a six-point scale, as shown in **Table 10.1** below. This methodology, and the subsequent assessment of impacts and significance of impacts, is derived from the Design Manual for Roads and Bridges (DMRB 2 Volume 11, 2009).

**Table 10.1: Assessment of Importance**

Importance	Factors for assessing the importance of Heritage Assets
Very High	World Heritage Sites (including nominated sites). Assets of acknowledged international importance. Assets that can contribute significantly to acknowledged international research objectives.
High	Scheduled Monuments (including proposed sites). Grade I and II* Listed Buildings. Undesignated heritage assets of schedulable or exceptional quality and importance. Conservation Areas containing very important buildings. Assets that can contribute significantly to acknowledged national research objectives.
Medium	Designated or undesignated assets that have exceptional qualities or contribute to regional research objectives. Grade II Listed Buildings.
Low	Undesignated heritage assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives.
Negligible	Assets with very little or no surviving archaeological, architectural or historical interest.
Unknown	The importance of the resource has not been ascertained.

- 10.16 Where appropriate, the setting of a heritage asset may be considered as part of its importance. The setting of a heritage asset is described in the NPPF as:

*"The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral."*

#### Magnitude of Change

- 10.17 The magnitude of change is assessed using a five-point scale of impacts, whether positive or negative, as shown in **Table 10.2** below. Consideration of potential impacts on setting, uses the guidance provided in the English Heritage guidance document (*The Setting of Heritage Assets* EH, 2011) which states in Section 4.2 that:

*"...if the development is capable of affecting the contribution of a heritage asset's setting to its significance or the appreciation of its significance, it can be considered as falling within the asset's setting."*

**Table 10.2: Assessment of Magnitude of Change**

Significance of Impact	Description
Major	Change to most or all key elements of the heritage asset such that the resource is totally altered. Comprehensive change to settings.
Moderate	Changes to many key elements of the heritage asset such that the resource is significantly modified. Considerable changes to setting that affect the character of the asset.
Minor	Changes to key elements of the heritage asset such that the asset is slightly altered. Slight changes to setting.
Negligible	Very minor changes to elements or setting of the heritage asset.
No Change	No change to asset or its setting

*Significance of Impact*

- 10.18 The predicted significance of an impact is determined using an assessment matrix considering both importance and magnitude of change (see **Table 10.3** below) and professional judgement. Impacts of major or moderate significance are deemed to be significant in terms of the EIA Forestry Regulations.

**Table 10.3: Assessment of Overall Significance of Effects**

		Magnitude of Impact				
		No change	Negligible	Minor	Moderate	Major
Value	Very High	Neutral	Minor	Minor/Moderate	Major	Major
	High	Neutral	Minor	Minor/Moderate	Moderate/Major	Major
	Medium	Neutral	Neutral/Minor	Minor	Moderate	Moderate
	Low	Neutral	Neutral/Minor	Neutral/Minor	Minor	Moderate/Minor
	Negligible	Neutral	Neutral	Neutral/Minor	Neutral/Minor	Minor
	Unknown	Neutral	Neutral	Neutral	Neutral	Neutral

## Existing Conditions

- 10.19 There is no record of comprehensive or exhaustive archaeological surveys having been undertaken across the study areas; indeed the Dorset County Council Historic Landscape Characterisation review on the *Dorset For You* website states that “The heathland cries out for survey.” The relatively benign land use and the legislative constraints to commercial development have meant that archaeological data from casual finds or development-led site investigations are extremely limited. Prehistoric round barrows, surviving as earthworks, are the most commonly occurring type of historic asset found in existing records. Where site investigations have been undertaken in the modern era, generally in areas of reclaimed heathland, it is clear that archaeological sites are significantly underrepresented in the county’s Historic Environment Record (HER) and the potential for new discoveries very high.
- 10.20 The existing archaeological databases are therefore very limited in detail. **Tables 1-6** in **Appendix 10.1** provide a summary of the heritage assets for Purbeck, Wareham, Gore Heath, Hethfelton, Affpuddle, Moreton and Puddletown Forest blocks respectively. The majority of the assets included in these tables have been added during the course of this study, by the examination of historical maps and site visits. In addition it has been possible to use existing data, along with an assessment of local topography, to identify areas considered to be of High (but generally unproven) Archaeological Potential for further remains. **Figures 10.1-10.2** show

keyplans of the respective forest areas. All areas visited as part of the study and the heritage assets identified (including areas considered to be of High Archaeological potential) are shown in **Figures 10.3–10.12**.

- 10.21 In the entire **Purbeck** Forest block (**Figures 10.3 – 10.4**) there are:
- No designated heritage assets.
  - 53 non-designated heritage assets comprising 15 assets of agricultural origin, four settlement related assets, 19 assets of industrial origin, two findspots, one possible funerary monument, one negative archaeological investigation and 11 other features including a stream crossing, parish boundaries and marker stones.
- 10.22 Of these assets, eight fall within the proposed heathland restoration areas and may be vulnerable to direct physical impacts, or indirect effects on setting. They comprise Site 2 (linear features); Site 8 (clay pit); Site 19 (gravel pit); Site 31 (boundary stone); Sites 32-33 (clay pits); Site 34 (boundary stone); Site 44 (parish boundary). These sites are of low or negligible importance.
- 10.23 In the entire **Wareham** Forest block (**Figures 10.5 – 10.7**) there are:
- 12 designated heritage assets comprising 11 Scheduled Monuments (one decoy pond, one hillfort and nine barrows) and one Listed Building.
  - 60 non-designated heritage assets comprising 18 assets of agricultural origin, one settlement related asset, three funerary monuments, eight assets of industrial origin, four roads (including roman road), three findspots and 23 other features including parish boundaries and marker stones.
- 10.24 Of these assets, none fall within the proposed heathland restoration areas and therefore will not be vulnerable to direct physical impacts.
- 10.25 In the entire **Gore Heath** Forest block (**Figure 10.8**) there are:
- No designated heritage assets.
  - Nine non-designated heritage assets comprising four assets of agricultural origin, one asset of industrial origin, two assets of military origin, one road and one boundary stone.
- 10.26 Of these assets, none fall within heathland restoration areas and therefore will not be vulnerable to direct physical impacts.
- 10.27 In the entire **Hethfelton** Forest block (**Figure 10.9**) there are:
- Five designated heritage assets.
  - No non-designated heritage assets.
- 10.28 Of these assets, none fall within heathland restoration areas and therefore will not be vulnerable to direct physical impacts.
- 10.29 In the entire **Affpuddle** Forest block (**Figures 10.10-10.11**) there are:
- 15 designated heritage assets comprising 13 Scheduled Monuments (all barrows) and three Listed Buildings.
  - 19 non-designated heritage assets comprising five assets of agricultural origin, four assets of industrial origin, five probable funerary assets, one road, one settlement and four other features including parish boundaries and markers.
- 10.30 Of these assets, 13 assets fall within heathland restoration areas and may be vulnerable to direct physical impacts and indirect effects on setting. They comprise Sites 300-307 (barrows), and are scheduled monuments; Sites 318, 319 and 322 (possible barrows); Site 326 (road); Site 327 (plantation). Sites 300-307 are of High importance; other sites are of low or unknown importance.
- 10.31 In the entire **Moreton** Forest block (**Figure 10.12**) there are:
- Two designated heritage assets comprising one Scheduled Monument (barrows) and two Listed Buildings.

- 13 non-designated heritage assets comprising eight assets of agricultural origin, two assets of industrial origin, two roads, one settlement.
- 10.32 Of these assets, one falls within heathland restoration areas and may be vulnerable to direct physical impacts and indirect effects on setting. Site 331 is a gravel pit of negligible importance.
- 10.33 In the entire **Puddletown** Forest block study area there are:
- seven designated heritage assets comprising six Scheduled Monuments (five barrows and one Roman Road) and one Listed Building.
  - One non-designated heritage asset, a parish boundary, is recorded in the reduced study area.
- 10.34 The one recorded asset that falls within the heathland restoration may be vulnerable to direct physical impacts and indirect effects on setting. The site is a parish boundary and is of low importance.
- 10.35 Extensive analysis of soil and peat pollen samples have shown that the creation of the Dorset heaths can be directly attributed, in large part, to anthropogenic factors of woodland clearance and consequent soil degradation. While localised clearance may have been underway during the Mesolithic and Neolithic periods (10,000BC to 2,200BC), significant clearance, followed by a relatively short-lived period of arable agriculture, is now known to have taken place during the Bronze Age.
- 10.36 Since their creation, by c 1500BC, the heaths have been used, at varying intensity, for grazing, fuel, clay winning, hunting and timber and being locally reclaimed for arable agriculture. Human intervention has continued to maintain the heath, along with natural agencies such as fire and grazing wildlife. Surviving evidence for prehistoric settlement is slight, and is often found adjacent to watercourses where more fertile soils could be found. Bronze Age burial mounds (barrows) are present over many of the study areas and often located on prominent hillocks. Heathland barrows were generally formed largely of turf stacks and do not always include the prominent 'ring ditch' (quarry ditch) that is associated with barrow construction elsewhere in southern England. As a result, they are often no more than low turf mounds that are very vulnerable to ground disturbance.
- 10.37 Most round barrows in the study area are considered to be of High importance and are protected as scheduled monuments. Of note are the significant groups of barrows found at the west end of the Affpuddle Forest block (**Table 5 in Appendix 10.1**, sites 300-309), but most barrows are either isolated or are located in small groups (as is common on heathland) across Wareham, Gore Heath, Hethfelton, Affpuddle and Puddletown, but to a lesser extent, in Purbeck and Puddletown.
- 10.38 Barrows site have been shown elsewhere in Dorset to be associated with so-called *flat* cemetery features, such as urn fields. There are none recorded within the seven forest blocks, but zones around recorded barrow sites are considered to be of High Archaeological Potential for this reason.
- 10.39 Later prehistoric and Romano-British sites are rare on the heaths and of particular note is the Woolsbarrow Iron Age hillfort (site 117) in the Wareham Forest block, the well-preserved Roman Road through Puddletown Forest (site 501) and the presumed course of a Roman Road running north-west from Wareham (sites 115, 118). The Rempstone and Newton Heaths, and their fringes, were used during the later Iron Age and Romano-British periods for clay extraction and as a fuel source for pottery manufacture. Several of the small clay pits identified in the area may date from these periods.
- 10.40 During the medieval and post-medieval periods, the local heathland was used primarily for open grazing and as a fuel source. Parish boundaries were established and marked by boundary stones; such was the lack of established (field) boundaries. The expansion of arable agriculture using new agricultural techniques in the eighteenth century led to the 'improvement' of localised areas of heath (often around watercourses or existing track ways), a proportion of which failed and reverted to heath or woodland. Local communities were granted rights of turbarry and used the heath for fuel by cutting 'turves'. Localised woodland plantations were introduced and their embanked enclosures can occasionally be traced. Since the end of the nineteenth century the dominant economic activities have comprised military use and forestry, both of which have had some identifiable impacts on earlier heritage assets.

- 10.41 The majority of heritage assets identified in this study date from the medieval and post-medieval periods (principally agricultural and parish boundaries).
- 10.42 The assessment of 'importance' of the heritage assets, shown in **Tables 1 –6 in Appendix 10.1**, includes consideration of the existing condition (survival) of the asset. It is clear that over large proportions of the forest blocks, the use of scarifying techniques during original tree planting has had a significant impact on the survival (and potential survival) of heritage assets. It is estimated that as much as 75% of the total woodland survey area has been subjected to this treatment. Furthermore, most heritage assets have had their setting compromised by the presence of coniferous plantation – most were created in an open heathland landscape that for a large part has been lost.

### The 'Do Nothing' Scenario

- 10.43 The areas of commercial forestry that have been considered in this EIA will, in due course, be subject to thinning and felling activities whether or not the revised heathland restoration proposals are implemented. Both these activities may have impacts on heritage assets. The most significant difference is therefore that the additional activities associated with replanting could have a negative impact on buried archaeological sites. There will also not be an improvement to the setting of features that would otherwise be achieved by the heathland restoration proposals.

## Impact Assessment

- 10.44 **Indirect positive impacts** will arise by the re-establishment of open heathland. This will re-establish the original setting of many heritage assets and, if clearance is undertaken without causing harm to the sites, then the magnitude of impact will be moderate to major and the overall impact will be of **moderate to major positive** significance.
- 10.45 Similarly, the reversion to heathland will re-establish local historic landscape of the affected areas; this will be a **moderate positive** impact.
- 10.46 **Direct adverse physical impacts**, on both buried and upstanding heritage assets may occur during the following forestry operations:
- Thinning and felling: the movement of mechanical plant is the principal source of impact. This activity may cause damage to buried remains by rutting and compaction, and to upstanding earthworks by rutting and deformation. Logging routes will normally use established track ways, but creating new routes to these tracks may incur damage to heritage assets. The magnitude of these impacts may be minor to moderate, and the overall significance of the impact will be **minor to moderate negative (prior to mitigation)**.
  - Ground clearance following felling may affect vulnerable surface remains. The magnitude of these impacts may be minor to moderate and the overall significance of the impact will be **minor to moderate negative (prior to mitigation)**.
- Please note that thinning, felling and ground clearance will take place in the 'do-nothing' scenario. These impacts have therefore been included for information purposes only but do not strictly relate to the impacts of the revised heathland restoration proposals.**
- 10.47 **Indirect negative impacts** on buried remains may arise when localised drainage is affected which has the effect of desiccating currently waterlogged organic deposits (wooden artefacts etc.). No such sites have been identified within the study area and therefore no impacts are predicted.

## Proposed Mitigation

- 10.48 Archaeological sites and any special measures to manage them will be included through the Forestry Commission's Operational Site Assessments (OSA) process (as outlined in Chapter 3: **Description of the Proposals**). Any sites at risk will be identified, marked off and operations

planned to avoid disturbing sites. Advice will be sought from a professional archaeologist (and English Heritage, where appropriate). The UK Forestry Standard Guidelines on Forestry and Historic Environment will be followed.

- 10.49 In all areas of High Archaeological Potential within the heathland restoration zones, a more extensive archaeological walkover will be carried out to check for potential earthwork remains that must be avoided. Scheduled Monument Clearance may be required from English Heritage unless class consent is granted.

## Residual Impacts

- 10.50 The significance of the residual indirect impacts on setting will remain **moderate to major positive** following mitigation.
- 10.51 Following the successful implementation of the mitigation proposals, the significance of the residual direct physical adverse impacts will be reduced from minor to moderate negative to **negligible to minor negative**.

## Further Survey Requirements and Monitoring

- 10.52 Advance surveys in areas of High Archaeological Potential during winter (when there is minimal vegetation cover) will be undertaken.
- 10.53 Tree clearance within scheduled areas will require a grant of consent by the Secretary of State for Culture Media and Sport, unless class consent is provided under Class 1 consent for Agricultural, Horticultural, Forestry works as per the Ancient Monuments (Class Consents) Order 1994.

## Summary of Impacts

- 10.54 **Table 10.4** below summarises the predicted impacts of the heathland restoration proposals on the historic environment.

**Table 10.4: Summary of Impacts**

Predicted Impact	Significance	Mitigation	Significance of Residual Impact
Indirect impacts on setting	Moderate to major positive	None	Moderate to major
Direct physical damage to heritage assets by use of mechanical plant during forestry operations	Minor to moderate negative	Implement UK Forestry Standard Guidelines on Forestry and Historic Environment	Negligible to minor

# **Chapter 11: Summary and Conclusions**



# 11 Summary and Conclusions

## Introduction

- 11.1 Chapters 4 to 10 of this Environmental Statement (ES) have assessed the likely impacts of the heathland restoration proposals on a topic-by-topic basis, including the interactions between impacts. An assessment of the significance of each predicted impact has been made, based on the criteria defined in the topic chapters. **Table 11.1** provides a summary of the potential impacts, both before and after the incorporation of mitigation measures.
- 11.2 For the purposes of this ES, impacts of major or moderate significance are both considered to accord with the significant impacts highlighted in the EIA Regulations. In accordance with the Regulations, the ES has paid particular attention to these impacts and the measures proposed to mitigate them.
- 11.3 The ES shows that, with the proposed mitigation measures in place, many potential environmental impacts associated with the heathland restoration proposals can be avoided or minimised.
- 11.4 The ES concludes that as a result of felling activity, **negative** significant residual impacts will occur in relation to:
- **Bats** at the site level in Purbeck and Affpuddle (in relation to loss of foraging and commuting routes).
  - **Woodland specialist birds** at a site level.
  - **Visual amenity** during the short term.
- 11.5 As a result of heathland establishment, the ES concludes that **positive** significant residual impacts will occur in relation to:
- **Habitats** (ie the creation of heathland) at a County level.
  - **Invertebrates, birds and reptiles** at a local level.
  - **Visual amenity** during the long term.
  - **Setting of heritage assets.**
- 11.6 No residual significant impacts are predicted to occur in relation to land use and socio-economics, hydrology, air quality or the carbon balance.

**Table 11.1: Summary of Impacts**

Predicted impact	Significance	Mitigation	Significance of residual impact
<b>Chapter 4: Ecology</b>			
Badger: Habitat loss, physical disturbance and loss of life	Negative impact at a Site level	Follow standard Operational Site Assessment and Forestry Commission guidelines	None
Bats: Loss of foraging and commuting habitats	Negative impact at a Local level (Purbeck and Affpuddle)	Phase works to minimise impacts on bats. Retention of vegetation in buffer zones around known roosts	Negative impact at a Site level (Purbeck and Affpuddle)
Birds (woodland specialists): Habitat loss	Negative impact at a Site level	None possible	Negative impact at a Site level
Birds (all others): Physical disturbance and loss of life	Negative impact at a Site level	Avoid felling operations during breeding bird season	None
Reptiles: Habitat loss, physical disturbance and loss of life	Negative impact at a Site level	Follow standard Operational Site Assessment and Forestry Commission guidelines	None
Invertebrates: Habitat creation	Positive impact at a Local level	None	Positive impact at a Local level
Habitats: Heathland creation	Positive impact at a County level	None	Positive impact at a County level
Birds: Habitat creation	Positive impact at a Local level	None	Positive impact at a Local level
Reptiles: Habitat creation	Positive impact at a Local level	None	Positive impact at a Local level
<b>Chapter 5: Landscape and Visual Amenity</b>			
Landscape character	Minor positive long term	None	Minor positive long term
Visual impacts Purbeck –recreational users of public rights of way through the forest; and recreational users of public rights of ways surrounding the site to the south, east and north. Wareham and Gore Heath – viewers along some parts of public rights of way through the site. Affpuddle and Moreton - on users of public rights of way through the site. Hethfelton - on recreational users of forest tracks the forest. Puddletown - on recreational users of public rights of way through the forest.	Moderate/ Major negative short term	None	Moderate/ Major negative short term

Predicted impact	Significance	Mitigation	Significance of residual impact
<p>Purbeck –users on parts of the Purbeck Way.</p> <p>Wareham and Gore Heath – visitors to Woolbarrow Iron Hill.</p> <p>Affpuddle and Moreton - travellers along minor roads to the east and south.</p>	Moderate negative short term	None	Moderate negative short term
<p>Purbeck –on recreational users of public rights of way through the forest; and recreational users of public rights of ways surrounding the site to the south, east and north.</p> <p>Wareham and Gore Heath –on viewers along some parts of public rights of way through the site.</p> <p>Affpuddle and Moreton - on recreational users of public rights of way through the site.</p> <p>Hethfelton - on recreational users of forest tracks the forest.</p> <p>Puddletown - on recreational users of public rights of way through the forest.</p>	Moderate/ Major positive long term	None	Moderate/ Major positive long term
<p>Purbeck –on parts of the Purbeck Way and visitors to Brownsea Island.</p> <p>Wareham and Gore Heath – visitors to Woolbarrow Iron Hill.</p> <p>Affpuddle and Moreton - travellers along minor roads to the east and south.</p>	Moderate positive long term	None	Moderate positive long term
<b>Chapter 6:Land Use and Socio-economics</b>			
Reduction in woodland cover	Negligible at all scales from local to national scale	None proposed	Negligible at all scales from local to national scale
Increase in heathland	Minor positive at a local and county scale, Negligible at national scale	None proposed	Minor positive at a local and county scale, Negligible at national scale
Cumulative change in woodland cover with FDP and NIA proposals	Negligible at all scales	None proposed	Negligible at all scales
Reduction in direct employment	Negligible	None proposed	Negligible
Reduction in indirect employment and value addition in the local economy	Negligible	None proposed	Negligible
Reduction in the overall viability of management of the Purbeck Forests	High level of uncertainty, but impact is most unlikely to be significant	None proposed	High level of uncertainty, but impact is most unlikely to be significant
Addition of livestock grazing	Negligible	None proposed	Negligible

Predicted Impact	Significance	Mitigation	Significance of Residual Impact
Risk/ impact of disease in remaining woodland	Negligible	None proposed	Negligible
Relocation of recreation into forestry areas	Minor negative	Communication and interpretation with recreational users	Minor negative
Fire risk	Moderate negative	Measures to reduce fire risk	Minor negative
<b>Chapter 7: Hydrology</b>			
Water pollution	Moderate negative	Following best practice and pollution prevention guidelines. Implement measures to reduce the risk of spills.	Minor negative
Sedimentation	Minor negative	None necessary	Minor negative
Changes in water absorption	Minor for Wareham Main Block, Gore Heath, Purbeck Forest, Puddletown Forest and Moreton Moderate for Affpuddle	Stagger tree felling; rake and burning of the ground after felling and removal of leaf litter to encourage heathland growth	Minor negative
Nutrient transport	Minor negative	None necessary	Minor negative
<b>Chapter 8: Air Quality</b>			
Dust nuisance to humans within 200m of felling activities	Negligible – Moderate negative	Site planning and dust mitigation measures as listed in Chapter 8	Negligible – minor negative
Emissions from plant and vehicles on site	Negligible	Site planning and plant / vehicle use and in Chapter 8	Negligible
Impacts from traffic on the local road network	Negligible	Not applicable	Negligible
<b>Chapter 9: Carbon Balance</b>			
Change in carbon balance from biomass stock in the assessment period	Positive – there will be a small change in the amount sequestered during the assessment period	Management and maintenance activities to accord with UKFS.	Positive -there will be a predicted net increase in carbon sequestration during the assessment period
Change in carbon balance taking into account cumulative impacts from NIA proposals	Unknown	Review of impacts of future forestry management schemes	Unknown
Change in carbon balance from plant and transport on site	Negligible	Forest operations, civil engineering and timber transport will be planned to minimise energy use and/or use biofuels where possible	Negligible
Change in carbon balance from transport off site	Negligible		Negligible
<b>Chapter 10: Historic Environment</b>			
Indirect impacts on setting	Moderate to major positive	None	Moderate to major positive
Direct physical damage to heritage assets by use of mechanical plant during forestry operations	Minor to moderate negative	Implement UK Forestry Standard Guidelines on Forestry and Historic Environment	Negligible to minor negative

# **Chapter 12: References**



## 12 References

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