

# A 20 year working plan

2013 - 2032

## The Sefton Coast Woodlands **'Phase II' Overview**

Coordinated by The Mersey Forest on behalf of  
the Sefton Coast Woodland Owners





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McCoy Wynne

## Foreword

This Working Plan for the Sefton Coast Woodlands has been supported by the Heritage Lottery Funded Sefton Coast Landscape Partnership Scheme, Interreg IVb ForeStClim project and The Mersey Forest Partnership.

We are grateful for the support of these funders, landowners and local community groups to develop this Plan and in particular recognise and the hard work of the landowners in delivering the Sefton Coast Woodlands Forest Plan so effectively over the past 10 years.

The Sefton Coast, as we all know, is a special place with many positive facets, some ancient, some new, all having supporters and champions.

This Working Plan sets out how the trees and woodlands on the coast can be managed sustainably for wildlife, people and the economy.

We were delighted that the Royal Forestry Society recognised the work of the landowners and partnership in trying to adapt management to project climate change and award a “Highly Commended” honour to the Plan.



**Figure 2 Discussion and site visits – A key part of the development of the Forest Plan**

## Executive Summary

This Working Plan is a refresh of the original Sefton Coast Woodlands Forest Plan that was published in 2003, also taking into account the review that took place in 2008.

This original Plan and its review have sustained effective working across over 400ha of woodland on the Sefton Coast, in 16 different ownerships. The activities planned for the first 10 years have been broadly achieved, testament to the hard work of the woodland owners and the efficacy of the plan.

Over the 10 years;

Owners and managers have all played a very active role in managing the woodland, interest groups and partners have contributed significantly to the monitoring of activities and their effects on the woodlands and wider environment. The Mersey Forest coordinated the process throughout the ten years of implementation.

Restructuring (restocking felling) has gone to plan,

A number of compartments have been managed to favour wet and dry slack vegetation in recognition of their importance as open or dune scrub habitats.

The squirrel population suffered a huge decline as a result of an outbreak of squirrel poxvirus in 2007/08, but recovered and appears not to be affected by forest management operations.

The woodlands on Sefton Council, the National Trust and the National Nature Reserve continue to be managed as an educational resource, attracting schools and Universities to use them for learning visits, projects and research.

In the closing stages of the first phase, national timber prices have improved and owners have begun to work together, jointly contracting operations and as a consequence have seen some revenue from their timber and forest products that is being used to offset management costs.

However, after 10 years, we have learnt a lot and this refreshed Plan tries to capture the learning that has taken place.

This refresh of the Working Plan for the Sefton Coast Woodlands has been supported by the Heritage Lottery Funded Sefton Coast Landscape Partnership Scheme, Interreg IVb ForeStClim project and The Mersey Forest Partnership.

The working plan now has additional information on the historical development of the Pine woodland on the coast. It also is set within the context of Green Infrastructure Planning and the updated Mersey Forest Plan.

Over the next 10 years it is planned that the following work will take place

- Thinning - 230ha
- Restocking - 12.31ha
- Planting - 22.71

The exact timing of operations, particularly thinning, will depend on the market price of timber. In recent years this has been increasing, providing opportunities for more economic thinning of the woodlands, generating an income that can be used to support wider management activities.

Delivery of aspects of the Working Plan may also be eligible for Forestry Commission support through the new EU Funding programmes. These are still being developed and so the detail is not available yet.

The Sefton Coast Woodlands continue to be valued by many people for a wide range of benefits that they provide. They also come under scrutiny due to the designations that exist on the Sefton Coast. There is no doubt that the debate about trees on the coast will continue. This plan provides a basis for the adaptive management and the basis of this on-going debate.



**Figure 3** The woodlands provide a rich resource for play, recreation and learning

## Preamble

The Sefton Coast Woodlands Forest Plan was written in 2000/01, consulted on and approved for implementation from January 2003. Since then, the participating landowners and managers have successfully implemented the annual action plan, coordinated by The Mersey Forest and supervised by the Woodland Owners' Task Group (a sub-group of the Sefton Coast Partnership Conservation Task Group).

The action plan was reviewed in 2008, the short term objectives adjusted, activities adjusted to reflect changes, achievements were celebrated and the annual programme was then taken to its ten-year conclusion at the end of 2012.

Much has been achieved over the ten years of implementation:

Owners and managers have all played a very active role in managing the woodland, interest groups and partners have contributed significantly to the monitoring of activities and their effects on the woodlands and wider environment. The Mersey Forest coordinated the process throughout the ten years of implementation.

Restructuring (restocking felling) has gone to plan, falling slightly short only in the second cycle of the plan. Thinning has fallen behind, but efforts in the second cycle, especially the last years have meant that there has been some 'catch up'. Very little natural regeneration has been carried out, largely because public perception has made it hard for owners to wait for it to be a success, whereas planting has kept up with restocking felling.

A number of compartments have been managed to favour wet and dry slack vegetation in recognition of their importance as open or dune scrub habitats.

The squirrel population suffered a huge decline as a result of an outbreak of squirrel poxvirus in 2007/08, but recovered and appears not to be affected by forest management operations. The squirrel and woodlands continue to attract huge numbers of visitors to the Sefton Coast, especially to the Formby and Ainsdale woodlands.

The woodlands on Sefton Council, the National Trust and the National Nature Reserve continue to be managed as an educational resource, attracting schools and Universities to use them for learning visits, projects and research. Their use for amenity purposes are difficult to quantify, but the sheer numbers of walkers and cyclists, both local and from surrounding conurbations, is a testament to the fact that the managers are creating a desirable environment.

In the closing stages of the first phase, national timber prices have improved and owners have begun to work together, jointly contracting operations and as a consequence have seen some revenue from their timber and forest products that are being used to offset management costs.

As the Plan drew to a conclusion, with the help of funding from Heritage Lottery Funding (HLF) and EU Interreg ForeStClim, a second phase has been formulated taking into consideration learning from the first phase, changes in the economic situation, concerns about climate change and shifts in public perception. The medium and short term objectives were consulted on with the view to



getting approval for a further ten years of implementation before the close of 2013 (year 11 of the plan).

True to the very early commitments to transparency and best practice, The Mersey Forest has developed a consultation model based on benefits of Green Infrastructure (section 2.1.8):

**Diagram 1, Green Infrastructure Benefits Model**

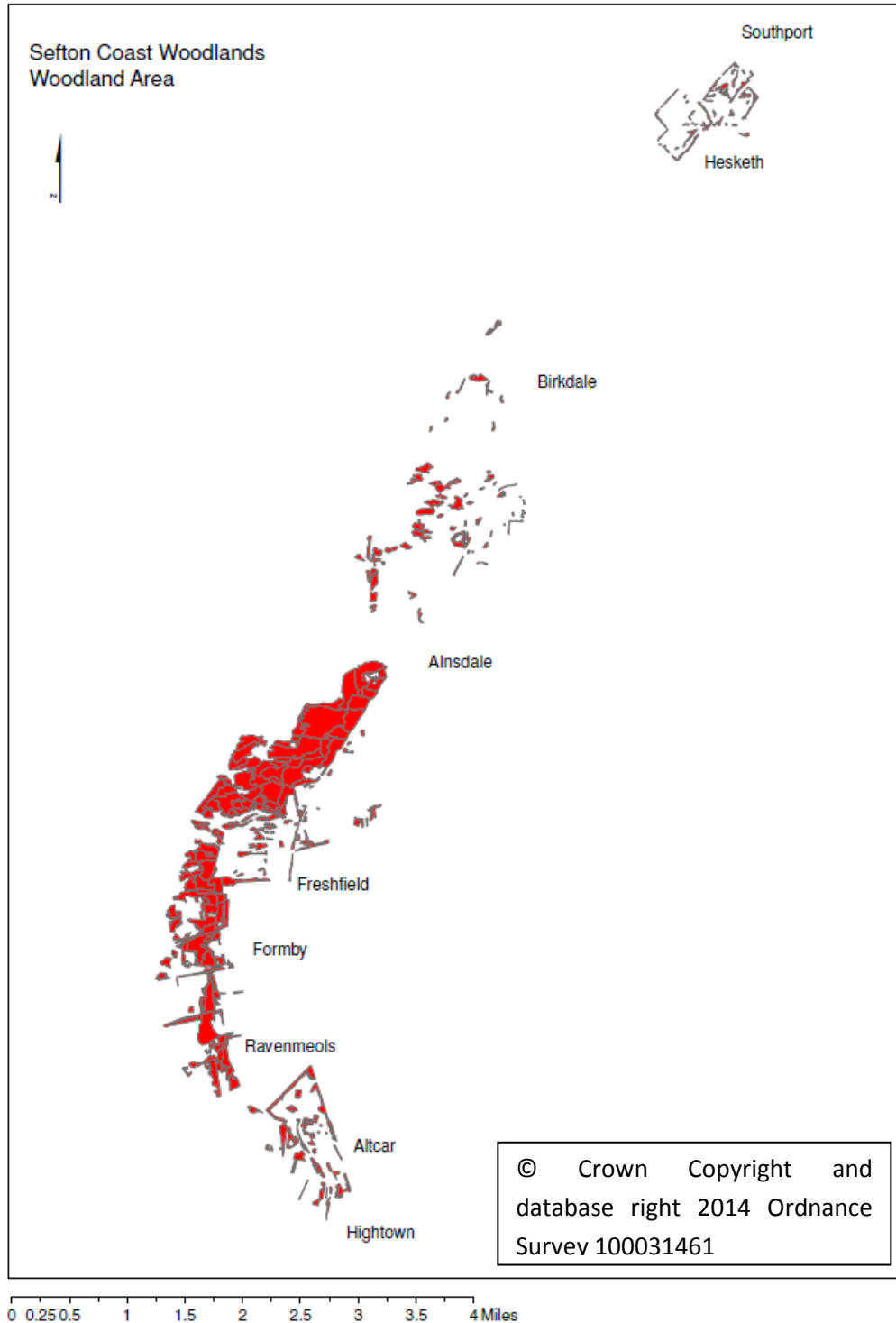


The objectives, achievements and issues were all discussed with an Interest Group Panel (IGP) that was drawn together from people associated with each of the indicated benefit areas, changes were proposed and incorporated into the medium and short term objectives and then activities adjusted to ensure that objectives are still being addressed. In parallel with this process, it was considered good practice—but not a requirement—to enter into a Sustainability Appraisal (SA) looking at the social, environmental and economical impacts of the plan and a Habitats Regulations Assessment (HRA), to ensure that plan activities do not damage European designated habitats.

A draft revised plan emerged by the beginning of 2013, written once more by Nick Roche (contracted by The Mersey Forest) and was taken out to public consultation through the first half of 2013 to allow The Woodland Owners' Task Group to consult on the revised objectives and enable all the participating landowners to consult on their individual activity schedules.

The area that is being dealt with in this plan remains the same, lying on the Sefton Coast between Hesketh in Southport to the north and the Alt estuary to the south. The designated woodlands have been re-mapped recently and are shown to cover 410.95 hectares or 1,015.05 acres and are distributed between 32 different ownerships. In total 93% of the woodland area is included in the Action Plan. The following map indicates total extent of the woodlands:

**Map 1, The Woodland Area of The Sefton Coast Woodland Plan**



## 1 Context

The Sefton Coast Woodlands Forest Plan is one of a number of plans and strategies for different aspects of the Sefton.

The Sefton Coast Partnership provides a forum for discussion and to a degree coordination of these Plans and strategies. The Sefton Coast Woodland Owners Task Group is a sub group of this Partnership Board.

Over the past 10 years there has been a great deal of change in the context for the Sefton Coast Woodlands Forest Plan. Green Infrastructure Planning has developed and provided an opportunity to assess in a systematic way the scope and scale of benefits that the Coast Woodlands provide. The City Region Green Infrastructure Framework provides an inventory and assessment of green infrastructure across Merseyside and Warrington ([www.merseyforest.org.uk/Technical\\_document.pdf](http://www.merseyforest.org.uk/Technical_document.pdf))

The role of the woodlands in adapting the area to climate change and the potential impacts of climate change on the woodlands themselves is now better understood.

The Coast Woodlands are highlighted as a key area in the Mersey Forest Plan that was refreshed and approved by Sefton MBC along with the other six local authority partners in January 2014 ([www.merseyforest.org.uk/plan](http://www.merseyforest.org.uk/plan) ). This plan is supported by National policy such as National Planning Policy Framework and the Environment White Paper.

Increasing pressures on budgets and reduced funding from a wide range of sources means that delivery of the Forest Plan in future will need to be flexible and entrepreneurial. Timber prices over recent years have improved and are projected to improve as demand increases. However, this alone will not fund the delivery of the wide range of services and benefits that the Coast Woodlands provide.

## 1.1 The Sefton Coast

### 1.1.1 GENERAL ARCHAEOLOGY AND HISTORY

#### Prehistoric Age

Through the Palaeolithic (200,000 to 9,500 before present (BP)) the land was subject to a series of glaciations which ended only as the climate improved about 10,000 years ago. This created a dynamic process that has meant that archaeological information was lost to erosion or was submerged under what is now the Irish Sea. The low-lying coastal zone was important to human habitation as it was less harsh than the higher hinterland and would have provided an important supply of wild food and other materials to Mesolithic man (Adams, Harthen 2007). The rivers and fens, characteristic of the Sefton coast, would have provided natural breaks for people to live in and for movement around the region (Cowell 2008).

Some of the prehistoric footprints that have been found on the Formby beaches date from this Mesolithic period (early Stone Age), between 7000 and 6000BP and include prints of aurochs, red deer, roe deer, wild boar, wolf, wading birds, unshod horses, cattle and goat/sheep interspersed with trails of human adults and children (Roberts, Worsley 2008).

The pattern of living for the people of the later Neolithic (6,000 to 4000BP) will have changed little from early Stone Age, though the quality of their tools improved. Although there is evidence of the presence of domesticated animals in some of the sites around Merseyside and west Lancashire, the habitations are still not considered to be permanent (Adams, Harthen 2007). The ability to manipulate the environment using the better quality tools becomes apparent in the finding of a wooden walkway dated to about 5000BP on the beach near present-day Hightown. A 60m length of track, about 1.4m in width and 30cm deep was uncovered, originally laid across salt marsh, possibly to gain access to boats or fish traps. Analysis of the wood suggested predominantly hazel and oak, but with ash, elm, lime, probably hawthorn, alder and birch having been used in its construction.

It is in late Neolithic (the early Bronze Age – 4500 to 2,800BP) that more significant disturbance to what would have been widespread woodland cover can be seen together with increasing evidence of cereal crops through pollen analyses of soil profiles. This suggests a major change to the way that humans were living, abandoning hunter-gathering, they would have cleared the woodland and settled into permanent homesteads together with domesticated animals. The peaty soils of the Sefton hinterland would have been used for growing cereals and the rich grasslands of the wetlands would have provided good grazing. The soil profiles seem to show the pollen of oak, alder, birch, elm and hazel predominating with ash and lime recorded and sycamore beginning to appear (Cowell, Innes 1994).

Elsewhere in the UK, from about 2800 to 2000BP, there is evidence of a gradual shift to iron tools and weapons (the Iron Age) and a growth in material belongings. As agriculture developed in sophistication and the settled pattern of living on more elevated ground became established. The woodland vegetation will have changed little in composition from the previous era, though it is considered that there was a cooler and wetter phase encouraging an expansion of alder woodland or Carr in the wetlands and which will have also had the effect of driving any remnant birch/pine woodland from England into the present Scottish retreats (Tansley 1965).

It is noted that Hoylake on the Wirral was an important port for trade in items such as salt and for the movement of people (Philpott 2008) and with the Alt only 15 kilometres across Liverpool Bay there would have been a natural link providing good access to the hinterland.

### Age of History

There is no information available on the Roman occupation of the Sefton Coast and very little in terms of archaeological findings to provide insight, however, west Lancashire was considered to be sparsely populated through this period and west of the road between *Coccium* (Wigan) and *Bremetenacum Veteranorum* (Ribchester) the area was recorded as being 'thick wood and marshland' (Adams, Harthen 2007).

This lack of habitation is possibly supported by the fact that the climate is known to have been warmer and drier which, for the Sefton Coast, may have resulted in higher sea levels and an increased water-logging of the tidal flats making them less attractive for settlement or even seasonal habitation, but it is by no means certain (Lewis 2002). It is probable that the River Alt would have provided access to the area as part of the west coast trading activities during the Roman period (as in the earlier Iron Age) and there is evidence of Roman settlement (Adams, Harthen 2007).

It is suggested that England was becoming recognisable in its later, medieval form with cities, towns, villages and farmsteads in place, linked by a network of roads, many of which form the basis of today's byways. Perhaps England was already at a point where woodland dotted a populated landscape, rather than there being habitation distributed in a wild landscape which would have been the feature of previous ages. The woodlands in England by the Roman period were generally managed to serve a timber-based economy (Rackham 2006), but this would not have extended into this remote part of the coast, so the remaining tree cover in the Sefton area is likely to have been more 'wildwood' in nature.

It is not clear at what pace the Anglo-Saxon incursion from AD500 onwards proceeded into Sefton with the subsequent displacement of native Briton population. Some indication of their presence is provided in place names such as Melling, 12km east of Formby. Co-existence with the Britons was probably peaceful until the Anglian victory at the battle of Chester in AD614-616 at which point interactions would have become more aggressive. It is thought that the Anglos-Saxons sited their settlements at 30 to 40 m above sea level, avoiding both marsh and hill-tops, which would have made the Sefton area largely uninhabited (Adams, Harthen 2007). There was also thought to have been a deterioration of climate at this point with an increase in dune formation which would have put pressure on any remaining settlements in the coastal plain.

A Norse incursion into Sefton from Ireland began about AD 900 that was not part of the westward movement of invading armies from Scandinavia, but was more of an agricultural settlement by farmers forced to leave Ireland. Again place names provide evidence of this migration, such as *meols* of Ravenmeols derived from a Norse word for sand dunes. It is probable that the Alt again provided a natural point for incursion into land that was sparsely populated (Adams, Harthen 2007).

It was the Norman invasion of 1066 and defeat of the Saxon king Harold at Hastings that led to the establishment of the Norman kingdom and the occupation of English land by the Norman barons. It is thought that periods of Saxon revolt and their quashing and threats to the Norman homeland led William, Duke of Normandy to establish a commission to survey England (the Domesday survey of

AD1086) to help reinforce his administration and as a basis for raising money for the defence of his realms (Chibnall 1986).

That settlements and associated agriculture on the coast were noted in the Domesday Book gives rise to the thought that the tree cover over much of it will have been cleared by the time that the commissioners were recording the landholdings. It is considered that woodland cover in England had dropped to about 15% of the total land area by 1086 (Rackham 2006). Work in the Sefton area using estimates of cultivated land on the whole confirms this broad estimate (Lewis 2000).

By the 1300s it is thought that the land and economy was dominated by the monastic houses or granges that grew up in Ainsdale, Ravenmeols and Altmouth. These granges were established by the Cistercian order who were known to be prolific sheep farmers and it is possible that any remnant tree cover was cleared as part of the management for the extensive sheep grazing (Tansley 1965). There is still evidence of a grange at Altmouth (Houston 1999).

Examination of estate plans to determine field patterns and names led to the conclusion that extensive drainage programmes in the 17<sup>th</sup> Century continued to open up large areas of the mosslands to the east for agriculture, whilst the western edge was very much subject to the vagaries of sand blow and dune instability. A 1428 record indicates the shifting of the village centre of Formby further east as the old centre was inundated with sand, but also gives information on the presence of poorly drained agricultural land (Adams, Harthen 2007).

Although it is generally thought that it was the Normans that introduced wild rabbits into the English countryside for meat and pelts, it was not until 1667 that Henry Blundell and Robert Formby established formal rabbit warrens in the Sefton dunes—an ideal site with light sandy soils and plentiful low vegetation.

Nicholas Blundell, Lord of Little Crosby, recorded in his 'Great Diurnall' of 1702-1728, that he indulged in significant tree planting, however, none of the old maps show any woodland vegetation on the coast between Ainsdale and the Alt. Even in 1795 a Dr J Aikin recorded that the sand hills, 'in some places more than half a mile broad' and with few or no trees within the landscape' (Adams, Harthen 2007). It was only in 1795 that the Reverend Richard Formby planted up an area of just over one hectare at the south western edge of Formby, now known as Firwood (Yorke, Yorke, 2008). The woodland still exists as a mixture of pine and various broadleaves surrounding the remnants of a house that was built by his son Dr Richard Formby (Gray, 2003), though whether it is still the original planting is not so clear. Interestingly the Firwood woodland is not shown on any of the maps subsequent to the planting until the Formby Tithe Map of 1845.

In conclusion it is possible to surmise that tree cover on Sefton Coast was reduced to about 15% by the time of the Domesday survey and then virtually nothing by, perhaps, the 1300s but at least by the late 1400s, early 1500s. A tree cover has then been introduced into the modern day landscape only after 1795 and in earnest after 1860 (as discussed in the next section). It so happens that the introduction of trees into the landscape coincides with the decline of rabbit 'farming' and the upsurge of asparagus cultivation and are somehow linked.

### 1.1.2 GEOLOGY, SOILS, TOPOGRAPHY AND CLIMATE

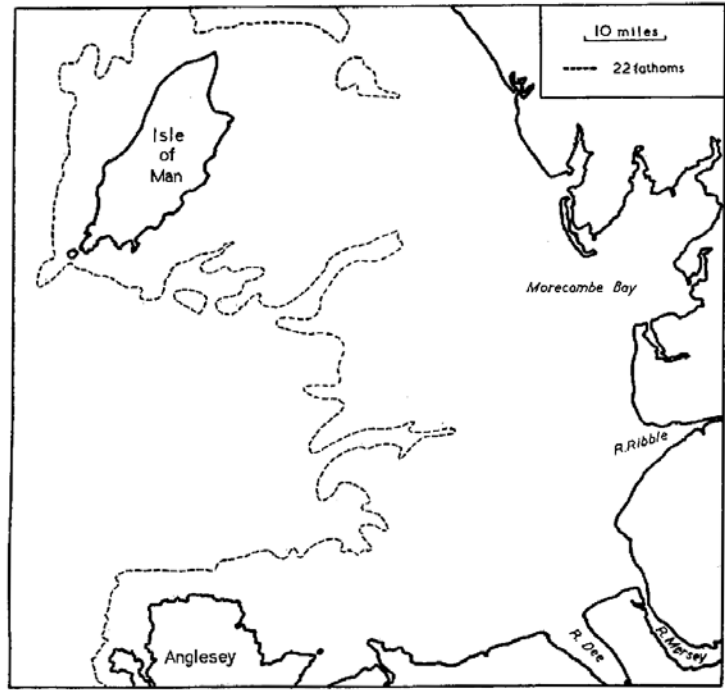
The geomorphology of the UK has been heavily influenced by the action of the glacial ice sheets, but for the Sefton Coast, the most significant impact is that it is probable that sea levels were between 20 and 40 metres below the current level which meant that the coastline would have been much

further west that it is today (Cowell 2008). It is likely that the Isle of Man was part of the mainland (Gresswell 1953) with the link severed about 9,000 years ago (Cowell, Innes 1994).

As the glacial epoch finished the climate would have warmed and the glacial ice melt would have led to sea level rises. The coastline moved into the Lancashire plain and by about 7,000 years ago it is considered to have been about eight kilometres inland of today's line, covering areas such as Downholland Moss (Cowell 2008). It eventually retreated again to the current coastline by the end of the period or early Neolithic (6,000 years ago). This was not a simple advance and retreat as the isostatic and eustatic movements of land and the climatic cycles meant that the coastline would have moved backwards and forwards a number of times (between four to five marine incursions), until some form of balance was reached in relation to today's coast (Gresswell 1953).

It is likely that the coastal landscape would have consisted of inter-tidal sand and mud flats that would have merged into a mosaic of freshwater swamp and

fen woodland consisting mostly of alder Carr. It is also important to note that some of the soil samples have thrown up dune heath vegetation (of which creeping willow may be an indicator) suggesting the presence of older stable dunes and sand dune ecosystems in the area from 9500BP (Roberts, Worsley 2008).



Early post-glacial coastline  
(Reproduced with permission, Fig 6, Page 16, Sandy shores in south Lancashire)

Borehole information from the area indicates blown sand to a depth of 6 metres and boulder clay, probably including lenses of silt, peat and sand for a further 25 metres, overlying the Keuper Marl series (grey shales and mudstones). These were part of the sedimentary rock series laid down in the Triassic division (245 million years ago to 208 million years ago) of the Mesozoic period.

The Keuper Marl and evolving sand dune topography have directly influenced the soils. The Sefton Coast woodlands occupy the low-lying coastal belt of blown dune sand in various stages of stability. The free draining soils are poorly developed, often consisting of an acid needle layer overlying sand in the pine woodlands. The raw sand of the foredunes have a pH of 8-9 due to the high calcium carbonate content, are low in organic matter and plant nutrients and do not retain moisture well. With time and increasing stability the organic matter in the upper section of the profile rises, lowering the pH to 5-6. Water retention increases reducing the leaching of nutrients and improving the potential for plant growth. However, even after 200 to 300 years the changes are likely have extended down only to 10cm or so. Where pines have been planted the process of acidification is much faster, with needle litter reducing pH further to pH 3-4. This lower pH mobilises the iron salts in the profile down to 20cm, with some iron-rich layers forming in the older soils. Those areas that are below the water table for extended periods exhibit anaerobic profiles, with reduced organic

decay and a much higher pH of 8-9. Peat forms in the top few centimetres and leaching and drainage from surrounding dunes enriches the slacks improving conditions for plant growth despite the higher pH. The Keuper Marl boulder clays inland of the dune belt give rise to the flat poorly drained and heavy soils of the agricultural hinterland.

The topography consists of dunes and slacks with varying slope angles up to 35° and a fluctuating water table, particularly on the dunes.

The area receives approximately 800mm of rain annually and the recorded mean annual daily temperature is 9.5° Centigrade, varying between 4.0° in the winter and 16.0° in the summer. The prevailing wind is north-westerly, with a mean annual wind speed of 9 knots. Salt laden winds, potentially damaging to trees, blow throughout the period November to March and can rise to 70 or more knots during storms.

### 1.1.3 COASTLINE DEVELOPMENT

The Sefton Coast contains the largest windblown area of sand in England (Pye, Blott, 2008), but most of the area is now stabilised by vegetation or has been built on and modified by man in some form or another.

Prevalent sea currents, offshore topography, onshore geomorphology, soils, wind patterns, vegetation and 'human endeavour' in the Liverpool Bay all play a role in changes that occur along the coastline. Although there is some four hundred years of evidence of the southward movement of sediment along the coast resulting in sustained removal from Formby Point, interestingly the Point was actually accreting during the second half of the 19<sup>th</sup> Century only to be eroding again from 1906. More recently in the past 20 years, the beach at Southport (the 'golden sands') are also accreting with sediment moved up from Formby Point, with the conversion of the beach to 'green' salt marsh (Plater, et al 2008).

All UK coastlines are subject to a variety of forces and are undergoing, and will always undergo, change. Often it is the sea currents and offshore topography that will determine the major developments—accretion or erosion of the coastline—but it is the interaction of the other factors that will help create the character of a shoreline at any particular time. Changes in any one of these factors will bring about shifts in this character.

The development of the sand dunes along the Sefton Coast have been dated to about 4,000 to 4,600 years ago when the conditions for sand accumulation were right (lower sea levels, quieter waters for silt deposition). Large amounts of sand were brought up into the shallows offshore, exposed at low tide and then blown over the low-lying peat moss land inland of the high-water line.

The dune system over the millennia will have had periods of stability and of mobility and the periods of stability would have been characterised by succession of vegetation, soil formation and slack development. The unstable periods would have seen dunes moving through the area, with many blow-outs occurring where vegetation failed or the sea breached the fore dunes.

Where the shoreline is eroding, the dunes play an important role in defending the hinterland by rolling back as the seaward dune slopes are undermined and then exposed by the sea. This roll-back, despite the apparent damage in isolated areas, maintains the defence against the breaching of the dune system as a whole. A dune, as it rolls-back, reaches a point when vegetation can begin



to re-colonise and stability is once more established. Vegetation plays an important role within this dynamic system and it is in response to this that the management of the dunes has developed.

It has been suggested that management of the dune area extends back for some centuries with Acts of Parliament passed as far back as the eighteenth century to control overuse of the vegetation on the dune areas. By the nineteenth century, the threat of encroachment posed by windblown sand of the developing railway system, of large private properties and of valuable agricultural land ensured that there were concerted efforts to stabilise the dunes using brush faggots, the planting of marram grass, willow and other broadleaves and of course pine trees.

#### 1.1.4 STATUTORY DESIGNATIONS

The Sefton Coast is highly valued for its intrinsic beauty and for its biodiversity, some of which is rare by European and UK standards. This has led to the statutory protective designations at national and international levels and also national and local planning designations. These are listed below:

International:

- 1 Ramsar Site
- 1 Special Protection Area (SPA)
- 1 Special Area of Conservation with proposed extensions (SAC).

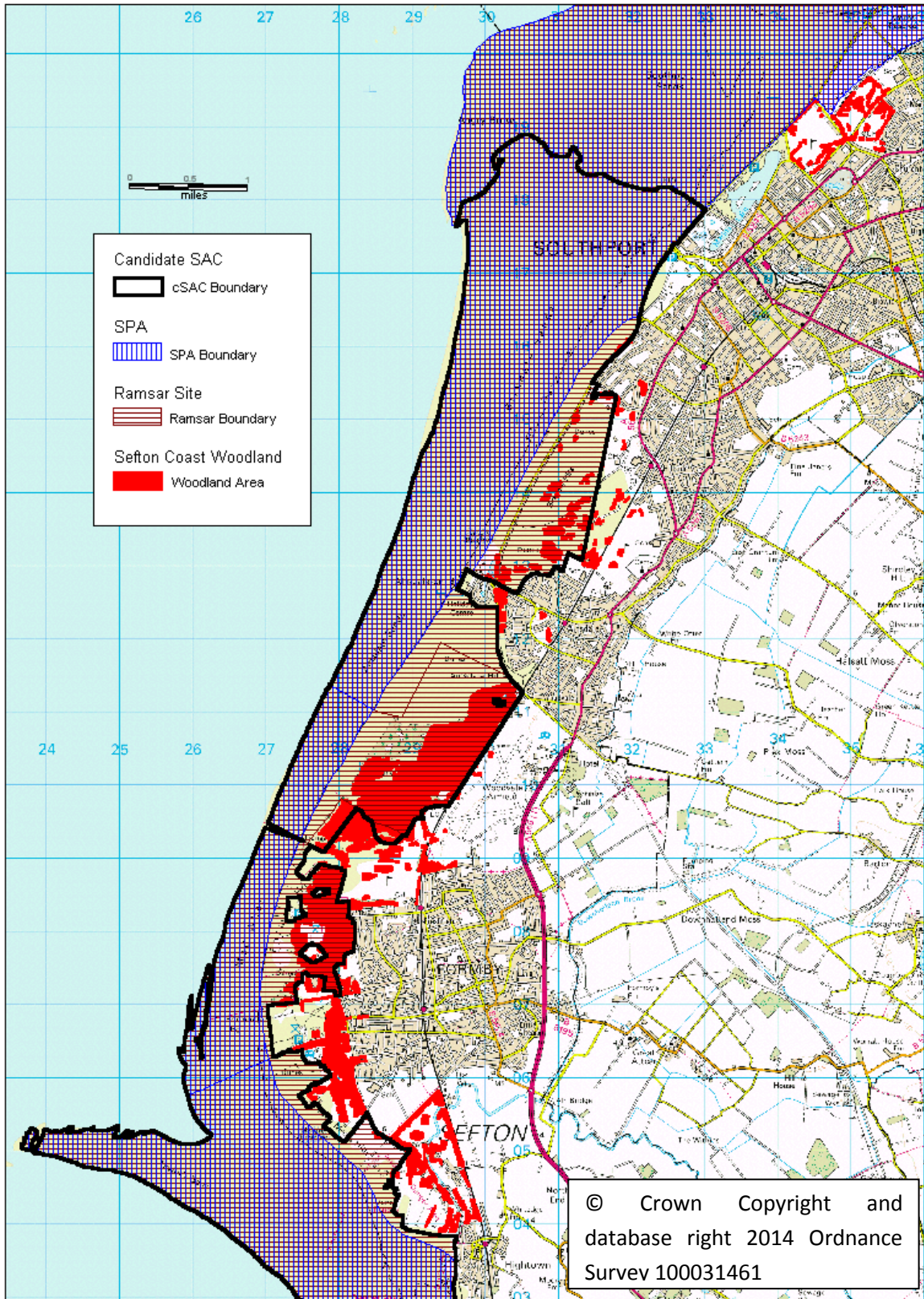
National:

- 7 Sites of Special Scientific Interest (SSSI)—5 of which were amalgamated in August 2000 to make the Sefton Coast SSSI.
- 3 National Nature Reserves (NNR).

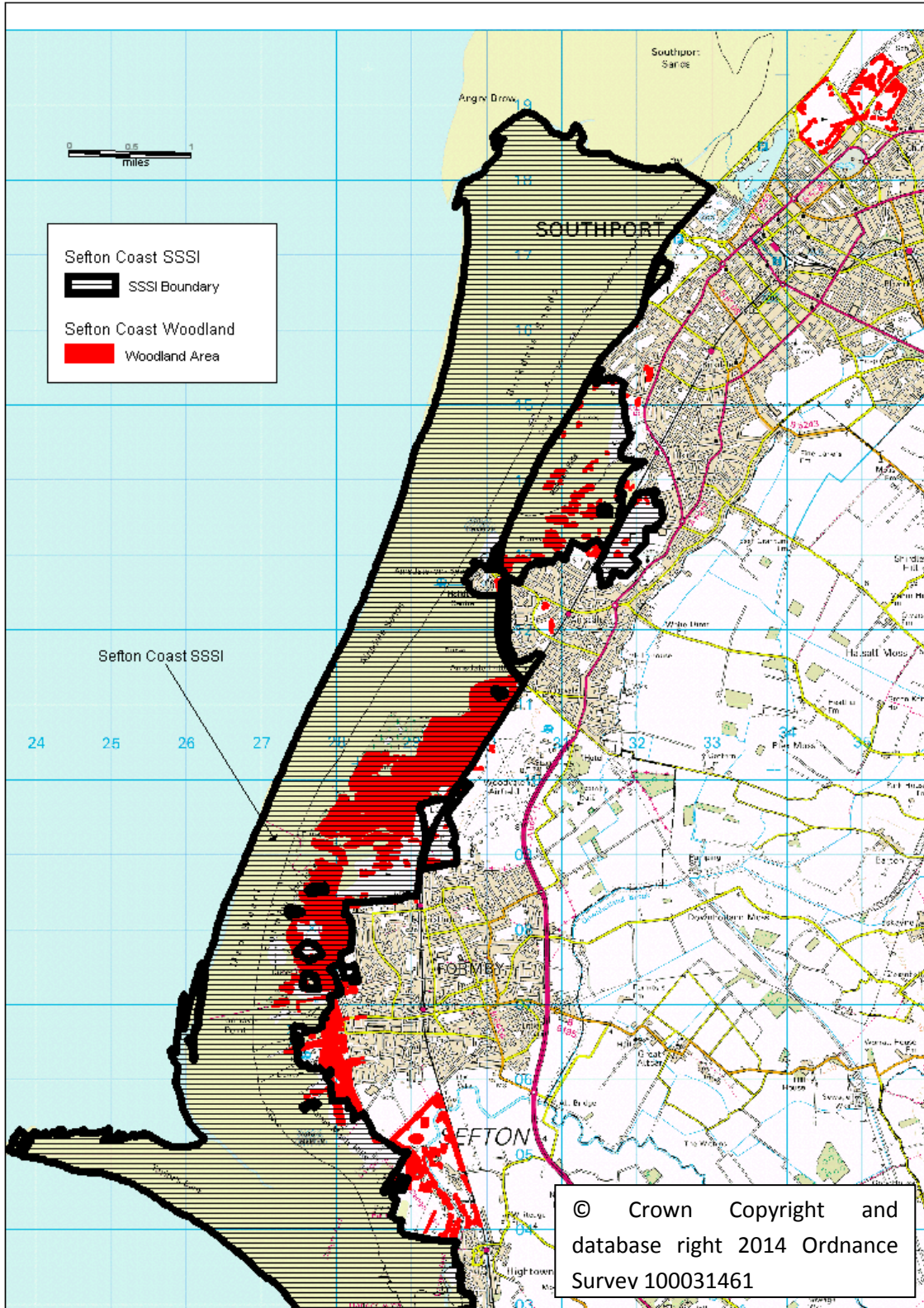
Local:

- 2 Local Nature Reserves (LNR)
- Approximately 24 Local Wildlife Sites in the coastal zone, plus three proposed.
- Numerous Sites of Local Biological Interest (SLBI)

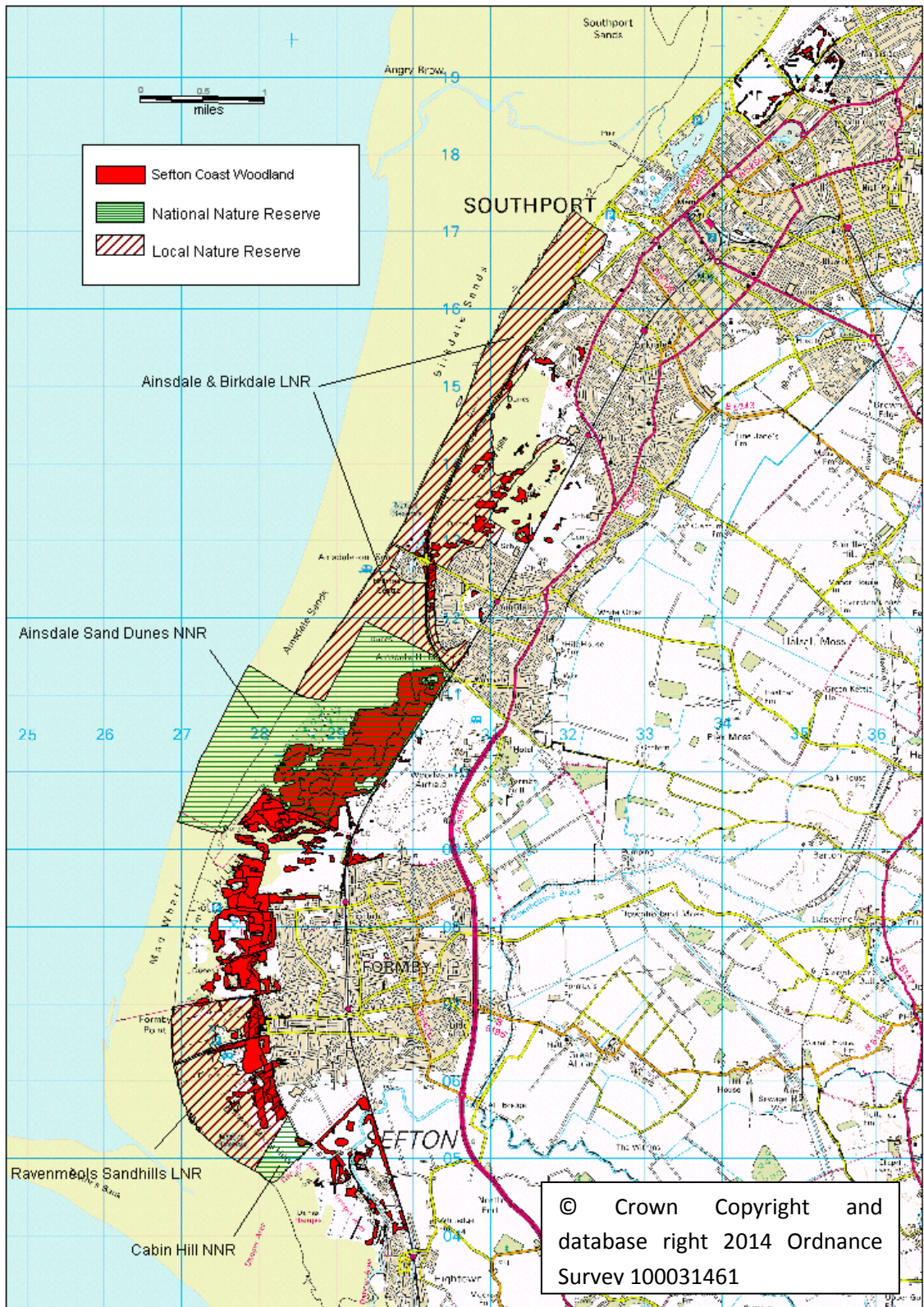
Map 2, International Statutory Designations (SAC, Ramsar Site, SPA)



Map 3, The Sefton Coast SSSI - as notified 16 August 200



Map 4, National & Local Nature Reserves, Sefton Coast



## 1.2 The Sefton Coast Woodlands

### 1.2.1 WOODLAND STRUCTURE

#### Woodland Types

The 410.95 ha of woodland, in terms of tree cover are divided up between woodland, scrub and bare areas, where:

*Woodland* is defined as those areas populated with trees that have a canopy cover of 20% or more (where a tree is a plant that has a permanently woody trunk, which in its natural state usually develops branches at an appreciable height above the ground and when in leaf creates a canopy that covers an area significantly greater than the trunk).

*Scrub* is defined as a growth or tract of stunted woody vegetation that can include stunted trees or shrubs with a canopy cover of 20% or more.

*Bare* is defined as geographically distinct areas with a tree cover less than 20%. This does not include open areas within a compartment otherwise designated as woodland or scrub (including some of these bigger areas can push the total of bare land up to 5% (The Mersey Forest 2007)).

**Table 1 Designated Areas of Woodland and Scrub**

Cover	Area, ha.	%
Woodland	359.19	87%
Scrub	50.22	12%
Bare	1.54	1%
<b>Total</b>	<b>410.95</b>	

Within these broad definitions, The Sefton Coast Woodland and Scrub Management Strategy (Ennion 1999) has identified three woodland types:

*Pinewood* being defined as those with pine constituting 75% or greater canopy composition. The pine species being a mixture of Corsican, Scots, lodgepole and maritime pine. Of the species Corsican pine is the most common at approximately 80%.

*Broadleaf woodland* being defined as having 75% or more deciduous species in the canopy composition. A number of distinct broadleaf woodland types are found in the Sefton Coast region: alder carr woodland; planted mixed broadleaf consisting of sycamore, beech, horse chestnut, white poplar<sup>1</sup> with an understorey of elder, hawthorn and bramble; a third type has developed from poplar, willow, birch and sycamore scrub.

*Mixed woodland* being defined as 25-75% (by crown composition) pine mixed with deciduous and other conifer species. There is a wide range of species mixtures.

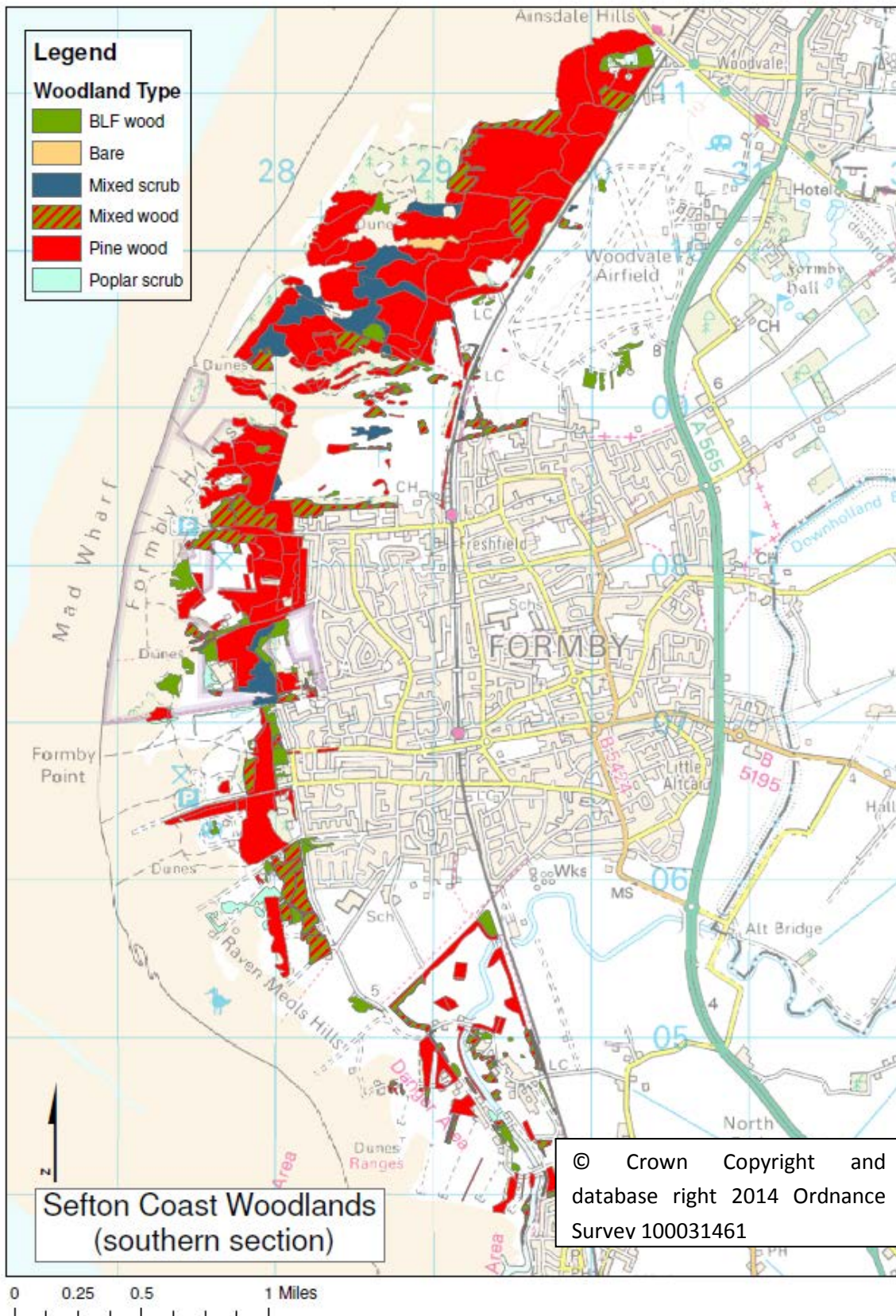
<sup>1</sup> Much of the White Poplar (*Populus alba*) has now hybridised with Aspen (*P. tremula*) to become Grey Poplar (*P. x canescens*). A minor point perhaps but it is now quite hard to find pure White Poplar along the coast. (PH Smith – Private correspondence)

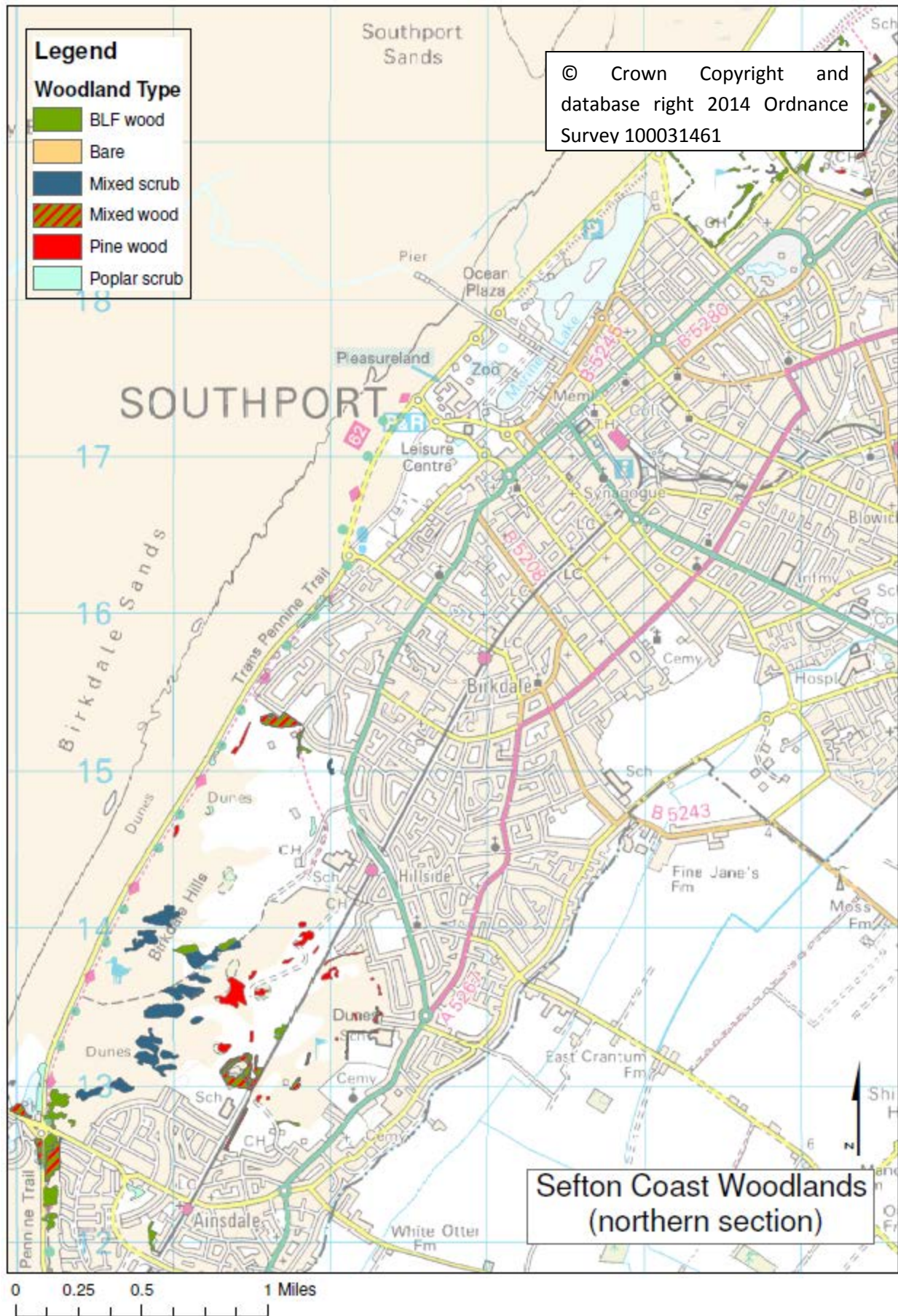
**Table 2 Woodland Types**

<b>Woodland type</b>	<b>Area, ha.</b>	<b>% of Wood</b>	<b>% of Total</b>
Pinewood	253.85	71%	62%
Broadleaf woodland	37.65	10%	9%
Mixed woodland	67.69	19%	16%
<b>Total</b>	<b>359.19</b>		

The following maps illustrate the spread of each type:

**Map 5, Woodland Types, Sefton Coast**







It should be noted that there is some difficulty in obtaining definitive figures for this breakdown. The figures and maps shown here are derived from the current dataset held on The Mersey Forest database. In the work reported in the Disaggregated Data broadleaf content is as high as 26%. The differences appear to be for following reasons: Firstly that as the dataset is examined in more detail, misreporting has been shown up which has led to the compartment being re-designated; secondly, as field work progresses some compartments are being re-designated based on a clearer understanding of their composition, but as this is often subjective it is hard to quantify and may vary between managers and field workers; thirdly, management work has change species composition in a few small areas (in terms of the area, this is not significant—probably about 0.5% of the total area); and finally in presentation the figure has sometimes included broadleaf scrub and sometimes not and has sometimes been reported as a percentage of total and sometimes of woodland area.

Ennion also identified three scrub types, which when reanalysed presents as follows:

**Table 3 Scrub Types**

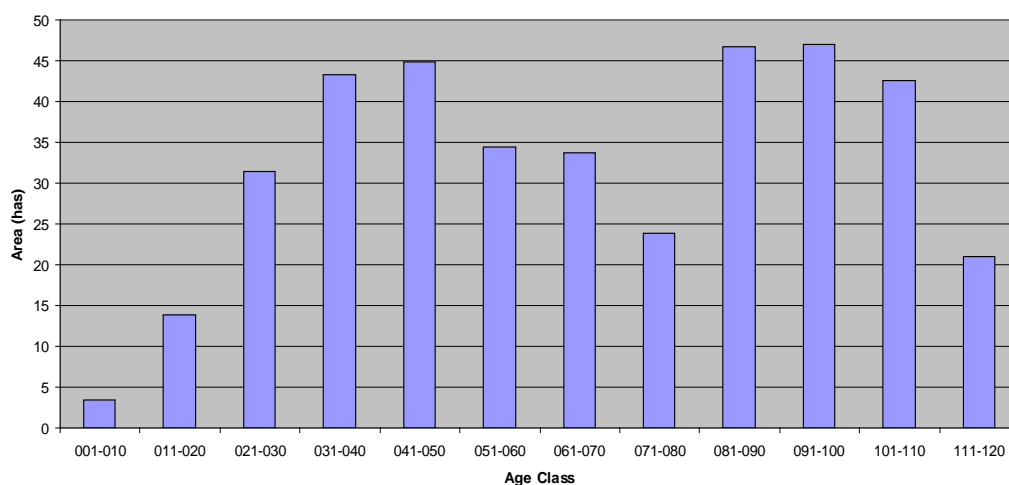
Scrub type	Area, ha.
Sea buckthorn scrub	0
Poplar scrub	7.67
Mixed scrub	42.55
<b>Total</b>	<b>50.22</b>

It should be noted that there is still buckthorn present in a number of woodland compartments, but due to a lot of work by many land managers to remove the species, there are no areas where buckthorn still predominates (hence in a broad analysis, the figure is 0%).

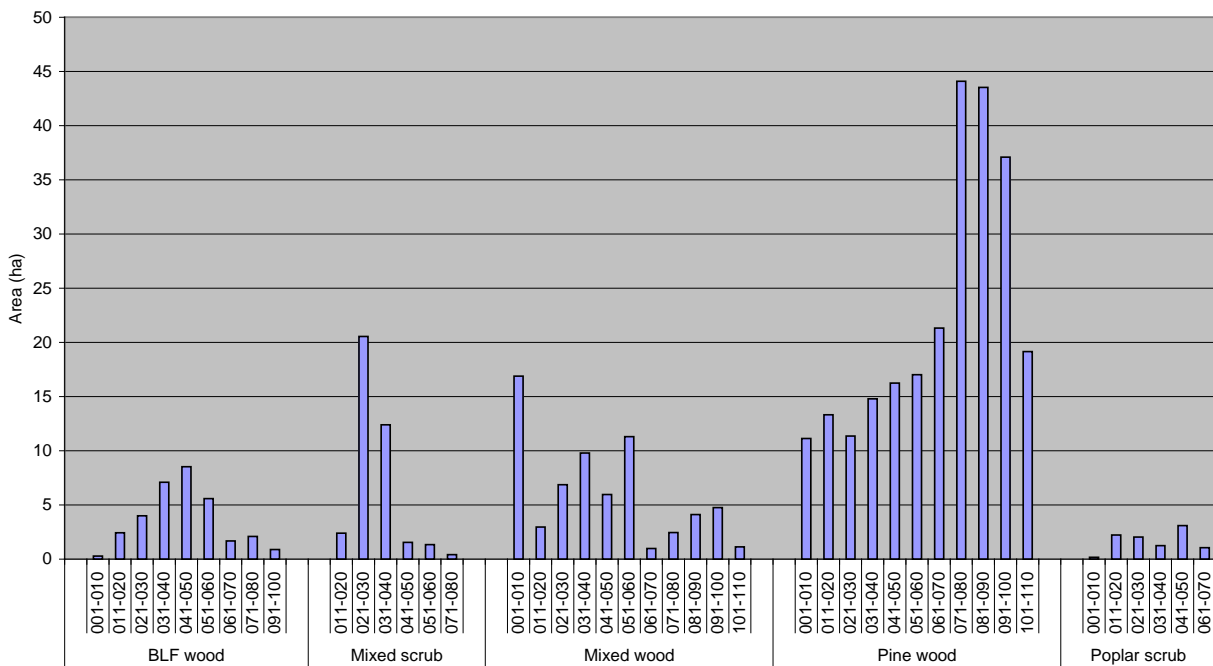
## Woodland Age

If the woodland is taken as a whole, in the re-analysis of the current database the following profile emerges:

**Diagram 2, \_Age Profile of the Woodlands on the Sefton Coast (2012)**



If this data is disaggregated for woodland type, then a particularly skewed distribution can be seen in the pine woodland category:

**Diagram 3, Age Profile of the Woodlands by woodland type (2007)**

It is particularly the age structure of the pinewoods (62% of the woodland) that has led to the call for restructuring.

### 1.2.2 OWNERSHIP OF THE WOODLANDS

In the first phase of this plan, the analysis of area, woodland composition and age was based on data received from the Merseyside Environmental Advisory Service (MEAS, previously known as JCAS) which was not geographically disaggregated within compartment boundaries. Since then, three things have happened: Firstly, the quality of mapping material (MasterMap and aerial photography) has improved; secondly resources were put into analysing compartment composition in 2007 (The Mersey Forest 2007); and thirdly resources were put into re-mapping compartment boundaries in 2012. The combination of these three factors has meant that there a number of changes in the base-line data—apart from changes that have occurred as a consequence of management interventions (see Section 1.2.5)—most notably that the total area has been reassessed to be 411 rather than the 420 hectares previously recorded, that the age profile across the woodlands has evened out to be more ‘normal’ (evenly distributed in all age categories) and thirdly that there is a much higher total broadleaf content (up to 25%, rather than the original 10%).

It should be noted that much of the change in total area should be attributed to more accurate mapping and interpretation of aerial photographs, where roads, rides and property and compartment boundaries have excluded areas previously included as woodland. The small proportion of woodland that has seen change from woodland to other land designations is attributed to the effects of sand dune movement at Ravenmoels and Formby Point and illegal felling on Shorrocks Hill, however, some of this has been made up for in previously unscheduled new planting and so is not a factor in this ‘change’ in area.

Sefton Coast woodland and scrub is distributed between 32 different ownerships, the largest being the National Nature Reserve owned by Natural England at 157 hectares and the smallest in private ownership at less than a hectare. The breakdown is detailed in the following tables and maps:

**Table 4 Sefton Coast Woodland Ownership by site (Bold indicates that the area is covered by the detailed action plan)**

S. no.	Site	Ownership	Area
1	1, Alexander Road	Private, 1 Alexander Road	0.14
2	2, Alexander Road	Private, 2 Alexander Road	0.04
3	<b>Ainsdale Sand Dunes NNR</b>	Natural England	157.32
4	<b>Altcar Rifle Range</b>	RFCA	27.06
5	Atherton Cottage	Private, Atherton Cottage	0.23
6	Badgers Rake	Private, Badgers Rake	1.95
7	<b>Birkdale Hills</b>	Royal Birkdale Golf Club	3.57
8	<b>Birkdale Hills</b>	SMBC, Coast & Countryside	23.05
9	<b>Cabin Hill NNR</b>	Natural England	0.85
10	Cloven-le-Dale Farm	Private, Cloven-le-Dale Farm	0.52
11	Firwood	Private, Firwood	1.37
12	Formby Caravan Park	Formby Caravan Park	0.25
13	<b>Formby Golf Course</b>	Ladies' Formby Golf Club	4.99
14	<b>Formby Golf Course</b>	Men's Formby Golf Club	41.91
15	<b>Formby Point</b>	National Trust	72.99
16	<b>Freshfield Dune Heath</b>	Private, Freshfield Dune Heath	1.07
17	<b>Freshfield Dune Heath (Woodvale)</b>	Lancashire Wildlife Trust	4.13
18	<b>Golf Cottage</b>	Private, Golf Cottage	0.35
19	Greenloons Farm	Private, Greenloons Farm	0.63
20	Hawes House	Private, Hawes House	1.82
21	<b>Hesketh Golf Links</b>	Hesketh Golf Club	7.50
22	<b>Hillside Golf Course</b>	Hillside Golf Club	5.48
23	<b>Lark Hill Farm</b>	Private, Lark Hill Farm	1.68
24	Lark Hill Farm House	Private, Lark Hill Farm House	0.82
25	<b>Lifeboat Road</b>	SMBC, Coast & Countryside	12.43
26	<b>Lifeboat Rd, Cambridge Rd, Birkdale</b>	SMBC, Estates	1.65
27	<b>Southport Golf Links</b>	SMBC, Landscape Services	3.37
28	<b>Ravenmeols</b>	SMBC, Coast & Countryside	16.42
29	Shorrocks Hill	Private, Shorrocks Hill	8.50
30	Shorrocks Hill Country Club	Private, Shorrocks Hill Country Club	0.78
31	Southport and Ainsdale Golf Course	Southport and Ainsdale Golf Club	2.33
32	<b>St Josephs Convent</b>	Poor Servants of the Mother of God	1.50
33	<b>St Lukes Church Wood</b>	St Lukes Church	0.46
33	Windy Gap, Ainsdale NNR	Private, Pilkington Estate	2.66
34	<b>Woodvale Airfield</b>	MoD	1.13
<b>TOTAL</b>			<b>410.95</b>

If this data is re-presented as ownerships over 3 hectares (combining sites for each ownership):

**Table 5 Sefton Coast Woodland Ownership by size (over 3 hectares)**

Ownership	Area
Natural England	158.17
National Trust	72.99
SMBC, Coast & Countryside	51.90
Men's Formby Golf Club	41.91
RFCA	27.06
Private, Shorrocks Hill	8.50
Hesketh Golf Club	7.50
Hillside Golf Club	5.48
Ladies' Formby Golf Club	4.99
Lancashire Wildlife Trust	4.13
Royal Birkdale Golf Club	3.57
SMBC, Landscape Services	3.37
<b>TOTAL</b>	<b>389.57</b>

The majority of woodland is held by 12 individual owners with the remaining 21 hectares distributed between another 20 landowners (averaging 1.3 hectares), in general private houses and small businesses. Sixteen owners have been involved in the development of detailed long term action plans for their woodland. This represents 385.91ha or 93% of the total woodland area.

**Table 6 List of owners and area included in the development of long term management plans**

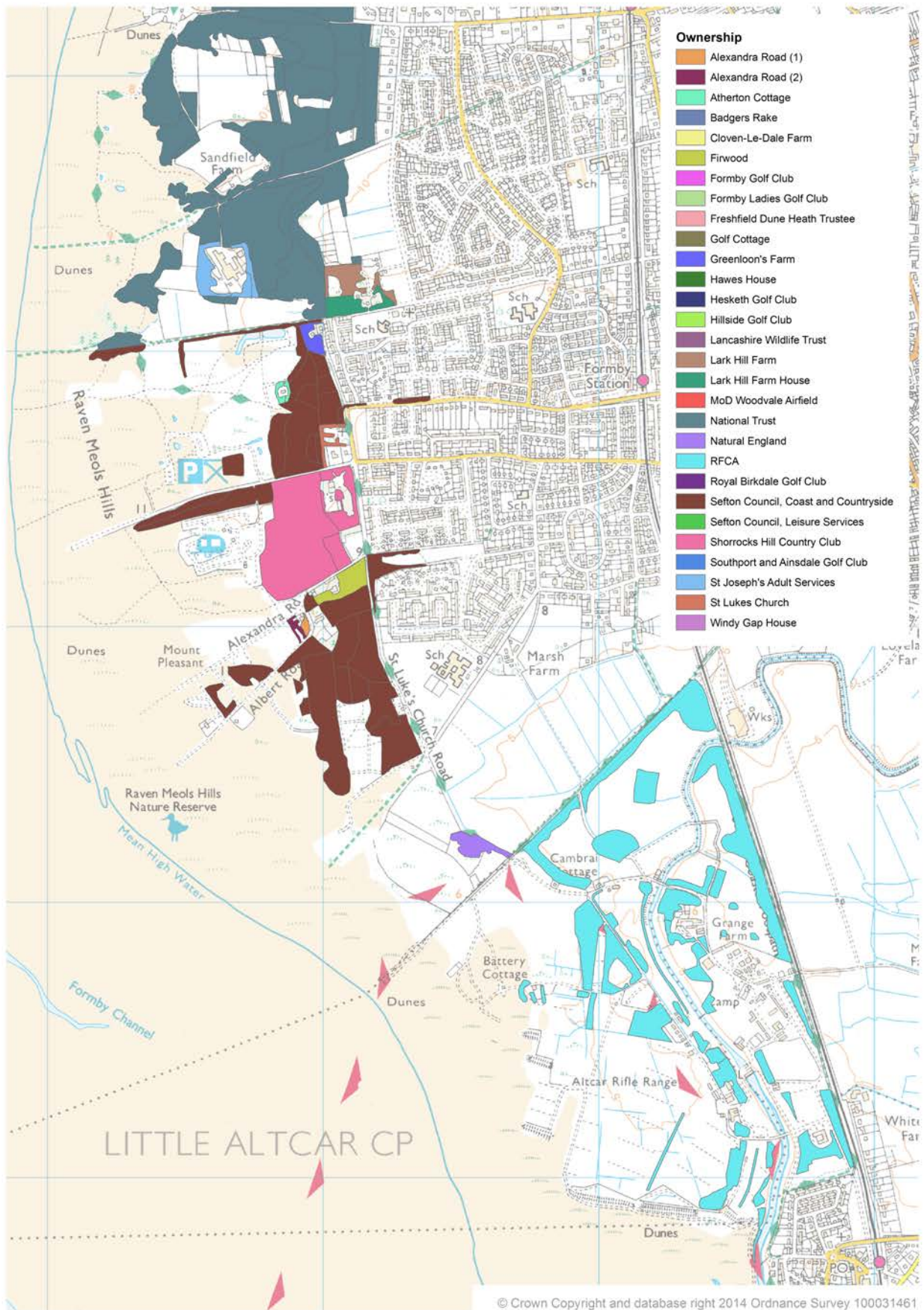
Ownership	Site Name	Area	Join Date
Formby Golf Club, Ladies	Formby Golf Course	4.99	01/12/2012
Formby Golf Club, Mens	Formby Golf Course	41.91	01/12/2012
Hesketh Golf Club	Hesketh Golf Links	7.50	01/12/2012
Hillside Golf Club	Hillside Golf Course	5.32	01/12/2012
Lancashire Wildlife Trust	Freshfield Dune Heath (Woodvale)	4.13	01/12/2012
MoD	Woodvale Airfield	1.13	01/12/2012
National Trust	Formby Point	72.97	01/12/2012
Natural England	Ainsdale Sand Dunes NNR	157.32	01/12/2012
Natural England	Cabin Hill NNR	0.85	01/12/2012
Poor Servants of the Mother of God	St Joseph's Convent	1.40	01/12/2012
Private, Golf Cottage	Golf Cottage	0.35	01/12/2012
Private, Lark Hill Farm	Lark Hill Farm	1.68	01/12/2012
RFCA	Altcar Rifle Range	27.06	01/12/2012
Royal Birkdale Golf Club	Birkdale Hills	3.57	01/12/2012
SMBC, Coast & Countryside (n)	Birkdale Hills	23.05	01/12/2012
SMBC, Coast & Countryside (s)	Lifeboat Road	12.43	01/12/2012
SMBC, Coast & Countryside (s)	Ravenmeols	16.42	01/12/2012
SMBC, Landscape Services	Southport Golf Links	3.37	01/12/2012
St Lukes Church	St Lukes Church Wood	0.46	01/12/2012
	<b>Total area</b>	<b>385.91</b>	

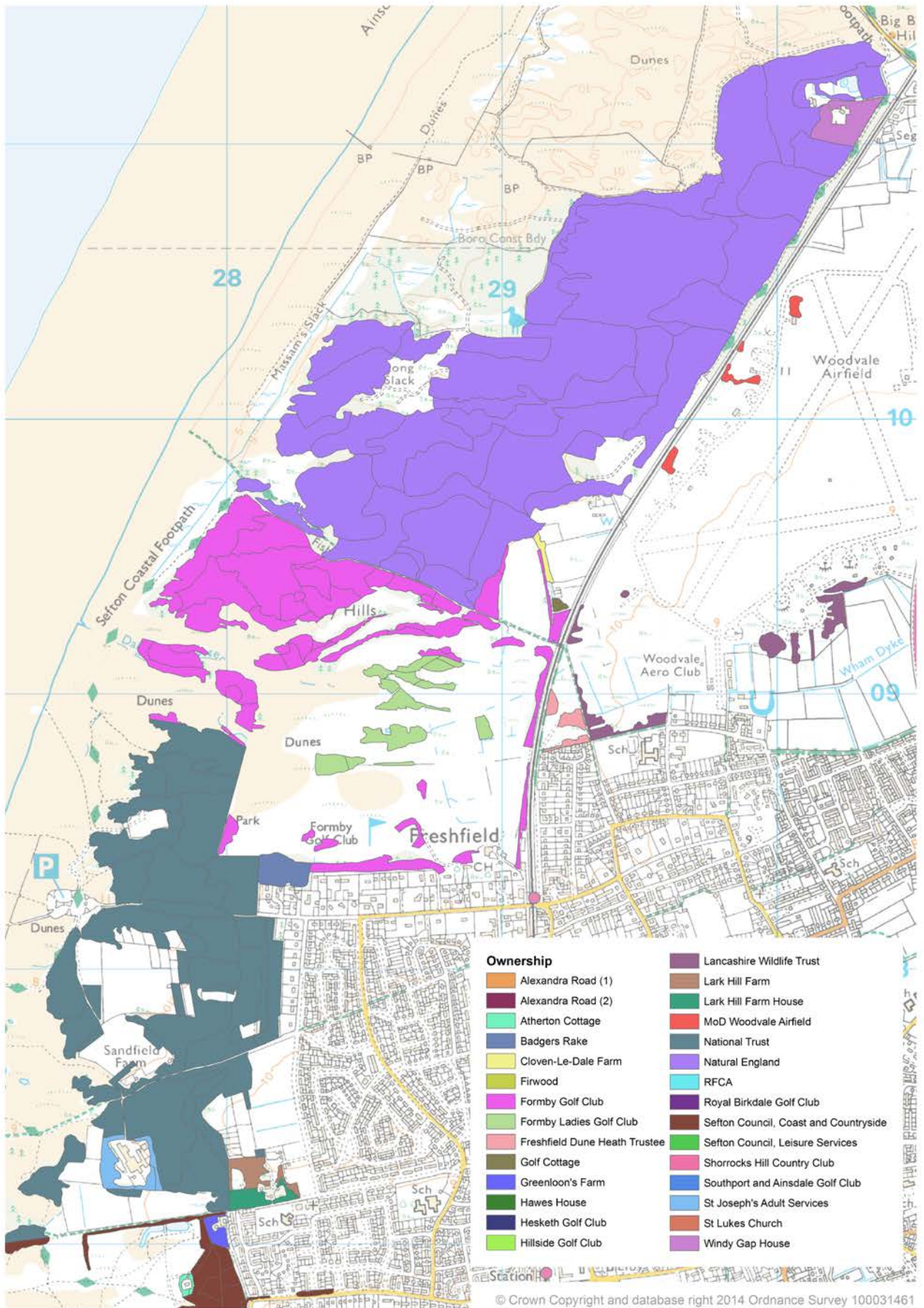
The following four maps provide further detail to the ownership of the woodlands, starting in Hightown in the south and ending up in the north in Hesketh (north Southport):

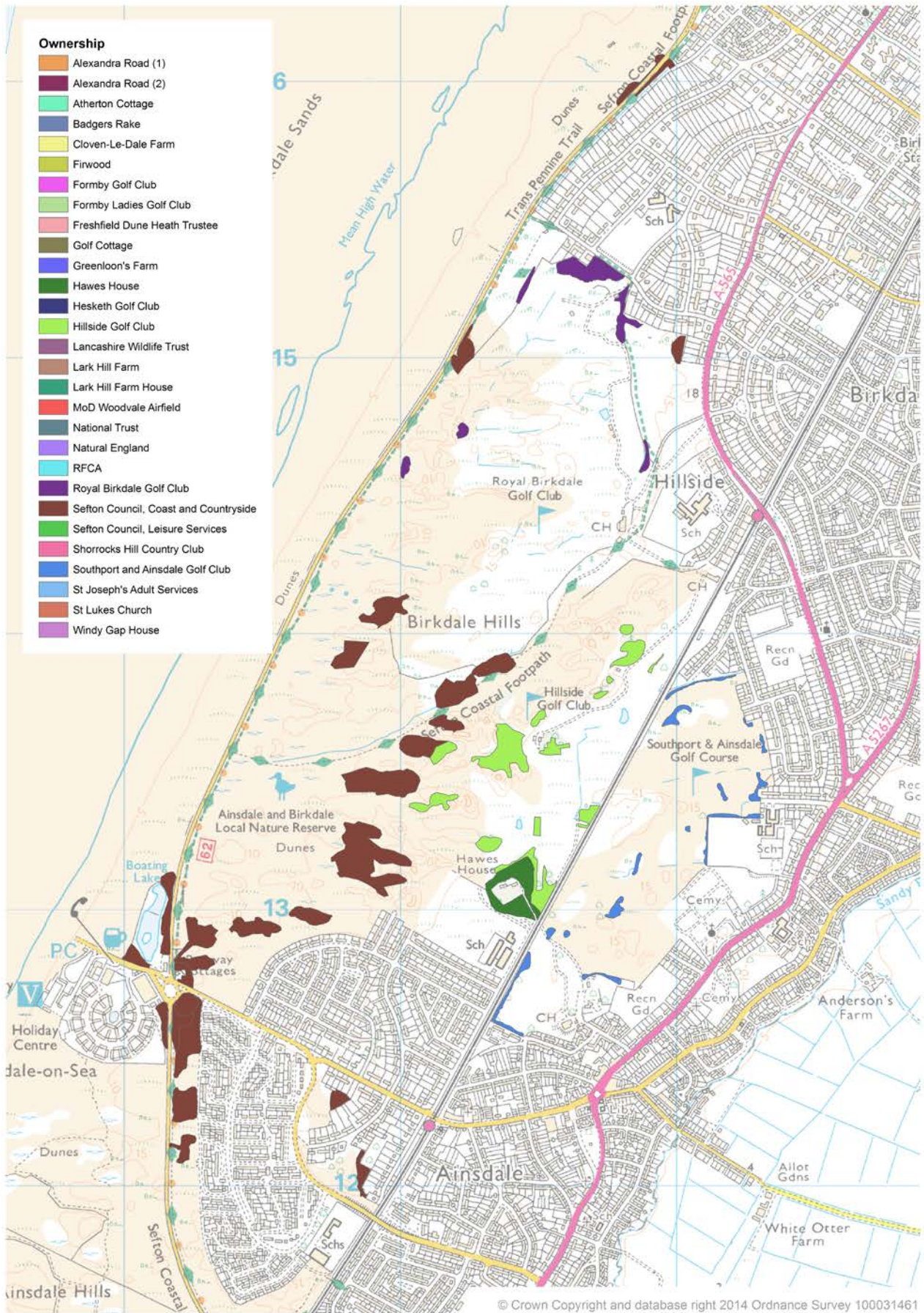


Figure 4 Mobile sawmill owned by Sefton MBC – helping to manage the woodlands to produce valued products for the coast.

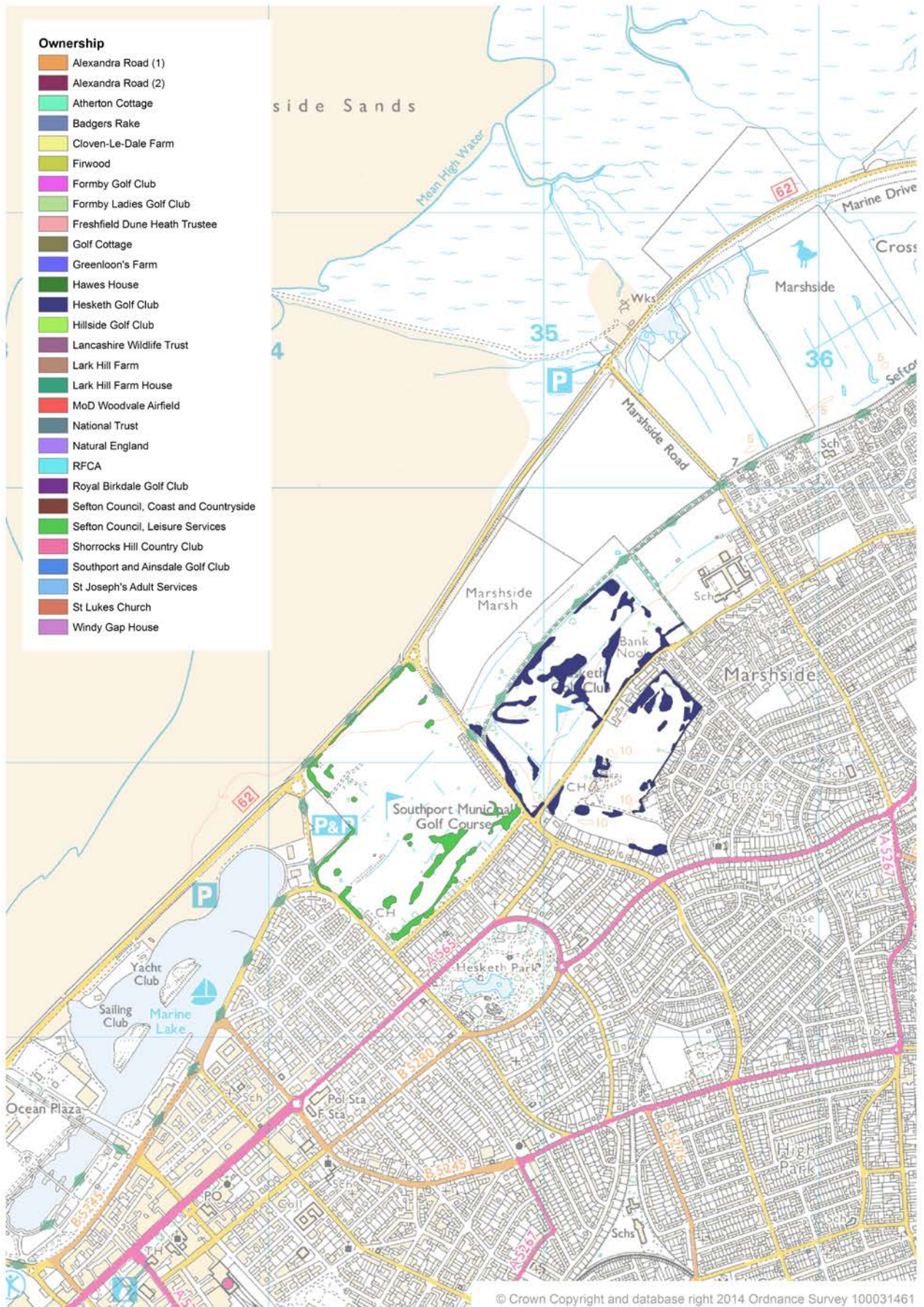
Map 6, Woodland Ownership, Sefton Coast











### 1.2.3 WOODLAND ARCHAEOLOGY AND HISTORY (PRE-HISTORY TO 1860)

#### Tree Cover on the Sefton Coast:

The tree cover on the area of blown sand of the Sefton Coast has gone through radical transformations throughout geological and human history from a complete lack of woodland during the last ice age 100,000 years ago to colonisation by a mixed broadleaf and pine woodland as the last ice retreated from about 10,000 to 6,000 years ago, followed by a period of warmer climate in which the woodland became pure broadleaf—a blend of oak, birch, alder, with hazel and hawthorn understorey and small amounts of ash, elm and lime, the exact composition depending largely on the level of the water table.

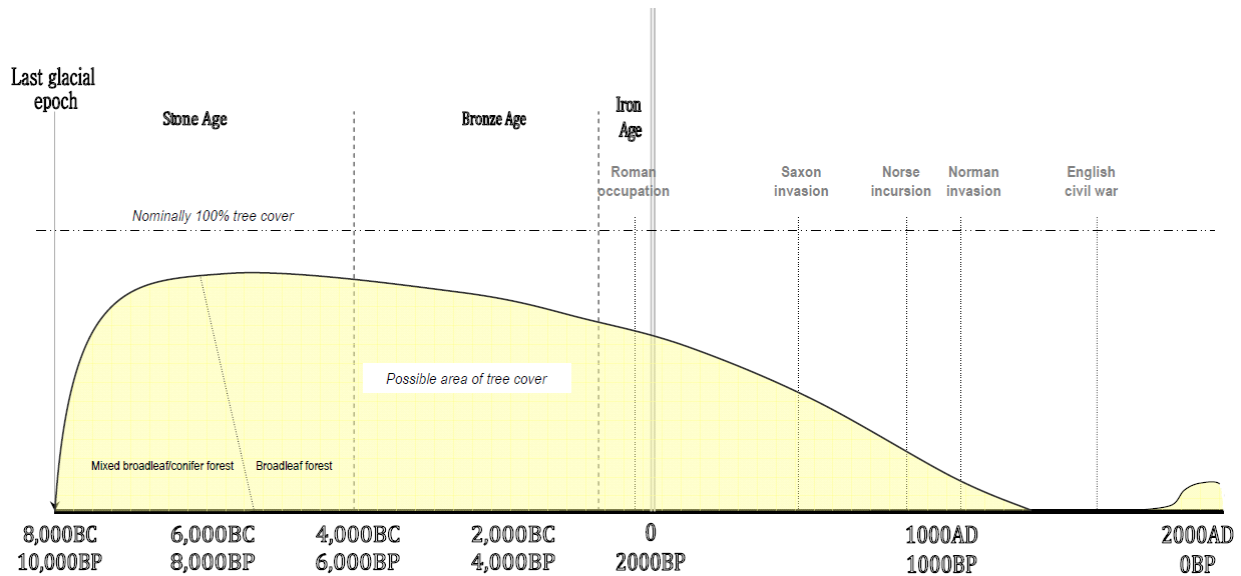
A reduction in cover through dune formation, clearance for grazing and agriculture over the ensuing centuries, with little change in composition of the remnant woodland, left the area with less than 15% tree cover by the time of the Domesday Survey in AD1086.

Post-glacial forests inland of the Sefton dunes were overwhelmed by developing peat bogs, especially during the Sub-boreal period, from about 5000 years BP, after which the “wildwood” was mostly confined to rising ground on glacial till to the east and south. Older parts of the dune system may have supported stands of pioneer birch and willow/alder carr during periods of relative stability, as evidenced by the place-name “Birkdale” coined during Norse settlement from about 900AD. However, most of the duneland must have remained in an open condition to account for the survival of specialist flora and fauna, including the Sand Lizard and Natterjack Toad, which probably arrived here during the warm period at about 9500BP and were then cut off by the inland development of wildwood. These and many other species presently restricted to the coastal dune habitats cannot survive in densely wooded landscapes.

Early maps and historical evidence suggests that certainly by the AD1500s and possibly as early as the 1300s there was, once again, no tree cover left on this area of the coast, probably individual trees, but certainly no woodland.

A small area of Scots pine in Firwood, planted by one of the key landowners (the Formbys) in AD1795 saw the beginning of an experiment that is on-going to today with the eventual planting of some 400 hectares of a pine mix and the development of a mixed broadleaf woodland on about another 100 hectares. In the last 100 years changes in ownership, policy and legislation has seen that area fall back to a total of about 410 hectares—mostly pine and pine and broadleaf mixed woodland (Roche 2012).

Diagram 4 provides an indicative tree cover over the period since the last glaciation. The rate of decrease in woodland cover will have been more chaotic and perhaps faster than shown on the timeline, we can though perhaps find a consensus that the data from Domesday to present is relatively robust.

**Diagram 4, Timeline: An indicative tree cover on the Sefton Coast, between Altcar and Ainsdale**

NOT TO SCALE!

It is important to place the Woodland Plan in the context of this historical and archaeological perspective to help understand that it has a relatively 'modern' vision.

### Scrub Development:

Although a small amount of the present scrub area was introduced to the dunes for stabilisation purposes from the eighteenth Century onwards, by-and-large, the reduction and then more recent spread of scrub within the dunes has been a consequence of changes in land management practices.

It is thought that the area would have been dominated in the 1300s by the monastic houses or granges that grew up in Ainsdale, Ravenmeols and Altmouth during the medieval period. These granges were established by the Cistercian order who were known to be prolific sheep farmers and it is possible that any remaining tree and scrub cover was cleared as part of the management for the extensive sheep grazing (Tansley 1965). Subsequently the dunes would have been kept free of trees and scrub by the grazing until the 1600s, when the landowners began to introduce rabbits into managed warrens dotted through the area. The rabbits would have been very effective in controlling vegetation even after the practice of managing warrens became outdated. It was not until the mid-twentieth century when myxomatosis was introduced (1954) that rabbit populations were greatly reduced to allow scrub to develop and expand (Wheeler *et al.* 1993). By the time that the rabbit populations increased again (though never to pre-myxomatosis days), the scrub was sufficiently well established to resist attack which corresponds to the fact that much of the developed scrub area can be dated to the 1970s. Estimates are that on the Ainsdale and Birkdale Hills the area of scrub increased from about 4 hectares in 1945 to 15 hectares in 1980—a fourfold increase (Smith, 1994; Nesbitt, 1981). At Formby Point, Burns reported a thirteenfold increase between 1945 and 1984 (Burns, 1987) and at Ravenmeols Wild reported a fivefold increase in a similar period (Wild, 1988).

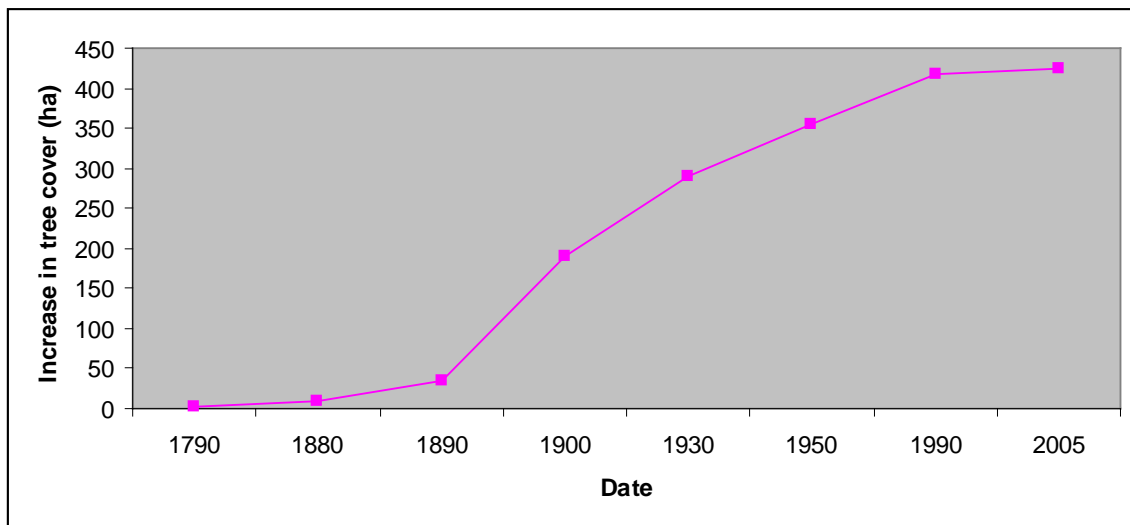
It may also be that the droughts of the 1970s reduced the water tables in the slacks sufficiently to allow sea buckthorn in particular to establish (Smith, 1994). Generally the drier conditions of the twentieth Century, with consequent lowering of water tables, has favoured the development of scrub on dunes and in dune slack habitats. This may have been heightened in proximity to the woodlands where it is known that the pine plantations have lowered the water table and provide a “shelter” for the establishment of scrub. (2.1.3).

#### 1.2.4 HISTORY OF WOODLAND MANAGEMENT (1860 TO 2000)

As already indicated, until the end of the 1700s the Sefton Coast was without woodland from early medieval times (see 1.2.3) and it was only in 1795, when the Reverend Richard Formby planted up an area of about one hectare on land now known as Firwood, that woodlands began to be a feature within the rearward dune landscape once more.

However, it was only in the latter part of the next Century (1885) that further extensive planting was undertaken, this time by Formby’s son, the Doctor Richard Formby at Shorrocks Hill using Austrian pine. This subsequent planting of the pinewoods was associated with dune stabilisation and was carried out by both the Formby and Blundell families and led to a gradual expansion of woodland cover that has continued to the late 1900s (see diagram 5, below).

**Diagram 5, *Rate of increase in tree cover from 1780 to 2005 (Roche)***



The data shown in the diagram incorporates a reduction of about 100 hectares of mostly pine woodland that were felled during World War Two; were lost to coastal erosion in the 1970s; were felled under a dune restoration programme in the 1990s; and have been felled for a variety of reasons over the whole period. In addition to woodland losses to coast erosion in the 1970s (and 1980s), early 20<sup>th</sup> century O.S. maps show linear plantations at Formby Point that fell into the sea decades earlier<sup>2</sup>.

Some new areas have been established in the latter part of the 20<sup>th</sup> Century, most notably in Altcar on the RFCA rifle range (27 hectares). Other, smaller areas, have been established on the Formby Golf Course, National Trust and Sefton Council land (at Ravenmoels) in the period from the 1970s to the present.

<sup>2</sup> PH Smith – Private correspondence 2013

Management of the woodlands in the early days was proactive, both in terms of maintaining planted areas, but also management of the maturing crop of pine timber to provide a useful income for the two estates. The pinewoods figured in a number of accounts supporting the war effort by providing timber and poles. Some of the poles from thinning and felling activities were used to build defences along the coast in an effort to prevent enemy air and sea craft from using the beaches for invasion.

The 1950s began to see major changes to the woodlands and the way they were managed due to the changes in land ownership that occurred when land was sold in 1958 by the Weld-Blundell estate to pay death duties. The land was finally bought by the Nature Conservancy Council (NCC) in 1965 and declared a National Nature Reserve in recognition of the value of the open dune habitat and associated species. A further tract was purchased by the National Trust in 1967, both open dune and woodland to help conserve habitat and landscape. The Formby family estate having been held in trust for some time, was also broken up with a portion sold to the National Trust, some leased to The Merseyside County Council in 1978 (and later passed on to the Sefton Metropolitan Borough Council when it was formed in 1986) and the remainder passing into multiple ownership over the passage of time.

The Forestry Commission, who had originally expressed interest in purchasing the Weld-Blundell woodland and trees had written a management plan for the Weld-Blundell estate in 1957, but in general it appears that after this period, most of the management in the pine woods was reactive, dealing with safety of access until the 1980s when efforts were made by several owners to improve the condition of the pine woods by thinning and replanting some areas of the NNR, Lifeboat Road and Formby Point.

In the 1990s, Country Commission (the successor to the NCC, and now Natural England) initiated a project to restore some of the frontal pine woodland to open dune habitat. The felling of 28 hectares, in two phases, eventually prompted opposition among some of the local inhabitants of nearby towns. In order that management of the remaining woodland was rationalised a strategy was written for the coast (The Sefton Coast Woodland and Scrub Management Strategy) and the NNR had several management plans written to demonstrate their commitment to managing the remaining woodland. However, in the end, the sensitivity to the whole issue of frontal woodland clearance resulted in a moratorium called by the Forestry Commission on all woodland work until an assessment and public consultation was carried out.

The frustration that this hiatus caused to the landowners led to the current approach to woodland management across the coast and the Forestry Commission invited The Mersey Forest in 2000 to assist all the landowners to develop a new, coordinated plan that was to provide a clear statement of intent that could be fully consulted on. This process of development and consultation took until December 2002 and a plan, The Sefton Coast Woodlands Forest Plan, was finally approved for implementation in January 2003 and it is this ten-year plan that is being refreshed for a further ten years of implementation until 2022.

The Woodland Plan also fits retrospectively into the overall coastal management strategy articulated in the Nature Conservation Strategy and Biodiversity Plan for the Sefton Coast drafted in 2006. The Strategy attempts to balance the sometimes competing demands of conservation priorities, amenity pressures, landscape management and cultural perspectives. The Woodland Plan proposes a management approach for the woodlands within this complex socio-political and economic environment.

Finally, the writing of this plan, involvement of interest groups and wider consultation has been enabled by the Landscape Partnership Scheme that was put in place by the Sefton Coast Partnership in 2007 and funded by Heritage Lottery funding. Additional funding has been provided by Interreg IVb ForeStClim

project and The Mersey Forest Partnership. The focus of the scheme is to add value to coast-wide management initiatives that incorporate landscape, people’s use and community participation.

### 1.2.5 THE SEFTON COAST WOODLANDS FOREST PLAN, ACHIEVEMENTS AND LEARNING, PHASE I (2003-2012)

#### Summary of Achievements

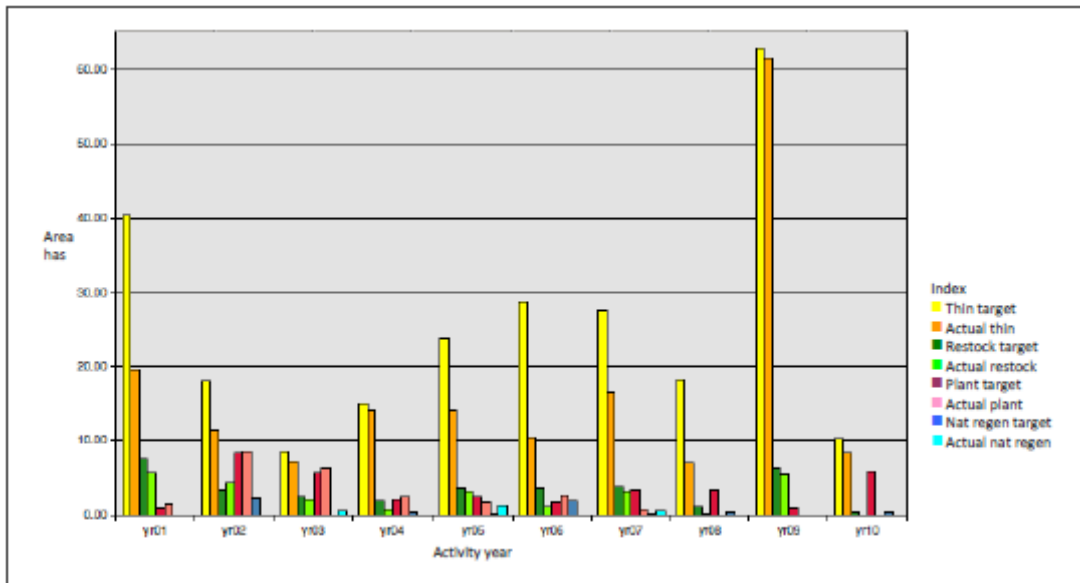
The ten years of the Sefton Coast Woodlands Forest Plan have been very busy for all the participating partners and achievements are significant, though it is apparent that the first five years saw more progress in some aspects than in the second. This can be attributed to a number of factors, but it is likely that the downturn in the economy played the greatest role.

A number of quite significant changes occurred during the period, not least that there was a restructuring of government support to nature conservation and forestry. English Nature was restructured to Natural England and the Forestry Commission closed its grant scheme for a period and has gone on to administer its grant schemes through DEFRA (the RPA), rather than directly.

Climate change has become a political issue in the meantime and the emergence of the concept of ‘Green Infrastructure’ has meant that planners are taking greater notice of the role that the natural environment can play in improving the socio-economic context within which we are live and work. The Sefton Coast woodlands are a key element of The Mersey Forest, the strategic plan was refreshed and approved in January 2014.

Achievements of the Plan extend beyond tree and woodland management, but the silvicultural activities are summarised in the following chart:

**Diagram 6, 1<sup>st</sup> Phase Forest Plan Achievements**



It should be noted that although the achievements are shown to have occurred in the year corresponding to the target, the work was not always carried out in that year (this chart is derived from the database and the nature of the data forces reporting against the target year).

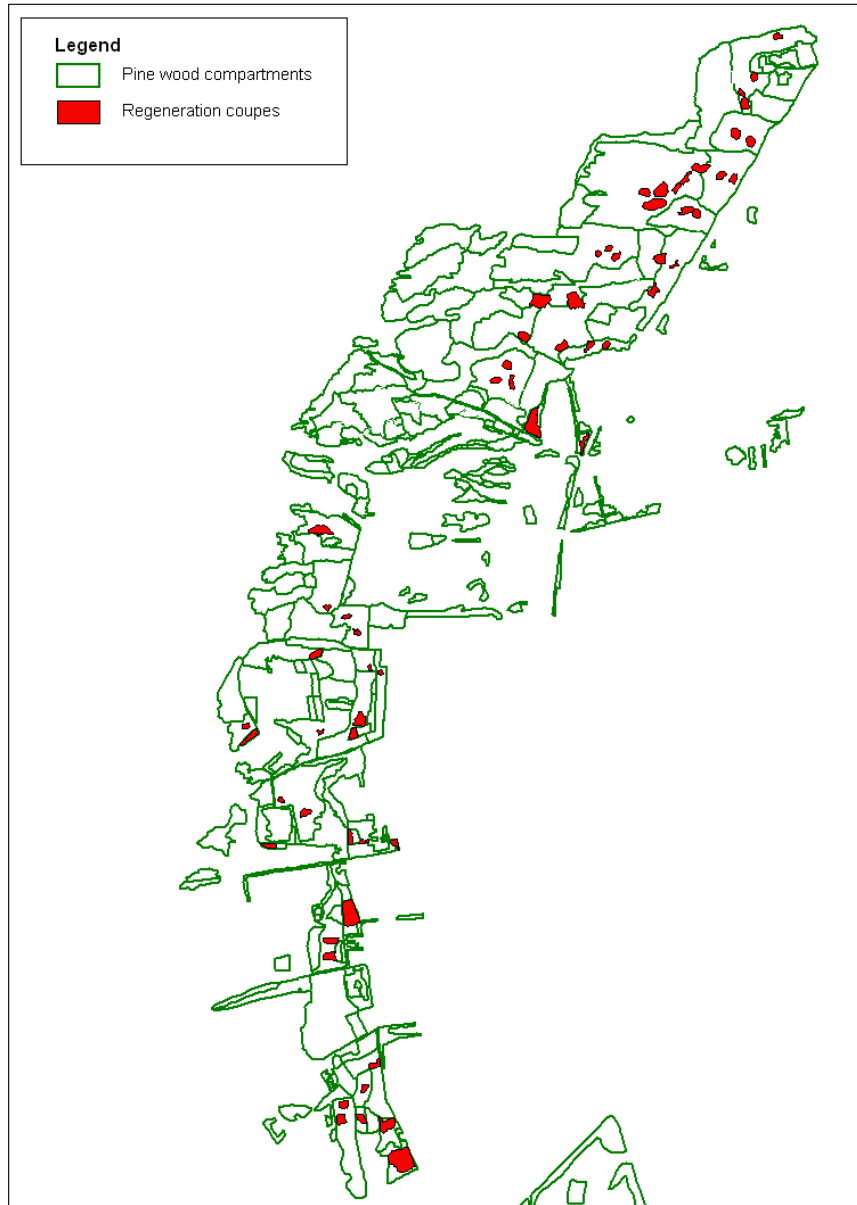
The actual cumulative figures are as follows:

**Table 6, 1st Phase Forest Plan Achievements**

	<b>Target</b>	<b>Achieved</b>
Thinning	253.54	170.53
Restock Felling	33.54	25.95
Planting	34.69	23.42
Natural Regeneration	0.40	2.30

Thinning has fallen behind by about a third. This was primarily because of poor timber prices in the first cycle of the Plan. It was felt that restructuring (restock felling) was a priority and so resources were allocated accordingly. Timber prices have improved to the point that thinning in better quality stands actually provides a return and so a significant proportion of targeted thinning was completed in the final two years through a joint contract put in place to cover six properties.

Restock felling is also down due to the difficulty of finding sites to locate the coupes. The following map shows the location of most of the coupes in the first phase of the Plan:

**Map 7, Location of regeneration coupes up to 2011 in the 1<sup>st</sup> phase of the Plan**

This is especially an issue on the NNR when it was decided in the ‘appropriate consent’ that no replanting could occur within 100 metres of a slack (see section 2.1.3)—a certain ambiguity means that it is not even clear whether this only applies to numbered wet slacks or to all slacks, even long afforested dry slacks within the main rear woodland area—so many of the compartments on the NNR have therefore been excluded from the restructuring process.

Planting figures have kept pace with restock felling and any shortfall is because much of the planting in the last two years of the Plan is being carried out in the first cycle of the next phase. In fact some of the shortfall is made up by new planting carried out by a few landowners in the first cycle of the first phase, so the gap is greater than it seems from this table, but will be made up for in 2013/2014.



A number of the landowners support a huge number of educational visitors from schools and further education establishments. The numbers are difficult to compute and the nature of support has changed in the ten year period in that as staff numbers have dropped in response to reduced budgets fewer visitors are hosted and guided, they are often required to be self-sufficient.

A lot of educational literature, information boards, leaflets and websites have been created to inform target audiences of the variety of habitat and species and of the reasons behind management decisions and consequent actions.

All the woodland areas, with the exception of the smaller private woodlands and the Rifle Range host, formally or informally, huge numbers of walkers, dog walkers, runners and cyclists every day throughout the year.

The main section of the pine woodlands are visited by huge numbers of people every year who want to see the red squirrel (National Trust report 300,000 a year visiting their site).

The woodlands continue to be a significant backdrop to the journey up and down the coast, whether along the beach or along the north-south feeder roads.

Most landowners undertake a lot of work on maintaining non-woodland habitats, which includes providing bat and bird boxes, creating and maintaining dun scrub and open habitat, clearing wet slacks, opening up woodland canopy to increase light penetration to improve understorey and clearing south-facing dune banks.

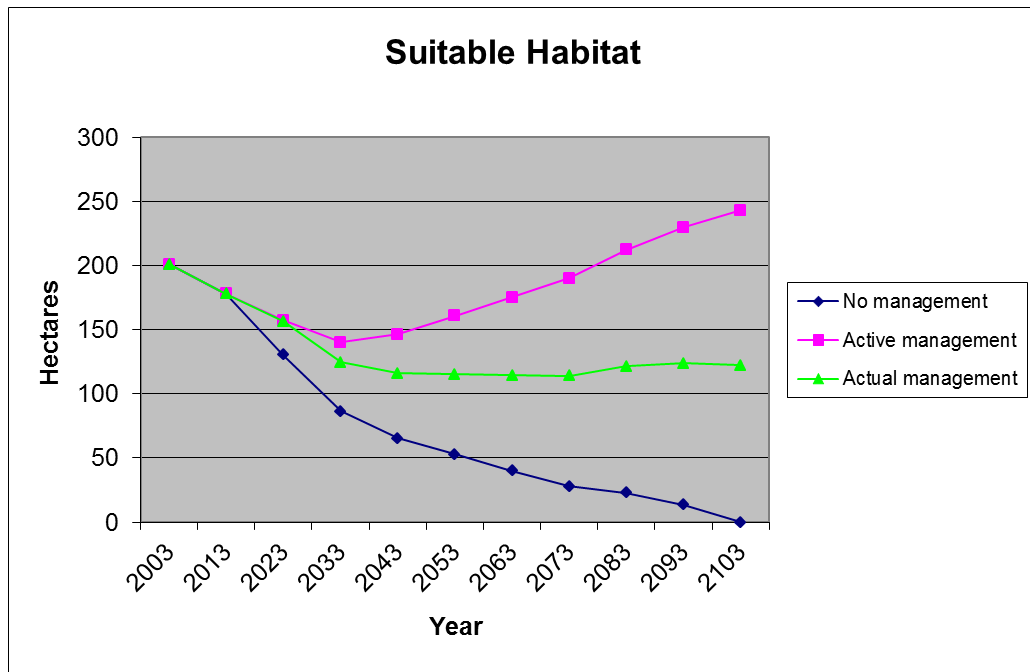
### Significant Learning

In brief, the following is a list of key learning from the first phase, some of which comes from the mid-term review, some from a review of silviculture on the Merseyside, some from a review of regeneration coupes on the Sefton Coast and some have emerged from the review of the first ten years:

- Participation in the Plan is generally very high, but can only be attributed to high level of good will among the landowners – an unquantifiable resource.
- A huge number of activities are carried out by the landowners, some of which in the first version of the Plan were not captured, but have since been included—such as the huge amount of educational work carried out by a number of the landowners.
- Regeneration coupes must be 0.25 hectares in size or more, though very intensive maintenance allows for them to be smaller, but is expensive.
- Good planting practice and after-care is crucial to successful establishment.
- The expectation that disease and fire damage will not be an issue on the Sefton Coast has proved to be a false hope and although there has not yet been a major catastrophe, a number of problems have alerted the managers to the need to manage for prevention.
- Coordinating fire protection across the coast has proved to be more difficult than anticipated. The fire services are only willing to engage in the spring and summer months and there is no single body that can take responsibility (each fire service appears to be relatively autonomous).
- Lack of funding, means a significant reduction in activity, lowered monitoring levels, reduced coordination.

- That the Sefton Coast Woodlands plan is one of the few plans which is being consistently funded and implemented means that it attracts unwarranted levels of scrutiny and expectation.
- Coordination is expensive: Writing the original plan cost in the region of £60,000 (Roche 2003), coordinating it over the ten years has been estimated at about £100,000 (Gibbard 2012).
- Maintaining the commitment to restructuring is difficult. The work on felling coupes has fallen slightly short in the first ten years, but the projected felling for the next ten is less than half what is recommended from the model (Section 2.1.5). The result is startling—suitable habitat falls to about 125 hectares, about half. This is well short of the recommended 200 hectares of pinewood needed for a healthy red squirrel population:

**Diagram 7, Various management scenarios for the pine woodland area**



The model of suitable habitat has been imposed on the whole 250 hectares of available pinewood and then actual management figures incorporated with a projection that uses the current rate (2013-2022) of coupe felling.

The shortfall is partly accounted for by the NNR being restricted in where it can place coupes (section 2.1.3), partly by the fact that some owners want a breathing space from all the felling, some by owners not participating in the programme (Shorrocks Hill being the most significant).

- The use of “Multi Criteria Decision support tools as part of the ForeStClim project was useful in terms of identifying the range of green infrastructure benefits that the woodlands provide and in highlighting that any decisions need to balance these various benefits to some degree.
- Climate Change is already potentially having an impact on the coast woodlands. The ForeStClim project helped to identify ways in which we can adapt and develop management to meet the challenge and create resilient woodlands. This was recognised in the award of “highly commended” in the Royal Forestry Society Climate Change awards.

- Research must be undertaken by the landowners to try out comparable species to Corsican pine (such as Macedonian pine) to create resilient woodlands.



Figure 5 Woodlands Interest Group meeting working on the aims and objectives for the plan

## 2 Working Plan

### 2.1 Issues

#### 2.1.1 DESIGNATIONS AND CONSTRAINTS

##### Designations

As indicated in Section 1.1.4, there is significant conservation value in the area, with two national SSSIs, three National Nature Reserves (NNR), two Local Nature Reserves (LNR), the whole area designated as a Ramsar site and a Special Area for Conservation (SAC). The RSPB manages an adjoining site for wildfowl protection.

Under the impetus of the 1992 Rio Declaration on Environment and Development, Agenda 21 and the Convention on Biological Diversity, local authorities and other interested bodies have produced Biodiversity Action Plans for a number of key species and vegetation types. Some of the relevant ones include Lowland Mixed Broadleaf Woodland Habitat, Coniferous Woodland Habitat, Wet Woodland Habitat, The Sand Dune and Dune slack Habitat, The Red Squirrel, Bats (Pipistrelle, Brown Long-eared, Whiskered, Natterer's, Noctule), Sand Lizard, Natterjack Toad, Skylark, Grey Partridge.

A number of species have also been prioritised on the basis of the Habitats Directive Annex II: Great Crested Newt and Petalwort, also the Habitats Directive Annex IV: Brown Long-eared Bat; Natterjack Toad; Sand Lizard.

Biodiversity Action Plan (BAP) Species include: Natterjack Toad; Great Crested Newt; Sand Lizard; Skylark; Linnet; Song Thrush; Grey Partridge; Pipistrelle Bat; Red Squirrel; Tiger Beetle; Long-leaved Threadmoss. Nationally rare species include the plants Yellow Bartsia; Seaside Centaury; Early Marsh Orchid; Pyramidal Orchid; Grass of Parnassus.

##### Biotic importance

- The pinewoods are a stronghold for the red squirrel (Ramsar, SPA and BAPs).
- The woods adjoin important wader bird and wildfowl sites (SSSIs and LNRs).
- The woods adjoin important open dune habitat (NNR and SSSIs).
- The woods adjoin important open grassland bird sites (BAPs).

##### Management Plans

There are a number of national, regional and local non-statutory planning and management documents that cover the area, or parts of the area:

- A working Plan for Woodlands on the Sefton Coast, 1986 (now out-dated).
- Forest Plan, The Mersey Forest, September 2013.
- A Management Plan for the Rearward Woodlands, Ainsdale Sands National Nature Reserve, February 1995.

- Long Term Woodland Management Plan for Ainsdale Sands National Nature Reserve, January 1997.
- The Sefton Coast Management Plan, Second Review, 1997 – 2006.
- UK Forest Standard 2012
- The England Forestry Strategy Statement: March 2013.
- Sefton Coast candidate Special Area of Conservation Strategy, September 1999.
- The Sefton Coast Woodland and Scrub Management Strategy, November 1999.
- Environmental Statement on options for management of the frontal woodland areas at Ainsdale NNR. by W.S. Atkins Consultants (2004)
- The Sefton Coast Nature Conservation Strategy and Biodiversity Plan, 2007 (draft).

### Statutory Constraints

Under the European Union Habitats Directive the foreshore, dunes and dune slack areas were designated in 1995, firstly under the ‘Ramsar’ Convention on the conservation of wetlands, and secondly together with some extensions, as a Special Area of Conservation (SAC). Under the European Wild Birds Directive the foreshore has also been designated as a Special Protection Area (SPA), however this does not affect any areas of woodland. Between 1963 and 1985 seven Sites of Special Scientific Interest were designated under the UK Wildlife and Countryside Act (1981)—previously the National Parks and Access to Countryside Act 1949—and recently partly amalgamated into the Sefton Coast SSSI.

The Conservation (Natural Habitats etc.) Regulations 1994, as amended, and the Wildlife and Countryside Act 1981, as amended, form the legal basis for the protection of the above mentioned national and international statutory designations. The main working mechanism being the list of ‘operations likely to damage’ that is issued in the documentation for all designated SSSIs. Owners and managers subsequently have to seek consent from Natural England to carry out management operations on those sites to ensure that the features of the site are not damaged or destroyed. In the case of the European designations, Natural England operates a parallel system of consent on behalf of the UK Government (DEFRA).

This list of operations is general to the whole of the UK and consent can therefore be given to particular operations in situations where those operations do not damage the features of the site. Written consent being obtained from Natural England, with on-going operations being provided for under five year agreements.

For the purposes of the Forest Plan, these designations are exclusively focused on the dune nature of the coastline and managers will therefore have to consider the impact of forest management operations on these features. The Sefton Coast is considered to be of European importance because of the following features:

- Fixed dunes with herbaceous vegetation ‘grey dunes’ (priority habitat)
- Dunes with *Salix repens* spp. *argentea*
- Embryonic shifting dunes

- Humid dune slacks
- Eu-Atlantic decalcified fixed dunes (dune heath) (priority habitat)
- The species *Petalophyllum ralfsii* (petalwort)
- Shifting foreshore dunes with *Ammophila arenaria*
  - The species *Triturus cristatus* (great crested newt)

The list of operations associated with the SSSIs number 32 in all and range from “Application of manure, slurry, silage liquor, fertilisers and lime” to “Use of lead shot”. For the purposes of the Forest Plan, the relevant operations are numbers:

1. Cultivation, including ploughing, rotovating, harrowing and re-seeding (the re-seeding of existing golf tees and greens at the notification date is **not** subject to consultation).
4. The introduction of mowing or cutting and alterations to the mowing or cutting regime.
5. Application of manure, slurry, silage liquor, fertilisers and lime.
6. Application of pesticides, including herbicides (weedkillers) whether terrestrial or aquatic, and veterinary products.
9. Release into the site of any wild, feral, captive-bred or domestic animal\* plant, seed or micro-organism (including genetically modified organisms).
10. Killing, injuring, taking or removal of any wild animal\*, or their eggs and nests, including pest control, but excluding existing coastal fishing and disturbing them in their places of shelter.
11. Destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, dead or decaying wood, moss, lichen, fungus, leaf-mould, turf.
12. The introduction of, and alterations to, tree and/or woodland management including planting, felling, thinning, coppicing, changes in species composition, removal of fallen timber.
- 13a. Drainage (including moor-gripping, the use of mole, tile, tunnel or other artificial drains).
21. Destruction, construction, removal, rerouting or regrading of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, including soil and soft rock exposures or the laying, maintenance or removal of pipelines and cables, above or below ground.
22. Storage of materials.
23. Erection of permanent or temporary structures or the undertaking of engineering works, including drilling.
26. Use of vehicles or craft.
28. Use of lead shot.

\* ‘animal’ includes any mammal, reptile, amphibian, bird, fish or invertebrate (including honey bees).

Finally the designation that will lend weight to recommended forest management regimes is the designation of the red squirrel and pipistrelle bat as species of national importance under Schedule

5 of the Wildlife and Countryside Act. These have Priority Species Action Plans which have been taken into account in the forest management prescriptions.

In summary, there is a complex range of biotic, ecological and statutory planning considerations to take account of in the preparation of a working plan. The individual objectives of owners and the perceptions of the interested public all add to the complexity. There are a number of complementary though diverse interests, but also some conflicting ones. All interests will have to be prioritised and balanced to maintain a sustainable, living and dynamic set of woodland habitats and landscape in the Sefton Coast area.

### 2.1.2 COASTAL EROSION

The tides and winds constantly change the shape of the shoreline and in the context of climate change transformation will be inevitable. As has already been said, the dunes are considered to be an important—perhaps the best—defence against tidal flooding and predictions of climate change suggest sea-level rise putting the coastal areas at increased risk of increased erosion and flooding. How this relates to the Plan and woodland management can be summarised in the following list:

- A challenge to the Sefton Coast land owners and managers is the changing coastline across ownership boundaries and the need for partnership and landscape-scale management a necessity.
- The frontal dune woodlands have the potential to interfere with the capacity of the coastline to adjust to the changes in condition. On the seaward side of the dunes, where the shoreline has eroded back to the edge of the pinewoods, the collapsing tree root plates can rip out sections of the dune profile. This exposes raw sand to being washed away or blasted away by prevailing winds to cause localised ‘blow-outs’. The process without tree cover allows for a gradual erosion of the dune profile, with the sand being carried out a short distance to be exposed at low tide and blown back into the dunes to help build up the dunes once more (Pethick, 2001).
- Similarly the forward pinewoods can interfere with the protection of dune surfaces. Much of the planting in the nineteenth and twentieth centuries was undertaken to stabilise windblown sand resulting from over cutting and overgrazing by stock and rabbits. These conditions no longer prevail and there is evidence that the tree cover on the fore dunes suppresses the sand-binding marram grass through shading.
- In some localities, nationally important dune habitats are being squeezed between areas of frontal woodland and the eroding coastline.
- In the 1990s English Nature engaged in a process of dune restoration on the NNR. The strategy was to clear some of the frontal woodlands to restore the internationally important open dune habitat. This strategy was subject to public scrutiny and various reviews have attempted to inform the public of underlying issues and develop a way forward to meet international conservation obligations.
- Given the different time scales, for the moment, the Plan does not include the frontal woodland compartments on the NNR in the management recommendations. The area concerned covers six compartments, about 22.5 hectares, 5% of the total woodland area. It has been agreed that the implementation of the Forest Plan should not be held up pending the outcome of the Dune Restoration Review.
- The Sefton Coast woodlands have stabilised mobile areas of dune with the subsequent development of soil profiles and sheltered environments for woodland species such as the red squirrel.

- There are significant silvicultural constraints on the coast associated with strong, salt-laden north westerly gales during the winter months.

There are distinctly contradictory elements apparent from this list. The Woodland Plan makes no effort to resolve them as it is for society in general to determine priorities and balance between issues. Also the Plan is not about coastal defence, it is about managing an existing, valued resource within the context of landowner objectives and different perspectives and demands from wider society.

### 2.1.3 THE WATER TABLE

The dune slacks on the Sefton dune system are important for biodiversity and are dynamic depending on the height of the groundwater table. The sand in the mobile dune system is blown away to the point at which the water table is exposed and the sand ceases to be mobile, this becomes a slack. Changes in the water table affect the process and although water recharge is driven by precipitation, it is sensitive to impacts such as pollution, water extraction, climate or vegetation change. The slack will remain wet for a period until it is stabilised and re-colonised by vegetation or the groundwater table drops, in the meantime it supports important species of fauna and flora such as the rare Natterjack toad (*Epidalea calamita*).

Borehole data in the Sefton dunes has shown the water table to be affected by changes in the type of vegetation—it is lower in the vicinity of the trees, reported to be up to 50cm lower under the conifer plantations than the rest of the system (Clarke et al, 2008). If the water table contours are mapped, then this effect can be seen in a kink in the contours where they cross the pine planting:



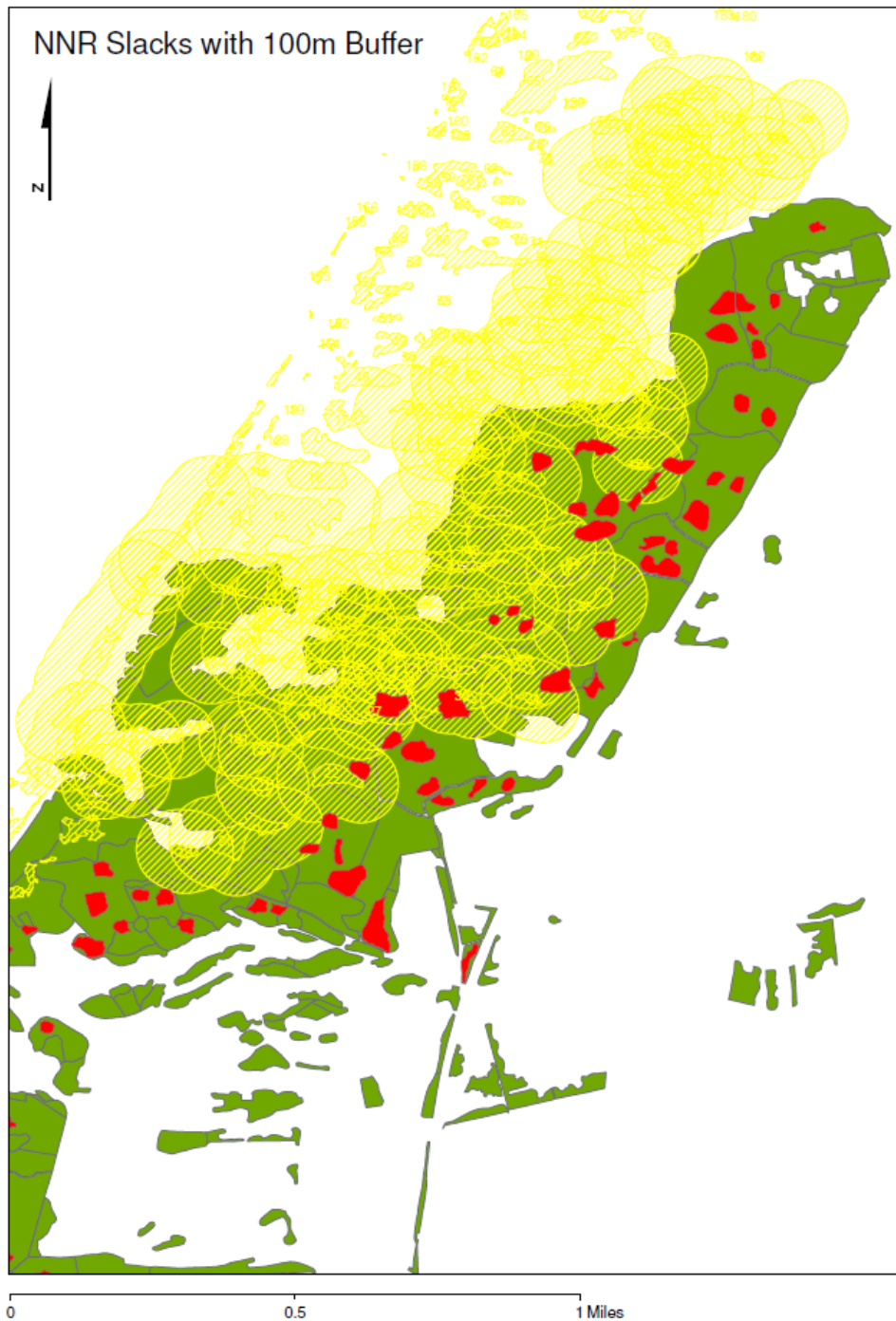
Map 7, Water table contour map

September 1999



The water table rose by up to 50 cm two years after removal of an area of frontal woodlands on the NNR. The importance of this in the context of the Working Plan is that for the NNR (and this really only affects the NNR) to maintain wet slacks and restore some of the dry slacks, replanting of woodland is currently restricted within 100metres of a slack.

The basis for a 100 metre buffer zone is not clearly indicated in any literature and is merely a ‘best guess’ or more likely an arbitrary number. It is therefore important that further research or analysis of existing borehole data is carried out to provide a more reasoned approach to consent—however, there is no additional money to carry out this work and it is not really clear who has responsibility. In the meantime consent will continue to be based on this arbitrary figure and its effect on the ability of the managers to restructure the age profile of the woodlands is clearly illustrated in the following map (the map is fairly crude in that there has been no effort to exclude slacks that may not be relevant to the analysis):

**Map 8, Slacks with 100 metre buffer zone**

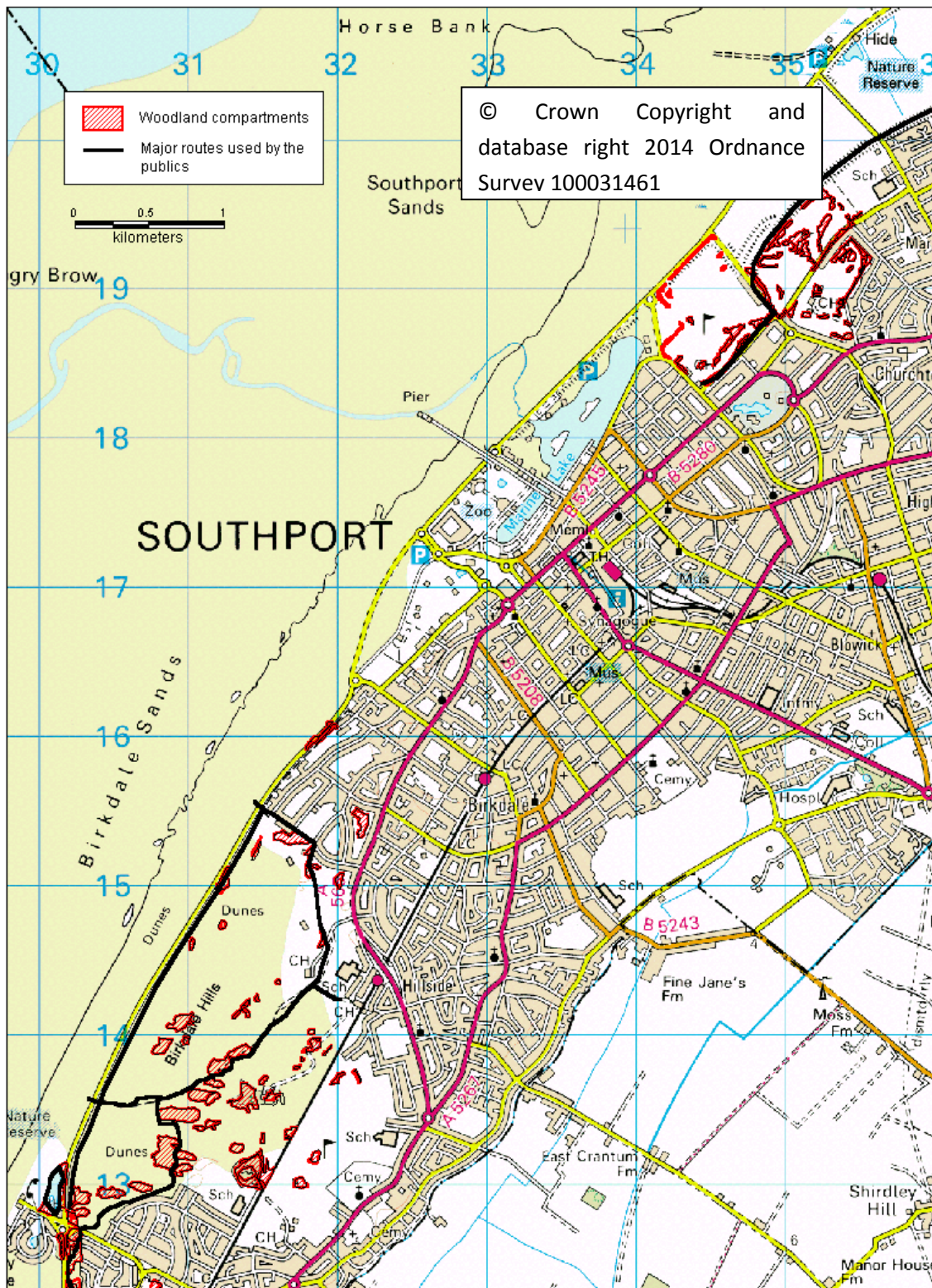
The 100 metre buffers preclude many of the compartments on the NNR from restructuring, in part or as a whole. It should be noted that Natural England has worked hard to locate coupes in remaining suitable areas and to date only one coupe has been felled and not replanted as a consequence of this constraint—some of the coupes felled very early in the first cycle are within the 100m buffer zones, but were replanted (all those indicated red on the map within the buffers).

More recent data presented at the 2012 Dune Scrub and Woodland Conference at Liverpool Hope University<sup>3</sup>, but as yet unpublished, indicates that the suspected impacts on the water table by trees

<sup>3</sup> <http://www.hope.ac.uk/dunewoodlands/>

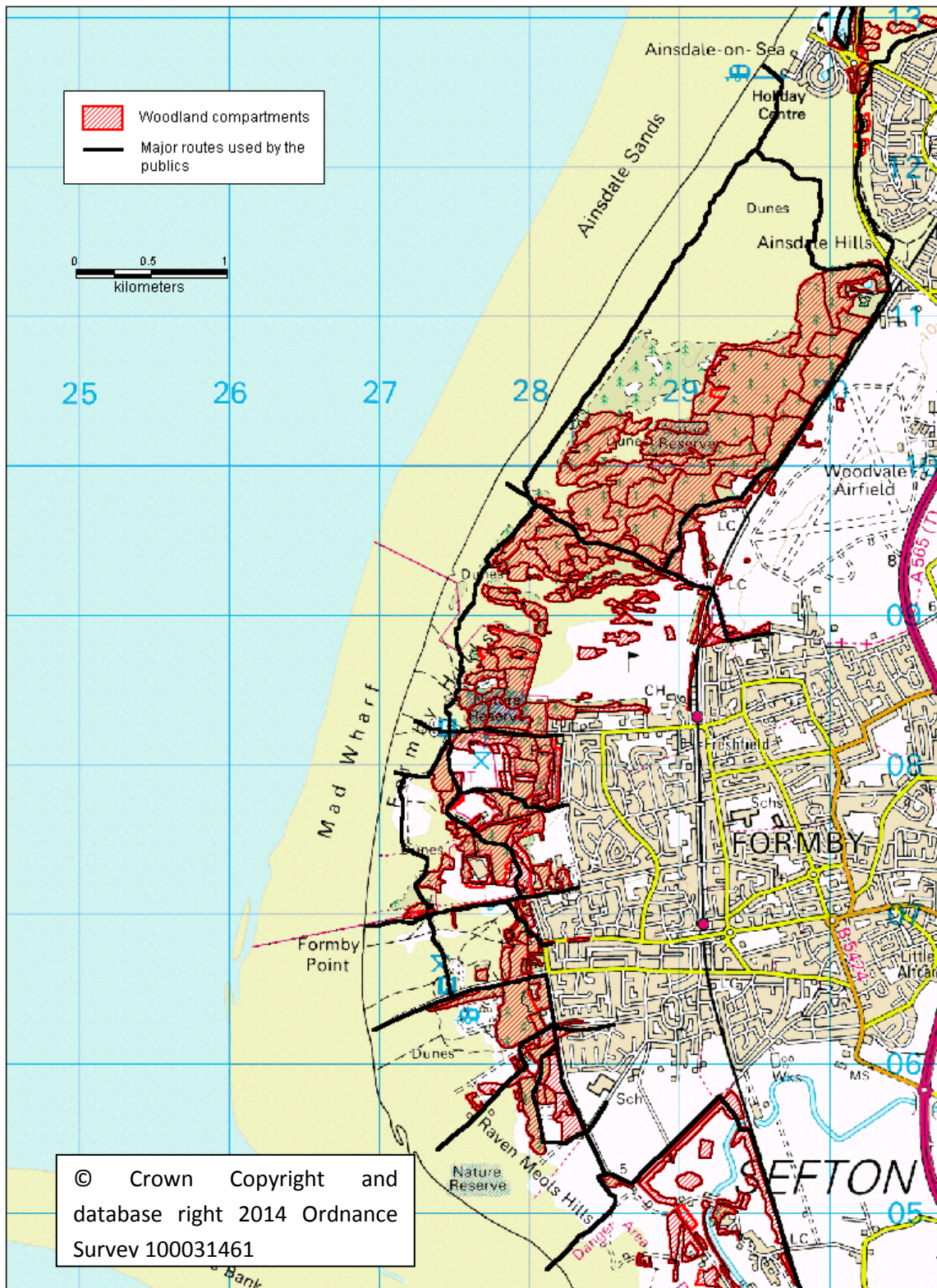
may be reduced in future by projected climate change. Increased infiltration of rainwater may in fact lead to better recharging of the water table under the woodland areas than the open dune system.

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The maps are not definitive and do not show all routes, only those routes most obviously used by people. The maps do not attempt to show differences between Rights of Way, permissive routes and routes used without consent.

### 2.1.5 THE RED SQUIRREL

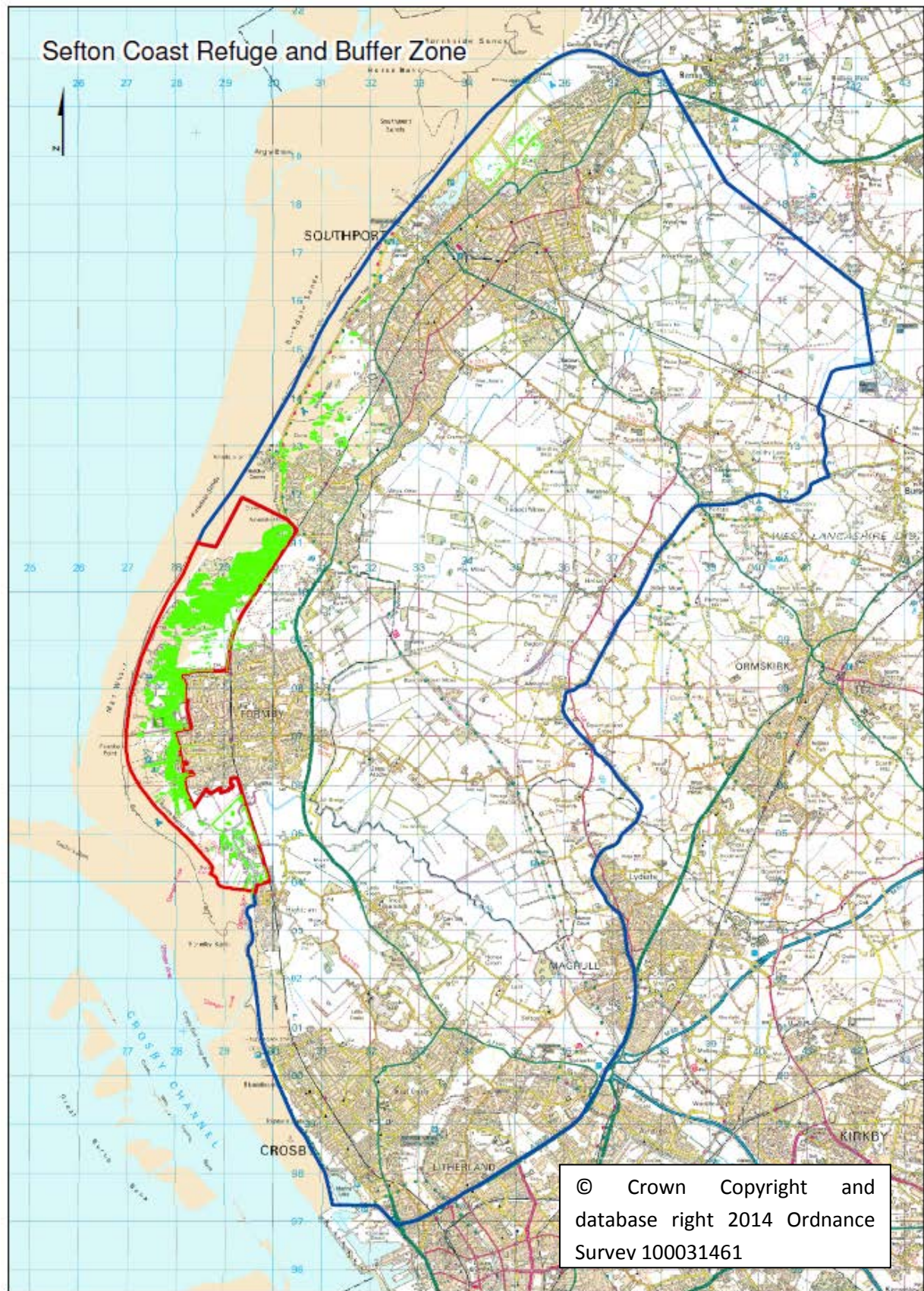
The red squirrel is held in high regard by the people of Sefton and much of the visiting public and is considered to be one of the Sefton Coast's major attractions. It is estimated that the National Trust Property at Formby alone attracts 300,000 visitors to the coast each year, who are often (though not exclusively) travelling to Formby with the primary objective of seeing the squirrels.

Red squirrels were once found throughout the UK but are now almost wholly restricted to the north, with small colonies on the Isle of Wight and Brownsea Island in Dorset. The remaining population continues to decline because of the spread of grey squirrels, habitat fragmentation, and disease. The red squirrel is therefore listed as a Priority Species in the UK Biodiversity Action Plan (UKBAP) and is now regarded as endangered with its future uncertain unless appropriate measures are taken to protect it.

In 2005, the UK Red Squirrel Group (with responsibility for facilitating the implementation of actions within the UKBAP) drew up a national strategy to ensure the survival of the red squirrel. It aimed to protect the main populations by establishing refuges and buffer zones throughout the country in areas where red squirrels persist. A total of 20 red squirrel refuge sites were proposed for designation in the north of England, nine of them in the north-west. They came into being in 2005 and the Sefton Coast refuge and buffer zone is the only site established in Merseyside / Lancashire and supports the most southerly population in mainland England:



**Map 10, *Sefton Coast Red Squirrel Refuge and Buffer Zone***





Refuge sites were selected according to the following criteria:

- A minimum of 200ha of primarily conifer woodland supporting an existing, viable population of red squirrels;
- a buffer zone surrounding the refuge comprised largely of habitat that is hostile to squirrels and therefore defensible against grey squirrel incursion.

The red squirrel population is dispersed and is not confined to the core refuge area (the red boundary on the map) but is found throughout the buffer zone in Sefton and West Lancashire. It is important to note that the urban areas of Southport, Birkdale, Ainsdale, Formby, Hightown, Crosby, Blundellsands, Aughton and Ormskirk support a significant proportion of the total population. The distinction between the refuge area and buffer zone is, in reality, artificial and the whole area has therefore subsequently become known as ‘The Stronghold’ (the blue line on the above map). The objective of the conservation work in the Stronghold is to maintain the red squirrel population. It includes measures to actively encourage the red squirrel population to flourish as well as measures to control the influx of grey squirrels from the hinterland.

The conservation measures which impinge on the Plan are:

1. Maintaining a suitable habitat for the red squirrel
  - o Restructuring to ensure that there is a healthy coning crop:

Currently the age structure of the pinewoods suggests that within 20 years most of the pine will have a reducing cone crop. It is therefore critical that the forest be managed as a ‘normal’ forest. This will ensure a continuous and vigorous cone production.

As shown in section 1.2.1, the age distribution in the pinewoods is skewed towards the over-mature age classes:

**Diagram 8, Skewed age class distribution in the pinewoods (2013)**



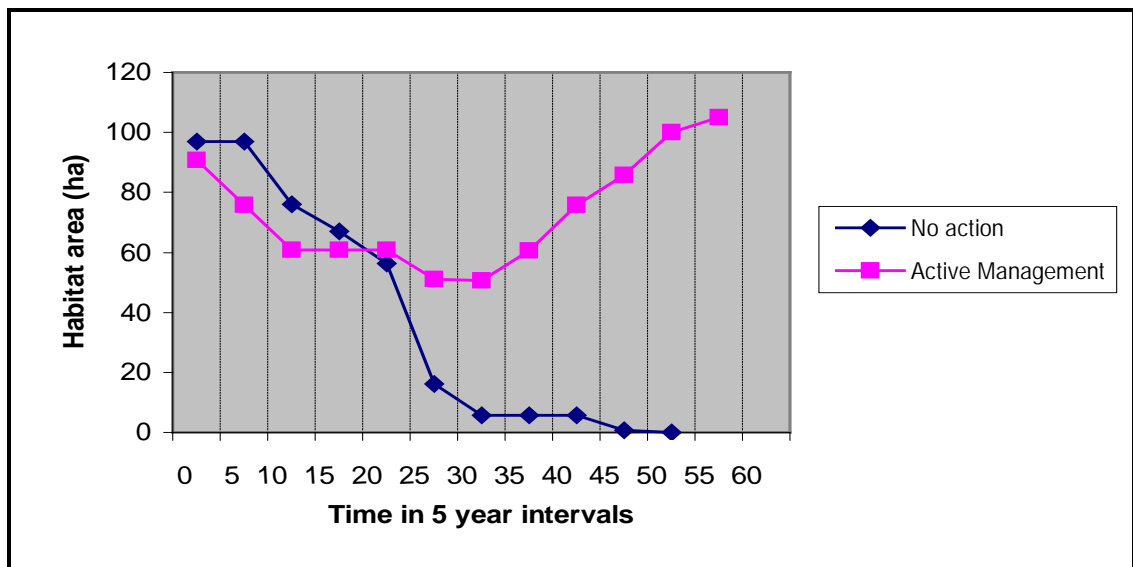
About 160 hectares are in excess of 70 years old and the reason why this is a problem is that Corsican pine (the predominant species) cones from about 25 years old, with coning dropping off after 90 and Scots pine producing cones sooner from about 15 years, but then begins to drop off after about 100 years. In terms of a healthy coning

crop, over 65% of the pinewoods are already moving into a period of declining cone production.

If the woodlands were allowed to move into over-maturity with no attempt to address the problem, then there would be a steady decline in suitable habitat until, in about another 60 years, there would be little, or no remaining healthy coning pine.

Unfortunately the nature of the skewed age structure has implications even in the event of management action being taken to ‘normalise’ the age structure—the normal age structure being the ideal to work towards. Any felling in the older age classes will reduce the available cones for a period of 15 to 25 years until the new planting begins to cone. This effect is explored in the following graph using data from the Ainsdale Sand Dunes NNR and a management regime in which 15 hectares of older age class pine is felled every 5 years and replanted:

**Diagram 9, The Effect of Management on NNR Squirrel Feeding Area**



The implication is that the sooner the work begins, the sooner it will be possible to see a recovery in the available coning area.

- o It will be essential that all forest operations that impact the habitat are carried out in the winter before the squirrel breeding season begins in March and after the young adult dispersal is over by November. In other words, work should be carried out outside the breeding season.

Red squirrels are protected by the Wildlife and Countryside Act 1981 and may not be intentionally trapped, killed or kept, or have their dreys disturbed (except under licence from Natural England). Thus all operations that involve felling of trees will have to be planned around existing dreys and ensure that there is no danger to individual animals.

- o Maintenance of a suitable species balance:

First and foremost it is about maintaining in excess of 200 hectares of pinewood of suitable ages to ensure viable habitat (see Diagram 10 above). Currently there is about 250 hectares of pine woodland.

Secondly, it is about not planting or allowing excessive natural regeneration of large-seeded broadleaves.

Thirdly, the level of broadleaf content should remain at current levels, about 10% by area of pure broadleaf and 16% mixed woodland—all of suitable species. The main reason for this is that large-scale block plantations of conifers give red squirrels the greatest chance of survival as they present a very poor habitat for the bigger, more demanding grey. However, it should not be forgotten that the red squirrel also feeds on sycamore and birch bark on young shoots especially in spring and early summer (tending to use their buried hoards in the winter). Maintenance of suitable broadleaf areas is therefore also very important to red squirrel conservation.

Finally, that there is a sufficient mix of suitable coning species to ensure that if any one species has a bad coning year, then there are alternative food sources. For example, Corsican pine has a coning cycle of 5 years and Scots pine has a cycle of 3 years. The greater the variety of species, the less the chance there is of having lean years (not to forget the importance of building in disease resilience).

## 2. Control of the grey squirrel

Grey squirrels are classed as a vermin species and within measures of the Wildlife and Countryside Act 1981 it is an offence to release (or allow the escape) of any kind of animal of a kind that is not established in the wild in Britain.

The grey squirrel is the carrier of the squirrel poxvirus (squirrel parapoxvirus or SQPV). The virus was first confirmed in East Anglia in the early 1980s and has moved steadily northwards with the spread of grey squirrels. The virus is considered to be the main cause of decline in red squirrel population, although competition for habitat and food resources also plays a part. It is assumed that the virus has been introduced to the native red squirrel population by the grey which acts as a carrier and although is fatal to the red squirrel it has no effect on the hardier grey.

The first recorded release of grey squirrels was in 1876, when a pair was brought from America and released into Henbury Park in Cheshire. The most significant releases of greys, in terms of establishing a wild population, include the release of 100 greys into Richmond Park, Surrey, in 1902, 91 into Regents Park between 1905 and 1907 and 10 into Woburn Park, Bedfordshire in 1890. There are documented records for grey releases to at least 30 sites in England and in Scotland over the following fifty years.

There is significant scientific evidence that stopping the grey squirrel incursion to the remaining red squirrel strongholds will solve the problem of declining reds, including research undertaken at the Universities of Newcastle and Liverpool; Queen Mary University of London; The Moredun Research Institute; the Royal (Dick) Veterinary School; and the Institute of Zoology. Scientific, peer-reviewed and published research has found that the rate

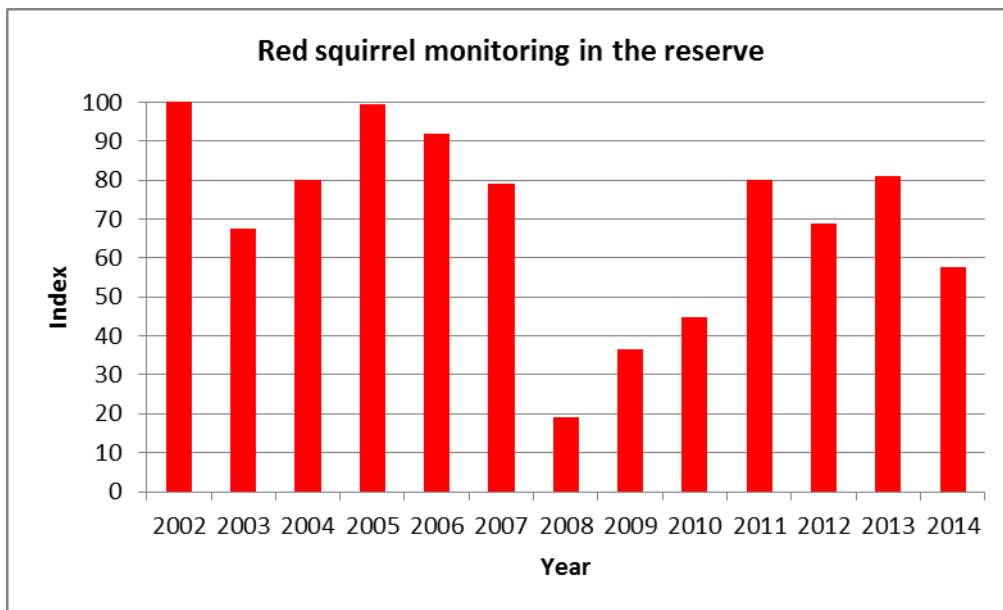
of decline of the red squirrel is 17-25 times higher in areas where SQPV is found in grey squirrels.

The majority of grey squirrel control should therefore occur in the areas outside the Sefton Coast Woodlands (it will be within the blue boundary of the above map) and are therefore, unfortunately, not considered a direct activity of this Plan. Incursions of the grey into the Sefton Coast woodland area will prompt action under the auspices of the Plan. In both cases owners and the public should report sightings of grey squirrels and sick red squirrels throughout the stronghold to the Squirrel Officer at the Lancashire Wildlife Trust offices. Action will then be taken by authorised volunteers to trap and dispose of the grey squirrel and to deal with the disease outbreak.

3. Monitoring the squirrel population within the woodland area

A red squirrel population monitoring programme has been set up by the Lancashire Wildlife Trust in the pinewoods. Transects are walked in autumn and spring of each year to give an indication of changes. This data does not give absolute numbers, it only provides information on changes in population against a baseline established in 2002. A summary graph is provided from a report produced by the Lancashire Wildlife Trust after the 2012autumn monitoring:

**Diagram 10, Red squirrel population figures, 2002-2012 (Courtesy of Lancashire Wildlife Trust)**



Several observations can be made from the data: Firstly, that since forest operations started in 2003 there appears not to have been any impact on the population; secondly that the effect of the virus can clearly be seen when it struck in 2007/08. Since then, the control measures and management actions implemented by LWT have seen the population recover to 2003 levels—the drop in the 2012 autumn population count can be accounted for by a poor breeding season and is not considered significant (LWT 2012).

A regular monitoring system will keep managers aware of the impact of disease and management operations on the squirrel population in the woodlands.

Finally, in the first phase of the Plan, there were recommendations to maintain ‘canopy corridors’ within the main area of pinewoods to minimise the impact of thinning and felling operations on feeding habitat. This issue is not dealt with in this phase as it is felt that it is more important to concentrate on restructuring and keeping up with thinning schedules. In any case, one of the key principles of the Plan maintains corridors by limiting any single area of restocking felling. Observation suggests that forest operations often do not disturb feeding patterns as there are a number of anecdotal accounts of red squirrels happily feeding on the ground within metres of large forest machines during felling operations!

### 2.1.6 PESTS AND DISEASE

As everywhere, pests and disease will act as a constraint on management of species on the Sefton Coast and some understanding of the most common or likely dangers is important. The table below gives limited information on a limited number of common or possible infestations:

**Table 8, Pests and Disease that Relate to the Sefton Coast Woodlands**

Pest or Disease	Symptom and life cycle	Comments	Treatment
<p>Pine weevil <i>Hylobius abietis</i></p>	<p>Typically, adult weevils feed on bark of the main stem of seedlings to girdle and eventually kill them.</p> <p>The life cycle of the weevil begins with egg-laying by adult females in the bark of conifer root-stumps. Pine weevils find stumps on recently felled sites by the resin odours from the cut surface. After hatching, the larvae feed in the stump bark, increasing in size as they pass through their developmental stages. The adult weevil usually emerges at the soil surface in the autumn but will then overwinter in the soil and re-emerge in spring on or near the same felling site.</p>	<p>The pine weevil is a common cause of mortality in young conifers (especially pine) used to restock forest sites after felling.</p> <p>Historical records from the Weld-Blundell estate talk of problems with this beetle (Roche 2012).</p>	<p>Insecticides can be used to protect seedlings during the vulnerable establishment period and these are applied either before or after planting. However, there are concerns about the effects of insecticide on the wider environment.</p> <p>The alternatives are to reduce population size by:</p> <p>leaving an appropriate fallow period to allow weevil emergence and dispersal;</p> <p>using resistant planting stock;</p> <p>releasing natural predators such as nematodes.</p>
<p>Red band needle blight <i>Dothistroma pinii</i></p>	<p>Symptoms are first visible on infected needles from September. Generally older needles are affected and typically develop yellow and tan coloured spots and bands which turn red. Banding is not always evident and needles may have an overall brown or reddish coloration (easily confused with other diseases). As the</p>	<p>This is a significant disease of conifers. It causes premature needle defoliation, resulting in reduced growth rates and, in severe cases, death.</p> <p>Until recently the disease was of concern in the southern hemisphere, however, since the 1990's there has been a rapid increase of disease</p>	<p>In some countries successful methods of control have focussed on fungicide treatments. However, in the UK, the approach has been to use resistant species and good stand management—such as heavier thinning regimes to improve air flow.</p>

Pest or Disease	Symptom and life cycle	Comments	Treatment
	<p>disease develops, symptoms are most apparent in June to July, after this, infected needles are shed and trees may have a 'lion's tail' appearance with a tuft of the current year's needles at the branch ends. Defoliation can continue over a number of years weakening the tree and eventually killing it.</p> <p>Reproduction is from small, black fruit bodies on the needles generally seen within the red bands. Spores are released from these and if they land on a host needle, they germinate and grow through the stomata. Infection occurs between late spring to late summer and severe infection appears to be correlated with wet springs and high rainfall.</p>	<p>incidence in Europe. In the UK it is now found in many forests growing susceptible pine species, with Corsican, lodgepole and more recently Scots pine all being affected.</p>	
<p>Ash die-back <i>Chalara fraxinea</i></p>	<p>Infection starts primarily on leaves and is progressive over time, with dieback and stem lesions usually develop in the next growing season. Leaf symptoms can be detected within two months of infection.</p> <p>Infection occurs from June to October and is via spores from fruit bodies which occur on infected fallen leaves and shoot material. This occurs in the growing season after infection and trees are likely to need a high dose of spores to be infested.</p> <p>Moist conditions favour production of the fruiting bodies. Natural spread is by wind-blown spores which are thought to travel up to 20-30 km per year and perhaps much further. Longer-distance spread also occurs via infected plants, seeds and wood products.</p>	<p>A fungal pathogen that causes leaf loss and crown die-back in affected trees and can lead to tree death. It has infected many species of ash, but with differing. Unfortunately the UK's common ash is one of the most severely affected species. Young trees, coppice stools and pollards are particularly vulnerable and succumb to disease rapidly. Dieback has seriously affected a high percentage of ash trees in continental Europe (an estimated 90% of ash trees).</p> <p>Currently there is no evidence that the disease can spread to tree species other than ash.</p>	<p>Trees cannot recover from infection, but larger trees can survive infection for a considerable time and some might not die. The impact depends on tree age, location, weather conditions and co-presence of honey fungus or other secondary pathogenic organisms. Trees in forests are more susceptible because of the greater prevalence of honey fungus. Timber trees should be felled before they are killed by honey fungus.</p> <p>Trees under 10 years of age are likely to die from in 2-10 years.</p> <p>Trees under 40 years old will die in 3-5 years if also infected with honey fungus.</p> <p>For trees more than 40 years old, there is no evidence of unless infected by other pathogens.</p>

Pest or Disease	Symptom and life cycle	Comments	Treatment
<p>Butt-rot <i>Heterobasidion annosum</i></p>	<p>Symptoms are difficult to pick up, except through unexpected windthrow, areas of group death or the discolouration in butt wood of felled trees.</p> <p>During the summer moths spores are released from fruiting bodies which can be carried long distances in air currents. The spores re-infect through wounds in trees and damage such as freshly cut stumps. Once on a stump the fungus colonises and moves into the root via mycelium and can grow 0.1–2.0 m per year. Since this fungus cannot move very far through soil, it relies on root graphs to help it infect neighbouring trees. It can also spread through insects that feed on roots.</p>	<p>This is a white rot fungus that causes root rot, butt rot and death. It is significant disease of conifers in the UK, though the pines are considered to be among the least susceptible of conifer species.</p> <p>The gaps that can develop in the forest canopy where groups of trees have been killed off are an important part of forest ecology. Available levels of moisture and sunlight increase to create distinct micro-climates of initially non-forest fauna and flora. Eventually the gaps will be re-colonised by natural regeneration of less susceptible forest species.</p>	<p>Treatment is based on preventing the spores from germinating once they have landed on freshly cut stumps in felling areas.</p> <p>The use of urea for this purpose is now considered to be out-dated and a suspension of <i>Peniophora gigantea</i> in disodium octaborate is considered preferable as it is using a natural biological agent – a naturally occurring, non-pathogenic wood rot fungus that competes for space with <i>H annosum</i></p>
<p>Honey fungus <i>Armillaria mellea</i>, <i>Armillaria spp.</i></p>	<p>Initial symptoms of honey fungus infection include the dying back of leafy branches or failure of leaves to appear in spring. Black bootlace-like strands appear under the bark and around the tree and fruiting bodies grow in clusters from the infected plant in autumn and die back after the first frost. The pathogen spreads from living and dead trees, live root contact and stumps by means of reddish-brown to black root-like rhizomorphs ('bootlaces') that grow at the rate of around 1 m a year. Infection by spore is rare. Rhizomorphs grow relatively close to the soil surface (in the top 20 cm) and invade new roots, or the root collar of woody plants. An infected tree will die once the fungus has girdled it, or when extensive root death has occurred. This can happen rapidly, or may take several</p>	<p>A parasitic fungus that lives on conifer and broadleaf trees and woody shrubs. It is considered highly destructive as it does not need to moderate its growth to ensure the host continues to live, as once dead the fungus continues to thrive on the dead and decaying woody material.</p>	<p>There is no cure for the disease and control, if deemed necessary, entails removal of infected trees and material by burning and requires that stumps be ground down to below ground level.</p>

Pest or Disease	Symptom and life cycle	Comments	Treatment
	years.		
<p>Sudden oak death <i>Phytophthora ramorum</i></p>	<p>Symptoms include lesions (cankers) that bleed a black exudate which usually dries to a crust on the trunk. The bark will be dis-coloured and dying. Trees will die once the lesions become extensive on the trunk.</p> <p>On Japanese larch, shoots and foliage can be wilted or withered, the needles blackened that shed prematurely. These trees will have resinous cankers on infected branches and upper trunk.</p> <p>Infection is not dependent on wounding, it appears to be the result of contact with the thousands of spores produced on sporulating hosts such as rhododendron and larch just before leaves are shed in autumn. Spores are washed from infected needles in rainfall and collect in water pockets on twigs or bark. It seems that the spores act together to achieve infection and the number of spores has to be large for it to succeed.</p>	<p>This is a fungus-like pathogen of plants that causes damage and mortality to trees and other plants. It has been found mostly on shrubs, especially rhododendron, viburnum and camellia.</p> <p>Few tree species were affected until 2009, when the disease was found to be infecting and killing large numbers of Japanese larch in south west England. In 2010 it was found to have spread to Wales, Northern Ireland and the Republic of Ireland and by 2011 western Scotland.</p> <p>Evidence indicates that the disease can be spread over several miles in mists, and moist air currents, watercourses and rain splash. The pathogen can also be spread on footwear, dogs' paws, vehicle and bicycle wheels, use of infected tools and equipment and movement of infected plant material.</p>	<p>No cure has been found, so control must be to prevent or minimise any further spread of <i>P. ramorum</i>. Infected larch, must be felled and material destroyed as quickly as possible after detection and before the next spring or autumn period of sporulation begins on the needles.</p>
<p>Group dying <i>Rhizina undulata</i></p>	<p>The fruiting bodies can develop as soon as 15 weeks after burning. The spores can remain dormant and viable for up to two years until the heat of a fire activates germination. It will only become established in burned areas if both the spores are present in the soil prior to burning and live conifer roots are available.</p> <p>It is thought that more acidic soils containing a peaty layer are good conditions for the mycelium to grow as shallow rooting system offers many root contacts allowing the mycelium to spread from tree</p>	<p>A fungal pathogen that is the most common threat to conifers following burning operations in the woodlands. The fungus causes root rot known as group dying and affects most of the conifer species grown in the UK.</p>	<p>If group dying becomes established, it may be necessary to ban burning. It is thought that digging a trench (0.3 m deep x 0.3 m wide) will prevent the radial spread of the fungus. Avoiding planting sites adjacent to the burned areas and stumps may also prevent the spread of the fungus.</p> <p>There are no known chemical or biological methods of control.</p>



Pest or Disease	Symptom and life cycle	Comments	Treatment
	to tree.		

Up-to-date information on identification, spread, treatment and management, of diseases will be found on the Forestry Commission (FC), Natural England and DEFRA web sites. Similarly information on forest and tree pests and diseases not include in this brief summary can also be found on the FC web-site (<http://www.forestry.gov.uk/pestsanddiseases> ).

### 2.1.7 CLIMATE CHANGE

#### Background

For some background to this report, a summary of recent climate trends is provided using data from the Meteorological Office's Hadley Centre UKCIP08 (2007):

- Warming of the global climate is currently at the rate of 0.2°C/decade (over the past 25 years);
- global sea-level rise is currently running at about 3mm/year, but is thought to have risen by 1mm/year around the UK through the 20<sup>th</sup> Century (adjusted for land movement);
- the temperature of central England has risen by about 1°C since the 1970s and of Scotland by 0.8°C since 1980;
- although total rainfall amounts have not changed significantly, seasonal rainfall is highly variable with an overall decrease in summer and increase in winter;
- there has been an increase in UK in the contribution to winter rainfall from heavy precipitation events over the past 45 years;
- severe windstorms around the UK have become more frequent (although not above the levels seen in the 1920s);
- Sea-surface temperatures around the UK coast have risen over the past 30 years by about 0.7°C

The data for the north-west follows the national UK trends with little or no variation (magnitude only differing between the north and south of the UK).

The report makes no attempt at predicting changes or the effect that current trends will have on future weather patterns, but the facts, as they stand, suggest that there will be increasingly warmer and drier summers, wetter and stormier winters, with the severity of the storm events increasing. The continuing rise in sea level, coupled with severe winter storms will increase the vulnerability of low-lying and exposed coastal areas.

In crude terms for the North West, at the current rates of change, this means that within the space of a softwood tree rotation, average temperatures will relate to those currently seen in the south east around the Thames Valley—but this does not take into account the proximity to the Irish Sea and the fact that it is on the exposed side of the Pennine ridge.

## Climate Change and Trees

In brief, the key impact of climate change on trees and woodlands can be summarised as follows (more detail can be found in published literature):

- A rise in temperature will
  - alter photosynthesis and respiration;
  - reduce winter chilling effect;
  - increase premature bud burst in mild winter spells exposing trees to late frost damage;
  - change rates of soil organic matter decomposition and mineralization.
- Increased CO<sub>2</sub> will
  - alter photosynthesis and respiration to increase growth rates (limited by water and nutrient availability).
- Increased drought frequency and magnitude will
  - increase plant stress;
  - increase the incidence of fire.
- Increase in storm events will
  - cause windthrow damage (so increasing insurance costs, estimates in the Netherlands suggest an increase of up to 80% in insurance premiums).
- Heavier precipitation events will
  - Increase risk of loss of fertile top soils;
  - increase water-logging in heavy soils;
  - increase atmospheric humidity.

There seems to be agreement in the literature that natural disturbances, such as storms, droughts and floods, will increase in frequency and intensity in terms of extreme climate events. However, there is no simple relationship between events and long-term impact, as there is also the complex interaction between temperature, nutrient availability, tree age and forest type. What seems to be clear is that in addition to physical damage from events, such as storms, the combination of raised mean temperatures and climatic extremes will affect timber quality, water use, carbon and nutrient allocation, resistance to attack by pathogens and the species composition of forest ecosystems. It should be noted that change is likely to be felt at the margins of forest types first, such as in northern and upper limits the European boreal and alpine forests.

The ForeStClim project looked at developing management support tools to guide future management decisions. For example, it assessed;

- The need to balance woodland management activity with projected increase in visitor numbers
- The increasing importance of the woodlands in sustaining the water table
- The need to diversify species planted in order to improve resilience to future pests and diseases
- The role that thinning the woodlands can play in reducing spread of fungal disease

- The optimum coupe size, shape and orientation to enable regeneration and survival of planted trees.

### 2.1.8 GREEN INFRASTRUCTURE

Green infrastructure is the physical environment within and between our cities, towns and villages. It is the network of open spaces, waterways, gardens, woodlands, green corridors, street trees and open countryside that brings many social, economic and environmental benefits to local people and communities (Community Forests Northwest, 2006).

Green Infrastructure spans administrative boundaries, it is publicly and privately owned, semi-natural and man-made. It may not always be green, but is distinct from the built environment (or 'grey' infrastructure), it is diverse, as are the functions that it performs, it is central to local distinctiveness and is of global and local importance. Green infrastructure:

- Provides habitats for desirable fauna and flora;
- Increases water conservation;
- Reduces water pollution in nearby rivers and streams;
- Recharges local groundwater;
- Reduces potential of unwanted flooding;
- Delays and reduces peak storm water runoff flow rates;
- Helps to reduce sewer overflow events;
- Decreases the potential for erosion;
- Increases carbon sequestration;
- It can be used as an educational and research tool;
- Reduces the need for construction of drainage and retention systems;
- Reduces urban heat island effect and energy costs;
- Improves health and wellbeing;
- Helps to improve air quality;
- Provides additional recreational space;
- Helps to increase land value.

The Liverpool City Region Green Infrastructure Framework provides an inventory and analysis of the green infrastructure across Merseyside. It identifies the Sefton Coast Woodlands as an area of very high multifunctionality, of local, regional and national importance.

### 2.1.9 THE MERSEY FOREST PLAN

The Mersey Forest Plan is a government approved, long term, strategic document, that guides the work of The Mersey Forest Partnership. The Plan sets out the vision and objectives for the areas designated as The Mersey Forest. The Forest is not a single area of woodland, but the growing mosaic of trees and woodlands in and around our towns and cities. Since its approval in 1994, woodland cover across The Mersey Forest has increased by 75%, with large areas of undermanaged woodland also having been brought back into management.

**Our vision is to get “more from trees” to help make Merseyside and North Cheshire one of the best places in the country to live.**

We will work with partners, communities and landowners across rural and urban areas, to plant trees and woodlands, improve their management, and complement other habitats. This will increase woodland cover to 20% of the area. We will revitalise a woodland culture, and bring economic and social benefits through our transformed environment.



The objectives, listed below, are all linked to the delivery of socio-economic benefits through environmental improvements.

- The Economy and Tourism
- Woodfuel, Timber and Forest Industries
- Wildlife, Biodiversity and Ecosystems
- Climate Change
- Flood Alleviation and Water Management
- Access, Recreation and Sustainable Travel
- Health and Wellbeing
- Natural Play and Education
- Life-Long Learning, Training, Skills and Jobs
- Culture, Heritage, and Landscape

The Forest Plan has been refreshed through the GIFT\_T Interreg project in 2013. It categorises the immediate area of the Sefton Coast Woodlands as 'no-change' managing the existing coastal woodlands as a Red Squirrel Stronghold, landscape feature and important recreational area. For the hinterland, however, the Plan provides the aim of increasing tree cover to an indicative 10% where appropriate.

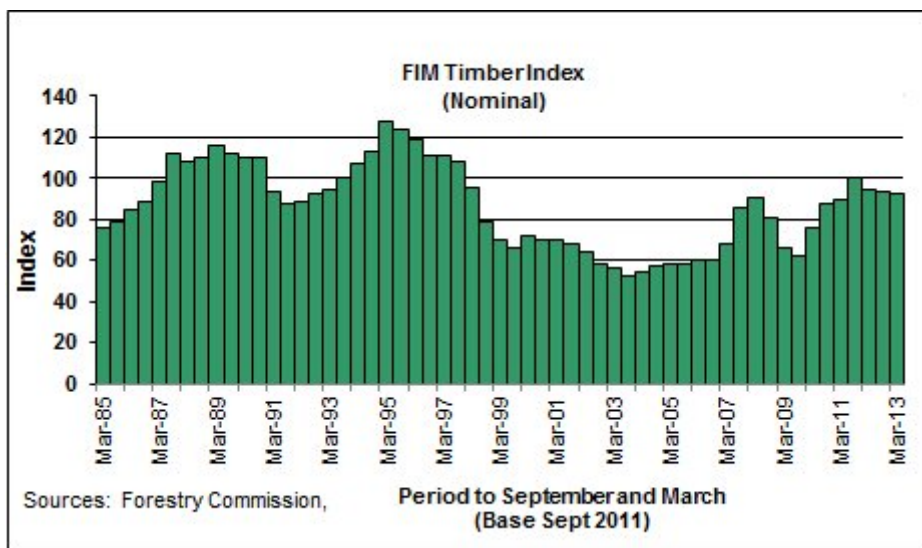
The Mersey Forest Plan is supported by national policy such as National Planning Policy Statement and in the Sefton Local Plan.

### 2.1.10 MARKETING AND UTILISATION

As indicated in 2.1.9, one of the objectives of The Mersey Forest is to help to develop opportunities for marketing timber products. Creating markets for timber and woodfuel helps to make the economics of woodland management more attractive.

Timber is a global commodity and prices gained for produce from areas such as the Sefton Coast are affected by large scale market forces.

Over the last few years there has been an increase in timber process, despite the downturn in the UK economy and the low rate of house building traditionally a strong market for sawlog grade material. This price increase is due to strong global demand for timber, particularly from Asia. Prices are not yet back to levels seen in the mid 90s, but are around 60% higher than in the 2000s.



In 2012/13, 4 woodland owners joined forces to let a thinning and felling contract. This resulted in a positive cash flow on the works that were undertaken, enabling funds to be recycled back into the day to day management of the woodlands. This type of collaborative work enables more competitive tenders for work to be achieved and also landowners with lower volumes of work to benefit from better prices than would be the case if they were to seek tenders for the work on their own.

The Sefton Coast Woodlands' timber is seen as good quality. The material is straight and relatively clean, with few knots on the main stems. Much of the thinning and coupe felling material is sawlog material, the most valuable timber market. Smaller trees and the timber left on larger trees once the sawlog material is removed, go to either fencing or chipboard markets.

The demand for biomass means that even the tops of the trees, the small branches, can be utilised. "Brash Balers" gather this material and create bales, that are subsequently burned in biomass boilers such as the one at Shotton.

As well as going to sawlog, fencing, chip and biomass markets, some material from the Sefton Coast Woodlands is used in the Woodland Workshop operated by Sefton MBC. Here a wide range of high quality products are created from timber that is milled, cut, planed and cut by the Inclusion Team. The workshop provides high quality support for a range of adults from a variety of backgrounds. It

also provides training to children who are not in main stream education, and who respond positively to the physical work required in managing woodland and creating timber products.



**Figure 6 Timber extraction from Sefton Coast Woodlands**

The high quality material that is produced from the workshop is used by Sefton MBC on the coast, reducing their need to buy in more costly products. The wider social benefits are important, but as yet have not been quantified.

Forest economics will continue to be important in shaping how the Working Plan is delivered. Whilst timber prices will fluctuate, it is anticipated that they will rise in real terms over the medium term. This means that the resource becomes a more valuable asset, and the opportunities for income generation from thinning and coupe felling to support on-going management are available. This Working Plan, forms the basis for the sustainable management of the woodlands, ensuring that there is a balance between thinning and felling and the long term health and delivery of multiple benefits from the coast woodlands.

The continuation of programmes such as that at the workshop are important too, enabling wider economic benefits to be achieved and engaging more people in the use and management of the Sefton Coast Woodlands.

### 2.1.11 FUNDING OPPORTUNITIES

Income from timber sales is unlikely ever to be enough to provide the income to carry out all of the activity that is proposed for well-used, multifunctional woodlands such as those on the Sefton Coast. Over the past 10 years a range of funding sources have been used to deliver the wide range Sefton Coast Woodlands Forest Plan objectives. These have included,

- Landowners own funds
- EU Interreg Funding – ForeStClim and GIFT\_T
- EU Structural Funds – particularly through the successful ICEP Programme
- NWDA – Regional Park funding
- Woodland Grant Scheme
- Heritage Lottery – Landscape Partnership Fund

In addition The Mersey Forest Team has also provided resources to support the ongoing coordination and delivery of the plan, estimated at over £160, 000.

The EU Structural and Investment Funds, will again provide opportunities to support some of the activities set out in this Working Plan. As yet the details of the new Woodland Grant Scheme are not available, but Mersey Forest Team will keep landowners up to date with current information on this scheme and look for opportunities to continue to gain resources for woodland management on the coast in addition to the potential income from timber and wood sales.



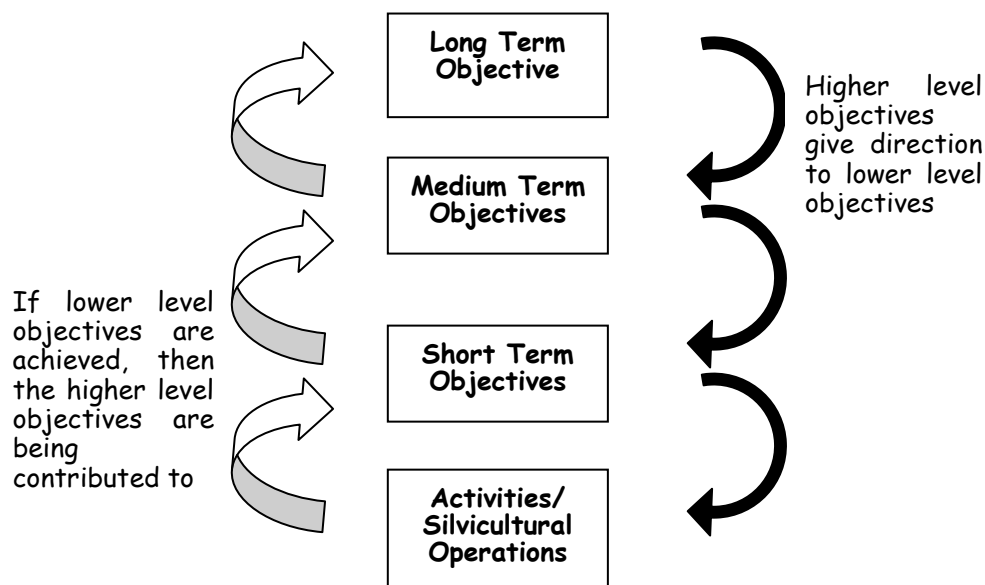
## 2.2 Objective and Activities

### 2.2.1 THE OBJECTIVES HIERARCHY

The Sefton Coast Woodlands Forest Plan has been placed in a structure that is based on a project management planning tool – Logical Framework Analysis (also known as ZOPP or goal oriented project planning). The aim is to structure the objectives and activities in such a way that planning, implementation, monitoring, evaluation and review can be carried out in transparent and systematic fashion. The important feature of the system is that the objectives and activities are all related, so that no activity is left without an objective and no objective is left without an activity—the danger in management planning is that plans often end up by being a ‘wish-list’ and the aim of this approach is to translate aspiration into a logical reality.

The following diagrams illustrate the principles behind the system:

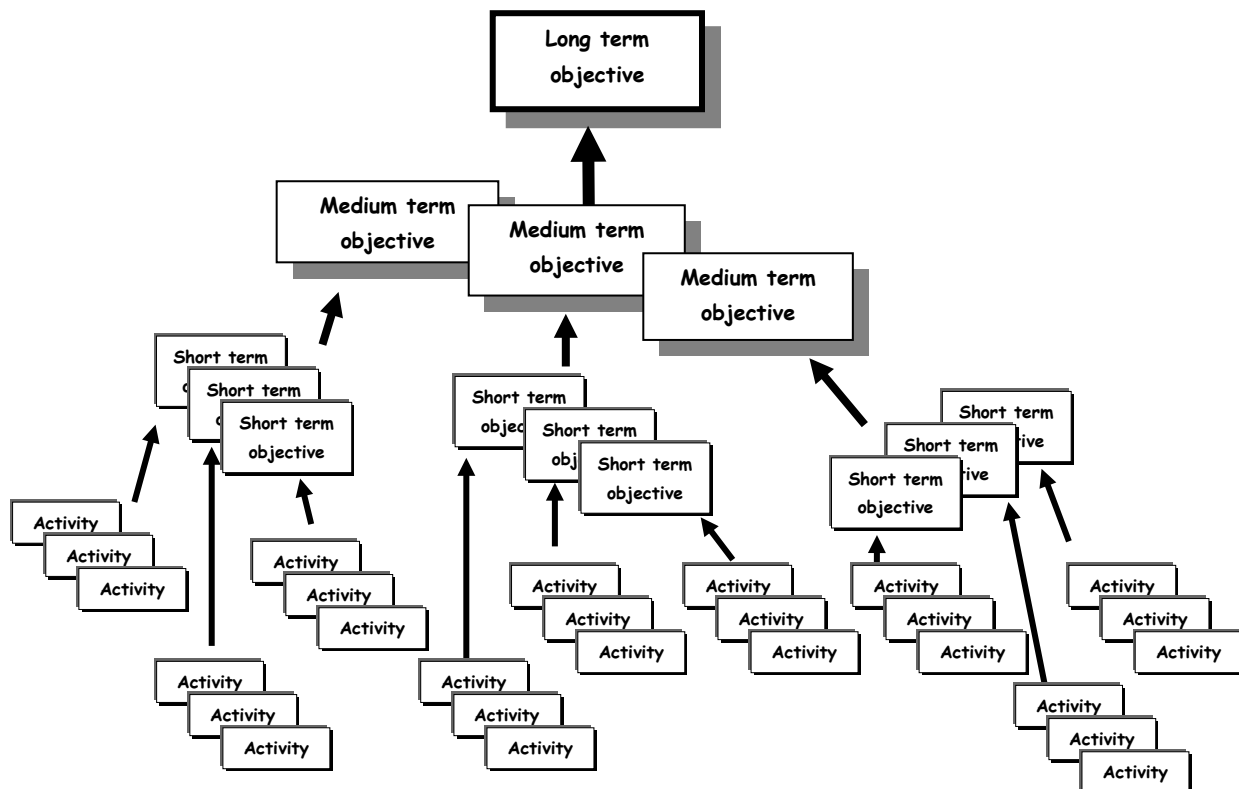
**Diagram 11,** *The mechanism enabling the objectives*



The long term objective is often stated as a vision, using aspirational language that cannot by its nature be achieved. However, the medium term and short term objectives are put in place to enable the project participants to take steps towards achieving the vision and the language changes from aspiration to action stating what will be done in strong terms. The activities are then the annual programme of operations that ensure that the short term objectives are achieved.

Once all the objectives and activities are specified, the actual structure becomes more of a hierarchy than a linear one. There are often many activities that contribute to short term objectives and equally several short term objectives that will contribute to a medium term objective. Thus the structure will look more like the following diagram:

Diagram 12 The hierarchy of objectives



The structure does not exist in isolation or as an entirely fixed entity. An important additional principle is that it must be flexible to allow participants and managers to learn from experience. For this to happen, there needs to be a feedback mechanism which is enabled through indicators to demonstrate progress or the lack of it with a review cycle that allows changes to be incorporated. This learning is derived from a variety of sources, not just the indicators, and should include changes in best practice, outcome from research, shifts in the socio-political and economic environment.

Obviously, the more information that can be amassed, the better informed decisions will be, but there are costs associated with collecting information and if it is too burdensome the process will stall. A balance has therefore to be found: On the one hand, sufficient information to make a rational decision and on the other hand, a light enough touch to ensure that people will engage with and follow through the process.

Some principles are:

1. Indicators should be simple with easily collectable data on progress:
  - At their simplest they should be activities that are regularly completed, for example, 15 hectares of woodland felled every 5 years and replanted. This renewal of woodland could then also be an indicator of sustainability at a higher level. The information is relatively easy to collect and amass on an annual basis.
  - Where additional indicators are needed, on say quality, then information should already be available from other sources—in other words it should not be necessary to collect additional information. For example, species surveys for habitat indicators, in this case an obvious species is red squirrel population changes over a long period being an

indicator of impact of habitat management on the population. That information is already being collected by one of the partner organisations.

2. Review should be regular, but frequency has cost implications:
  - o Activities and short term objectives should be reviewed every five years at a maximum, but if resources are particularly scarce, then this may have to be extended to every 10 years (assuming a 10 year cycle of activity).
  - o Medium term objectives should be reviewed every ten years.
  - o and long term objectives should be reviewed every twenty years, unless there are major changes to the socio-political environment.
3. Changes to the plan based on the review process should be incorporated only after consultation with interest groups and the wider public in the case of objective change.
4. The Review process should also identify activities not included in the plan or objectives not previously articulated and incorporated in the appropriate review event.

### 2.2.2 DEVELOPING COMMON OBJECTIVES

There are 32 owners of woodland on the Sefton Coast in the geographical area that concerns this Plan, there are two national statutory bodies with legal responsibilities for habitat management, there is one regional conservation body, the area is adjacent to several significant RSPB sites and it lies within the boundary of The Mersey Forest. The landowners range from public bodies such as Sefton Metropolitan Borough Council and Natural England to national conservation charities such as the National Trust, from a Rifle Range owned by the RFCA to golf clubs owned and managed by their members, from private country clubs with paintballing facilities to cottages within the dunes that have a small area of woodland.

The landowners and managers are, in part, represented through The Sefton Coast Partnership that brings together landowners, statutory agencies, key sectors and interest groups to develop a common vision for the protection and enhancement of the Sefton Coast with quality of life benefits for both local people and visitors. Their collective objectives for the Coast are articulated in the Coast Management Plan: “for the Sefton Coast to be managed to ensure the conservation of one of most important coastal areas in Europe for nature while being an asset to a healthy local economy and providing a much needed area for the quiet enjoyment of the countryside.”

The Partnership has accepted the joint responsibility to “ensure that the integrity and natural value of the dune system and estuaries is protected in perpetuity as one of the series of European nature areas.” This is restated in the Nature Conservation Strategy drafted in 2006. The Partnership has in place a structure that endorses the main areas of work, signs up to projects, seeks out funding, co-ordinates work programmes and provides a secretariat for partnership administration. It is within the coordinating structure that Task Groups are found that meet on a regular basis to oversee delivery of projects. The Woodland Owners’ Task Group is one such group and is responsible for the creation, delivery and review of the Sefton Coast Woodlands Forest Plan project.

It should be noted that in each phase of the Plan the number of participating partners, especially land owners, fluctuates, depending on a variety of factors and it has been as high as 22 owners, but is currently 17. Although the number is just over half of the owners, it takes in 386 out of the total

of 411 hectares (94%). The following vision statements reflect some of the diverse interests that are represented:

The Forestry Commission states in the England Forest Strategy that it has given priority to the four key programmes: Forestry for rural development; for economic regeneration; for recreation, access and tourism; for environment and conservation. In the final report by the Independent Panel on Forestry, published in 2012, these objectives are restated by the Chairman in his statement, that in England:

“We should be unequivocal about how woodlands form some of the greatest assets of our natural capital. We should be leading the world in showing how woodlands can help us slow the rate at which our climate is changing, and help us adapt to the changes that are already taking place. We should be making the case for investment in our woodlands to tackle our public health crisis, and our ever-increasing disconnection from the natural world. We should be realising the untapped potential of existing and new woodlands to lessen our dependence on fossil fuels and other imported commodities. And at the heart of this, we should be focused on creating the right conditions for thriving businesses centred on woodlands and wood products.”

The Sefton Metropolitan Borough Council endorses the Sefton Coast Management Plan and aims to work towards the objectives on its own land holding. Through the various strategies, such as the Woodland and Scrub Strategy and Sefton Coast Woodland Forest Plan, it also seeks to support and guide the other owners and managers towards the vision and objectives.

The Mersey Forest is a partnership that delivers a wide range of social, economic and environmental benefits for Merseyside and North Cheshire. The vision is to deliver “more from trees” by transforming the landscape through the creation of 8,000 hectares of new woodland, individual tree planting and managing woodland in and around our towns and cities. The aim is to provide economic and social benefits from environmental regeneration. There are enormous challenges—health inequalities, economic deprivation, climate change and more—however, by working together, the partners will make a difference. For 20 years The Mersey Forest has shown that community forestry can create a healthier, more prosperous society.

The National Trust is committed to the “permanent preservation for the benefit of the nation of lands and tenements (including buildings) of beauty and scientific interest and as regards lands for preservation...of their natural aspect features and animal and plant life”. The Trust is concerned with the conservation of the landscape character through working with natural processes and preserving elements of the human landscape such as field patterns created by asparagus growing. The management of the pinewoods is given high priority contributing significantly to the maintenance of suitable red squirrel habitat. The National Trust maintains facilities for public access and enjoyment of the coastal area and recognises the important contribution that the property makes to quality of life locally. It attempts to strike a balance between diverse obligations: to the public seeking access; to those seeking to make a living from the countryside; to achieve internationally agreed conservation objectives. The red squirrel is a key species on the Sefton Coast and some even consider the area to be a ‘refuge’ by virtue of the isolation of the pinewoods from other woodland. The National Trust has given the conservation of the Squirrel a very high priority in its management of the area.

The conservation bodies such as the Lancashire Wildlife Trust champion the conservation of wildlife and natural features. Their participation in the management of woodland and adjacent sites is based on the promotion of the principles of sustainable management of multiple-value resources for present and future generations. In general they promote the use of natural species, natural regeneration methods, the protection of natural habitats and species, a matrix of habitats to encompass needs of a variety of species and the education of the public.

Natural England manages Ainsdale Sand Dunes and Cabin Hill National Nature Reserves. The NNRs are a haven for wildlife which is given priority in management, along with welcoming people to come and enjoy these wonderful reserves. NNRs also provide opportunities for scientific research and the development of conservation management techniques. Visitors can experience the landscape, wildlife and habitats of the area, making use of the miles of footpaths, facilities and open access land found here. The most important natural features of these NNRs include the open dune habitats, geomorphological processes of the coast and the pine forest for its landscape and recreation value. Rare wildlife can be found in abundance, including creatures such as the sand lizard, natterjack toad, red squirrel and many unusual and beautiful wild flowers and insects.

As a significant landowner on the Sefton Coast, the Reserve Forces and Cadets Association at Altcar are very conscious of the importance of their holding. They are keen to promote the principles of conservation alongside their primary role of military training on a site that, because of the restricted access, has become a sanctuary for birds and dune fauna and flora. They are one of the few landowners that has indulged in new planting in the rearward areas—largely for wind protection and to provide a variety of landscape on the less important inland dune areas. Having restricted the public access, they are in a strong position to support conservation objectives as a contribution to the management of the Sefton Coast.

There are six golf courses in the Sefton Coast area, many classed as links courses, which in itself reflects the importance of the landscape to golfers. The clubs' management interests vary, at the most basic they are to maintain the links nature of the courses—a landscape objective that favours dune and dune slack habitats. Some of the clubs have active conservation bodies and manage the land for specific habitats. Small areas of scrub and trees are often retained for wind protection and as minor landscape features. None, with the exception of Formby Golf Course, contribute much to the overall area of pine woodland.

The private owners vary in size of holding from 8.50 to 0.04 hectares. Some, such as the golf clubs, Shorrocks Hill Country Club and Formby Caravan Park, clearly have commercial considerations, but most, if not all of the private owners, have in common an interest to maintain the integrity of the landscape and to contribute to the conservation of habitat for key species.

All of this is in a cultural context in which wider society tends to see much of the coast as a public good, irrespective of tenure. However, despite that, the consistency in commitment to upholding the principles of the Sefton Coast Partnership management plan is marked. It is only when the core business of the partners is considered that differences emerge and emphases change. An organisation whose primary role is to give military training, or to provide a financial return, or provide the context within which to play golf, will put landscape-scale habitat conservation at a lower second. Indeed, some, such as the rifle range and indeed the private homes, will actively discourage public access and amenity.

For each part of the structure there will need to be resources allocated to help owners achieve those objectives that they are signed up to. However, some aspects of the Plan will not be as well resourced as well as others and the reality is that those aspects will become burdensome to the point that they will probably be neglected. It should always be remembered that the Plan is a voluntary association of landowners and interest groups—there is no statutory weight or obligation to the Plan.

Finally this Plan is a woodland plan, not a site or species conservation or amenity plan, so some aspects of species, habitat and site management that do not relate directly to trees and woodland will be left for the individual owners to take forward as they see fit, using resources and knowledge that they can mobilise themselves to realise their particular aims.

On the other hand, although the Plan is a woodland management plan, it will be important to balance the different parts of the vision which are less about managing trees and more about managing habitat, landscape, amenity and other diverse perspectives. This balance will only be achieved by individual owners applying the principles of this and the Nature Conservation Strategy to the activities that are scheduled for their property.

Somehow, this hierarchy of objectives must provide space for everyone without building an impenetrable or inflexible structure. Perhaps the key lies in phrases such as ‘mosaic of land uses’ and ‘landscape-scale conservation’. In its entirety a vision incorporating such a diversity of partners cannot be achieved in any one location, but, across the whole, with people working in a coordinated way, it will be possible to achieve it. For example, where public access is high, then conservation aims may have to be adjusted. Where landscapes or habitats are internationally important, then public access may have to be carefully guided. Where livelihoods are threatened, then support must be given to seek sustainable economic solutions. What is clear that for those who are strong proponents of one particular element of the vision, there will be disappointment when emphasis shifts towards another, or indeed toward a balance.

### 2.2.3 THE OBJECTIVES

#### Vision

To sum up the Vision, the following seeks to be inclusive:

Taking account of natural landscape formation processes, the Sefton Coast woodlands should be managed sustainably and in perpetuity as a mosaic of land uses to ensure:

- The integrity of historically important landscapes
- The viability of habitats for rare and important species
- Opportunities for the rural and peri-urban economy to thrive
- Opportunities for the quiet enjoyment of the countryside.

#### Goal

To achieve the vision, the partners will work individually and together, through good silvicultural management, to achieve the following medium term objectives:

#### Medium Term Objectives

- To maintain the woodland, bearing in mind the natural landscape formation processes;

- o To maintain the quality of the woodland as a habitat for locally and nationally important and rare species within the context of the international legal obligations of the national SSSI, SAC, SPA;
- o To maintain the existing landscape character comprised of a mosaic of habitats across the Sefton Coast woodland area;
- o To maintain the partnership that enables people to work together to manage the woodland sustainably, checking progress against clearly defined benchmarks;
- o To maximise and balance the economic, educational and amenity benefits of the woodland.

**Short Term Objectives**

Each of the medium term objectives have one or more short term objectives:

Medium Term Objective	Short Term Objectives
To maintain the woodland, bearing in mind the natural landscape formation processes	To maintain the woodlands with trees of all ages, through thinning, felling and replanting
	To maintain fire risk reduction strategies
	To involve additional landowners in the planting of trees as appropriate
	To monitor condition of frontal woodland areas
To maintain the quality of the woodland as a habitat for locally and nationally important and rare species within the context of the international legal obligations of the national SSSI, SAC, SPA	To provide places within the woodland for plants and animals to survive – especially those named as ‘Priority Species’
	To manage the perimeter of the woodlands to enhance woodland edge and open dune species
	To manage the wet slack areas within the woodlands as open areas
To maintain the existing landscape character comprised of a mosaic of habitats across the Sefton Coast woodland area	To keep about 9% of the total area as pure broadleaf woodland and 16% as mixed woodland, 62% as pure conifer and 13% as dune scrub and open habitat
	To maintain a patchwork within the woodland that includes everything from open habitat to mature trees
To maintain the partnership that enables people to work together to manage the woodland sustainably, checking progress against clearly defined benchmarks	Provide a structure that allows owners and managers to work together
	To keep the public informed of progress and developments
	To involve the public and local community in the management of the woodland mosaic
	Monitor the progress of the Plan
To maximise and balance the economic, educational and amenity benefits of the woodland	To utilise the woodlands as an educational resource for local educational establishments
	To maintain the woodlands as a safe area for use as an amenity resource
	To ensure an income from the woodland where possible
	Provide local employment and training in forest

Medium Term Objective	Short Term Objectives
	management and timber processing industries

### 2.2.4 ACTIVITIES

Each short term objective breaks down into activities that over the 10 year period of the Plan will help the owners achieve the objective:

Short Term Objective	Activities
To maintain the woodlands with trees of all ages, through thinning, felling and replanting	Fell coupes; Restock by planting and natural regeneration; Under-plant; Fence; Thin woodland; Selective fell
To maintain fire risk reduction strategies	Develop and maintain site fire plans; Fell and maintain firebreaks; Develop and maintain access routes; Liaise with Emergency Services; Remove combustible by-products of activities
To involve additional landowners in the planting of trees as appropriate	Bring existing woodland into the woodland plan; Involve Forest Plan landowners in new planting; Involve non-Forest Plan landowners in tree planting
To monitor condition of frontal woodland areas	Review condition of frontal compartments; Review effects of coastal erosion; Review effects of sand drift
To provide places within the woodland for plants and animals to survive – especially those named as ‘Priority Species’	Fell coupes; Maintain canopy bridges; Reduce invasive species; Retain standing and lying deadwood; Establish and maintain bird and bat boxes; Develop specific habitats
To manage the perimeter of the woodlands to enhance woodland edge and open dune species	Selective fell; Coppice; Clean; Mow
To manage the wet slack areas within the woodlands as open areas	Selective fell; Coppice; Clean; Mow
To keep about 9% of the total area as pure broadleaf woodland and 16% as mixed woodland, 62% as pure conifer and 13% as scrub and open habitat	Selective fell; Coppice; Clean; Thin; Replant with appropriate composition; Natural regeneration



Short Term Objective	Activities
To maintain a patchwork within the woodland that includes everything from open habitat to mature trees	Coppice; Clean; Site design; Maintain rides; Manage scrub; Mow; Retain feature trees; Manage heathland
Provide a structure that allows owners and managers to work together	Establish and maintain woodland owners task group; Combined events and initiatives; Joint demonstration and training
To keep the public informed of progress and developments	Local press releases and articles; National media work; Run public events; Create public display boards; Contribute to local newsletters; Contribute to talks, seminars and conferences; Contribute to local information events
To involve the public and local community in the management of the woodland mosaic	Run volunteer working days; Host and support school events; Foster local guardianship
Monitor the progress of the Plan	Maintain annual monitoring cycle; 5 year review cycle; 10 year review cycle; Monitor indicator species; Monitor and review BAP species and habitats
To utilise the woodlands as an educational resource for local educational establishments	Establish interpretation boards on site; Develop and distribute information packs and leaflets; Support student projects; Support school and University visits; Guided walks
To maintain the woodlands as a safe area for use as an amenity resource	Health and safety checks; Risk Assessment for work and events; Contract supervision
To ensure an income from the woodland where possible	Run larger, combined forestry contracts; Sell forest products; Add value to harvested forest products; Apply for relevant grants; Certify woodland
Provide local employment and training in forest management and timber processing industries	Provide job opportunities; Provide employment training; Liaise with local businesses

### 2.2.5 PRINCIPLES UNDERLYING THE OBJECTIVES AND ACTIVITIES

The strength of the Sefton Coast management strategy is partnership as, in isolation, the many owners of woodland cannot hope to see all the Management Objectives achieved, but on a co-ordinated, landscape-scale, it will be possible to see progress towards the vision. Underlying these Management Objectives there are a series of broad principles which will give greater clarity to the direction of the plan for the individual owners. It will be the adherence to and interpretation of the principles for each site that will see a balance between landscape character, amenity use, national and local conservation priorities and economic return being achieved across the whole landscape:

- A key will be the creation of a 'healthy' (sustainable) age profile, where: in perpetuity at least 30% of the area would be between 0 and 40 years old; 30% between 40 and 80 years old; 30% between 80 and 120 years old; and the remaining 10% being allowed to develop into mature 'character' woodlands (e.g. the older Scots pine and small areas of mature broadleaf) or left bare (e.g. species rich dune slacks within the woodland). This will mean that in the first phases of management, the rate of restocking thinning and felling will have to be higher to redress the overabundance of old stands. Once progress has been made towards creating a 'normal' forest structure, the rate of felling will drop to maintain equilibrium.
- The second driving principle will be to maintain the focus on species suitable as a food source for the red squirrel without losing the existing woodland character.
- The third principle will be to maintain areas of indigenous mixed broadleaf, up to and no more than 26% of the total area, which will comprise about 10% as pure broadleaf and 16% as mixed woodland (maintaining the current cover).
- A fourth principle of adaptive change will underlie the above three principles in that, as effects of projected climate change begin to impact the Sefton Coast, then management will have to adapt. This may be by amending species mixes in planting schemes (we have seen the impact of Dutch elm disease and are currently confronted with several pine diseases, ash die-back, Japanese larch being killed by fungal infection), increasing thinning intensities to improve airflow through woodland areas, increasing size of felling coupes to improve aeration and light penetration. It may also be important to consider vegetation bridges or corridors to facilitate movement of species.
- The fifth principle will be to work towards a mosaic of woodland structures (as well as species). Commercial interests tend to dictate stands of uniform age and single composition, but the more complex objectives of the Sefton woodlands will require that stands be broken up by age and species—known as 'modified continuous cover forestry'. This can be achieved by utilising natural regeneration potential where it already exists through the creation of regeneration coupes of between 0.25 and 0.5 hectares and reducing restocking and planting to coupes of no more than 0.5 hectares.

**Diagram 13,** *The mosaic of woodland structures*



- The sixth principle will be to provide suitable habitats within the woodland structure for appropriate Priority Species. This can be as simple as providing nesting boxes for birds and bats, leaving standing or lying deadwood or more complicated measures such as ensuring mature canopy bridges for the red squirrel in areas subject to restocking operations. It should also include associated non-woodland management of wet slacks, glades and heath to maintain the 'mosaic of species and habitats' to ensure broadleaf, open dune flora and heath birds, mammals, invertebrates and fungi have suitable habitats in glades, fire-breaks, coupes and permanent bare areas.

- An seventh principle will be the need to manage for public access, in that in heavily used areas there will have to be a recognition that some of the conservation landscape and quiet enjoyment objectives will suffer to ensure that health and safety is paramount, quality of access improved and important site information made available to visitors.
- The final principle will be to ensure an economic return from the sale of timber and other non-timber products and benefits (through regular thinning, coupe felling, coppicing and other commercial activities) where feasible. This may include partnership working as the economy of scale will come into play when a number of owners contract to carry out commercial or semi-commercial forest operations.

### 2.2.6 SPECIES CHOICE

The character of the woodlands will be shaped by the choice of species made in each phase of this Plan. As indicated in the previous section, a key principle is to maintain the existing character within the constraints of climate change. The planting strategy will be:

- 1) To provide suitable habitat for the red squirrel, predominantly suitable conifer, followed by small-seeded broadleaf.
- 2) To maintain landscape character 'as is':
  - a) The broad characteristics are, by area, pure conifer (62%); pure broadleaf (9%); and mixed woodland (16%), the remainder comprised of scrub and 'bare' ground.
  - b) The sense of a mosaic of habitats and features across the landscape.
  - c) The distribution of management events across the whole landscape to lessen impact, such as felling coupes spread by geography and cycle.
- 3) To provide for individual site needs which will be determined by land owner objectives mixed with landscape-scale objectives.
- 4) To use a species mix that will provide some resilience in the face of climate change and the spread of disease. The Forestry Commission Ecological Site Classification modelling and the "Climate Twinning" work through ForeStClim can help to inform species choice in the future.

Potential conifer species	Comment
Corsican pine <i>Pinus nigra var maritima</i>	Most suited to the site conditions of the Sefton Coast, but there is concern about red-band needle blight ( <i>Dothistroma pini</i> ) already present on the coast.
Scots pine <i>Pinus sylvestris</i>	Less suited to the exposed site conditions and there is some concern about red-band needle blight, also the potential for pine wilt and pitch canker to spread from Europe.
Maritime pine <i>Pinus pinaster</i>	Perhaps under-used on the Sefton Coast and would benefit from better provenance choice.
Macedonian pine <i>Pinus peuce</i>	A possible alternative to Corsican pine, but needs to be evaluated on the coast.
Sitka Spruce <i>Picea sitchensis</i>	In small quantities where suppression of heavy weeds is required.
Norway spruce <i>Picea abies</i>	Could be used in small amounts in a mixture on wetter sites, but should not be planted on the majority of drier sites that the sandy soils present.
Douglas fir <i>Pseudotsuga menziesii</i>	Only for use in small amounts in shaded areas or to suppress unwanted weed species (bramble, bracken).
European larch <i>Larix decidua</i>	A useful species, but cannot need to be careful in use because of disease ( <b>Phytophthora</b> ), <i>less affected than</i>
Japanese larch <i>Larix kaempferi</i>	Unable to use this species as it is heavily affected by <b>Japanese larch</b> .

**Potential conifer species**

**Comment**

*Phytophthora.*

In practice, in the pure conifer areas, there should still be a focus on planting pine, predominantly Scots pine, with Corsican and maritime pine in the mixture, the percentage of the latter increasing in the more exposed woodland areas. Some work will be done by landowners on the testing of other, similar pines, such as Macedonian pine with the view to increasing the diversity of species in the event of incursion of red band needle blight. The use of other species should be circumspect and for silvicultural purposes such as using the shade tolerance of Douglas fir to restock particularly shaded areas of felling coupes and the ability of Sitka spruce to suppress unwanted ground flora (excessive bramble and bracken and pernicious weeds).

**Potential broadleaf species**

**Comment**

Birch *Betula pubescens*, *B. pendula*

Although a desirable species, it often regenerates without the need for planting – to the extent that it is considered a ‘weed’ in some areas.

Alder *Alnus glutinosa*

Limited by soil conditions (needs wet conditions) – alder beds need to be coppiced on a 30-40 year cycle.

Willow *Salix alba*, *S. fragilis*, *S. caprea*

Limited by soil conditions and needs coppicing on a 7 to 15-year cycle.

Elm *Ulmus glabra*, *U. procera*

Useful tree that can become a weed in some situations, but is limited by disease and needs to be coppiced on a 30-year rotation.

Field maple *Acer campestre*

Can be planted in limited numbers, but is not ideally suited to the sandy soil of Sefton.

Ash *Fraxinus excelsior*

Will be limited by the spread of ash die-back and soil conditions.

Cherry *Prunus avium*

Can be planted in limited amounts, but generally requires deeper rich soils to grow well.

Blackthorn (sloe) *Prunus spinosa*

Can be planted in small blocks as an understorey species.

Hawthorn *Crataegus monogyna*

Can be planted in limited amounts as an understorey species.

Black poplar *Populus nigra*

Can be planted into limited areas when there is local planting material available.

Sycamore *Acer pseudoplatanus*

Should never be planted as it will naturally seed into areas – this ability to regenerate ‘aggressively’, means that it quickly becomes a ‘weed’ species.

Lime *Tilia cordata*

A useful species tolerating low light conditions that has featured in the archaeological soil profiles of the area, but it is a soil enricher.

Holly *Ilex aquifolium*

Will regenerate naturally under low light conditions (under thinned compartments).

Elderflower *Sambucus nigra*

Will grow in the understorey, but prefers richer more alkaline sites.

The aim of planting desirable broadleaves should be to maintain the existing character of the broadleaf compartments or to convert those broadleaf compartments with undesirable species into more suitable mixtures.

Where compartments are a mixture of conifer and broadleaf, then again planting mixes should reflect existing character.

Undesirable species	Comment
Lodgepole or Shore pine <i>Pinus contorta</i>	Undesirable because of aggressive tendency to regenerate, poor provenance and low incidence of squirrel feeding.
Oak <i>Quercus petraea</i> , <i>Q. robur</i>	Will regenerate naturally into many areas, but should be limited to reduce potential for grey squirrel bridging. It should never be planted.
Beech <i>Fagus sylvatica</i>	Will tolerate low light conditions, but should be severely limited due to the potential for grey squirrel bridging.
Hazel <i>Corylus avellana</i>	An understorey species that could be used only in very low light conditions in order to prevent fruiting, but really should not be planted due to grey squirrel bridging problems.
Sweet chestnut ( <i>Castanea sativa</i> )	Large seeded broadleaf that already exists in small amounts, should not be planted.
Horse chestnut ( <i>Aesculus hippocastanum</i> )	Large seeded broadleaf that already exists in small amounts, should not be planted.
White poplar <i>Populus alba</i>	Should not be planted as it has the potential to be a weed tree.
Balsam poplar <i>Populus gileadensis</i>	Should not be planted as it has the potential to be a weed tree.
Sea buckthorn <i>Hippophae rhamnoides</i>	Should never be planted as it is a soil enricher and a major weed species.
Grey Poplar <i>Populus</i> × <i>canescens</i> Balm-of-Gilead <i>Populus</i> × <i>jackii</i>	Both these are ubiquitous and invasive in the duneland, the latter being a synonym of <i>Populus</i> × <i>gileadensis</i> .

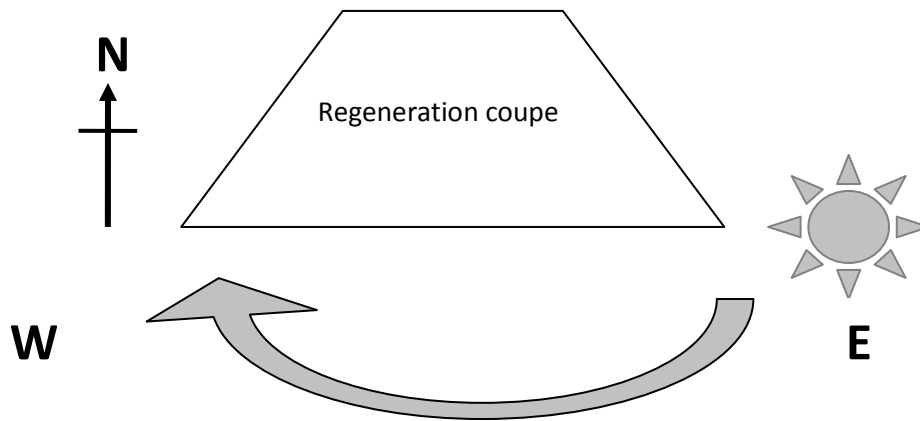
### 2.2.7 FOREST OPERATIONS

Best practice should be integral to the Working Plan and the description of the following forest operations will help owners and managers to observe what is currently considered to be desirable for the Sefton Coast. It should be noted that as research is carried out, the landowners learn from experience and the Forestry Commission, Natural England and other authoritative bodies issue new guidelines, they should be absorbed into this Plan's 'best practice' guidelines:

#### Restocking Felling

Within the Sefton Coast woodlands, restocking felling will be based on coupes (small open areas), generally of between 0.25 to 0.6ha and flattened polygon in shape with the long side facing the sun to maximise the area benefiting from direct sunlight (necessary for good pine regeneration):

**Diagram 14, Coupe Size and Orientation**



Research (Roche 2011) supported by the Interreg ForeStClim project confirms that if the coupes are smaller than 0.2ha then there will be inadequate light penetration for successful regeneration of the pines and other light demanding species. These coupes or restocking areas will not exceed 0.6ha in order that impact on the forest canopy and landscape is minimal.

- Stumps should be treated immediately with a suspension of *Peniophora gigantea* in disodium octaborate (urea if *Peniophora* is not available).
- In the event of pine weevil infestation, restocking with pine should be delayed for two years after thinning and felling operations and planting stock pre-treated to ensure that pine weevil infestations are kept to a minimum.
- After-care maintenance should ensure weed clearance for at least three years, perhaps five on fertile, un-shaded sites with beating up for at least two seasons after planting, though sites should be assessed individually.
- Excessive or unwanted regeneration should be re-spaced or cleared after five years and again after ten years.
- Adjacent, mature woodland should be thinned regularly and according to schedule to improve stand stability in the long term and improved air flow to reduce humidity and the incidence of disease such as butt rot, sudden oak death and red needle blight.

Coupes will be felled in a single operation, with timber extracted and stacked ride-side for immediate removal. Lop and top will be chipped or burnt. Given the nature of the dune substrate it may be desirable in some areas to burn off-site (it is important to burn off-site as fire increases the risk of infestation by the fungus *Rhizina undulata*) and distribute the ash to reduce further acidification of the soil horizon in the interest of promoting dune helleborine growth. It should be noted that substantial amounts of lop and top will also increase the difficulty of planting the site and reduce the success of natural regeneration for a number of years.

In the context of the Sefton Coast pinewoods, in the short term it will make sense to:

### Harvesting (machinery)

Generally contractors will be using their own equipment for harvesting operations, harvesters, forwarders and chippers. Contractors should provide risk assessments before beginning work. All operations should be well signposted to warn public of dangerous operations in progress.

For the Sefton Coast area vehicles should have balloon tyres or low inflated wide tyres to distribute load and reduce damage to dunes and grass cover within the woodlands.

Given the terrain and low number of access rides within the woodland, the under-thinned crop and the enormous public interest, it may be worth considering horse extraction (or snigging) as a versatile, low impact operation in those areas that experience high levels of public use. If grant funding is available it will help to balance the economics of more expensive felling operations or if horse extraction is used.

Access routes and extraction rides should be sited to reduce damage to underlying dune morphology (important in maintaining the SAC in favourable condition).

### Thinning

Thinning should be at an intensity of about 20 to 25% over a regular period of 10 years, starting 15 – 20 years after planting, depending on soil fertility and early management. The objective of the thinning exercise will be dictated by the objective for the particular compartment:

*To improve timber quality:*

Removal of all crooked, forked, heavily branched and sub-dominant trees working towards an even spacing throughout the compartment;

*To improve compartment biodiversity:*

Removal of all trees with a weak crown and reduce the number of stems in areas where density is high to a point where light penetration encourages lower canopy and ground flora development;

*To improve canopy and increase or maintain good coning:*

Remove trees with weak crowns and dominants or wolf trees to a point where light penetration encourages full canopy development;

*Develop character trees / compartment:*

Remove trees with weak crowns, those diseased and reduce stems in areas of close spacing, retaining strong trees with interesting form.

Marking for thinning is best done using marking spray paint, a point at each compass quarter (rather than a line or a slash mark) in a colour still visible at low light levels. Slash marking should not be used as it damages trees and in the event of the thinning operation being delayed there is an increased danger of disease attack. Generally marking is a practice undertaken by someone with experience. It should certainly be undertaken in circumstances where tariffing is necessary, felling teams are not familiar with management objectives, new systems are being tested, or a new contractor is being employed on site. Once contractors or staff have a proven record and demonstrate an understanding of the objectives of the Plan, marking could be left up to them.

**Diagram 15, Unthinned 30-60 year old Corsican pine****Diagram 16, Thinned Corsican pine**

### Tariffing

The estimation of tree volume for a compartment to determine potential revenue from timber. It is an operation that can be undertaken in large scale operations where timber revenue is necessary to offset costs of the thinning operation. Every marked tree is recorded of which every 10<sup>th</sup> tree is measured for diameter and every 100<sup>th</sup> is measured for height. The compartment must be allocated to a yield class to ensure that volume can then be estimated using the FC standard tables for the species being marked. Tables and methodology are documented in Forestry Commission Book 039, Forest Mensuration.

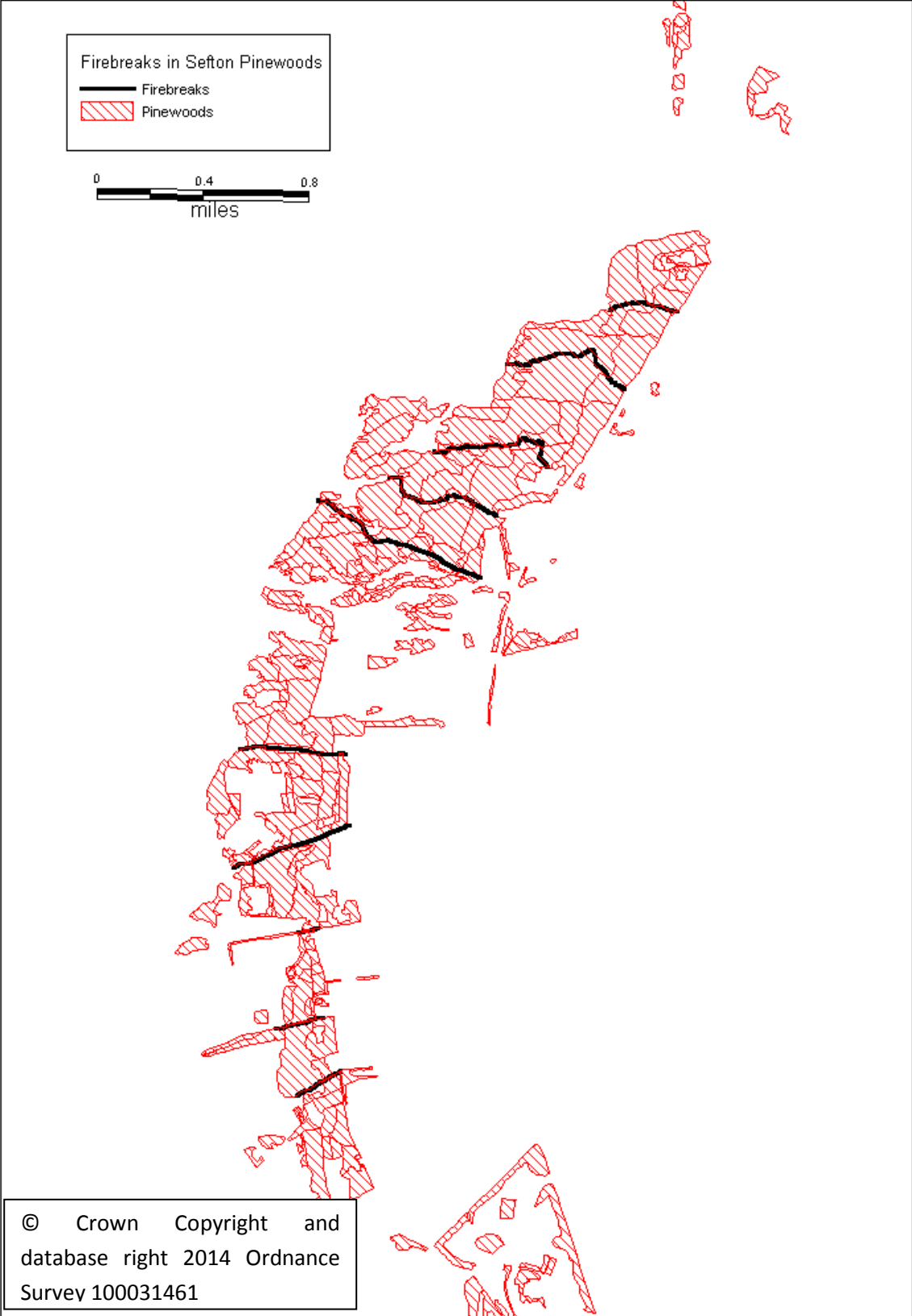
### Fire lines

Fire lines are important to help break up large areas of woodland so that in the event of a fire, the fire can be confined to sections of the woodland, rather than spreading throughout.

The following map indicates the location of firebreaks through the Sefton Coast woodland area:



Map 11, Firebreak Lines, Sefton Woodlands



The ideal is to maintain a fire line width of more than twice the height of the tallest trees, so that falling trees do not bridge the fire line. The Lines should be regularly swiped or grazed, if resources allow, during the summer months, with persistent regeneration (e.g. sycamore and birch) chemically spot treated.

Accurate maps of Fire Lines should be made, with access routes, gates and other roads and rides indicated. Copies should be provided to the local Fire Service and other relevant authorities with details of gate security (spare gate keys etc) and contact numbers. In especially vulnerable sites it may be necessary to think about fire tanks and beaters at strategic points—though the dangers of vandalism will have to be considered. These details need to be updated annually, with regular liaison with the Fire Brigade. Seasonal assessment of conditions will determine the level of readiness required.

The ideal will be for there to be a Fire Plan developed by all agencies involved that will be maintained and coordinated by one single lead organisation – preferably the Fire Service.

### Stacking Felled Timber

Felled timber should be forwarded to accessible ride-side stacking bays within two weeks of a felling operation. Access up to the stacking bays should be for articulated flat-bed lorries, so should have all-season surfaces.

Stacking should be sign-posted and cordoned off with tape to warn the public against interference with the stacks. Stack sites should carefully planned to ensure against collapse and to maximise access for the flat-bed lorries.

Timber stacked in the stacking bays should not be left for more than one month. It is therefore beneficial to try and coordinate operations across the Forest Plan area to ensure that transporters have enough timber for a complete load. This will ensure that timber is not left lying on site longer than necessary.

### Brashing

The removal of lower branches should be undertaken in pine crops as it closes canopy from about 15 years. The operation improves timber quality and also provides access to plantations, enabling marking for thinning and actual thinning to be undertaken with greater ease.

Lower branches should be removed using pruning saws up to a height of 1.8 - 2 metres on the trunk. Cuts should be made flush with the trunk (but ensuring that that trunk bark is not damaged) to prevent new growth forming around the deadwood of cut branches—deadwood within the timber decreases the quality of the timber. The cut branches (or brash) should be removed from compartments accessible to the public due to the fire hazard and burnt off-site during wet periods in the winter or chipped and spread through the compartment at other times.

In compartments that are considered important for dune helleborine, brash should be removed from the site altogether to limit the degree of soil acidification. Where the sites are more remote and not noted for floral composition brash can be left *in situ* to rot down and provide fungal and faunal habitat.

### Fencing

There will be a number of different types of fencing that managers can use:

*Stock:*

Three strand with netting and barbed wire top strand

*Rabbit:*

Three strand with pegged close mesh netting sunk one foot underground where complete proofing is required

*Demarcation:*

Three strand wire, no barbed wire or netting

*Rustic:*

Wooden paling or post and rail where owners require distinctive character fencing

Decision on type of fencing will be dictated by costs and objective. Barbed wire should generally be avoided on the Sefton Coast as the woodlands are heavily used by the public. The exception may be stock fencing, usually on the edges of the compartments where sheep are being farmed to maintain grass sward.

## Planting

Site preparation is important and will depend on soil conditions, soil fertility, weed growth. At the very least, coupes within larger compartments may only need lop and top to be removed to ensure a clear planting area. Coupes and sites that are more open to light will probably have weed growth and broadleaf regeneration. Grass, weeds and unwanted regeneration will have to be cut with mechanical cutters and chemically weed treated to reduce re-colonisation.

In general, sites should be marked and lined out at required density to ensure even spacing—lines and even spacing aid in monitoring quality of work and reduce subsequent weeding, brashing and crop thinning costs.

Species choice will be dependent on site character and objectives, the issues behind making the 'right' choice have been discussed in a previous section (2.2.6).

All nursery stock should be of a suitable and proven provenance, with native species collected in the locality. Seedling stock should conform to BS 3966 (Specification for nursery stock).

Early winter planting with bare root stock is perhaps the most desirable practice, but can suffer from bad handling of seedlings and is still vulnerable to spring summer droughts. Seedlings should be 30-45 cm for the more exposed frontal woodland sites and up to 45-60 cm for the more sheltered and fertile rear woodland sites where there will be strong weed competition. Container grown stock as a useful, but more expensive alternative, can be planted in the winter, however, it is a versatile practice and stock can be planted throughout the winter from late autumn to late winter.

Seedlings should be planted at a spacing that is guided by 2 m x 2m (2,500 per hectare), into slit trenches made with planting spades and well heeled in. An application of insecticide mixed with a PPE fertiliser will reduce incidence of damage from large pine weevil and *Hylastes spp.* (though the incidence of infestation can also be managed by timing of felling and planting, together with a nematode application, see Section 2.1.6) and improve initial growth of the seedling.

As a minimum the seedlings will always require spiral rabbit guards to protect against rabbits stripping the seedling bark, but coupes or new planting could also be fenced using rabbit-proof fence. The use of fences in heavily accessed woodland to protect planting as the added benefit of demonstrating 'progress' to the public.

### Beating Up

Beating up or replacement planting should be carried out when a planting success rate falls to 85% or below.

Seedling quality should be high and in general larger container grown stock should be used. Spot weeding will have to be carried out in the spring and summer to ensure that the smaller beaten up material is not swamped by summer growth of grass, bracken or bramble.

It is suggested that planting contracts be issued in which it is required that full stocking is achieved within 3 years and the final payment made only after assessment in year 3. Responsibility for beating up lies with the original contractor and their final payments dependent on successful establishment.

### Natural Regeneration

The ideal is to create circular or oval coupes of 0.5 ha orientated east-west on the long axis. The coupe should be surrounded by healthy seed bearing trees of the desirable species. The larger coupes may need a mother tree retained within the coupe itself. Many compartments will not be big enough to accommodate coupes of over 0.5 ha or will be situated in heavily accessed areas of the woodland and should therefore be adjusted down in size, but never below 0.1ha for pine to ensure adequate light penetration.

Coupes, once opened up, should be chemically treated for broadleaf weeds (if necessary) and then scarified to improve the site for seed germination, all brash, lop and top should be removed with burning off-site. Application of ash from burning sites is desirable.

Ideally scarification should occur in a year that coincides with a good pine seed year (not every year is a good seed year). The site should be assessed after 3 years to determine regeneration success—where success is considered to be healthy seedlings at a density of about 2,250 per hectare, fairly evenly spaced through the coupe. If after five years there is no regeneration, or very poor regeneration, then a decision may have to be taken to plant into the site. Equally if there are sections of the coupe that has poor regeneration, then again planting may have to be considered to bolster the crop.

**Diagram 17, Thinned Corsican pine, pre-regeneration felling – year 1**



**Diagram 18, Regeneration coupe with natural regeneration – year 8**



**Diagram 19, Regeneration coupe, well stocked with regeneration thinned – year 20**



## Weeding

Weed growth in planting sites greatly reduces survival and reduces seedling growth through competition for water, soil nutrients and light. In the late summer and early autumn, the collapse of vigorous weed growth (especially bracken) can physically smother seedlings, causing damage or can harbour insects and mammals that will damage young seedlings.

In general weeding should be carried out twice in the summer period, at the beginning and the end. More fertile soils may require more often where resources permit, less fertile soils may not even need one weed, especially where the site is a coupe cleared in the centre of a compartment.

There are a number of methods of weeding:

### *Mechanical:*

Tractor mounted swipes or manually controlled machines. They can only be used on planting sites where lines are consistent and adequately spaced. Generally not very effective as the method does not reduce weed competition, but it is a good method for clearing large sites of woody growth. Mechanical swipes could be used for keeping rides and fire lines weed-free.

### *Chemical:*

Herbicides are often the most effective method for treating sites as they can be applied with precision and if selective chemicals are used, then certain types of flora will remain undamaged. The down-side being that if the site is ecologically important, then the use of herbicides will be undesirable. As sections of the Sefton Coast woodland are within the designated SSSI, it will be

necessary to obtain consent to use chemicals. When used, a twice yearly application should be made (May & July) with an approved herbicide to maintain a one metre diameter spot for the first three years after planting.

*Manual:*

Manual weeding is the least damaging to the site and can be very specific and tailored to site conditions, however, it is the most expensive or labour intensive method. Brush cutters can be used with adequately trained manpower, or bladed tools. The site can be either spot or line weeded.

Manual workers need to be carefully supervised as it is easy to damage the seedlings or regeneration through the mishandling of tools or chemicals.

### Coppicing

The tree is cut within 6 inches of ground level on a specific rotation. The aim may be to produce small diameter biomass with species such as hazel and willow or to maintain vigour and ground cover in fast growing pioneers such as birch and alder. It should only be used on species that can shoot from the base of the trunk and in situations where the mature tree is undesirable such as elm.

The situations where coppicing may be desirable on the Sefton Coast are:

- In the case of elm regeneration it is not desirable to allow the trees to exceed 29 cm diameter—the diameter at which the beetle *Scolytus scolytus* can re-infest the bark and introduce the leaf wilt fungus *Ophiostoma ulmi*. This requires a rotation of about 30 years, roughly the age at which 29 cm diameter is reached.
- Birch and alder as pioneer species begin to be susceptible to fungal attack after about 40 years and management by coppicing and singling (choosing a single desirable stem from a coppice stool) will help to maintain general vigour. This suggests a rotation of 40 years.
- Large areas of sycamore are undesirable within the Sefton Woodlands as it can be such an aggressive coloniser. Once it reaches seeding age, it can colonise a compartment very quickly, even growing in low light conditions under the pine. However, the bark from young branches in spring can be an important food source for the red squirrel and some managers may wish to retain it. A commitment to careful management **must** be made and if sycamore is retained and coppiced on a strict 7 year cycle to prevent seed production, it will help to vary the squirrel food resource. Mature Sycamore is much used by canopy-feeding birds, due to its large biomass of aphids<sup>4</sup>.
- In the rare event of hazel being retained in the understorey, it will be important to manage it under strong canopy and on a strict 7 year rotation to reduce seed production. Extensive seed production of hazel (and other large seeded species) has the potential to encourage grey squirrel incursion and therefore is a key to the management of the pine woodlands. It is unlikely that there will be sufficient quantities of hazel coppice for there to be a commercial angle to coppicing activities.
- Willow is the other major species likely to be coppiced and should be used to manage it for vigour. It is again unlikely that there will be sufficient quantities to consider managing

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<sup>4</sup> PH Smith Personal Correspondence

willow beds for commercial production, where cutting is on an annual basis (and strictly speaking is not coppicing). A rotation would be between 15 to 20 years to retain form and vigour. The occasional tree might be left to grow into old age where paths and rides are not threatened by sagging branches.

### Cleaning

This is a term used in the Forest Plan for forest operations that are not otherwise covered by weeding, thinning, felling and it is about maintaining the 'mosaic of habitats'. It is likely to cover activities such as ivy reduction, clearance of unwanted and very young pine, birch and sycamore regeneration (two to three years old) and of bramble and bracken reduction. Although the work will aim to control a species, it may not require removing it completely. The operation will vary depending on the conditions of the particular compartment or management objective. An example might be where non-native garden ivy has begun to infest a compartment adjacent to houses and requires some control in order that it does not become damaging to other ground vegetation or smother desirable trees and shrubs. The decision to completely remove or reduce a species should be made on the basis of whether it is native and other considerations such as the importance of the species for cover for nesting bird. Retention of a proportion will require a specific commitment to long term control by the manager.

For absolute clarity: Where cleaning includes woody material, reference must be made to the Forestry Commission 'Tree Felling, getting permission' booklet, in which it is specified that woody material over 8cm in diameter at chest height and exceeding 5m<sup>3</sup> by volume (not including brash and lop and top) in any calendar quarter must be additionally licensed by the Forestry Commission.

### Chemical Application

Herbicides, insecticides and fertilisers. There are detailed descriptions of appropriate chemicals, quantities required, trade names, machinery and equipment listed in the Forestry Commission's The Use of Herbicides, Field Book 008; Herbicide Update, Technical Paper 024; Forest Fertilisation in Britain, Bulletin 095, Reducing Pesticide Use in Forestry, Practice Guide 005.

Use of chemicals must conform to Control of Pesticides Regulations 1986 and Control of Substances Hazardous to Health Regulations 1988. Matters to consider will include approved and machinery (sprayers), the storage and disposal of the chemicals, utilisation of protective clothing and manpower training.

Finally, as discussed earlier, the use of chemicals on the SSSI and SAC, are governed by legislation and their use will require consent from the authorising body (Natural England). The recommendation throughout the Sefton Coast Woodland area is that chemicals be considered only if no other option is available and the treatment absolutely essential.

### Grass cutting

This is largely covered elsewhere in weeding, chemical application and fire breaks. The most likely need will be keeping grass down on rides and within fire breaks and within planting and regeneration sites to reduce competition with tree seedlings.

### Risk Assessment

Contractors and woodland management staff should develop a risk assessment for any work to be undertaken in compartments. Contractors and staff should provide a written copy of risk assessments to the owner / managers. In the event of an accident a review by health and safety specialists will include appraisal of the risk assessment.

### **Maintenance of Lowland Heath**

Heathland has developed from the clearance of open forests on sandy soils in pre-historical times. In recent years, with the decline in grazing, succession is taking many of the heathland sites back to woodland. On the Sefton coast this is often taking the form of birch, lodgepole pine, Corsican pine, oak and sycamore regeneration.

Lowland heath is an increasingly rare habitat in England and requires preservation. Remaining sites should be managed to eliminate regeneration, remove all but a few mature character trees in areas where the heath is already damaged. To minimise disturbance to breeding birds, tree clearance should be carried out between September to March. As the sites are often rich in invertebrate fauna chemical treatment or management by controlled burning is undesirable.

It will be important to prevent any practices that will encourage soil enrichment (brash left on site, burning, chipping, chemical fertilisers) as it will decrease suitability for heath species and instead encourage grassland species. In general, once the site has been restored, management should ensure that tree regeneration does not take hold.



### 3 Activity Schedule



Figure 7 Royal Forestry Society assessors visit to Sefton Coast woodlands to look at management that takes climate change into account.

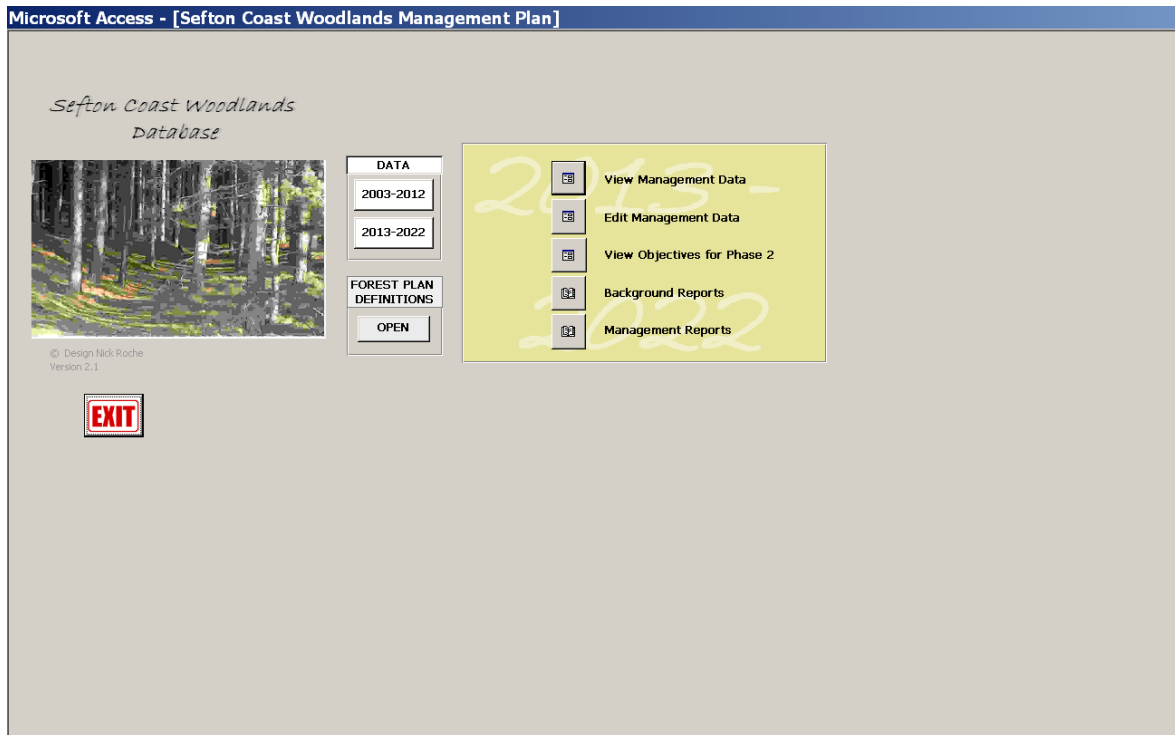
### 3.1 The Data

#### 3.1.1 THE DATABASE

The database used to compile the information for this Plan is based on that used by MEAS (previously JCAS) in its Sefton Coast Woodland and Scrub Management Strategy, November 1999 and held in an Excel spreadsheet **sftdta\_full.xls**.

The original data set has been up-dated and moved into MS Access software. Although essentially the same, some of the coded data has been dropped and aspects of the inventory carried out in 2000 / 2001 and in 2007 included. The database (the full version in MS Access is known as **SCWDBv2.mdb**) has been distributed to each of the owners in digital form (CD ROM) as part of the plan. The front page now looks as follows (it has the option to go into either the first phase or second phase):

**Diagram 20, Facsimile of the Sefton Coast Woodlands Database Front Page**



The owners can choose to use their digital copies as 'working copies' with monitoring information up-dated and added to for management purposes. The database contains the background information, the five year cycle of operations, the annual programme of activities and the monitoring system.

The definitive copy of the database is held at The Mersey Forest Offices and is maintained by a member of staff there. Experience has shown that most owners/managers do not use the database for management purposes, but in the event of it being used, an annual process of synchronising data will be undertaken to prevent the creation of multiple copies that diverge over the years.

The following points should be noted:

The maps contained in this section of Volume I, are only a site map of the property. Details are contained in the main management volume, Volume II. Copies of both volumes held at the Forestry Authority offices at Delamere, The Mersey Forest Offices at Risley Moss, the offices of The Merseyside Environmental Advisory Service in Bootle and is available in the following libraries.

- [Crosby Library](#)
- [Formby Library](#)
- [Southport Library](#)

Each owner/manager also has a copy of the two volumes and copies are available on line at [Merseyforest.org.uk/seftoncoastplan2](http://Merseyforest.org.uk/seftoncoastplan2)

The unique or key identifying factor in working with the data contained in the database has been the compartment number. Until 2007 information was not geographically located within the compartments, but in 2007, some effort was made to disaggregate the compartment data to give more accurate information on compartment make up (species and age).

Some changes to the compartment numbering has occurred in this version as there has been an effort to get rid of multiple breakdowns (for example 023a.1), also one private owner (Asparagus Cottage) has cut down all their remaining trees, so have been removed from the database and the compartment number reallocated (to Altcar Rifle Range). There may be some confusion over this, but reference to the previous version maps will resolve any issues.

Over time there will be a need to rationalise the compartment numbers and data further as restructuring proceeds. Fewer and fewer of the compartments will be homogeneous and an allocation of a single age and species composition may become meaningless. Careful thought will to be given to how this rationalisation is undertaken in order not to loose important historical inks.

Only those owners who indicated their interest in participating in the Forest Working Plan are included in this section of the plan (see section 3.2).

### 3.1.2 SURVEY METHODOLOGY

In this phase of the plan, every compartment was visited and survey forms used to collect information to update the database and create the new action plan.

1. There was a site visit at the end of 2012 to discuss issues together with owner or site manager and to walk through each compartment to discuss long term objectives and short term action over two five-year cycles.
2. The information was collated into the new action plan by the end of December 2012.
3. The draft was returned to the owner/manager for comment and adjustments by the middle of January.

The following form was filled in for every compartment and transferred to the database which is represented in Section 3 (and partly in 2):

Diagram 21, Survey Form

<b>Comp No:</b> 015		<b>Comp Area:</b> 0.46		<b>Date Visited:</b>	
<b>Owner:</b> St Lukes Church					
<b>Current Condition</b>					
Woodland type: BLF wood		Timber quality: Firewood		level of recreation: Moderate use	
predom sps: WP,Syc		Pine regeneration: None		Footpath: <input checked="" type="checkbox"/>	
Second sps: Be		Squirrel feeding: Low			
<b>2023 Management objective:</b>			<b>Amended Management Objective:</b>		
Be Retained, some underplanting					
WP,Syc Thinned and some planting					
<b>Past Management:</b>		<b>Proposed management 3rd cycle:</b>		<b>Proposed management 4th cycle:</b>	
Area thinned:		Area to thin:		Area to thin:	
Felled coupe no: area:		Fell coupe no: area:		Fell coupe no: area:	
Planted:		Plant:		Plant:	
Nat regen:		Nat regen:		Nat regen:	
Fenced:		Fence:		Fence:	
Weeded:		Weed:		Weed:	
Cleaned:		Clean:		Clean:	
Coppiced:		Coppice:		Coppice:	
Complete / Not complete			<b>Remarks:</b>		<b>Remarks:</b>
<b>Comments:</b>					

**Notes:**

- Woodland type: Visual assessment of forest type. (Section 1, Woodland Type)
  - Pine wood
  - Broadleaf wood (BLF)
  - Mixed wood
  - Poplar scrub
  - Mixed scrub
  - Buckthorn scrub
  - Bare
  
- Age structure: From records
  - Ten year age categories starting from 1 – 10 going up to 111 – 120
  
- Level of recreational use: Local knowledge and visual assessment of compartment
  - Heavy use
  - Moderate use
  - Infrequent use
  - Isolated area
  
- Timber quality: Visual assessment of average tree stem quality
  - Sawlog
  - Palletwood
  - Firewood
  - Chipwood
  - Not applicable (too young, scrub or bare)
  
- Incidence of Pine regeneration: Visual evidence
  - Adequate

	Sparse
	None
	Lodgepole pine regeneration (LP regen)
Squirrel feeding intensity:	Visual evidence, cone core counts
	High
	Medium
	Low
	None

The information was transferred from the forms to the database within as short a period as possible to ensure that it was still 'fresh'. Once incorporated into the database, the tables were imported into the GIS and the information mapped and returned in both table and map form to the owners / managers for comment and further discussion.

### 3.1.3 ABBREVIATIONS ETC.

A number of abbreviations are used. The owners are reduced to an abbreviation in many cases e.g. the National Trust to NT.

Many of the species are abbreviated:

Species	Abbreviation
Alder <i>Alnus glutinosa</i>	Ald
Ash <i>Fraxinus excelsior</i>	Ash
Balsam poplar <i>Populus gileadensis</i>	Pop
Beech <i>Fagus sylvatica</i>	Be
Birch <i>Betula pubescens</i> , <i>B. pendula</i>	Bi
Black poplar <i>Populus nigra</i>	BIP
Blackthorn (sloe) <i>Prunus spinosa</i>	Slo
Cherry <i>Prunus avium</i>	Chy
Corsican pine <i>Pinus nigra var maritima</i>	CP
Douglas fir <i>Pseudotsuga menziesii</i>	DF
Elderflower <i>Sambucus nigra</i>	Eld
Elm <i>Ulmus glabra</i> , <i>U. procera</i>	Elm
European larch <i>Larix decidua</i>	EL
Field maple <i>Acer campestre</i>	FMI
Hawthorn <i>Crataegus monogyna</i>	Hth
Hazel <i>Corylus avellana</i>	Hzi
Holly <i>Ilex aquifolium</i>	Hly
Horse chestnut <i>Aesculus hippocastanum</i>	HoC
Japanese larch <i>Larix kaempferi</i>	JL
Leyland cypress, <i>Cupressus x leylandii</i>	LyC
Lime <i>Tilia cordata</i>	Lme
Lodgepole or Shore pine <i>Pinus contorta</i>	LP
Macedonian pine <i>Pinus peuce</i>	Mac
Maritime pine <i>Pinus pinaster</i>	MP
Norway spruce <i>Picea abies</i>	NSp
Oak <i>Quercus petraea</i> , <i>Q. robur</i>	Oak
Privet, <i>Ligustrum lucidum</i>	Pvt
Scots pine <i>Pinus sylvestris</i>	SP
Sea buckthorn <i>Hippophae rhamnoides</i>	Bth

Species	Abbreviation
Sitka spruce <i>Picea sitchensis</i>	SSp
Sweet chestnut <i>Castanea sativa</i>	SwC
Sycamore <i>Acer pseudoplatanus</i>	Syc
White poplar <i>Populus alba</i>	WhP
Willow <i>Salix alba</i> , <i>S. fragilis</i> , <i>S. caprea</i>	Wlw
Yew , <i>Taxus baccata</i>	Yew

### 3.2 Participating Owners

Ownership	Site Name	Area	Join Date
Formby Golf Club, Ladies	Formby Golf Course	4.99	01/12/2012
Formby Golf Club, Mens	Formby Golf Course	41.91	01/12/2012
Hesketh Golf Club	Hesketh Golf Links	7.50	01/12/2012
Hillside Golf Club	Hillside Golf Course	5.32	01/12/2012
Lancashire Wildlife Trust	Freshfield Dune Heath (Woodvale)	4.13	01/12/2012
MoD	Woodvale Airfield	1.13	01/12/2012
National Trust	Formby Point	72.97	01/12/2012
Natural England	Ainsdale Sand Dunes NNR	157.32	01/12/2012
Natural England	Cabin Hill NNR	0.85	01/12/2012
Poor Servants of the Mother of God	St Joseph's Convent	1.40	01/12/2012
Private, Golf Cottage	Golf Cottage	0.35	01/12/2012
Private, Lark Hill Farm	Lark Hill Farm	1.68	01/12/2012
RFCA	Altcar Rifle Range	27.06	01/12/2012
Royal Birkdale Golf Club	Birkdale Hills	3.57	01/12/2012
SMBC, Coast & Countryside (n)	Birkdale Hills	23.05	01/12/2012
SMBC, Coast & Countryside (s)	Lifeboat Road	12.43	01/12/2012
SMBC, Coast & Countryside (s)	Ravenmeols	16.42	01/12/2012
SMBC, Landscape Services	Southport Golf Links	3.37	01/12/2012
St Lukes Church	St Lukes Church Wood	0.46	01/12/2012
	<b>Total area</b>	<b>385.91</b>	

### 3.3 Activity Schedules

The planned activities of the participating owners are represented in two forms, an annual programme which is reproduced in Volume II and the five year activity schedule which formed the basis for the original Felling Licence is reproduced in the following tables:

## Management Data, 5 year Cycles - 2013 to 2022

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail	2nd cycle management	2nd cycle coupe detail
<b>Formby Golf Club, Ladies</b>												
045a	Formby Golf Course	0.34	Mixed wood	BLF	051-060	37%	Syc, Bi	Manage as open wood	None		Thinning	
				CP	031-040	34%	Maturing CP	Manage as open wood	None		Thinning	
				SP	031-040	28%	Maturing SP	Manage as open wood	None		Thinning	
045b	Formby Golf Course	0.19	Pine wood	SP	101-110	52%	Mature SP heavily branched	Thinned to final spacing	Cleaning		Thinning	
				CP	041-050	48%	Maturing CP	Managed to maturity	None		Thinning	
045c	Formby Golf Course	0.6	Mixed wood	Bi,Wlw	041-050	36%	Scrub Bi	Cleaned and coppiced	Cleaning		Thinning	
				SP	031-040	64%	Mature branched & younger	Thinned to mature spacing	None		Thinning	
045d	Formby Golf Course	0.27	Pine wood	SP	101-110	31%	Mature SP	Manage as open woodland	Cleaning		Thinning	
				Syc	041-050	33%	Maturing Syc	Manage as open woodland	Cleaning		Thinning	
				CP	041-050	36%	Maturing CP	Manage as open woodland	Cleaning		Thinning	
045e	Formby Golf Course	0.13	Pine wood	SP	101-110	100%	Mature feature block	Manage to mature spacing	Cleaning		Thinning	
045f	Formby Golf Course	0.18	BLF wood	Syc	061-070	100%	Maturing Syc	Manage as maturing Syc wood	None		Review	
045g	Formby Golf Course	0.21	Pine wood	SP,CP,Bi	101-110	100%	Maturing, fairway edge	Manage as open woodland	Thinning		Thinning	
045h	Formby Golf Course	0.27	Mixed wood	SP	101-110	100%	Mature SP, a few CP	Manage to final spacing	Thinning		Cleaning	
045i	Formby Golf Course	0.08	Pine wood	SP,Bi,Wlw	041-050	100%	Maturing fairway divider	Managed to maturity	Thinning		None	
046	Formby Golf Course	0.23	Mixed wood	CP,LP,Bi	031-040	100%	Scrappy divider fairway divid	Managed as thick screen	Selection felling		Cleaning	
047	Formby Golf Course	0.38	Mixed wood	LP,CP	041-050	60%	Windblown LP, underplanted	Convert to pure CP	Selection felling		Cleaning	
				Bi,Syc	031-040	40%	Blf regen within block	Managed as open wood	Thinning		Cleaning	
048	Formby Golf Course	1.23	Mixed scrub	Bi,MB	051-060	23%	Low Bi scrub	Retain as scrub	None		None	
				CP	041-050	12%	Isolated trees	Retain as feature	None		None	
				Bi	041-050	65%	Low Bi scrub	Retain as scrub	Coppicing		Coppicing	
049a	Formby Golf Course	0.72	Pine wood	SP,CP,LP	041-050	100%	Maturing stand	Thinned to maturity	None		Thinning	
049b	Formby Golf Course	0.16	Mixed wood	CP,MB	041-050	100%	Mixed, CP & scrub eastern e	Managed as small Blf block	Thinning		Thinning	
<b>Formby Golf Club, Mens</b>												
003b	Formby Golf Course	4.39	Pine wood	Bare	Bare	8%	Grass sward	Fontal woodland	None		None	
				CP	101-110	61%	Stunted frontal CP	Fontal woodland	None		None	
				CP	041-050	31%	Regeneration	Fontal woodland	None		None	
003c	Formby Golf Course	2.04	Mixed wood	Bare	Bare	23%	Open with Bi,CP regen	Retained as diverse block	Cleaning		Cleaning	
				MB	041-050	77%	Bi,Ald,SP	Retained as diverse block	Cleaning		Cleaning	
003d	Formby Golf Course	1.49	Mixed wood	CP	101-110	30%	Mature pine stand	Allow to age	Review		None	
				CP	081-090	70%	Maturing pine stand	Allow to age	Review		None	
003e	Formby Golf Course	6.28	Pine wood	CP	101-110	23%	Good quality, overstocked	Thinned to mature spacing	Cleaning		Restocking felling	1 0.25 0.25
				CP	081-090	24%	Good quality, overstocked	Thinned to mature spacing	Cleaning		Thinning	
				CP	061-070	53%	Good quality, overstocked	Thinned to mature spacing	Cleaning		Thinning	

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail	2nd cycle management	2nd cycle coupe detail
003f	Formby Golf Course	0.76	Pine wood	CP WP	061-070 031-040	86% 14%	Maturing CP, overstocked Block of poplar	Thinned to mature spacing Thinned to maturity	None None		Thinning None	
003g	Formby Golf Course	0.76	Pine wood	CP	101-110	100%	Good quality at mature spacing	Managed at mature spacing	None		Thinning	1 0.25 0.25
003h	Formby Golf Course	0.13	Mixed scrub	Bth,Bi Scub	031-040	100%	Bi, Buckthorn scrub	Restocked	Planting		Cleaning	
003i	Formby Golf Course	1.22	Pine wood	CP CP	101-110 081-090	29% 71%	Mature, overstocked Mature, overstocked	Restructured Managed at mature spacing	Cleaning Cleaning		Restocking felling Thinning	1 0.25 0.25
003j	Formby Golf Course	0.29	BLF wood	Ald	061-070	100%	Mature Ald	Managed as alder bed	None		Coppicing	
003k	Formby Golf Course	0.77	Pine wood	CP	101-110	100%	Mature CP damaged by fire	Restructured	Planting		Cleaning	
003l	Formby Golf Course	0.32	Mixed scrub	Bi	051-060	100%	Bi scrub	Allowed to develop to Blf wood	Cleaning		Cleaning	
003m	Formby Golf Course	0.17	Mixed wood	Bi	041-050	100%	Bi scrub, bankside	Maintained as copse	Cleaning		Cleaning	
003n	Formby Golf Course	0.58	Pine wood	SP	101-110	100%	Slow grown SP overstocked	Gradual respase to old age	Cleaning		Thinning	
003o	Formby Golf Course	2.9	Mixed scrub	MB	031-040	100%	BP,Bi scrub, some CP	Retain as open mosaic	Cleaning		Cleaning	
003p	Formby Golf Course	2.69	Mixed scrub	Bare	Bare	100%	Grass sward, mixed scrub	Retain as open mosaic	Cleaning		Cleaning	
003q	Formby Golf Course	1.26	Pine wood	CP CP	101-110 061-070	47% 53%	Mature CP Maturing CP	Managed at mature spacing Thinned to mature spacing	Cleaning None		Restocking felling Thinning	1 0.25 0.25
004a	Formby Golf Course	0.89	Pine wood	CP	071-080	100%	Frontal CP	Managed to mature spacing	Cleaning		Thinning	
004b	Formby Golf Course	0.99	Pine wood	CP	071-080	100%	Mature frontal CP	Managed to mature spacing	Cleaning		Thinning	
004c	Formby Golf Course	0.36	Pine wood	SP,CP	041-050	100%	Stunted SP	Managed as frontal woodland	None		Reviewed	
004d	Formby Golf Course	1.13	Pine wood	LP	041-050	100%	Windblown LP, partly restock	Fully restocked as SP,CP mix	Cleaning		Restocking felling	1 0.25 0.25
004e	Formby Golf Course	0.3	Pine wood	CP	041-050	100%	Mature CP, a few LP	Managed to maturity	Cleaning		Cleaning	
004f	Formby Golf Course	0.59	Pine wood	SP LP,CP	101-110 041-050	68% 32%	Stunted frontal SP Windblown LP,CP	Managed as mature SP Restructured	None None		Thinning Restocking felling	
004g	Formby Golf Course	0.37	Mixed wood	CP,SP Syc,Bi	071-080 071-080	42% 42%	Maturing frontal pinewood Maturing frontal scrub	Allow to develop as mixed wood Allow to develop as mixed wood	Cleaning Cleaning		Thinning Thinning	
004h	Formby Golf Course	0.46	Pine wood	SP,CP	101-110	100%	Frontal pinewood, open scrub	Allow to develop	None		None	
004i	Formby Golf Course	0.07	Pine wood	SP,Bi,Hily	101-110	100%	Mature frontal pinewood	Manage as frontal wood	Thinning		Cleaning	
005a	Formby Golf Course	0.14	Pine wood	CP	031-040	100%	Maturing CP block	Managed to maturity	None		Thinning	
005b	Formby Golf Course	0.57	Pine wood	CP,LP	041-050	100%	Maturing mixed pine block	Thinned to maturity	None		Thinning	
005c	Formby Golf Course	0.34	Pine wood	CP,LP	041-050	100%	Maturing mixed pine block	Thinned to maturity	None		Thinning	
005d	Formby Golf Course	0.27	Pine wood	CP,LP	031-040	100%	Maturing mixed pine block	Thinned to maturity	None		Thinning	
005e	Formby Golf Course	0.21	Pine wood	CP,LP	031-040	100%	Maturing mixed pine block	Thinned to maturity	None		Thinning	
005g	Formby Golf Course	0.56	Pine wood	SP	101-110	100%	Mixed aged, SP to north	Managed to maturity	Cleaning		Thinning	
006a	Formby Golf Course	0.16	Pine wood	CP CP,Bi	101-110 031-040	47% 53%	Mature CP patch Maturing CP, Bi regen	Managed as mature woodland Managed to maturity	Cleaning Cleaning		Cleaning Cleaning	
006b	Formby Golf Course	0.46	Pine wood	CP Bi regen	101-110 021-030	83% 17%	Mature CP, underplanted Bi regeneration	Managed to mature spacing Thinned	Cleaning Cleaning		Thinning Thinning	
006c	Formby Golf Course	0.44	Pine wood	SP	031-040	100%	Maturing CP block	Managed to maturity	Cleaning		Thinning	
006d	Formby Golf Course	0.84	Mixed wood	Bi	031-040	100%	Mixed Blf scrub/wood	Managed to mixed woodland	Cleaning		Thinning	



Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail			2nd cycle management	2nd cycle coupe detail		
006e	Formby Golf Course	0.36	BLF wood	Bi	031-040	100%	Mixed Blf scrub/wood	Managed to mixed woodland	Cleaning				Thinning			
006f	Formby Golf Course	0.42	Mixed wood	Bi,Syc	031-040	100%	Mixed Blf scrub/wood	Mixed Blf scrub/wood	Thinning				Cleaning			
006g	Formby Golf Course	0.28	BLF wood	CP,Syc	061-110	100%	Mature CP, maturing syc	Allow to develop to maturity	Selection felling				Selection felling			
007a	Formby Golf Course	0.18	BLF wood	Bi	031-040	100%	Maturing birch block	Maintain as open copse	Cleaning				Cleaning			
007c	Formby Golf Course	0.51	Mixed scrub	SP,CP,Bi	021-040	100%	Developing natural regen	Maintain as open scrub wood	None				Review			
007d	Formby Golf Course	0.08	Pine wood	LP	031-040	100%	Small area scrappy LP	Restocked with SP,CP,Bi	Underplant				Thinning			
007e	Formby Golf Course	0.32	Pine wood	SP,CP,LP	031-040	100%	Developing screen planting	Manage to maturity	Thinning				Thinning			
007f	Formby Golf Course	0.09	Pine wood	LP,SP,Bi	031-040	100%	Developing pine block	Managed to maturity	Thinning				Thinning			
008a	Formby Golf Course	0.15	Mixed scrub	Mixed	031-040	100%	Mixed, open pine, Bi	Maintained as open woodland	Cleaning				Cleaning			
008b	Formby Golf Course	0.94	Pine wood	Bare	Bare	5%	Open grass sward	Maintain as open sward	Cleaning				Cleaning			
				SP,CP	041-050	75%	SP planting, regeneration	Maange to maturity	Cleaning				Thinning			
				Syc,LP	031-040	5%	Mixed regeneration	Reduce to limited Syc	Cleaning				Thinning			
				Bi,Syc,BP	031-040	5%	Mixed BLF woodland	Reduce to limited Bi	Cleaning				Thinning			
008d	Formby Golf Course	0.49	Pine wood	CP,LP	041-050	16%	50:50 mix of CP, LP	Manage to maturity, remove LP	Cleaning				Thinning			
				LP	041-050	12%	Very poor LP	Remove	Cleaning				Thinning			
				CP	041-050	72%	CP planting	Manage to maturity	Cleaning				Thinning			
008e	Formby Golf Course	0.33	Pine wood	CP,SP	011-020	100%	Railway screen	Manage to maturity	Cleaning				Thinning			
009a	Formby Golf Course	0.24	Pine wood	LP	041-050	41%	Very poor LP	Restocked as screen	Restocking felling	1	0.15	0.15	Planting			
				CP	031-040	59%	Sparse CP	Managed as screen	Thinning				Cleaning			
009b	Formby Golf Course	0.23	Pine wood	LP	041-050	100%	Very poor LP, some CP	Restocked to CP,SP	Selection felling				Planting			
009c	Formby Golf Course	0.33	Pine wood	CP	041-050	58%	CP planting, variable quality	Managed to maturity	Thinning				Cleaning			
				LP	041-050	17%	Very poor LP	Restocked to CP,SP mix	Selection felling				Planting			
				CP,Bi	011-020	25%	CP,Bi regen	Managed to maturity	Planting				Cleaning			
009d	Formby Golf Course	0.39	Pine wood	Bare	Bare	20%	Open mown grass	Maintained	Cleaning				Cleaning			
				Pop,Syc,CP	051-060	20%	Mixed wood, screen	Managed for Blf content	Thinning				Thinning			
				LP,CP	031-040	20%	Pine screen, some Pop	Managed to maturity, LP removed	Thinning				Planting			
				LP	031-040	40%	Pine screen, some Pop	Restocked to CP,SP mix	Selection felling				Selection felling			
011	Formby Golf Course	1.37	Mixed wood	Bare	Bare	5%	Mown grass sward	Managed as open sward	Cleaning				Cleaning			
				CP	091-100	32%	Mature CP	Managed as feature trees	None				Thinning			
				BLF	051-060	36%	Mixed, Bi, Pop	managed as Blf wood	Thinning				Thinning			
				Mixed	011-020	27%	Planted, Bi, CP, Oak	Thinned to maturity	Thinning				Cleaning			
<b>Hesketh Golf Club</b>																
086a	Hesketh Golf Links	0.06	BLF wood	Bi	051-060	100%	Birch copse	Manage as birch copse	None				Thinning			
086b	Hesketh Golf Links	0.17	BLF wood	BP,Syc	051-060	100%	Dense polar copse	Restock to pine feature	Restocking felling	1	0.10	0.10	Restocking felling	1	0.10	0.10
086c	Hesketh Golf Links	0.13	BLF wood	Syc,Pop,WIw	051-060	100%	Dense polar copse	Thinned, eventually restocked	None				Thinning			
086d	Hesketh Golf Links	0.89	Mixed wood	CP,Pop	021-030	100%	Screen of mixed age/species	Managed as screen	Thinning				Thinning			
086e	Hesketh Golf Links	0.46	Mixed scrub	WP,Syc	041-050	100%	Series of 5 mixed splotches	Partially restocked and managed	Thinning				Restocking felling	1	0.10	0.10
086f	Hesketh Golf Links	0.86	Mixed scrub	WP,Bi	041-050	100%	Poor quality block of scrub	Manage to a feature	Restocking felling	1	0.25	0.25	Restocking felling	1	0.25	0.25

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail			2nd cycle management	2nd cycle coupe detail		
086g	Hesketh Golf Links	0.39	Mixed wood	WP,Syc	041-050	100%	Open copse dividing fairways	Manage to maturity	Thinning				Cleaning			
086i	Hesketh Golf Links	0.09	BLF wood	Wlw	041-050	100%	Maturing wood	Manage as fairway divider	Cleaning				Cleaning			
086j	Hesketh Golf Links	0.46	BLF wood	WP,Wlw	051-060	100%	Ivy infested wood	Managed to maturity	Thinning				Thinning			
086k	Hesketh Golf Links	0.5	BLF wood	Wlw,Bi,WP	051-060	100%	Mixed, willow screen	Restocked to Bi,Wlw	Restocking felling	1	0.20	0.20	Coppicing			
086l	Hesketh Golf Links	0.41	Mixed wood	NS,CP,MB	041-050	100%	Maturing screen	Manage as screen to maturity	Cleaning				Restocking felling	1	0.10	0.10
086m	Hesketh Golf Links	0.12	BLF wood	Wlw,Syc	061-070	100%	Over mature willow	Managed as screen	Cleaning				Coppicing			
086n	Hesketh Golf Links	0.61	BLF wood	Wlw	051-060	100%	Willow boundary	Maintained as screen	None				None			
086o	Hesketh Golf Links	0.14	BLF wood	WP	051-060	100%	Fairway divider	Managed as fairway divider	Thinning				Thinning			
086p	Hesketh Golf Links	0.28	BLF wood	Wlw,Syc	051-060	100%	Boundary wood	Retained as boundary screen	None				None			
086q	Hesketh Golf Links	0.06	BLF wood	Bi	041-050	100%	Birch copse	Manage as birch copse	Cleaning				Thinning			
086r	Hesketh Golf Links	0.11	Pine wood	CP,MP,LP	041-050	100%	Small pine stand	Managed as feature	Thinning				Thinning			
086s	Hesketh Golf Links	0.26	Mixed wood	WP,CP,LP	061-070	100%	Neglected wood	Restocked to pine wood	Cleaning				Restocking felling	1	0.26	0.26
086u	Hesketh Golf Links	0.25	BLF wood	WP	051-060	100%	Mixed screen copse	Restocked to pine screen	Restocking felling	1	0.25	0.25	Cleaning			
086v	Hesketh Golf Links	0.92	Mixed wood	Syc,CP,Bi	041-050	100%	Screen along road	Maintained as screen	Thinning				Thinning			
086w	Hesketh Golf Links	0.33	BLF wood	BP,Syc,Wlw	061-070	100%	Neglected Blf wood	Retained, eventually restocked	Thinning				Cleaning			
<b>Hillside Golf Club</b>																
002a	Hillside Golf Course	0.6	Pine wood	CP	071-080	100%	Exposed, maturing CP	Manage to maturity	Thinning				Thinning			
002c	Hillside Golf Course	0.15	Pine wood	CP	071-080	100%	Exposed, maturing CP	Manage to mature copse	Thinning				Thinning			
002d	Hillside Golf Course	0.07	Pine wood	LCy,Wlw,CP	041-050	100%	Newly planted SP and gorse	Manage as small pine copse	Cleaning				Cleaning			
002f	Hillside Golf Course	0.11	Pine wood	CP	071-080	100%	Exposed CP, holly understor	Manage to maturity	Thinning				Thinning			
002g	Hillside Golf Course	0.14	Pine wood	CP	071-080	100%	Maturing CP, underthinned	Manage to maturity	Thinning				Thinning			
002h	Hillside Golf Course	1.87	Pine wood	CP	071-080	100%	Maturing CP, underthinned	Manage to mature spacing	Restocking felling	1	0.25	0.25	Thinning			
002i	Hillside Golf Course	0.24	Pine wood	Syc,WP	071-080	100%	Replanted Blf as open SP co	Manage to mature open wood	Cleaning				Cleaning			
002j	Hillside Golf Course	0.14	Pine wood	CP	021-030	100%	Maturing, well spaced CP	Manage to maturity	Thinning				Cleaning			
002k	Hillside Golf Course	0.36	Pine wood	SP,MP	101-110	100%	Exposed, character SP, MP	Manage as mature exposed wood	Thinning				Cleaning			
002l	Hillside Golf Course	0.26	Mixed scrub	Bi,Bth,Pop	021-030	100%	Dune slack mixed BLF	Manage as open mixed wood	Thinning				Thinning			
002m	Hillside Golf Course	0.98	Mixed wood	Pop,Bi	061-070	100%	Developing mixed Blf wood	Manage as open Blf wood	Thinning				Thinning			
002n	Hillside Golf Course	0.4	BLF wood	Ald	071-080	100%	Vigorous alder carr, Bi	Manage as alder coppice	Coppicing				Coppicing			
002o	Birkdale Hills LNR	0.16	Mixed scrub	Bi,Bth,Pop	021-030	100%	Dune slack mixed BLF	Manage as screen along fence	Thinning				Thinning			
<b>Lancashire Wildlife Trust</b>																
085e	Freshfield Dune Heath (Woodval	0.05	Pine wood	CP	071-080	100%	Old pine planting	Manage as shelter wood	None				None			
085f	Freshfield Dune Heath (Woodval	0.25	Mixed wood	LP	041-050	100%	LP regen	Open mixed wood within heath	Selection felling				Selection felling			
				Bi	031-040	100%	Birch	Open mixed wood within heath	Selection felling				Selection felling			
085g	Freshfield Dune Heath (Woodval	1.45	Mixed wood	SP,Bi,MB	051-060	100%	Managed mixed wood	Manage as open mixed wood	Thinning				Cleaning			
085h	Freshfield Dune Heath (Woodval	0.74	BLF wood	Bi,Ald,Wlw	031-040	100%	Mixed woodland	Manage as mixed Blf woodland	Thinning				Thinning			
085i	Freshfield Dune Heath (Woodval	0.28	BLF wood	Wlw	021-030	100%	Natural regeneration	Manage as coppiced willow	Coppicing				Coppicing			
085j	Freshfield Dune Heath (Woodval	0.13	BLF wood	Wlw	021-030	100%	Natural regeneration	Manage as coppiced willow	Coppicing				None			

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail	2nd cycle management	2nd cycle coupe detail
085k	Freshfield Dune Heath (Woodval	0.87	BLF wood	Bi,Wlw	021-030	100%	Natural regeneration	Develop into mature open wood	None		Thinning	
085l	Freshfield Dune Heath (Woodval	0.36	BLF wood	Bi,Wlw	021-030	100%	Natural regeneration	Allow to develo to mature wood	None		None	
<b>MoD</b>												
085a	Woodvale Airfield	0.3	BLF wood	Elm	051-060	100%	Unmanaged elm	Manage as Elm coppice	Coppicing		Cleaning	
085b	Woodvale Airfield	0.13	Mixed scrub	CP	051-060	100%	CP regen	Maintain as open pine copse	None		None	
085c	Woodvale Airfield	0.44	Mixed wood	WP,Syc	051-060	100%	Unmanaged BLF	Maintain as mixed copse	None		None	
085d	Woodvale Airfield	0.26	BLF wood	WP,Syc	041-050	100%	Unmanaged BLF	Manage as Blf wood	None		None	
<b>National Trust</b>												
025	Formby Point	3.28	Pine wood	Bare	Bare	11%	Bare within compartment	Retained as open glades	Cleaning		Cleaning	
				SP,CP	101-110	41%	Mature frontal pinewood	Thinned to mature spacing	None		Thinning	
				Syc,Bi	041-050	2%	Bi,Syc regen	Retained	Cleaning		Thinning	
				LP	041-050	17%	Very scrappy LP	Cleared to plant CP,SP mix	Planting		Thinning	
				CP	021-030	12%	Young plantation	Thinned	None		Thinning	
				SP,CP,LP	001-010	17%	New planting, LP regen	Establish CP,SP mix	Planting		Thinning	
026a	Formby Point	0.3	BLF wood	Ald,Bi	061-070	100%	10 year old coppice	Managed as alder bed	Thinning		None	
026b	Formby Point	2.96	Pine wood	CP	091-100	24%	Mature mixed woodland	Managed as mature block	None		None	1 0.30 0.30
				CP	061-070	35%	Reasonable plantation	Thinned to maturity	None		Thinning	
				LP	041-050	38%	Scrappy LP	Cleared and replanted	None		Restocking felling	
				SP,CP	021-030	3%	Young plantation	First thinning	None		Thinning	
027	Formby Point	1.46	Pine wood	Mobile dune	Bare	22%	Mobile dune	Retain as frontal woodland	None		Review	
				Bare	Bare	13%	Grassland	Retain as frontal woodland	None		Review	
				CP	091-100	64%	Damaged frontal pinewood	Retain as frontal woodland	None		Review	
028a	Formby Point	0.28	Mixed wood	SP	021-030	100%	Mixed plantation	Thin to maturity	Thinning		None	
028b	Formby Point	1.47	Pine wood	SP	091-100	100%	Stunted , frontal woodland	Retain as frontal wood	None		H&S Review	
029	Formby Point	4.47	Pine wood	Bare	Bare	7%	Important sweep thro to fenc	Maintained as bare areas	Cleaning		Cleaning	1 0.25 0.25
				CP	091-100	9%	Some stunting, SP/CP mix	Thin to maturity, restructure	None		Restocking felling	
				SP	091-100	75%	Stunted and wind blown SP	Thinned to maturity	None		Thinning	
				Ald,Bi	061-070	3%	Alder in old slack	Maintained as alder bed	Selection felling		Coppicing	
				Bi,Syc,Pop	051-060	6%	Natural regeneration	Managed for final Bi canopy	None		Thinning	
030	Formby Point	2.3	Pine wood	SP	091-100	25%	Mature frontal pinewood	Managed as mature woodland	None		Thinning	
				CP	091-100	58%	Mature frontal pinewood	Managed as mature woodland	None		Thinning	
				Syc,Pop	051-060	11%	Frontal broadleaf	Retained as frontal screen	Cleaning		Cleaning	
				SP,CP	011-020	5%	Young planting & regen	First thinning	None		Thinning	
031a	Formby Point	3.66	Mixed wood	CP	091-100	13%	Area of mature CP, picnic ar	Managed as mature canopy	H&S felling		Thinning	
				SP,CP,Syc,Bi	061-070	12%	Mixed wood	Manage for mature canopy	None		Thinning	
				Bi,Syc	061-070	51%	Mixed BLF, high Syc content	Manage for mature canopy	None		Thinning	
				Ald,Syc	041-050	18%	Scub Syc	Manage for mature canopy	None		Thinning	
				SP,CP,MB	021-030	6%	Mixed planting	First thinning	None		Thinning	

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail			2nd cycle management	2nd cycle coupe detail				
031b	Formby Point	2.1	Mixed wood	Bare	Bare	5%	Bare frontal area	Manage as frontal feature	None				Thinning					
				Bi,Syc,LP,CP	051-060	84%	Mixed Blf wood	Thin for mature canopy	None						Thinning			
				CP	021-030	11%	CP planting	First thinning	None							Thinning		
032	Formby Point	2.84	Pine wood	CP	091-100	100%	Mature CP	Restructuring into maturity	None				Thinning					
033a	Formby Point	3.14	Mixed wood	Ald	071-080	13%	Mixed Ald/Bi wood	Managed to favour alder	Thinning				None					
				Syc,SP	061-080	10%	Mixed with old pine planting	Managed to maturity	Planting					Cleaning				
				SP,Bi	061-070	13%	Mixed Bi/Syc/SP	Managed as mixed wood	Thinning					None				
				Syc,WP	061-070	64%	Older Syc block	Managed as Blf wood	Thinning					None				
033b	Formby Point	1.33	Pine wood	CP	071-080	100%	Screen along access road	Managed as access feature	Selection felling				Restocking felling					
033c	Formby Point	0.25	Mixed wood	SP,CP,MB	011-020	100%	Old asparagus field	Managed to maturity	Cleaning				Cleaning					
034a	Formby Point	1.24	Pine wood	SP	101-110	91%	Mature pine wood	Managed as mature pine	Thinning	1	0.10	0.10	None					
				CP	071-080	5%	SP / CP mix	Managed to maturity	Thinning					None				
				Syc	061-070	5%	Mature syc roadside	Managed as mature Blf	Selection felling					None				
034b	Formby Point	2.18	Pine wood	SP	101-110	91%	Some stunted growth	Managed to old age	None				None					
				CP	091-100	1%	Some SP mix	Managed to old age	None					None				
				SP,CP,Bi	021-030	8%	Developing plantation	Thinned to maturity	Thinning					Thinning				
034c	Formby Point	0.6	Pine wood	SP,CP	021-030	100%	Old asparagus field	Managed to maturity	Thinning				None					
035a	Formby Point	2.15	Pine wood	SP	101-110	77%	Mature CP with some BLF	Managed to mature spacing	None				Cleaning					
				Syc	061-070	13%	Patches near houses	Managed to pine canopy	Planting					Cleaning				
				Syc,WP	041-050	10%	Edge along old field	Managed to reduce impact	Cleaning					Cleaning				
035b	Formby Point	4.56	Pine wood	CP	091-100	47%	Quality timber stand	Managed as mature canopy	None				Restocking felling					
				SP,CP	071-080	46%	Quality timber stand	Managed as mature canopy	None					Thinning				
				Syc	041-050	4%	Old sycamore regen	Regenerated	Cleaning					Cleaning				
				SP,CP	021-030	3%	Pine plantation	Thinned to maturity	Thinning					None				
035c	Formby Point	0.29	Pine wood	SP,CP	021-030	100%	SP regeneration on old field	Managed to maturity	Thinning				None					
035d	Formby Point	0.62	Pine wood	SP,CP,MC	011-020	100%	Plantation block	First thinning	Thinning				None					
035e	Formby Point	0.27	Pine wood	MC	011-020	100%	Planting block	Successful regeneration	Planting				Cleaning					
036a	Formby Point	5.86	Pine wood	SP	101-110	66%	Mature SP	Managed at mature spacing	None	1	0.10	0.10	None					
				CP	091-100	7%	Mature CP	Managed at mature spacing	Selection felling					None				
				Bi	061-070	2%	Birch patches	Managed as Blf patches	Thinning					Thinning				
				Syc,WP,CP	031-040	23%	Developing regeneration	Retain as frontal screen	None					None				
				SP,CP	011-020	2%	Small planting	Managed to maturity	Thinning					None				
036b	Formby Point	0.42	Pine wood	SP,CP,MB	011-020	100%	New plantation	Managed to maturity	Cleaning				Thinning					
036c	Formby Point	0.31	Pine wood	SP,CP,MB	011-020	100%	New plantation	Managed to maturity	Cleaning				Cleaning					
036d	Formby Point	0.24	Pine wood	Bi,Wlw,Hth	011-020	100%	New plantation	Managed to maturity	Cleaning				Thinning					
036e	Formby Point	0.27	Pine wood	SP,CP,MB	011-020	100%	New plantation	Managed to maturity	Cleaning				Thinning					
036f	Formby Point	0.14	Pine wood	SP,CP	011-020	100%	New plantation	Managed to maturity	None				Thinning					

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail			2nd cycle management	2nd cycle coupe detail
037a	Formby Point	6.95	Pine wood	MP	091-100	11%	Mature	Managed as feature	None	1	0.30	0.30	None	
				SP,CP	091-100	79%	Mature, overstocked SP	Some restructuring	Restocking felling				Thinning	
				SP,CP	021-030	6%	Pine plantation	Thinned to maturity	None				Thinning	
				Bi	021-030	4%	Birch regeneration	Thinned for mature canopy	None				Thinning	
037b	Formby Point	4.82	Mixed scrub	Bare	Bare	81%	Bare, scattered pine trees	Maintained as open sward	Cleaning				Cleaning	
				Syc,scrub	031-040	19%	Developing scrub	Managed as low scrub	Selection felling		Cleaning			
037c	Formby Point	1.93	BLF wood	SP,CP	101-110	2%	Isolated trees within block	Managed as feature within block	None	1	0.25	0.25	None	
				Pop	081-090	32%	Mature Pop trees	Reduced with mature canopy	Restocking felling				Restocking felling	
				Syc	081-090	37%	Patches of mature Syc	Managed as mature canopy	Thinning				None	
				Bi,Be,Hth,Elm	061-070	29%	Mature Bi patches	Managed as mature canopy	Coppicing				Cleaning	
037d	Formby Point	0.11	BLF wood	Syc,WP	071-080	100%	Maturing sycamore	Retain as block	None				Thinning	
037e	Formby Point	0.19	Mixed wood	CP,MB	011-020	100%	New planting	Manage to maturity	Planting				Thinning	
037f	Formby Point	0.07	BLF wood	Ald,WP,Syc	071-080	100%	Maturing alder wood.	Partly coppiced	None				Coppicing	
038a	Formby Point	1.78	Pine wood	CP	101-110	89%	Good stand, eroding front	Thinned to final spacing	Cleaning				Thinning	
				CP	011-020	11%	Small planting	Managed to maturity	Planting		Thinning			
038b	Formby Point	0.44	Pine wood	Syc,Oak,Ash	021-030	5%	Mix within block	Managed to maturity	Thinning				None	
				SP,CP	021-030	95%	Maturing screen	Managed to maturity	Thinning		None			
038c	Formby Point	1.87	BLF wood	CP	101-110	5%	Mature Pine	Maintain as frontal woodland	None				None	
				Syc,BIP,Bi	061-070	65%	Mixed aged, mixed BLF	Maintain as frontal woodland	None		None			
				LP	061-070	30%	Exposed and stunted	Maintain as frontal woodland	None		None			
038d	Formby Point	0.23	Pine wood	CP,SP	011-020	100%	New planting	Managed to maturity	None				Thinning	
039a	Formby Point	1.26	Mixed wood	CP,Bi	061-070	91%	Stunted frontal woodland	Manage to maturity	Thinning				Thinning	
				CP,MB	021-030	9%	Developing planting	Managed to maturity	None		Thinning			
039b	Formby Point	0.67	BLF wood	Syc,Pop,CP	031-040	100%	Developing mixed Blf wood	Manage as screen	Selection felling				None	
040	Formby Point	1.79	BLF wood	Ald,Bi,Syc	051-060	100%	Mixed frontal scrub	Maintain as frontal scrub	Selection felling				Thinning	
041	Formby Point	0.95	Pine wood	CP	081-090	100%	Frontal pinewood	Maintain as frontal pine	Thinning				None	
042	Formby Point	0.92	BLF wood	Ald,Syc,Pop	061-070	100%	Mature BLF	Restructured to mixed wood	Restocking felling	1	0.30	0.30	Cleaning	
<b>Natural England</b>														
019	Cabin Hill NNR	0.85	BLF wood	CP,SP	081-090	20%	Maturing, scrappy pine	Keep pine as feature	None				None	
				Syc,WP,MB	081-090	80%	Maturing, scrappy BLF wood	Manage as Blf	Selection felling		Coppicing			
050a	Ainsdale Sand Dunes NNR	1.13	BLF wood	Ald	101-110	100%	Homogenous alder carr	Manage on 30 year coppice	Selection felling				Coppicing	
050b	Ainsdale Sand Dunes NNR	0.59	Mixed scrub	Grass, CP reg	061-070	100%	Scrub in grass sward	Manage as grass sward	Selection felling				Selection felling	
051	Ainsdale Sand Dunes NNR	1.76	Pine wood	SP	111-120	69%	Predominantly 'character' SP	Thin to mature spacing	Thinning				None	
				CP	091-100	25%	Overstocked CP	Thin to mature spacing	Thinning		None			
				Syc,Pop	031-040	6%	BLF regeneration	Reduce in canopy	Thinning		None			

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail			2nd cycle management	2nd cycle coupe detail		
052	Ainsdale Sand Dunes NNR	4	Pine wood	Bare	Bare	8%	Pine scrub, open.	All regen to develop	Natural regen				Natural regen	2	0.25	0.50
				SP,CP	111-120	3%	Mature 'character' SP	Manage to mature spacing	None				Thinning			
				CP	101-110	15%	Uniform, mature CP stand	Manage to mature spacing	None				Restocking felling			
				CP	091-100	65%	Uniform mature CP stand	Manage to mature spacing	None				Thinning			
				Ash,Syc	051-060	7%	Maturing blocks of BLF	Select for healthy canopy	None				Thinning			
				Syc,Pop	031-040	1%	BLF regeneration	Reduce WP	None				Selection felling			
053	Ainsdale Sand Dunes NNR	6.44	Pine wood	CP	091-100	63%	Uniform, overstocked CP	Thinned and restructured	Cleaning				Thinning	2	0.25	0.50
				CP	081-090	37%	Thinned, mature spacing	Thinned and restructured	None				Restocking felling			
054	Ainsdale Sand Dunes NNR	4.66	Pine wood	CP	091-100	61%	Over thinned CP	Managed to maturity	None				Thinning	2	0.25	0.50
				CP	081-090	32%	Normal spacing CP	Managed to maturity	None				Thinning			
				Bi,CP	021-030	7%	BLF/CP(10%) regeneration	Thinned	Cleaning				Thinning			
055	Ainsdale Sand Dunes NNR	9.82	Pine wood	Firebreak	Bare	20%	Firebreak	Maintain as firebreak	Cleaning				Cleaning	1	0.50	0.50
				Bare	Bare	2%	Dune slack (no 34)	Maintain slack and heath	Cleaning				Cleaning			
				CP	091-100	91%	Mature, thinned CP	Thinned to maturity	Cleaning				Thinning			
				CP,Bi regen	051-060	5%	Regen in old firebreak	First thinning	Cleaning				Thinning			
056	Ainsdale Sand Dunes NNR	1.91	Pine wood	CP	091-100	73%	Uniform, mature CP	Thin to final spacing	None				Restocking felling	1	0.20	0.20
				Syc	071-080	8%	Area of Syc/CP, rail side	Thin to favour pine	None				Thinning			
				CP,Bi regen	051-060	19%	Regen in old firebreak	Manage to maturity	None				Thinning			
057	Ainsdale Sand Dunes NNR	0.89	Pine wood	Ash	061-070	8%	Unmanaged block	Thinned	Thinning				Thinning			
				CP	061-070	92%	Dense, unthinned, uniform	Thinned to maturity	Selection felling				Thinning			
058a	Ainsdale Sand Dunes NNR	5.81	Pine wood	Firebreak	Bare	5%	Firebreak	Maintain as firebreak	Cleaning				Cleaning			
				CP	071-080	86%	Mature overthinned pinewood	Manage to mature spacing	Cleaning				Thinning			
				WP,Syc	041-050	9%	BLF slacks (nos 32,33)	Maintain slacks	Cleaning				Cleaning			
058b	Ainsdale Sand Dunes NNR	1.54	Bare	Firebreak	Bare	53%	Firebreak	Manage as firebreak	Cleaning				Cleaning			
				Bare	Bare	47%	Rearward slacks (28,29,31)	Manage as slack	Cleaning				Cleaning			
059	Ainsdale Sand Dunes NNR	2.66	Mixed wood	Bare	Bare	8%	Grass sward	Maintained as mosaic, slack 36	Cleaning				Cleaning			
				CP	091-100	57%	Mature CP	Thinned to final spacing	None				Thinning			
				Bi	041-050	20%	Mature Bi	Heavy thin to improve slacks	Thinning				Thinning			
				CP	031-040	15%	CP regen	Thinned to maturity	Thinning				Thinning			
060	Ainsdale Sand Dunes NNR	5.93	Pine wood	CP,Syc	101-110	12%	CP, Syc, Syc understory	Sycamore thinned out	Restocking felling	1	0.30	0.30	Cleaning			
				CP	071-080	22%	Mature CP, underthinned	Thinned to mature spacing	None				Thinning			
				CP	051-060	51%	Mature CP, overthinned	Thinned to mature spacing	None				Thinning			
				Bi,CP	031-040	15%	Bi,CP regen in old firebreak	Thinned to maturity	Thinning				Thinning			
061	Ainsdale Sand Dunes NNR	3.6	Pine wood	CP	091-100	61%	Mature CP	Thin and restructure	Restocking felling	1	0.30	0.30	Cleaning			
				CP,Syc	061-070	29%	Maturing pine wood, Syc mix	Thin to mature pine wood	Thinning				Cleaning			
062a	Ainsdale Sand Dunes NNR	13.56	Pine wood	CP	081-090	46%	Mature CP	Thinned to maturity	Thinning	2	0.25	0.50	Restocking felling			
				CP	061-070	28%	Maturing CP	Thinned to maturity	Thinning				None			
				LP	051-060	15%	Windblown LP	Thinned	Thinning				None			
				Bi	031-040	3%	Wet and dry slacks	Manage as slack mosaic	Thinning				Cleaning			

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail			2nd cycle management	2nd cycle coupe detail	
062b	Ainsdale Sand Dunes NNR	1.86	Mixed scrub	Bi	041-050	100%	Bi, slack 39	Cleared and managed as slack	Cleaning				Coppicing		
063a	Ainsdale Sand Dunes NNR	21.35	Pine wood	Firebreak	Bare	12%	Firebreak	Maintained as firebreak	Cleaning	1	0.50	0.50	Cleaning		
				CP	081-090	59%	Mature, good quality	Thinned to maturity	None				Restocking felling		
				Bi	051-060	2%	Copse within CP	Managed as dry slack	Thinning				Cleaning		
				Bi,CP	031-040	5%	Mixed regen in old firebreak	Managed as dry slack	Thinning				Cleaning		
				Bi,CP,Syc	021-030	12%	Regen within old firebreak	Managed as dry slack	Cleaning				Cleaning		
				CP	021-030	1%	Good CP regen	Thinned to maturity	Thinning				Cleaning		
				CP	011-020	1%	Weak CP regeneration	Thinned to maturity	Thinning				Thinning		
063b	Ainsdale Sand Dunes NNR	6.3	Mixed wood	Bare	Bare	16%	Grass sward	Maintain as open sward	Cleaning				Cleaning		
				Bi,CP	031-040	84%	Mixed frontal regeneration	Reduce regeneration	Thinning				Thinning		
064	Ainsdale Sand Dunes NNR	5.77	Pine wood	Firebreak	Bare	10%	Firebreak	Maintained as firebreak	Cleaning	2	0.40	0.80	Cleaning		
				CP	101-110	11%	Over mature, good quality	Restructured	None				Restocking felling		
				CP,Syc	061-070	50%	Over mature, Syc understory	Thinned to final spacing	None				Thinning		
				CP,Bi,Ald	031-040	29%	Mixed regen in old firebreak	Thinned to favour pine	None				Thinning		
065	Ainsdale Sand Dunes NNR	7.97	Pine wood	Firebreak	Bare	4%	Firebreak	Maintain as firebreak	Cleaning				Cleaning		
				CP	081-090	82%	Over mature, overstocked	Thinned and restructured	None				Restocking felling		
				CP	071-080	14%	Mature, overstocked	Thinned to maturity	None				Thinning		
066	Ainsdale Sand Dunes NNR	4.8	Pine wood	Firebreak	Bare	2%	Firebreak	Maintain as firebreak	Cleaning	2	0.25	0.50	Cleaning		
				CP	101-110	55%	Mature CP	Restructured	Planting				Restocking felling		
				Ald	071-080	8%	Patches of Ald	Managed as alder coppice	None				Reviewed		
				CP	061-070	30%	Maturing CP	Thinned to maturity	Planting				Thinning		
				Bi	041-050	5%	Birch copse	Thinned	None				Thinning		
				Bi,BP	041-050	0%	Scattered Pop trees	Selectively felled	None				Thinning		
												Selection felling			
067	Ainsdale Sand Dunes NNR	2.29	Mixed wood	Firebreak	Bare	4%	Firebreak	Maintain as firebreak	Cleaning				Cleaning		
				CP	111-120	14%	Maturing CP	Light thin	None				Thinning		
				Oak,Bi,Pop	101-110	17%	Predominantly oak along roa	Manage as open, mixed canopy	None				Thinning		
				Oak	051-060	15%	Pure young oak, maturing	Manage to open canopy	None				Thinning		
				Be	051-060	28%	Maturing Be, Bi understory	Manage as Be block	None				Thinning		
				Bi	041-050	22%	Birch regeneration along ride	Thin to open canopy	None				Thinning		
068	Ainsdale Sand Dunes NNR	8.24	Pine wood	MP	111-120	5%	Strip of MP on west edge	Managed as feature	None	1	0.25	0.25	None		
				CP	111-120	47%	Overmature, good quality	Managed to mature spacing	None				Restocking felling		
				SP,CP	101-110	43%	Overmature, variable	Managed to mature spacing	Planting				Cleaning		
				Pop	051-060	0%	Single trees & understory	Reduced	None				Selection felling		
				Syc,Pop	051-060	2%	Strip along boundary	Managed to mature sycamore	None				Thinning		
				BLF	051-060	3%	Maturing broadleaf	Managed as mature BLF	None				Thinning		

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail	2nd cycle management	2nd cycle coupe detail
070	Ainsdale Sand Dunes NNR	2.22	BLF wood	Bare	Bare	15%	Grass, with scrub developing	Retained as part of mosaic	Cleaning		Cleaning	
				Syc,Bi,Ash	061-070	38%	Well developed mixed BLF	Managed as open BLF	None		Thinning	
				Syc,Pop,Be	051-060	8%	Mixed BLF	Managed as mixed BLF	None		Thinning	
				Pop,Bi	051-060	12%	Well developed mixed BLF	Managed as mixed BLF	None		Thinning	
				Bi,Elm	041-050	27%	Bi, with elm regeneration	Maintain by coppicing	Coppicing		Coppicing	
073	Ainsdale Sand Dunes NNR	0.56	Pine wood	CP	101-110	83%	Frontal pinewood	Review pending consultation	Review		Review	
				Pop	051-060	17%	Frontal scrub	Review pending consultation	Review		Review	
074	Ainsdale Sand Dunes NNR	1.03	Mixed scrub	Ald	051-060	17%	Mature alder copse	Review pending consultation	Review		Review	
				Bi,Pop,CrWw	051-060	58%	Mosaic of Bi,Will,Pop, grass	Review pending consultation	Review		Review	
				Bth scrub	041-050	25%	Mature buckthorn scrub	Review pending consultation	Review		Review	
075	Ainsdale Sand Dunes NNR	5.52	Pine wood	CP	081-090	58%	More protected CP	Review pending consultation	Review		Review	
				CP	081-090	37%	Frontal, reasonable condition	Review pending consultation	Review		Review	
				Bi,Pop,Ww	041-050	4%	BLF regeneration	Review pending consultation	Review		Review	
076a	Ainsdale Sand Dunes NNR	6.84	Mixed scrub	MB	041-050	58%	Birch / alder woodland	Thin to favour alder canopy	Thinning		Thinning	
				CP,Bi	031-040	23%	CP regen in old firebreak	Thin and restore slack	Fell for firebreak		Cleaning	
				CP,Bi	021-030	19%	CP regen in old firebreak	Thin to favour pine	Fell for firebreak		Cleaning	
076b	Ainsdale Sand Dunes NNR	3.47	Mixed scrub	CP	081-090	5%	Small area of mature CP	Thinned to mature spacing	None		Thinning	
				CP,Bi	031-040	81%	CP and Bi regen	Maintained as open slack	Fell for firebreak		Cleaning	
077	Ainsdale Sand Dunes NNR	3.41	Pine wood	CP	071-080	100%	Mature CP, MP - windblow	Review pending consultation	Fell for firebreak		Cleaning	
079	Ainsdale Sand Dunes NNR	0.93	BLF wood	Bi,Pop,Ww	041-050	100%	Maturing Bi, Ww, Pop, elder	Review pending consultation	Review		Review	
081a	Ainsdale Sand Dunes NNR	2.53	Pine wood	Bare	Bare	7%	Grass sward, old slacks	Review pending consultation	Review		Review	
				CP	081-090	74%	Older, but exposed CP	Review pending consultation	Review		Review	
				Bi,Pop,Ww	051-060	19%	Maturing mixed BLF	Review pending consultation	Review		Review	
081b	Ainsdale Sand Dunes NNR	4.28	Pine wood	Bare	Bare	4%	Grass sward within LP	Review pending consultation	Review		Review	
				CP	051-060	30%	Fordune CP, poor form	Review pending consultation	Review		Review	
				LP	051-060	53%	Bad form LP	Review pending consultation	Review		Review	
				Bi,Pop	041-050	13%	Bi,Pop regen	Review pending consultation	Review		Review	
081c	Ainsdale Sand Dunes NNR	3.65	Pine wood	Bare	Bare	8%	Slack 14 & forward dune	Review pending consultation	Review		Review	
				MP	091-100	4%	Stunted MP	Review pending consultation	Review		Review	
				CP	061-070	12%	Fordune CP, poor form	Review pending consultation	Review		Review	
				LP	051-060	72%	Bad form LP	Review pending consultation	Review		Review	
				Bi,Pop	041-050	3%	Developing scrub	Review pending consultation	Review		Review	
<b>Poor Servants of the Mother of God</b>												
098a	St Josephs Convent	0.8	Poplar scrub	Syc,WP,Ww	071-080	100%	Scrubby poplar wood	Manage as Blf wood	Cleaning		Thinning	
098b	St Josephs Convent	0.5	Pine wood	CP	081-090	100%	Deteriorating frontal SP	Underplant to revitalise	Underplanting		Cleaning	
098c	St Josephs Convent	0.1	Pine wood	SP,CP	011-020	100%	New planting, significant gap	Replant and manage	Underplanting		Cleaning	
<b>Private, Golf Cottage</b>												
083	Golf Cottage	0.35	Mixed wood	Bi	041-050	100%	Maturing mixed wood	Manage to maturity	Underplanting		Thinning	



Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail	2nd cycle management	2nd cycle coupe detail
<b>Private, Lark Hill Farm</b>												
099c	Lark Hill Farm	0.17	Mixed wood	SP,CP WP	101-110 071-080	76% 24%	NP CP,SP with few mature S Over-mature WP along road	Manage to maturity Maintain	Cleaning None			Thinning Review
099d	Lark Hill Farm	1.51	Pine wood	SP Be Syc CP,SP	101-110 051-060 041-050 001-010	58% 7% 6% 29%	Reasonable SP wood Maturing beech Maturing syc regeneration CP,SP mix	Partly restructured Retained as feature Reduced to minimal understorey Managed to maturity	Restocking felling None Selection felling Cleaning	1 0.30 0.30	Cleaning None Cleaning Thinning	
<b>RFCA</b>												
022a	Altcar Rifle Range	0.78	Mixed wood	CP,SP,MB	001-010	100%	New planting	Manage to first thinning	Weeding			None
022b	Altcar Rifle Range	0.31	Mixed wood	CP,Bi,Oak,WI	001-010	100%	New planting	Manage as screen	None			Thinning
022c	Altcar Rifle Range	0.3	Mixed wood	CP,SP,Bi,Wlw	001-010	100%	New planting	Manage to first thinning	Weeding			Thinning
022d	Altcar Rifle Range	0.16	Mixed wood	MB	001-010	100%	New planting	Manage to first thinning	Weeding			None
022e	Altcar Rifle Range	0.49	Mixed wood	CP,SP,MB	001-010	100%	New planting	Manage to first thinning	Weeding			Thinning
022f	Altcar Rifle Range	0.35	Mixed wood	CP,SP,MB	001-010	100%	New planting	Manage to first thin	Weeding			Thinning
023a	Altcar Rifle Range	0.27	BLF wood	Syc	081-090	100%	Open sycamore wood	Manage to maturity	Natural regen			Thinning
023b	Altcar Rifle Range	0.52	Mixed wood	WP,Syc CP	041-050 041-050	70% 30%	Unmanaged scrub Plantation	Thinned for canopy Manage to maturity	Thinning Thinning			None None
023c	Altcar Rifle Range	0.34	Mixed wood	WP,Syc CP	081-090 081-090	30% 70%	Maturing Blf Maturing pine stand	Managed to maturity Thin to final crop	Thinning Thinning			None None
023d	Altcar Rifle Range	0.2	BLF wood	WP	051-060	100%	Scrubby WP	Retain as small copse	None			None
023e	Altcar Rifle Range	0.93	BLF wood	Syc	081-090	100%	Mixed maturing Blf wood	Manage as mature wood	None			Coppicing
023f	Altcar Rifle Range	0.23	Mixed wood	Syc SP	051-060 051-060	70% 30%	Maturing Blf Maturing SP within Blf mix	Manage to mature canopy Manage as maturing mix wood	Coppicing None			Thinning Thinning
023g	Altcar Rifle Range	0.26	Poplar scrub	WP	041-050	100%	Scub woodland	Maintain as scrub woodland	None			None
023h	Altcar Rifle Range	0.4	Mixed wood	WP,CP,LP	041-050	100%	Mixed wood	Thinned to favour CP	Thinning			None
023i	Altcar Rifle Range	0.28	BLF wood	Wlw,Bi	041-050	100%	BLF scrub wood	Retain as screen	None			None
023j	Altcar Rifle Range	0.07	BLF wood	Ald,Bi	041-050	100%	Dense copse	Manage to maturity	Thinning			None
023k	Altcar Rifle Range	0.06	Mixed wood	Ald,Bi,SP	041-050	100%	Dense copse	Manage to maturity	Thinning			None
023l	Altcar Rifle Range	0.04	BLF wood	Ald,Bi, elm	041-050	100%	Dense copse	Manage to maturity	Thinning			None
023m	Altcar Rifle Range	0.18	Mixed wood	Syc,WP CP	081-090 081-090	50% 50%	Maturing Mixed Blf Maturing pine block	Managed to final canopy Thinned to final spacing	Thinning Thinning			None None
023n	Altcar Rifle Range	0.06	Pine wood	CP,LP	041-050	100%	Maturing pine planting	manage to maturity	None			Thinning
023o	Altcar Rifle Range	0.1	Mixed wood	CP,MB	041-050	100%	Maturig woodland	Manage to maturity	Thinning			None
023p	Altcar Rifle Range	0.22	Mixed wood	WP CP,LP	041-050 041-050	30% 70%	Developing WP scrub Maturing plantation	Matained as screen Thinned to maturity	None None			None Thinning
023q	Altcar Rifle Range	0.25	BLF wood	Ald,Wlw	041-050	100%	Blf screen	Manaage as screen	None			None
024a	Altcar Rifle Range	1.98	Pine wood	CP	021-030	100%	CP plantation, good cover	Manage to maturity	None			Thinning
024b	Altcar Rifle Range	1.4	Pine wood	CP	021-030	100%	CP plantation, good cover	Managed to maturity	None			Thinning

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail	2nd cycle management	2nd cycle coupe detail
024c	Altcar Rifle Range	1.46	Pine wood	CP, JL,MB	021-030	55%	CP plantation, good cover	Thinned to maturity	None		Thinning	
024d	Altcar Rifle Range	1.28	Pine wood	CP,MB	011-020	100%	Mixed CP/BLF	Thinned towards maturity	Thinning		None	
024e	Altcar Rifle Range	1.98	Pine wood	CP,JL,MB	011-020	100%	Beaten up with BLF mix, gap	Thinned to maturity	Thinning		None	
024f	Altcar Rifle Range	1.26	Pine wood	CP,LP	041-050	100%	Maturing pine plantation	Thinned to maturity	None		Thinning	
024g	Altcar Rifle Range	1.78	Mixed wood	CP, MB	021-030	100%	Maturing mixed plantation	Thinned to maturity	Thinning		None	
024h	Altcar Rifle Range	1.08	BLF wood	MB	021-030	100%	Maturing Blf woodland	Thin to maturity	Thinning		Thinning	
024i	Altcar Rifle Range	0.88	Mixed wood	CP,JL,MB	021-030	100%	Maturing mixed plantation	Thinned to maturity	Thinning		None	
024j	Altcar Rifle Range	0.57	Pine wood	CP,JL, MB	021-030	100%	Maturing pine wood	Thinned to maturity	None		Thinning	
024k	Altcar Rifle Range	0.8	Pine wood	CP,JL,MB	021-030	100%	Maturing pine plantation	Thinned to maturity	None		Thinning	
024l	Altcar Rifle Range	0.77	Pine wood	CP,JL,MB	021-030	100%	Maturing pine plantation	Thinned to maturity	None		Thinning	
024m	Altcar Rifle Range	0.34	Pine wood	CP,JL,MB	021-030	100%	Maturing pine plantation	Thinned to maturity	None		Thinning	
024n	Altcar Rifle Range	2.23	Pine wood	CP,JL,MB	021-030	100%	Maturing pine plantation	Thinned to maturity	None		Thinning	
024q	Altcar Rifle Range	0.11	Mixed wood	CP,Blf	011-020	100%	CP, BLF mix in triangle	Thinned to maturity	None		Thinning	
024s	Altcar Rifle Range	0.4	Pine wood	CP,JL,MB	021-030	100%	Maturing pine plantation	Thinned to maturity	Thinning		None	
024t	Altcar Rifle Range	0.21	Mixed wood	CP,JL,MB	011-020	100%	Maturing plantation	Thinned to maturity	Thinning		None	
024u	Altcar Rifle Range	0.7	Pine wood	CP,WP	031-040	100%	Pine screen	Thinned to maturity	Thinning		None	
024v	Altcar Rifle Range	0.05	Pine wood	CP	011-020	100%	CP planting, maturing	Thinned to maturity	Thinning		None	
024w	Altcar Rifle Range	0.21	Pine wood	CP,Blf	011-020	100%	Screen planting	Managed to maturity	None		Thinning	
024x	Altcar Rifle Range	0.1	Pine wood	CP,Blf	011-020	100%	Screen planting	Managed to maturity	Thinning		None	
024y	Altcar Rifle Range	0.22	Pine wood	CP,JL	011-020	100%	Maturing pine plantation	Thinned to maturity	None		Thinning	
024z	Altcar Rifle Range	0.45	Pine wood	CP	011-020	100%	Maturing pine plantation	Thinned to maturity	None		Thinning	
<b>Royal Birkdale Golf Club</b>												
001c	Birkdale Hills	0.27	Poplar scrub	WP	021-030	100%	Boundary screen	Maintain as screen	Coppicing		Thinning	
001e	Birkdale Hills	0.19	Mixed wood	Syc,CP WP	041-050 041-050	17% 83%	Mixed, CP and Bi Poplar scrub	Maintain as screen Reduce area of WP	Weeding Selection felling		Thinning Selection felling	
001f	Birkdale Hills	1.47	Mixed wood	mixed BLF CP Wlw	051-060 041-050 031-040	72% 15% 13%	Syc,WP,Bi CP copse Willow scrub	Maintain as mixed BLF Manage to maturity Coppice to maintain health	Selection felling Thinning Coppicing		Selection felling None Coppicing	
001g	Birkdale Hills	0.35	Pine wood	CP	031-040	100%	Boundary screen	Maintain as fence screen	Selection felling		Thinning	
001h	Birkdale Hills	0.13	Poplar scrub	WP,CP	041-050	100%	CP,Hth	Maintain as feature	Thinning		None	
001i	Birkdale Hills	0.16	Pine wood	CP	041-050	100%	Mostly CP, screen to road	manage to maturity	Thinning		Thinning	
001k	Birkdale Hills	0.39	BLF wood	Bi WP	031-040 031-040	80% 20%	Developing dune woodland WP scrub	Manage as mixed BLF wood Allow to develop to mixed BLF	None None		Thinning Restocking felling	1 0.10 0.10 1 0.10 0.10
001l	Birkdale Hills	0.61	BLF wood	Syc,Wlw,Hth Bi	031-040 031-040	30% 70%	Mixed BLF dune woodland Developing dune woodland	Maintain as dune wood feature Maintain as dune wood feature	None None		Thinning Thinning	
<b>SMBC, Coast &amp; Countryside (n)</b>												
092a	Birkdale Hills	0.4	Poplar scrub	Syc,Pop,Wlw	051-060	100%	Roadside scrub	Retained as scrub blocks	Cleaning		Cleaning	

Comp No.	Ownership Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail	2nd cycle management	2nd cycle coupe detail
092b	Birkdale Hills	0.41	Poplar scrub	Syc,Pop,Wlw	051-060	100%	Roadside scrub	Retained as scrub block	Cleaning		Review	
092c	Birkdale Hills	0.2	Poplar scrub	Wlw	031-040	100%	Small block of Wlw scrub	Retain as block within LNR	None		Review	
092d	Birkdale Hills	1.69	Mixed scrub	Bi,Wlw	041-050	100%	Developing mixed scrub	Managed as dune woodland	Cleaning		Cleaning	
092e	Birkdale Hills	1.29	Mixed scrub	Bi,Hth,Bth	041-050	100%	Area of Bi scrub	Managed as dune woodland	Cleaning		Selection felling	
092g	Birkdale Hills	1.82	Mixed scrub	WP,Syc,Bi	031-040	100%	Maturing mixed scrub	Managed as dune woodland	Cleaning		Selection felling	
092h	Birkdale Hills	0.52	Mixed scrub	Bi,Wlw,Bth	031-040	100%	Maturing mixed scrub	Managed as dune woodland	Cleaning		Cleaning	
092i	Birkdale Hills	1.38	Mixed scrub	Bi,Syc,Hth	031-040	100%	Maturing mixed scrub	Managed as dune woodland	Cleaning		Selection felling	
092j	Birkdale Hills	1.93	Mixed scrub	Bi,Wlw	031-040	100%	Maturing mixed scrub	Managed as dune woodland	Cleaning		Selection felling	
092l	Birkdale Hills	3.22	Mixed scrub	Bi,Oak,Bth	031-040	100%	Maturing mixed scrub	Managed as dune woodland	Selection felling		Cleaning	
092m	Birkdale Hills	0.79	Mixed scrub	Bi,Bth	031-040	100%	Maturing mixed scrub	Managed as dune woodland	None		Cleaning	
092n	Birkdale Hills	0.76	Mixed scrub	Bi,Wlw	041-050	100%	Maturing mixed scrub	Managed as dune woodland	Cleaning		Cleaning	
092o	Birkdale Hills	1.67	BLF wood	Bi,Wlw,Ald	041-050	100%	Maturing mixed scrub	Managed as dune woodland	Cleaning		Selection felling	
092p	Birkdale Hills	0.12	BLF wood	Bi,Bth	041-050	100%	Maturing mixed scrub	Managed as dune woodland	Cleaning		Cleaning	
093a	Birkdale Hills	0.44	BLF wood	Syc,Ald	041-050	100%	Maturing sycamore wood	Manage to maturity	Cleaning		Thinning	
093b	Birkdale Hills	0.36	BLF wood	Ald,WP,Syc	081-090	100%	Maturing mixed Blf	Retained as screen	None		None	
093c	Birkdale Hills	1.59	Mixed wood	CP,Syc	041-050	100%	Maturing mixed woodland	Managed as maturing feature	Cleaning		Thinning	
093d	Birkdale Hills	1	BLF wood	Ald,WP,CP,Sy	041-050	100%	Maturing mixed woodland	Manage as maturing feature	Cleaning		Cleaning	
093e	Birkdale Hills	0.49	BLF wood	WP,Bi,Wlw,Sy	031-040	100%	Mixed woodland on wet slack	Manage as wet woodland	Cleaning		Selection felling	
094a	Birkdale Hills	0.47	Poplar scrub	WP,Syc	021-030	100%	Poplar scrub	Maintain as screen	Cleaning		Cleaning	
094c	Birkdale Hills	0.47	BLF wood	Pop,Wlw	061-070	100%	Very poor condition	Retain as screen	Cleaning		Cleaning	
095a	Birkdale Hills	0.53	Mixed wood	CP,SP,WP,Sy	071-080	100%	New planting with small Blf bl	Manage to maturity	Cleaning		Cleaning	
095b	Birkdale Hills	1.06	Poplar scrub	WP,Wlw	051-060	100%	WP,Syc scrub	Manage as screen	Cleaning		Cleaning	
095c	Birkdale Hills	0.44	Mixed wood	CP,WP	081-090	100%	Developing screen on road	Manage as screen	Cleaning		Cleaning	
<b>SMBC, Coast &amp; Countryside (s)</b>												
012a	Lifeboat Road	0.44	Pine wood	CP	111-120	100%	Old, frontal pinewood	Manage as landscape feature	Thinning		Review	
012b	Lifeboat Road	1.38	Mixed wood	WP,Syc,Bi	021-030	34%	Maturing MB scrub	Manage as Blf	Thinning		Cleaning	
				CP,SP	021-030	66%	Maturing CP plantation	Manage towards maturity	Thinning		Cleaning	
012c	Lifeboat Road	0.44	Pine wood	WP	021-030	16%	Poplar scrub	Increase species mix	Cleaning		Thinning	
				CP	021-030	40%	Mature patch of CP	Manage as mature woodland	None		Thinning	
				CP	021-030	44%	CP planting	Manage towards maturity	None		Thinning	
012g	Lifeboat Road	4.53	Pine wood	CP	111-120	80%	Mature, overstocked CP	Manage as mature woodland	Thinning		None	
				Be	071-080	2%	Maturing beech	Manage individual trees	Review		Review	
				CP	021-030	8%	CP plantation (012f)	Manage towards maturity	Thinning		None	
				CP	021-030	6%	CP plantation (012e)	Manage towards maturity	Thinning		None	
				CP	021-030	4%	CP plantation (012d)	Manage towards maturity	Thinning		None	
013a	Lifeboat Road	1.19	Pine wood	Pop,Wlw	021-030	35%	Pop patches in plantation	Reduce poplar in canopy over time	Cleaning		Thinning	
				SP,CP	021-030	65%	CP,SP plantation	Manage to maturity	Cleaning		Thinning	
013b	Lifeboat Road	1.86	Pine wood	CP	101-110	100%	Maturing CP woodland	Manage to mature spacing	None		Restocking felling	1 0.20 0.20

Comp No.	Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail			2nd cycle management	2nd cycle coupe detail		
018a	Ravenmeols	0.47	Poplar scrub	BIP,Hth,Wlw WP	051-060 051-060	20% 80%	Mixed age frontal scrub Frontal scrub	Retain as frontal woodland Retain as frontal woodland	Cleaning Cleaning				Cleaning Cleaning			
018b	Ravenmeols	0.79	Poplar scrub	WP	051-060	100%	Frontal scrub	Retain as frontal woodland	Cleaning				Cleaning			
018c	Ravenmeols	1.09	Poplar scrub	WP,Syc,Wlw	021-030	100%	Frontal scrub, protects CP w	Retain as frontal shelter wood	Selection felling				Selection felling			
018d	Ravenmeols	0.23	Poplar scrub	WP	031-040	100%	Frontal scrub, protects CP w	Retain as frontal woodland	Cleaning				Cleaning			
018e	Ravenmeols	0.15	Poplar scrub	WP	031-040	100%	Frontal scrub, protects CP w	Retain as frontal woodland	Cleaning				Cleaning			
018f	Ravenmeols	1.94	Mixed wood	SP,CP,MB	011-020	100%	Mixed planting	Manage to maturity	Underplanting				Cleaning			
018g	Ravenmeols	2.11	Mixed wood	SP,CP,MB	011-020	100%	Maturing plantation	Manage to maturity	Thinning				Thinning			
018h	Ravenmeols	0.48	BLF wood	Syc,WP	061-070	100%	Maturing Syc	Restructured	Reviewed				Cleaning			
018i	Ravenmeols	1.71	Mixed wood	CP,Syc	101-110	100%	Mixed wood, Syc and CP	Partly restructured	Selection felling				Cleaning			
018j	Ravenmeols	1.06	Mixed wood	CP,Syc	061-070	100%	Mixed wood, CP and Syc	Allow to develop into old age	None				None			
018l	Ravenmeols	3.82	Pine wood	Bare CP	Bare 101-110	23% 77%	Past wind blow etc Exposed mature pine	Some under planting Managed into old age	Underplanting Thinning				Cleaning Restocking felling	1	0.25	0.25
018m	Ravenmeols	0.75	Mixed wood	CP,Syc	101-110	100%	Mostly CP, some Syc to rear	Partly restructured	Cleaning				Thinning			
018n	Ravenmeols	1.53	Mixed wood	WP,Syc	031-040	100%	Mixed age and species	Partly restructured	Cleaning				Thinning			
018o	Ravenmeols	0.29	BLF wood	WP	051-060	100%	Frontal scrub developing into	Allow to develop	Selection felling				Selection felling			
100a	Lifeboat Road	0.67	Poplar scrub	WP,Ww,Bi,CP	021-030	100%	Old field boundary scrub	Manage as scrub	Cleaning				Cleaning			
100b	Lifeboat Road	0.27	Poplar scrub	WP,Ww,Bi	081-090	100%	Frontal scrub	Manage as scrub	Cleaning				Cleaning			
102a	Lifeboat Road	0.38	BLF wood	WP	051-060	100%	Large poplar trees	Partly restructured	Cleaning				Thinning			
102b	Lifeboat Road	0.43	Mixed wood	CP,SP,MB	001-010	100%	New planting	Managed to maturity	Cleaning				Thinning			
102c	Lifeboat Road	0.84	BLF wood	WP,Syc,SP	051-060	100%	Mixed scrub, ivy, some trees	Leave alone	None				None			
<b>SMBC, Landscape Services</b>																
087a	Southport Golf Links	0.34	BLF wood	Ww,Hth,Syc	031-040	100%	Scrub block, developing can	Canopy partly converted	Restocking felling	1	0.10	0.10	Cleaning			
087b	Southport Golf Links	0.57	BLF wood	Syc,WP,Hth	031-040	100%	Very open sycamore canopy	Canopy partly converted	Replanting				Thinning			
087c	Southport Golf Links	0.07	BLF wood	Wlw	031-040	100%	Willow scrub, fairway divider	Replanted with mixed sp	Replanting				Cleaning			
087d	Southport Golf Links	0.28	BLF wood	Syc,Wlw,Chy	041-050	100%	Screen, scrubby wood	Converted to mixed screen	Planting				Thinning			
087e	Southport Golf Links	0.18	BLF wood	WP,BP	051-060	100%	Screen, line of mature Pop	Converted to mixed screen	Planting				Thinning			
087f	Southport Golf Links	0.37	BLF wood	Syc,WP,Hth	051-060	100%	Screen, maturing trees	Part converted to mixed screen	Planting				Thinning			
087g	Southport Golf Links	0.07	BLF wood	Syc,WP	041-050	100%	Small block at end of car par	Maintained as Blf feature	None				Thinning			
087h	Southport Golf Links	0.12	BLF wood	Syc,Pvt,Hly	041-050	100%	Roadside screen, maturing	Maintained as screen	None				Thinning			
087i	Southport Golf Links	0.17	BLF wood	Ww,Syc,Pvt	011-030	100%	Weather screen, stunted	Maintained as screen	None				None			
087k	Southport Golf Links	0.36	BLF wood	Syc,WP,Wlw	041-050	100%	Weather screen, stunted	Maintained as screen	Planting				Cleaning			
087m	Southport Golf Links	0.26	BLF wood	Ww,WP	011-030	100%	Weather screen, stunted	Maintained as screen	None				None			
087n	Southport Golf Links	0.07	BLF wood	Ww,Syc	011-030	100%	Fairway feature, small block	Maintained as feature / screen	None				Restocking felling	1	0.03	0.03
087o	Southport Golf Links	0.06	BLF wood	Wlw	011-030	100%	Fairway feature, small block	Converted to mixed canopy	Restocking felling	1	0.03	0.03	Restocking felling	1	0.03	0.03
087p	Southport Golf Links	0.1	Mixed wood	SP,Bi	011-020	100%	Mixed woodland	Managed to maturity	Thinning				Cleaning			
087q	Southport Golf Links	0.16	BLF wood	Ww,Bi,SP	021-030	100%	Mixed scrub	Converted to mixed canopy	Restocking felling	1	0.03	0.03	Cleaning			
087r	Southport Golf Links	0.07	BLF wood	Wlw	021-030	100%	Mixed scrub	Converted to mixed canopy	Restocking felling	1	0.03	0.03	Restocking felling	1	0.01	0.01

Comp No.	Site name	Comp. area	Woodland type	Species	Age class	% cover	General condition	2023 management objective	1st cycle management	1st cycle coupe detail			2nd cycle management	2nd cycle coupe detail	
087s	Southport Golf Links	0.12	BLF wood	Wlw,Syc	021-030	100%	Mixed scrub	Converted to mixed canopy	Restocking felling	1	0.06	0.06	Coppicing		
<b>St Lukes Church</b>															
015	St Lukes Church Wood	0.46	BLF wood	Be	071-080	18%	Line of mature beech	Thinned and under planted	Planting				Selection felling		
				WP,Syc, Elm	051-060	82%	Mature trees, sycamore rege	Managed as mixed Blf	Planting				Coppicing		

### 3.4 Site Maps



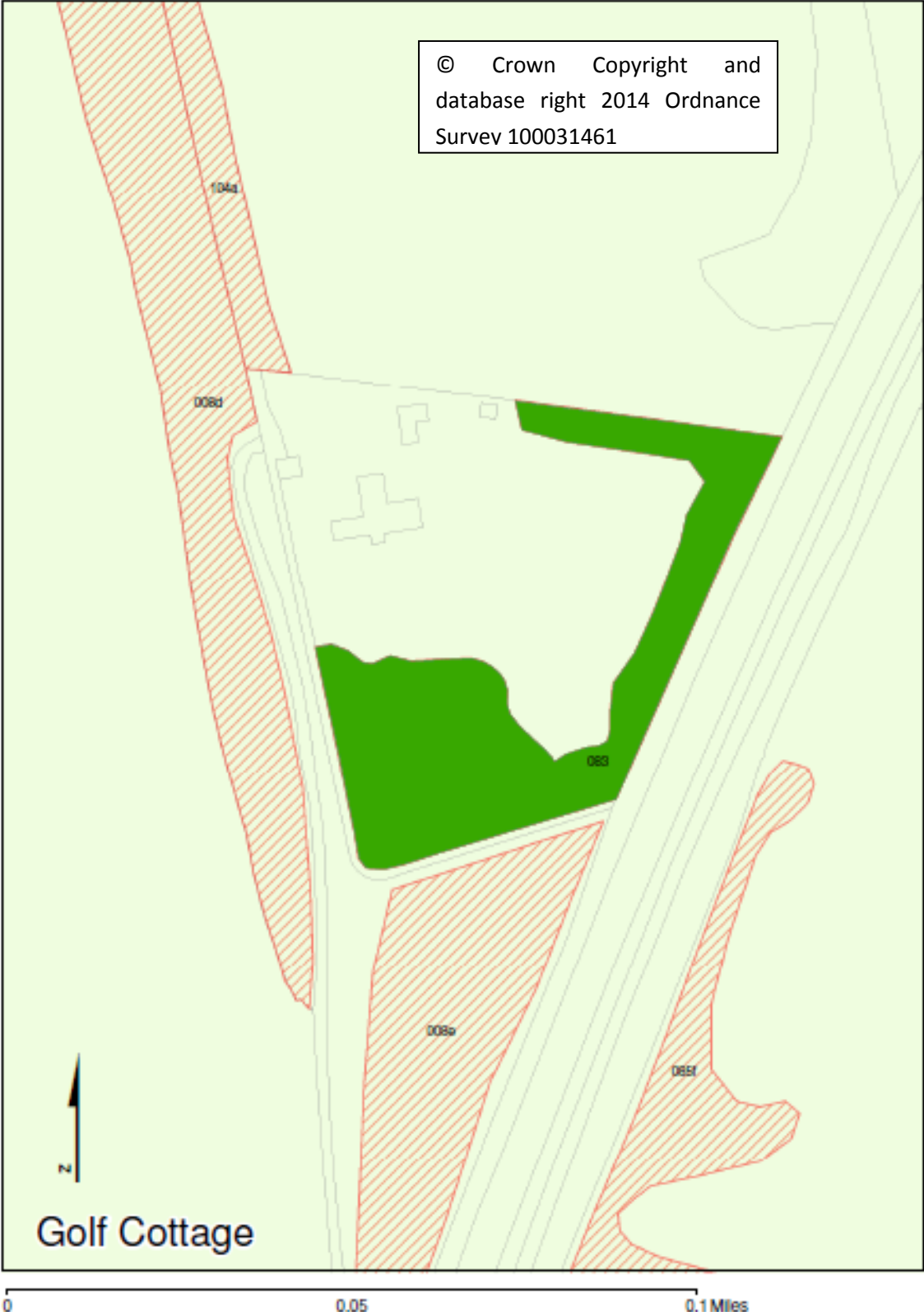
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Survey 100031461

Formby Golf Course, Ladies'

0 0.25 0.5 Miles



0 0.3 0.6 Miles

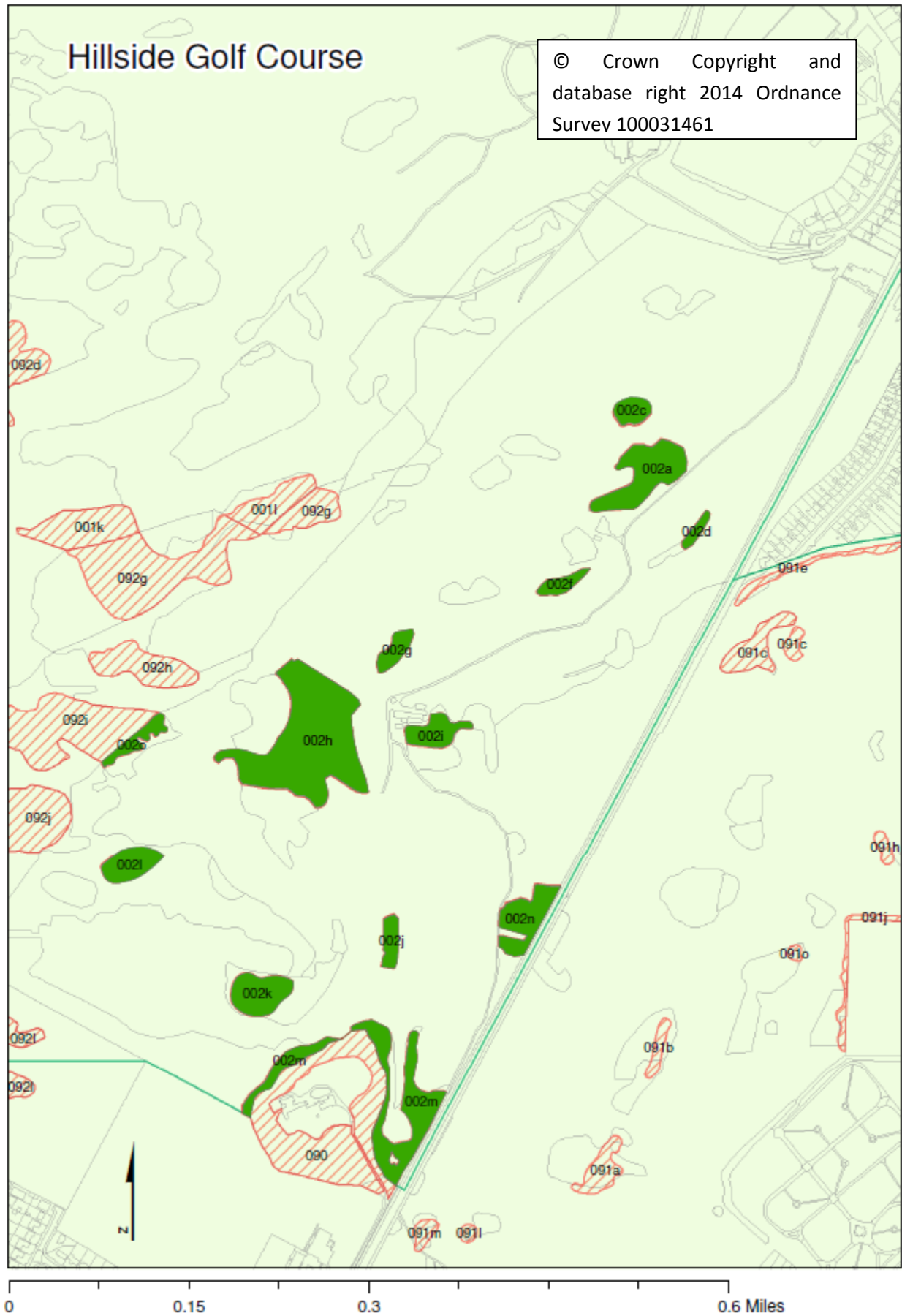




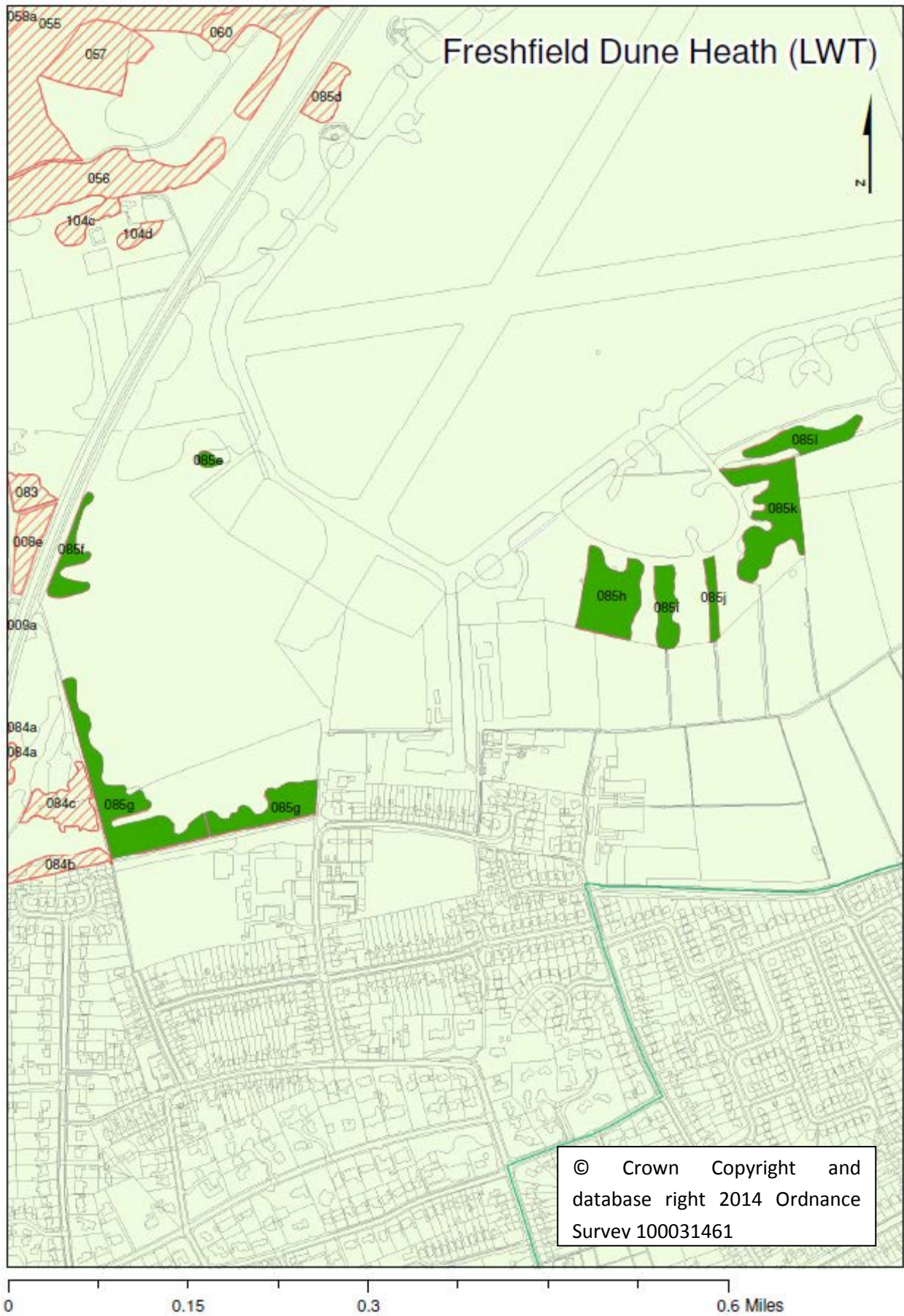


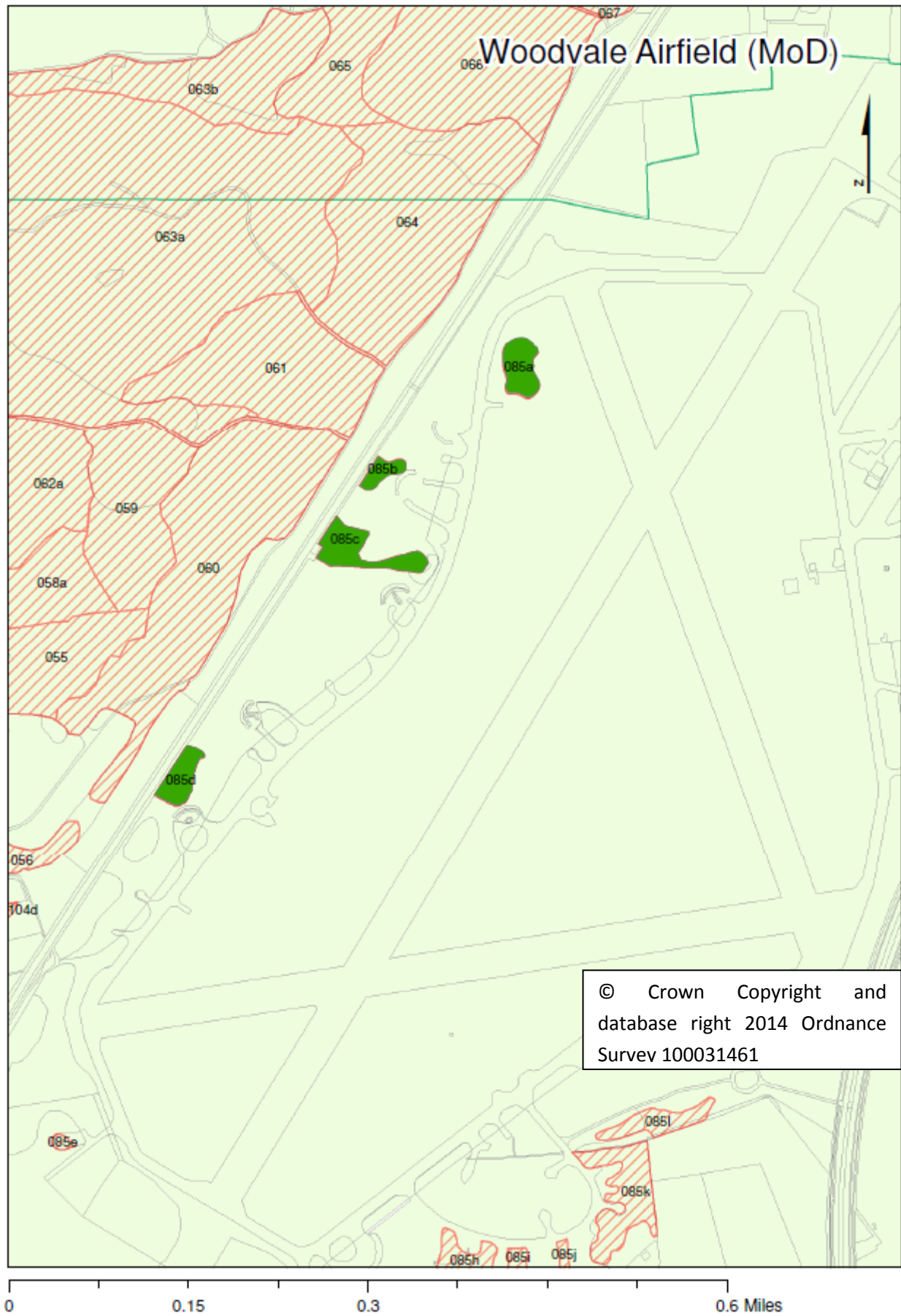
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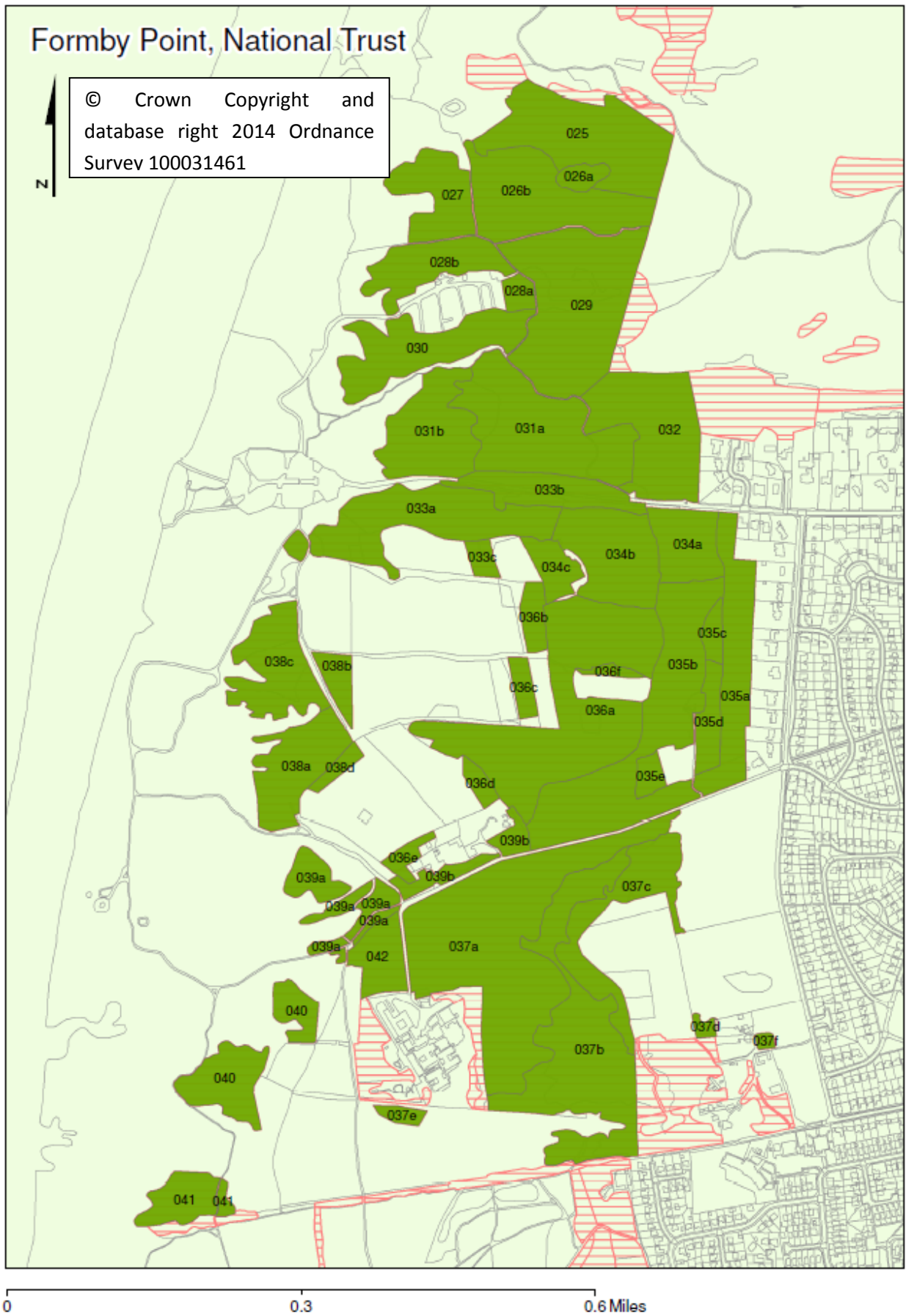
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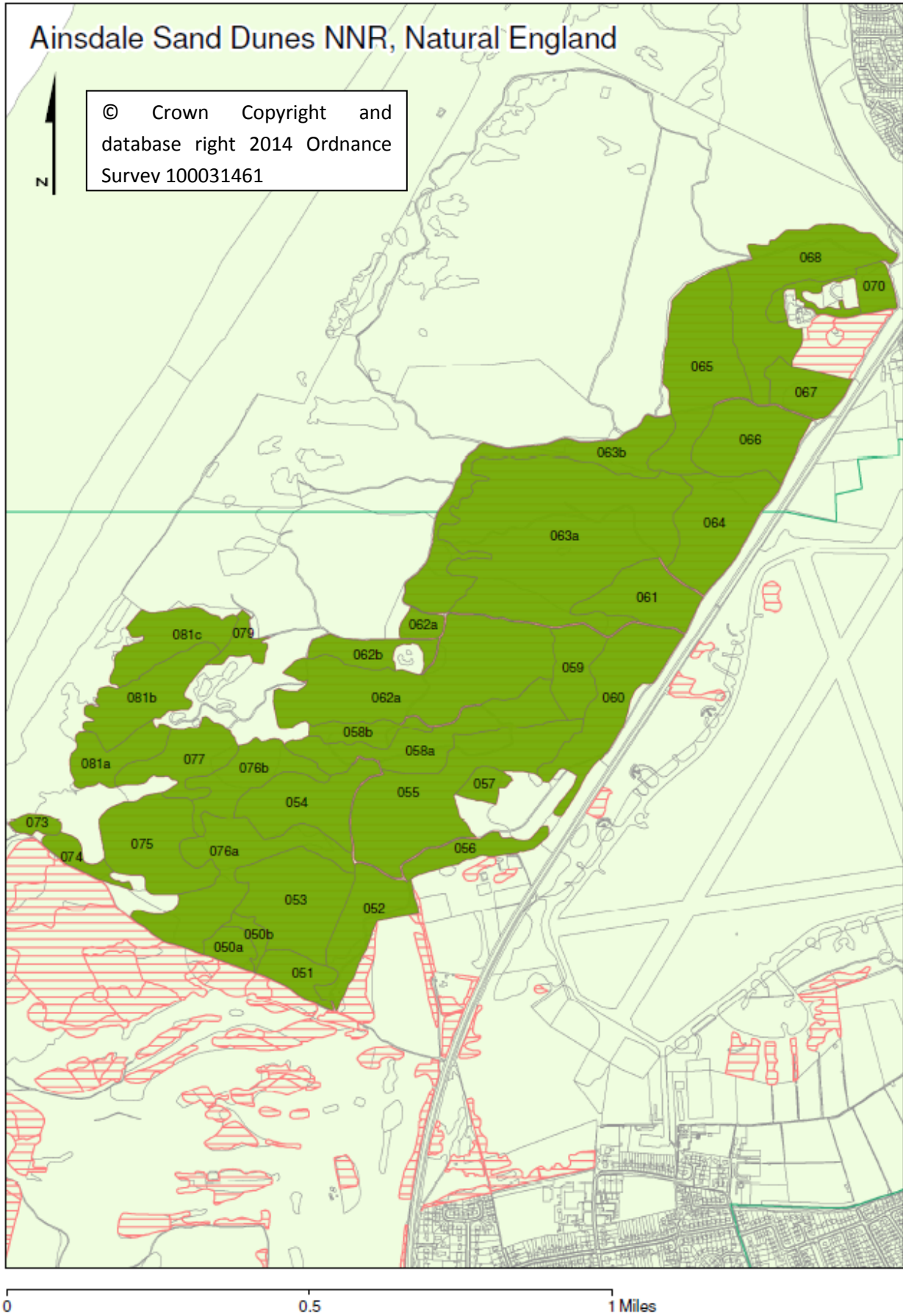


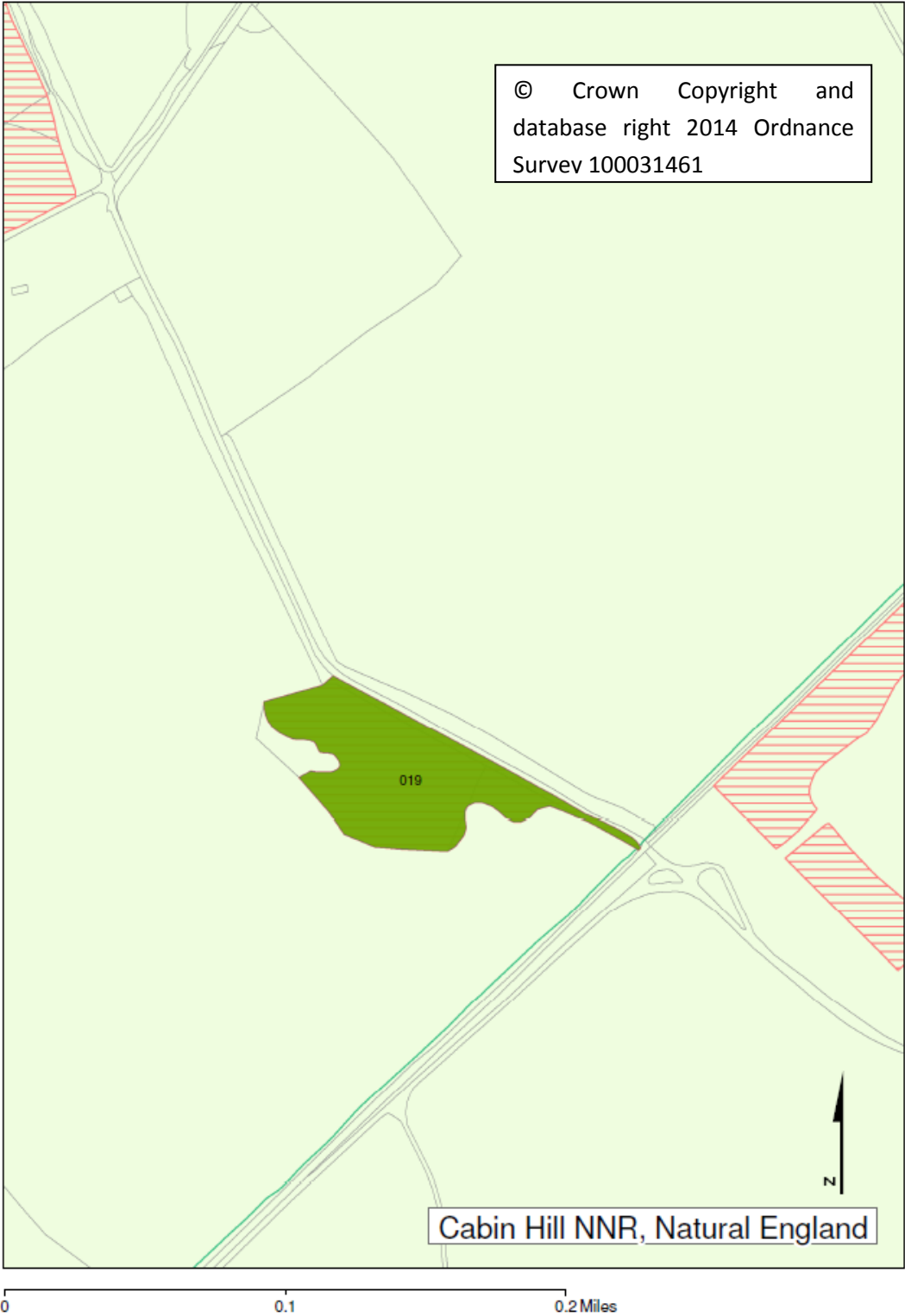








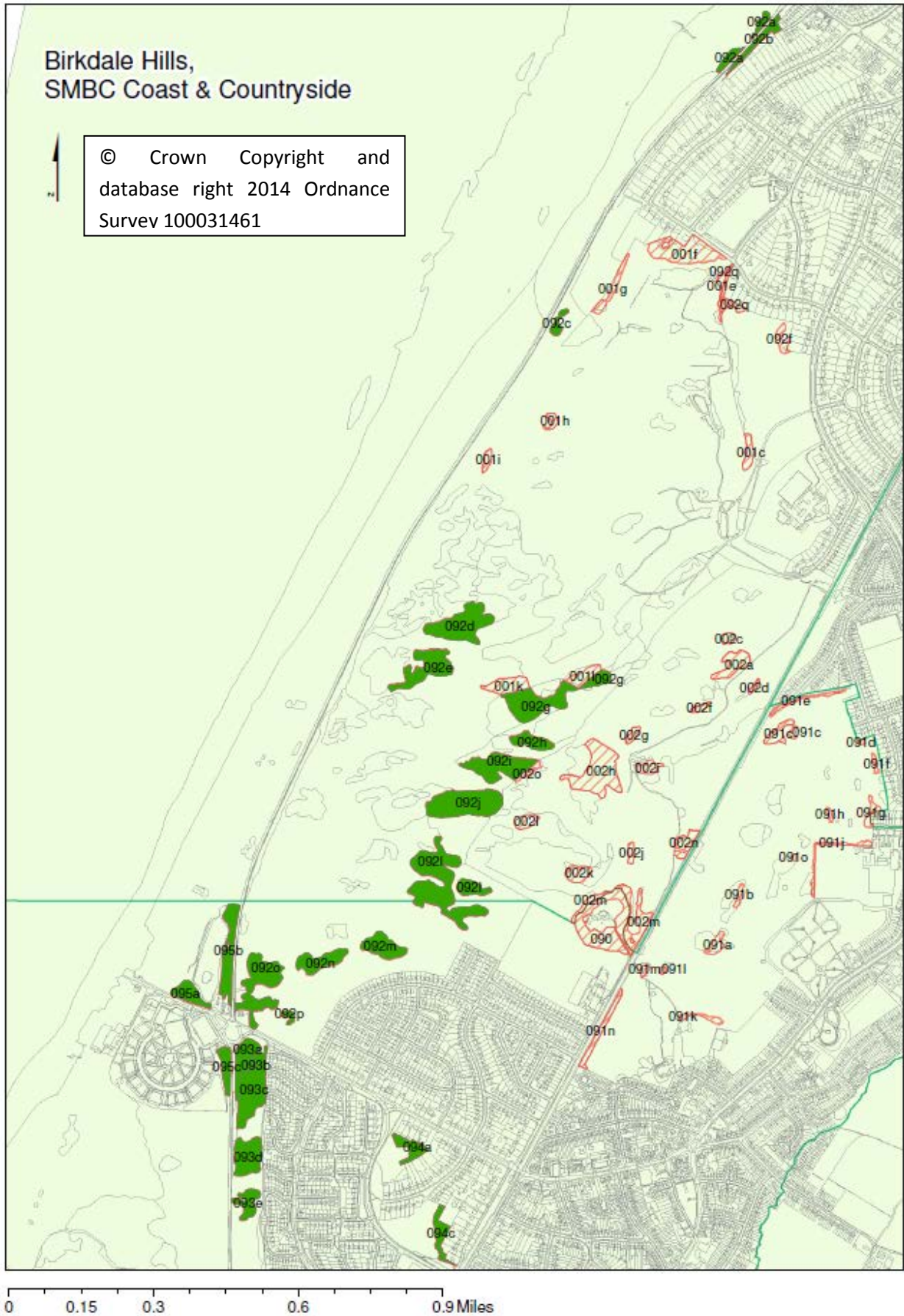


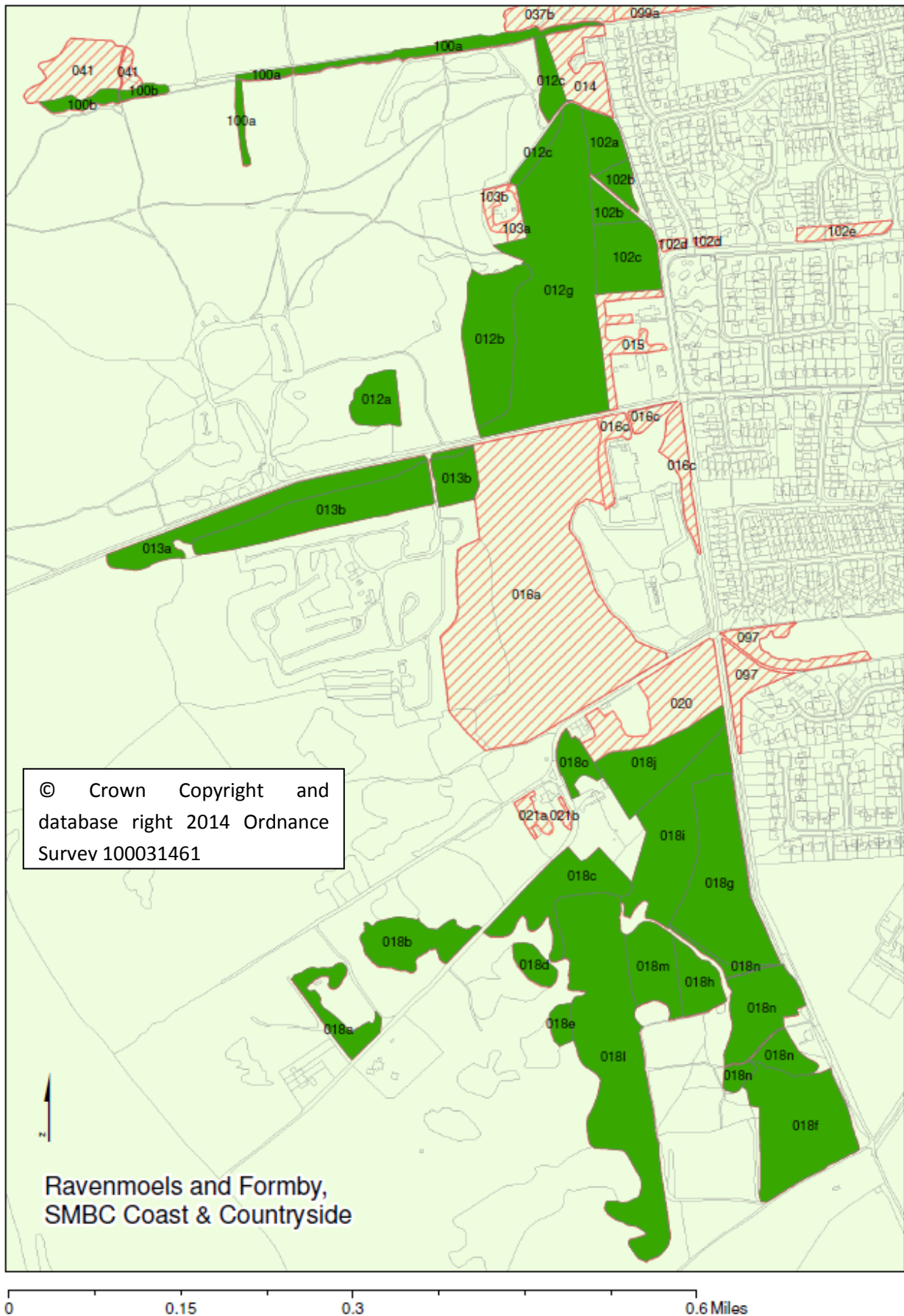


















## 4 Monitoring and Review

### 4.1 Woodland Owners' Task Group

The Woodland Owners' Task Group took responsibility for supporting, coordinating and monitoring the Sefton Coast Woodland Forest Plan. The Group met three times a year through the ten years of implementation in the first phase of the plan. Having moved into the second phase, the Group will continue to meet:

#### Role and Duties

The Woodland Owners' Task Group, a sub-group of the Nature Conservation Task Group, establishes the framework within which the Sefton Coast Woodland Working Plan can function:

to support the implementation and facilitate monitoring of the Sefton Coast Working Plan.

#### The partnership within the group is based on:

- Recognition and acknowledgement of a shared common purpose;
- A spirit of openness and co-operation in the pursuit of the agreed objectives;
- An ethos of mutual respect between all members of the partnership.

#### The purposes of the Group are to:

- Ensure all stakeholders in the Sefton Coast Woodlands Working Plan are involved in the implementation and review of the project;
- Provide a forum for discussion on the performance of Sefton Coast Woodlands Working Plan;
- Provide a forum for deciding on future funding bids and opportunities to assist in implementing the plan;
- Provide a 'transparent' view of the working of Sefton Coast woodlands management plan;
- Propose beneficial alterations to Sefton Coast Woodlands Working Plan objectives when needed;
- Propose beneficial alterations on the implementation of Sefton Coast Woodlands Working Plan that could be consulted on (see tolerance table below).

#### Terms of reference:

The terms of reference for the Group are very specific to the implementation of Sefton Coast Woodlands Working Plan:

To act as a forum for all to be involved in the development and delivery of Sefton Coast Woodlands Working Plan.



## Membership of the Partnership Group

Membership of the Group is open to all organisations and individuals involved in the Sefton Coast Woodlands Working Plan implementation. Participants in the group will subscribe to the vision and objectives of the Sefton Coast Woodlands Working Plan and to the statements given above.

Members may include *inter alia*:

- All owners and managers of woodland included in the Sefton Coast Woodlands Working Plan
- The Mersey Forest
- Forestry Commission
- Natural England
- Lancashire Wildlife Trust
- Other organisations by invitation

## Administration

The Group will meet at least twice a year to ensure that the monitoring and review cycle is completed, but in general will meet up to three times in a year to support implementation and discuss issues that arise through the working year.

Administrative support for the group will be provided by means of an unofficial secretariat which is currently offered by The Mersey Forest Team as part of their commitment to delivering The Mersey Forest Plan in Sefton.

### 4.1.2 TOLERANCE TABLES

An important tool in the monitoring of the Plan will be the Tolerance Table which is based on the original Forestry Commission Forest Plan table. This has not been changed since its use in the first phase of the Plan as, although it is no longer a requirement of the management agreement, it is in fact a good structure to enable the Task Group support and encourage landowners and managers to work flexibly and accountably within the partnership:

**Table 9, Tolerance Table**

	Adjustment to felling coupe area	Timing of restocking	Change to species	Windthrow clearance	Timing of thinning	Timing of coppicing, cleaning
<b>No approval required</b>	<0.1 ha per coupe, or <1.0 ha total for property – whichever is less	Up to 1 planting season after felling or scheduled new planting	Changes within approved Plan species group (e.g. CP to SP) of <10% composition	< 0.5 ha	< 1 financial year	< 1 financial year
<b>Inform Task Group in regular meetings</b>	0.1 – 0.2 ha per coupe or 1.0 – 2.0 ha total for property – whichever is less	1 – 2 planting seasons after felling or scheduled new planting	Changes within approved Plan species group (e.g. CP to SP) of 10–20%	0.5 – 2.0 ha	1 – 2 financial years	1 – 2 financial years

	Adjustment to felling coupe area	Timing of restocking	Change to species	Windthrow clearance	Timing of thinning	Timing of coppicing, cleaning
			composition			
<b>Approval by exchange of letters &amp; maps</b>	0.2 – 0.25 ha per coupe or 2.0 – 2.5 ha total for property – whichever is less	2 – 4 planting seasons after felling or scheduled new planting	Changes within approved Plan species group (e.g. CP to SP) of >20% composition	2.0 – 5.0 ha	2 – 4 financial years	2 – 4 financial years
<b>Approval by formal plan amendment</b>	>0.25 ha per coupe or >2.5 ha total for property – whichever is less	More than 4 planting seasons after felling or scheduled new planting	Changes between approved Plan species group (e.g. CP to alder)	> 5.0 ha	> 4 financial years	> 4 financial years

It should be noted that routine health and safety and other legal obligations for felling, clearance and cleaning are not covered by this table.

## 4.2 Cycle of Monitoring and Review

### 4.2.1 INTRODUCTION

Although monitoring is usually given some attention in a plan, it is, in reality, often relegated to one of those sections of the plan never referred to—it is seen as being ‘necessary’, but not *that* important. However, it is essential to making the plan a ‘management plan’, rather than leaving it merely as an ‘activity schedule’, for without an effective monitoring system the objectives remain ‘inactive’.

There are a number of basic requirements for successful monitoring:

- There must be a baseline;
- There should be measurable indicators for each objective;
- There should be a quantifiable target;
- There should be someone responsible for the indicator;
- There should be somewhere to store the accumulated information.

The beauty of the objective hierarchy is that as soon as the objectives are in place, it is possible to pick them up in the monitoring system by adding monitoring columns to the objectives table (see below 4.1.1).

The issue is then how often monitoring and review is carried out. The more often that it is undertaken, the more accurate a picture is obtained of progress and emerging issues, however if it is carried out too often it becomes burdensome. As indicated, the Woodland Owners’ Task Group is the body to take responsibility for monitoring and review, meeting at least twice a year to collect and collate information.

#### 4.2.2 ANNUAL MONITORING AND REVIEW

The Mersey Forest will provide each member of the Task Group with the annual targets for the coming year derived from the database at the beginning of the year.

Any deviations from the proposed annual programme will then be reported to the Task Group and exceptions noted according to the requirements of the Tolerance Table.

Each landowner and partner will then collect and collate the information relating to their own property / management responsibility at the end of each year. This is fed back to the Task Group and collated by the Secretariat and reported back to the Group as an annual progress statement. Information is collected in the following format:

OWNERSHIP:.....

Date compiled:.....

	AREA	Compartments	Comments
Thinning			
Coupe felling			
Planting			
Natural regen			
Coppicing			
Cleaning			
Selective felling			
H&S work			
Other habitat			
Publicity material			
Info boards etc			

#### 4.2.3 FIVE-YEAR MONITORING AND REVIEW

On a five-year basis the Group will collect and collate the annual reports made to the Task Group, together with any additional relevant information (from research, surveys and the monitoring systems).

The report will be used by the Task Group to assess progress towards the short term objectives. Exceptional progress, or lack, of will help the Group and the members to direct resources to maintain progress and deal with obvious problem areas. It is possible that the lack of progress demonstrates an inappropriate short term objective and the Group will then agree to make necessary adjustments to targets, improving indicators or indeed changing the Objective, if appropriate.

The compilation of annual progress and objective review will be used to write a report that informs firstly the Group and once approved, will provide the formal statement of progress in the five year

cycle of operation. This report will form the basis for demonstrating progress and issues to the Sefton Coast Partnership and wider public.

#### **4.2.4 TEN-YEAR MONITORING AND REVIEW**

On a ten-year basis The Mersey Forest will help mobilise funds to field a consultant / professional to carry out a review of the Working Plan. The work will entail, in the first instance, a review of the two five-year plans (the second five year plan also being prepared by the Task Group) and another inventory of the woodland area to document changes.

The progress towards the short term objectives will be reviewed and the impact on the medium term objectives assessed. Within this context, the 20 year objectives will be re-stated for each compartment and a further two five-year cycles of forest operations developed. This will provide the basis for a further 10 year Working Plan application to the Forestry Commission for felling licence and grant funding.

Changes in the socio-economic context, political issues, changes in the legal environment will all be factored in to the review of medium term objectives and once agreed, it will be consulted on to ensure that stakeholders are aware of progress, understand changes and can sign up to the next ten years.

#### **4.2.5 LONG TERM MONITORING AND REVIEW**

This cycle can run in perpetuity, with the Task Group allocating responsibility and resources as need dictates. At the end of twenty years it will be appropriate to look at the vision and goal level of objectives, using the accumulated progress and learning to review whether progress has been made towards the vision and indeed whether the vision is still appropriate.

A challenge in every part of this cycle will be to ensure that there is a balance maintained between the interest groups that seek to influence the process of formulating and implementing the Plan.

### **4.3 Responsibility for Monitoring**

It is important that the monitoring process is regarded as being of importance to the stakeholders. Self-monitoring is the foundation to achieving this, the implication of which is that annual monitoring should be the responsibility of each partner member—reporting becomes a means of judging personal progress and then of sharing information, achievements, problems with other members of the Task Group. The Task Group holds responsibility for achievement against the higher level objectives and indicators.

The Task Group must ensure that on an annual basis the partners are aware of the indicators, the information needed to assess progress and assist in allocating resources to complete tasks. Equally it must mobilise resources through the Mersey Forest to ensure that the five and ten-year cycle is completed.

A base line must be set in year one of the process and again the Steering Group should nominate a partner and mobilise resources to collate information to establish the base line for all the indicators. Much of this can be done with existing information and documents and can be done from a desk, it should require no more than two working weeks.

## 4.4 Indicators

### 4.4.1 INTRODUCTION

The Sefton Coast Woodlands are being managed by the landowners using the Forest Plan as a landscape scale management and coordination tool to achieve the vision.

There are medium and short term objectives that provide detail and direction in seeking to work towards the vision. There are a number of activities that are carried out to help achieve the short term objectives.

The indicators that are put in place will help to monitor the progress of the Plan at each objective level. In the ideal world each indicator would have a baseline and criteria for measurement to determine changes against the baseline. Using a simple example, a landowner might propose to install six interpretation boards over their site where there were none before—the monitoring device in this case is, at the implementation level, how many have been installed and are they in place on site? At a later stage, the quality has to be investigated by asking the question “How effective were they?” (based on indicators at the objective level). The first stage of collecting information can be as simple as checking annual reports or carrying out site visits, but quality will need specialised evaluation that is time-consuming and expensive.

At each review stage (every five years), the changes against the baseline are evaluated and an assessment is made as to whether there is progress towards the appropriate objective. Given the cost of this process the Plan can only be ‘tweaked’ at the 5, 15, 25 (etc) year stage, but can be adjusted more significantly at the 10, 20, 30 (etc) year stage when changes in economic, social and environmental context can be factored in.

**Table 10, Indicators Table**

Objective level	Objective Statement	Indicator
Vision	<p>Taking account of natural landscape formation processes, the Sefton Coast woodlands should be managed sustainably and in perpetuity as a mosaic of land uses to ensure:</p> <ul style="list-style-type: none"> <li>o The integrity of historically important landscapes</li> <li>o The viability of habitats for rare and important species</li> <li>o Opportunities for the rural and peri-urban economy to thrive</li> <li>o Opportunities for the quiet enjoyment of the countryside.</li> </ul>	<p>Fixed point &amp; other photo monitoring Indicator species and habitats monitored Local statistics  Public perception surveys of issues and changes</p>
Goal	To achieve the vision, the partners will work individually and together, through good silvicultural management, to achieve the following medium term objectives	<p>Working Plan Steering Group functioning Joint owner contracts &amp; list of approved contractors Stakeholder participation in events</p>

Objective level	Objective Statement	Indicator
Medium Term Objectives	To maintain the woodland, bearing in mind the natural landscape formation processes	Woodland area;
	To maintain the quality of the woodland as a habitat for locally and nationally important and rare species within the context of the international legal obligations of the national SSSI, SAC, SPA	Indicator species monitoring Habitat monitoring; BAPs
	To maintain the existing landscape character comprised of a mosaic of habitats across the Sefton Coast woodland area	Photo monitoring Woodland type, species mix Visitor numbers & perception
	To maintain the partnership that enables people to work together to manage the woodland sustainably, checking progress against clearly defined benchmarks	Task Group meetings Joint contracts Joint events
	To maximise and balance the economic, educational and amenity benefits of the woodland	Economy of scale Visitor facilities Income Local businesses
Short Term Objectives	To maintain the woodlands with trees of all ages, through thinning, felling and replanting	Age profile Database maintained
	To maintain fire risk reduction strategies	Fire plan Firebreaks established and maintained
	To involve additional landowners in the planting of trees as appropriate	New areas incorporated in the plan
	To monitor condition of frontal woodland areas	Monitoring system
	To provide places within the woodland for plants and animals to survive – especially those named as ‘Priority Species’	Monitoring system
	To manage the perimeter of the woodlands to enhance woodland edge and open dune species	Monitoring system
	To manage the wet slack areas within the woodlands as open areas	Slack map Slacks managed and maintained
	To keep about 9% of the total area as pure broadleaf woodland and 16% as mixed woodland, 62% as pure conifer and 13% as dune scrub and open habitat	Woodland type mapping Database maintained
	To maintain a patchwork within the woodland that includes everything from grass to mature trees	Woodland type mapping
	Provide a structure that allows owners and managers to work together	Task Group meeting regularly
	To keep the public informed of progress and developments	Regular press releases Consultation events
	To involve the public and local community in the	Volunteer involvement

Objective level	Objective Statement	Indicator
	management of the woodland mosaic	
	Monitor the progress of the Plan	Monitoring systems up and running
	To utilise the woodlands as an educational resource for local educational establishments	Educational visits
	To maintain the woodlands as a safe area for use as an amenity resource	Regular amenity use
	To ensure an income from the woodland where possible	Joint contracts Forest product marketing
	Provide local employment and training in forest management and timber processing industries	Appropriate training
Activities	The activity schedule	Indicators are the targets provided in the activity schedule

One aspect that is currently missing from the Plan is how to monitor the biodiversity of the mosaic of habitats. This is important for several reasons:

- Firstly, it is assumed that a rich biodiversity is a ‘good thing’. There is evidence that species can use the different habitats provided in managed woodland and can migrate between the different locations. For example open dune species making use of coupe felling, heavy thinning zones and permanent bare areas.
- The edge of woodlands is important for many species—indeed much of the indigenous fauna and flora in the England is considered to have adapted from or are suited to ‘woodland edge’ habitats typical of pre-history Britain (RSPB 2005).
- The plan’s origin is red squirrel conservation, landscape management and woodland sustainability, with funding and support mainly from the Forestry Commission and other woodland related sources. This has meant that, if not focus, at least attention has been on tree management. It has been up to individual owner/managers to find resources to manage the other aspects of the mosaic of habitats and this has often not happened.

It is unlikely that new sources of funding will suddenly appear to shift the balance of attention, therefore by addressing the monitoring of biodiversity in the wider mosaic, it is hoped that some shift in balance will occur through a better understanding of how to manage the mosaic.

There will need to be a number of activities associated with this approach, apart from obvious ones such as removal of undesirable weed species (such as Japanese knotweed) or provision of breeding boxes (for bats and birds etc). It is assumed that certain woodland management practices will contribute to more desirably biodiverse habitats than others—within the constraints of the other objectives (red squirrel conservation, amenity, timber production). In the context of the Sefton Coast dunes, not much is known for certain and there therefore needs to be, in the short term, a monitoring of select species and habitats with the aim of building up a picture of what is happening to those species.

It is clear that this Plan is not about managing individuals of species or sites, it is more about managing for the potential for species to exist in the mosaic around the woodlands. It is hoped that species (where they are able), over time, migrate around the woodland utilising the appropriate habitat for as long as it exists. For example planting sites: Are there practices that will encourage desirable species and is there a distance over which those species cannot travel—so how distant should a new planting site be from an existing suitable habitat to encourage species migration? Another example might be woodland margins, again what are the practices that will maximise potential for desirable species on the edges of the woodlands?

In the case of Priority Species, there are delegated authorities responsible for their monitoring and there are already systems in place to collect and collate data on the species. It is therefore not the place of this Plan to replicate existing systems—although there may be opportunities to contribute, for example in red squirrel monitoring or by encouraging existing monitoring systems to include appropriate woodland habitats and margins in their regular monitoring (dune helleborine, sand lizard).

The first step will be to develop a short list of species and habitats that can act as indicators and which can be monitored by (probably) volunteers over the next cycles of the Plan. The Task Group sought the help of the Nature Conservation Task Group in this matter, but was unable to come to a conclusion. The Mersey Forest has since approached an eminent ecologist to assist the Task Group with the aim of putting in place the bare bones of this structure.

And all of this within the constraint of extremely limited resources!



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