

Sefton Coast Pine Woodlands – ForeStClim Intervention



The Mersey Forest
Microsoft

Sefton Coast Woodlands

One of The Mersey Forest study areas for ForeStClim is an area of 400ha of Pinewoods along the Sefton coast.

<http://www.forestplan5yearreview.blogspot.com/>

The Management Plan for this area is being revised and renewed through 2011/12 and we intend to make one of the ForeStClim investments in modified silvicultural systems in 2011 and 2012. Link to current working plan <http://www.merseyforest.org.uk/pages/displayProjects.asp?iProjectID=6>.

In developing the interventions we have looked at a number of issues.

- Non standard silvicultural systems currently practiced in The Mersey Forest by woodland managers.
 - This study looks at how managers are already adapting management, not just for climate change but also for other drivers too. The results help us to capture more fully the management actions that we may be able to apply at Sefton.
- Historic assessment of the Sefton Coast Woodlands.
 - This study helps to set the context for stakeholders, what is the historic and cultural place of the Sefton Coast woodlands. This helps us to identify management that is sympathetic to the history of the coast, whilst also helping to tell a story about the place too.
- An assessment of forest coupe success in order to inform the latest interventions.
 - One of the key issues is regenerating the single age class woodlands. Coupe regeneration is considered our main silvicultural intervention for regeneration, this study looks at how successful previous coupes have been in order to start to be able to prescribe better the scale and types or coupe that work best in various situations faced on the coast.
- A Sustainability Assessment, to inform the plan making process

- This study takes a look at the Coast Woodland in a broad context. It assesses the issues that we will need to consider in order meet our aspiration of delivering a sustainable forest plan with the landowners.
- Development of Decision Support tools to enable communications of the multiple benefits we are seeking to achieve and also to act as the basis for discussion between stakeholders.
 - Through joint work with ForeStClim partners we wish to test Decision Support (DS) tools that can look at how applying weights to the functions and help to improve and guide management decisions.

The landscape on the coast is 'contested' with many competing interests. The ability to weigh function/benefits will assist in enabling discussion and decision making amongst stakeholders

The following Appendices provide the information gathered to date to assist in the intervention at Sefton...

Appendix 1 - Non Standard Silviculture in The Mersey Forest

Exploring aspects of silviculture in The Mersey Forest

Background

As part of the trans-national ForestClim consortium The Mersey Forest team are looking at developing a silviculture that can:

- Enable effective management of trees, woods and forests in a changing climate – based on best available projections.
- Enable better decisions to be made about how to manage the trees, woods and forests to provide the benefits required of them by society.

Although the project within the Merseyside looks to develop these ideas and then apply and monitor the techniques in ‘test’ areas by 2011, there will be an initial scoping programme that will run until October 2009. The aim of the scoping programme will be to look at the range of issues within current silvicultural practice, the possibilities and limitations of current silviculture, availability of information on new techniques from across the area and trans-national partnership.

Nick Roche, a forester associated with the Team, was asked to draw together the analysis of current practices and, working together with other Team members, was able to develop a series of site-based case studies. The case studies were chosen to represent clearly defined green infrastructure (GI) site functions and then analysed in the hope that issues would be thrown up to give direction to take the new silviculture.

Climate Change in England’s North-West

For some background to this report a summary of recent climate trends is provided using data from the Meteorological Office’s Hadley Centre:

The Weather

Turning to UKCIP08¹ to provide the UK context within which this report is working:

- 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 20th 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;

¹ UKCIP08, The climate of the United Kingdom and recent trends. Met Office, Hadley Centre. December 2007

- 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 to the reader 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 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 literature²):

- 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 CO₂ will
 - alter photosynthesis and respiration to increase growth rates (limited by water and nutrient availability).

² Forest management and silvicultural responses to projected climate change impacts on European broadleaved trees and forests. GE Hemery. International Forestry

- 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.

Current Silvicultural Practice

To identify current practices, sites were selected to act as case studies from across all types of ownership—public and private. The sites were selected in order that the range of benefits provided by GI to society was represented as fully as possible:

- Contribution to climate change adaptation and mitigation;
- Assistance in flood alleviation and water management;
- Help in improving quality of place;
- Contribution to health and well-being;
- Improvement of land and property values;
- Contribution to economic growth and investment;
- Assistance in increasing labour productivity;
- Contribution to tourism;
- Contribution to recreation and leisure;
- Help in improving land and biodiversity;

- Contribution to production from the land.

Each site was looked at in terms of its context within the landscape and society, the physical features of the site, known history and past management, woodland characteristics, current management strategy, issues that affect the site and their resolution, both ideal and pragmatic. The annex contains the full set of case studies.

The following table summarises the selection of sites, the categories that they fall into and the key issue underlying their selection:

Site categorisation table:

| | Site | Primary GI Function | Case Study Category | Wood area (ha) | Ownership | Issue |
|----|------------------------------------|-----------------------------------|------------------------------------|----------------|-----------|---|
| 1 | Croxteth Hall, Liverpool | Health and wellbeing | Climate | 47.88 | Council | Rising water tables |
| 2 | The Sefton pine woods | Biodiversity, Tourism | Objectives, Disease/Weed | 420.00 | Multiple | Conflicting objectives, Disease |
| 3 | Rimrose Valley Park, Sefton | Recreation and leisure, Flooding | Unclear objectives / Environmental | 28.10 | Council | Inappropriate planting design / Changing water levels |
| 4 | Stadt Moers Country Park, Knowsley | Recreation and leisure | Objectives | 26.84 | Council | Inappropriate species and fragmented design |
| 5 | St Christopher's Avenue, Sefton | Quality of place | Social | 1.26 | Council | Species and design compromising safety |
| 6 | Clock Face Country Park, St Helens | Health and wellbeing | Social | 13.50 | Council | Inappropriate design leading to anti-social behaviour |
| 7 | Taylor Park, St Helens | Health and wellbeing | Lack of funding | 8.60 | Council | Lack of management leading to anti-social behaviour |
| 8 | Clinkham Wood, St. Helens | Health and wellbeing | Social | 8.05 | Council | Anti-social behaviour damaging biodiversity |
| 9 | Naylors Wood, St Helens | Health and wellbeing | Disease / Weed | 1.60 | Council | Extensive areas of Japanese knotweed |
| 10 | Area 7,8,9, Liverpool | Quality of place, Property values | Lack of funding | 12.50 | Council | Lack of management compromising public safety |
| 11 | Woodlands School, Formby | Health and wellbeing | Unclear objectives | 0.50 | School | Trees nearing end of safe life |
| 12 | St Lukes Church, Widnes | Quality of place | Lack of funding | 1.00 | School | Japanese knotweed and no resources to manage |
| 13 | Owley Wood, Weaverham | Health and wellbeing | Conservation | 6.05 | Public | Damage to biodiversity from bmx bikes |
| 14 | Warrington Structure Planting | Economic growth and investment | Lack of funding | 67.49 | Council | Little management for 25 years, then major work |

| | Site | Primary GI Function | Case Study Category | Wood area (ha) | Ownership | Issue |
|----|---|--|----------------------|----------------|-----------|---|
| 15 | Wimboldsley Hall, Hatton's Hey, Pettypool | Biodiversity | Conservation | 91.75 | Private | SSSI in unfavourable condition |
| 16 | Home Farm, Dog Kennel Plantation | Quality of Place | Objectives / Funding | 1.63 | Private | Lack of management and funding compromising integrity of woodland |
| 17 | Poplar plantation, Old Lodge Farm, Burtonwood | Contribution to production from the land | Objectives | 8.90 | Private | Change of ownership and objectives, lack of management and plans |
| | | | TOTAL | 736.75 | | |

Once the case studies were assembled, the issues that affect the site were categorised as either 'general', 'silvicultural' or 'climate change'. All issues from all site case studies were then collected together within the three categories and put into similar groupings, for example, 'lack of funding' within the 'general' category, or 'under thinned' within 'silvicultural'.

The aim was to provide a snapshot of issues that affect the management of woodlands within the Merseyside area and, in addition, how climate change will impinge on those issues. The first aspect of the survey being based on the very real problems facing land owners in the Merseyside and in the case of the second, being somewhat speculative—as is the nature of climate change.

A Survey of Issues

An Overview

The full range of issues is provided in the table in the annex. In summarising the issues, the following emerges:

GENERAL

- Population pressure creating tensions for management;
- Antisocial behaviour damaging the fabric of the woodland;
- Lack of adequate funding to manage a 'public' good (even when in private hands);
- A lack of clear management goals leading, sometimes, to a conflict in objectives for the woodland or site;

Fragmented management within the structures owning and managing the woodlands.

SILVICULTURAL

Neglect or under-management;

Vigorous non-native species versus less vigorous native species;

Conservation versus amenity;

Disease and pests.

CLIMATE CHANGE

Species selection;

Disease;

Water logging;

Drought;

Storm events and rising sea level;

Design and structure of woodlands.

There are no unexpected revelations in the list and land managers will be very familiar with the day-to-day nature of the issues, but it is still useful to step back and gain an overview. It is also clear that very few of the issues are discrete or isolated, often one set of issues will impact on, or even cause another set of issues—for example, under-management will often lead to non-native species dominating the canopy or understorey, furthermore, under-management is often a consequence of the lack of funding available for woodland management work.

Some Narrative

Developing the overview somewhat, the following is a brief explanation, drawn again from the case studies, of each issue identified under the three main headings:

GENERAL

Population Pressure

About 4 million of the north-west's 6.8 million population lives within the region's nine largest cities and towns, most of which have strong industrial heritage. In the Merseyside, there is something like 1,400,000 people living at high density within the Liverpool, Knowsley, St Helens and Sefton urban areas and most of the case studies are adjacent to, or at the most, within 30 kilometres of this conurbation. The proximity to such a significant grouping of people living within what is a post-industrial society (28 Super Output Areas with the highest deprivation indices in the country are found within the Liverpool area³) brings with it particular problems: on the one hand a pressure on the resource, with large numbers of people accessing the green space if the conditions are right; and on the other, an exposure to the misuse and abuse of sites by particular groups within society.

The kinds of abuse include: wind-blown litter; fly-tipping to avoid waste-disposal charges and also out of ignorance; gaining unauthorised access with off-road vehicles; groups of people (often young) congregating to indulge in activities such as the hiding of illegal commodities (stolen vehicles, drugs and guns), drug-taking and under-age drinking; vandalism of site furniture and material brought onto site (domestic waste bins); rape and physical intimidation; destruction of habitat usually with fire (sometimes associated with the burning of bins) and use of air-guns to shoot fauna (and sometimes people).

The fact that woodlands are able to absorb higher levels of use than more open green spaces also means that people wishing to hide their activities are better able to do so.

Funding

It is apparent from the study that short-falls in funding create problems that impact on all aspects of woodland management: under-thinned woodland is a common issue across many ownerships; unwanted canopy composition (according to the National Vegetation Classification (NVC)); neglected weed species (unwanted species, in this context) in the shrub layer which have subsequently got out of control; neglect of more expensive boundary structures and site furniture which can become a health hazard as they decay and can give the impression of neglect of the site leading to downward spiral of misuse and further neglect.

³ Indices of Deprivation 2007, Revised April 2009. Liverpool City Council, Regeneration Policy Programmes & Performance Division

Short-fall is not the only issue, the availability of funding can create its own set of problems as it tends to be once-off, on the back of a current issue being promoted by government and so lead to, for example, the construction of infrastructure that decays after a period as it no longer attracts funds with policy having moved on (such as the creation of sculpture trails). Another very obvious example is the national shift of emphasis from away timber production towards access and amenity, leaving many private owners struggling with difficult decisions about whether to accept certain types of funding and open up access to 'the public'. This tends to create a situation in which funding is opportunistic and the management work related more to the objectives of the funding type, rather than long-term silvicultural needs, particularly a problem when there is not a clear, long-term management goal for the woodland.

Finally, the presence of grant funding does not necessarily ensure that management work will be carried out. For example, application for EWGS will only exert a responsibility on the landowner once it has been drawn down from the Forestry Commission *after* the work has been carried out. Only in the case of an SSSI being brought back to favourable condition will there be any chance of requiring a land owner to act on advice given.

Lack of management goals

The lack of clear management goals appears to be a common issue, ranging from having mixed, or even conflicting objectives (for example between conservation and amenity access) that can drag short-term management in many directions, to having no long-term management objective at all. The lack of a paper management plan in itself does not necessarily mean that there are no management goals—indeed some private owners would balk at the idea of committing themselves to paper, but do have a very clear idea of where they want to go. However, in many situations, management is merely reactive, or is simply an agglomeration of supposedly necessary, but immediate tasks.

When coupled with the intermittent funding cycles (highlighted above) that only partially cover costs, there is a very present danger that the only health and safety work adjacent to paths and external boundaries is undertaken with the occasional planting spree with little or no follow-up maintenance. On the rare occasion that there are surplus resources, they are likely to be directed into controlling what are considered to be 'weed species' (see discussion on desirable and undesirable species), but as this tends to be a once-only resource, it cannot be followed up in successive years.

Fragmented management structures

Multiple ownership or responsibilities has its own set of problems, with any number of potential problems emerging, as appears to be the case on sites owned and managed by local authorities. There seems to be a trend in which activities such as grass cutting, health and safety, woodland management, are contracted out by the local authority, with the contract given out by a contracts section of the authority, the responsibility for the site lying with an environmental section, health and safety with another, the tree officer part of yet another and even, in some cases, a ranger service also involved with the site, but only having responsibility for education and public awareness. The result often being that no-one within the authority is able to take responsibility for day-to-day management of the site.

Other examples exist where there are multiple owners involved in a site with the consequence that it is very difficult to generate a common goal (the Sefton Coast woodlands, where there are over 30 owners—from a military firing range to an NNR—involved). This leads to difficulty in coordinating activities across the whole site and at its worst leads to a fragmentation of activities and even the fragmentation of the woodland itself. It certainly leads to increased management costs.

Other general issues

Other issues that impact on sites, yet cannot be grouped together easily, include things like utility services crossing the site and landfill that create their own particular problems, for public access, of ground subsidence and of maintenance and management.

SILVICULTURE

Neglect and under-management

A number of issues have already been touched on in other sections: under-thinning; dominance by non-native weed species such as rhododendron, Himalayan balsam, Japanese knotweed; but it also includes issues such as the lack of adequate natural regeneration because of over-shading, absence of suitable parent species; even-aged and over-mature canopies, often under-thinned; high levels of disease; neglect of previous management interventions.

Vigorous non-native species versus less vigorous native species

Many sites are dominated by vigorous, non-native (or locally non-native) canopy species such as sycamore, the chestnuts, pines (prolific regeneration of undesirable

provenances of lodgepole pine on the Sefton Coast, for example), beech and in the understorey, rhododendron. There has even been some discussion on whether hazel is locally native on the Merseyside.

Conservation versus Amenity

Tension exists where sites are over-used as an amenity resource, with the resulting loss of ground layer species and damage to canopy species through vandalism; the effects of dog-walking on breeding fauna and flora; over-zealous grass-cutting regimes on meadows and glades within the woodlands; excessive clearance of undergrowth that obscures sight-lines.

However, the changes to a site as a consequence of conservation measures to restore habitats can also be shocking to local communities that use sites, where tree cover is removed (such as along the Sefton Coast to restore dune habitat), access curtailed (fencing to reduce amenity pressure), management practices changed (regular coppicing, re-wetting of sites, retention of standing and lying deadwood, reduced woodland hygiene). The work sometimes carried out with no or little consultation with the local communities, resulting in significant tension between site managers and the interest groups that form to resist change.

A third area of tension lies in the lost opportunity to use commercial openings to sell forest produce and utilise the returns to fund additional management work. This will include a range of issues such as the neglect of silvicultural thinning or brashing to improve timber quality, to the coppicing of suitable species to generate a commercial crop where outlets exist (biomass energy, charcoal-making, willow-weaving and hurdle making).

Disease and pests

Activities related to disease and pests tends to be focused on the health of trees adjacent to paths and buildings, rather than on overall woodland health.

Other silvicultural issues

Again a variety of issues emerge, including: a need to maintain sub-climax species in the upper canopy; the need to maintain 'protection woodland' as a buffer to environmental conditions (e.g. storm damage); increased water-logging after adjacent developments have damaged old drainage systems; conflicting objectives generated by the need to return SSSIs to favourable condition and the maintenance of non-native species to favour threatened fauna (red squirrel protection areas).

CLIMATE CHANGE

Species selection

The choice of dominant species within the canopy and shrub layers creates a tension on a number of sites, as scarce resources become channelled towards the removal of non-natives and locally non-natives, such as sycamore and beech, to the exclusion of other work. This is driven by the desire to shift the species mix towards the appropriate NVC, an objective that springs from the important aim of maximising the conservation potential of the woodland resource.

Disease and pests

The projected increase in rainfall will affect woodlands that are dense and under-thinned as damp conditions will increase their susceptibility to attack by commercially important fungal diseases, such as *Phytophthora* in the Corsican pine woodlands on the Sefton coast, that thrive in damp and wet conditions. Stress induced by drought periods and extreme weather events will also increase susceptibility of trees to pathogen and pest attack.

Increased rainfall

Predicted increased rainfall will create problems on sites with high water tables and clayey soils putting in doubt their ability to carry species not able to tolerate more frequent water logging, such as 'native' oaks and will favour species such as alder, ash and walnut.

Increased water stress

Equally, the changes in climate are likely to include periods, especially during the growing season, when rainfall is very low, inducing water stress. This will result in damage to timber and instigate early shedding of leaves, reducing the growing season and therefore productivity of the site, also impacting landscape value. It is anticipated that any drying of summers will cause problems for alder, sycamore, beech, birch, native oaks and wild cherry on lowland, well-drained sites.

Such changes will favour lime, field maple, pedunculate oak, among others.

Extreme weather events

Rising sea levels and increasing severity of storm events will threaten low-lying and exposed sites which will be an issue for protection woodlands and heavily accessed amenity areas, such as those along the Sefton Coast.

Design and structure of woodlands

Planting designs for mosaic habitats often seem to be based on amenity value, rather than ecological principles. The need to work to ecological principles will be increasingly important if woodland habitat is to remain viable and connected to facilitate species migration as temperatures rise. A number of sites have small woodland blocks of between 0.01 and 0.25 hectares set within amenity grassland with species favoured for their aesthetic value such as privet, viburnum, mountain ash, wild rose, wild cherry, but having few emergents and tend towards heavy thickets, rather than woodland.

The Way Forward?

The analysis has thrown up a range of issues across the region and has then categorised them. In the next phase of the ForestClim programme, appropriate silvicultural prescriptions will be identified through current research, which will then be site-tested in the context of climate change. However, the fact that there is a range of issues is important to the future success of the management of those woodland resources. If only those elements relating to climate change are addressed, but not the full range, then it is probable that the quality of the resource will not improve. If, for example, the issue of anti-social behaviour, apparent in many of the sites across the region, is not tackled, then any changes made to silvicultural practice for other reasons will be wasted.

The identified issues are not only wide-ranging, but are also inter-connected—for example, the impact of under-funding on the canopy and associated increase in undesirable non-native species and disease. It is therefore important to develop strategies that look at, in this case, the root cause of under-funding, as well as the impacts of over-stocking and increase in undesirable species. However, taking the argument further, there is an assumption that there is an understanding of what is ‘desirable’ and ‘undesirable’. Underlying many of the site objectives in the study has been an aim to maximise conservation potential, implicitly defining ‘desirable’ as locally native. It is easy to identify species such as Japanese knotweed as an undesirable non-native, but in the case of beech and sycamore the practice has been to categorise them in the same way and in the context of climate change it is necessary to revisit this definition. The analysis has brought to the fore a question that needs to be asked: ‘what adjustments in species choice should be made to accommodate climate change?’ For the Merseyside and north Cheshire, the appropriate NVC is W8, W10 (lowland mixed broadleaf) and possibly W16 (lowland oak-birch woodland). Should, therefore,

the associated NVC species list be strictly adhered to or should there be an acceptance—indeed promotion—of locally non-native species?

Examining the fact that issues are so wide-ranging and inter-connected has highlighted that there is often no well-defined, long-term management objective in place for a site, with management being dictated, more often, by implicit drivers such as funding or national guidelines (such as the NVC). It is imperative, therefore, that sites are managed to an explicit long-term objective where an emphasis is laid on either amenity, or timber production or conservation or a rational balance of one or more. Such an approach will give a clear direction to potential species choice and it is the economic, social and climate context that will then put constraints on what can and cannot be done in a practical sense.

In the short term, it is important not to point a finger of blame for problems that are highlighted in this and similar analyses and to then prescribe over-simplified antidotes to the problems—every situation will be very different, often requiring solutions unique to the particular site. Implicit in a ‘blame’ approach is the suggestion that something had not been done ‘correctly’, which would be rather irritating to the site managers, who in every case will be juggling difficult priorities with very limited (and often continually reducing) resources to hand.

Instead it is suggested that the way forward will be to improve how site-based decisions are made, taking into account off-site issues, such as funding availability and climate change, as well as on-site issues, such as anti-social behaviour or localised water-logging. How this might be done is discussed in the next section.

A Model for Decision-Making

The nature of forestry ensures that owners and managers are making decisions today about a resource that will mature only after 60 to 100 years from establishment, so it is important to ensure that land owners and managers manage effectively for those issues that are more-or-less quantifiable and site-based, on the one hand and on the other hand, to try to mitigate effects of the less certain issues (such as climate change). Long-term objectives for a site can be clarified to help give direction to short-term decision-making and then, a species mix planted that allows managers to thin out those species, trees and genotypes that no longer suit a changing climate.

Such an approach to management does not mean that there will have to be a ‘new silviculture’, or that existing silviculture knowledge has to be updated, as there is

already well-established and detailed information from a number of well-informed sources about species and their silviculture^{4 5 6}. It is much more about using tools such as climate change modelling to predict change and then to project an existing, appropriate silviculture from elsewhere (other similar bio-geographical regions) onto the site^{7 8}. However, for this to be effective, there needs to be a rational approach to decision-making that is less about what species is suited to a site, but more about a flexible, logical process placed within a social, economic and climatic context. It is suggested that a decision-tree approach is most effective, that takes account of the contextual issues and ensures that, at each stage of the process, the unsuitable options are eliminated. The final decision on species and silviculture is chosen from a set of suitable options that will contribute directly to the clarified long-term objective for the site.

Although long-term objectives may change over time as a consequence of social, economic or climatic pressures, there still needs to be a rational process in which policy, economics and climate change are factored in. The intention here is to present the foundation of a model for the decision-making process:

A Decision Making Process:

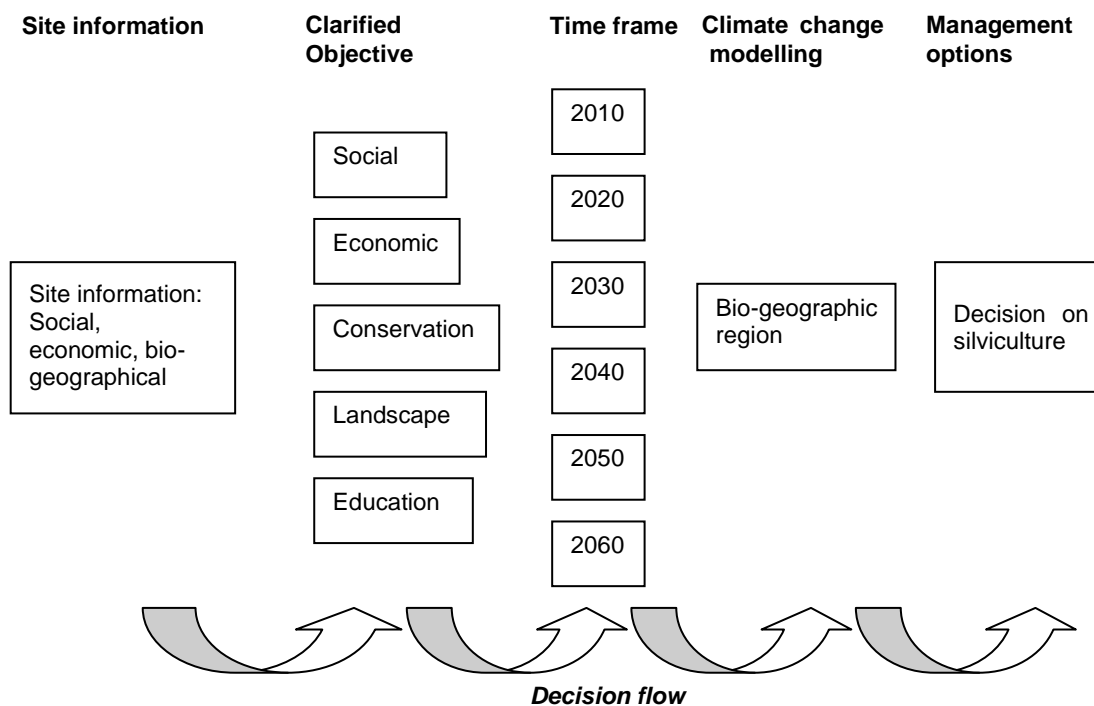
⁴ The silviculture of trees used in British forestry. Savill P. CAB International. 1991.

⁵ The Trees of Britain and Northern Europe. Collins. Mitchell A, Wilkinson J. 1982

⁶ Plantation silviculture in Europe. Oxford University Press, Oxford. Savill P, Evans, J, Auclair D, and Falck J. 1997.

⁷ Climate change and the future of broadleaf trees species in Britain. Broadmeadow MSJ, Ray, D, Samuel, CJA. Forestry, Vol. 78, No. 2, 2005

⁸ Forest management and silvicultural responses to predicted climate change impacts on valuable broadleaved species. Hemery GE. Short-Term Scientific Mission report for Working Group 1, May 2007.



If the model is ever to be considered to be functional, then it will need to be developed to enable owners and managers to use it 'in the field', tested, refined and 'beautified' before being promoted among The Mersey Forest partners.

Silvicultural Options

As has been indicated, the main outcome of the survey is that the most effective approach to adapting silviculture in a changing climate is an improved decision-making process that takes into account of both quantifiable 'on-site' factors, and less certain 'off-site' factors. However, there are still some general options that could be looked at for The Mersey Forest area:

Maturing to mature woodland

- Consider a reduced rotation age to ensure that better adapted species and genotypes can be established;
- Manage thinning intensity at the maximum permissible levels to ensure that good airflow under the canopy is maintained throughout rotation;
- Look at options for under-planting with species that project a climate-adapted bio-geographical region;
- Look at ways of developing connectivity between woodlands and woodland blocks using hedges, scrub or seldom-cut hay meadow.
- Shift management towards uneven-aged crops or 'continuous cover' silviculture.

Establishment to young woodland

- Clarify site objectives and develop UKWAS compliant management planning;
- Consider alternative species suited to projected climatic conditions for soil, altitude and aspect and clarified site objectives;
- Consider protecting the natural regeneration of species such as sycamore, wild cherry, lime and birch on selected sites;
- Look, in the equivalent bio-geographical regions, for southern provenances of species that have been selected;
- Ensure that genetic stock of planting material is of the highest standard to meet objectives for the site, to prevent inbreeding, loss of genetic diversity and takes into consideration conditions within the bio-geographical region;
- Move away from mono-cultural planting designs to mixed species;
- Design planting patterns that includes blocks of species from which final-crop, healthy individuals can be selected;
- Consider improved water management to prevent high mortality at establishment and water logging during the whole period of the rotation, though this will have to be considered in the context of increased establishment costs and lack of adequate funding;
- Consider soil preparation to improve establishment success and increase rates of early growth;
- Look at ways of developing connectivity in planting design between woodlands and blocks of planting using hedges, scrub or seldom-cut hay meadow.
- Design long-term planting programmes to promote uneven-aged or continuous-cover forestry.

Recommendations

The following are the recommendations that arise from this survey:

- The range of issues should be discussed and agreed together with key Mersey Forest stakeholders.
- A task force should be set up to discuss and steer the development of the 'Decision Making Process'.
- Resolution to the silvicultural issues should be discussed at a Regional level:
 - Lack of long-term objectives;
 - Balancing objectives—timber production, conservation and amenity;
 - Low levels and the directive nature of funding for management activities;
 - Non-native weed species—Japanese knotweed, Himalayan balsam, rhododendron;
 - The sycamore and beech conundrum—what is a 'native' species?
- Feeding the outcome of ForestClim discussions into the Regional Forestry Framework, national and international debate on climate change.
- Utilise climate change data from sources such as the Hadley Centre to map the northward (and altitudinal) movement of bio-geographical zones.

- Develop an awareness-raising programme in the region that targets woodland owners, promoting clarified management objectives (using available management tools, such as certification, grant funding, the Sylva Foundation myForest website) that includes more flexible and mixed species composition grown within uneven-aged stands (continuous-cover forestry).

Conclusion

This survey of issues that face woodland owners and managers in the Merseyside reveals a range of problems that can be dealt with only in part 'on-site' and only a proportion of which are silvicultural in nature. The remainder are either a consequence of the social or economic context and often cannot be resolved on-site and are generally more a matter of regional or national policy.

That climate change is an issue is beginning to loom on the horizon, but it is still very remote. However, today's manager can begin to address it through judicious silvicultural decisions based on a clear set of long-term objectives for the site and taking into consideration the social and economic context. A decision-making process is recommended in which it is possible to factor in social and economic context, climate change and site objectives to come up with a set of silvicultural options for that site.

A certain level of uncertainty will always remain within any decision-making system based on the fact that policy is often set remotely at the national level and that the effects of a changing economic context is outside the control of any land owner or manager. However, again, through careful consideration of options it should be possible to build in a certain level of flexibility to planting designs and species choice that can provide woodland owners and managers with choice, over the space of a rotation, that will accord with a changing climate—in most senses of the word.

Appendix

1. More Site Details

General Issues

Population pressure

| Issue | Sites | Ownership |
|--|-------------------------------------|---------------------|
| Large urban populations within close proximity | Sefton Pine Woods, Clinkham Wood | Multiple Council |

Anti-social behaviour

| Issue | Sites | Ownership |
|--|--|--|
| Anti-social behaviour – drinking, drug-taking, burning waste bins, vandalism | Croxteth Hall, Rimrose Valley, Clock Face, Taylor Park, Clinkham Wood, Areas 7, 8, 9 Liverpool, Owley Wood | Council Council Council Council Council Church Public body |
| Abuse of site – off-road vehicles, fly tipping | Rimrose Valley, St Lukes Widnes | Council Private |
| Personal safety – areas of woodland off-limits, especially to women | Stadt Moers, Taylor Park, St Christopher's Avn. | Council Council Council |

Lack of funding

| Issue | Sites | Ownership |
|---|--|---|
| Lack of resources to carry out management work apart from health and safety | Croxteth Hall, Sefton Pine Woods, Stadt Moers, Naylor's Wood, Woodlands School, St Lukes Widnes, Warrington structure planting Home Farm | Council Multiple Council Council School Church Council Private |

Lack of management objectives and strategy

| Issue | Sites | Ownership |
|--|---|--|
| Lack of clearly stated management objectives leading to confused strategies and counterproductive activities | Croxteth Hall, Sefton Pine Woods, Naylor's Wood, Woodlands School, St Lukes, Widens | Council Multiple Council School Church |
| Management objectives changed during rotation | Warrington structure planting Home Farm Poplar plantation | Council Private Private |
| Management strategies event driven | Sefton Pine Woods | Multiple |
| Management and funding severely limiting access | Clock Face, Taylor Park, Areas 7, 8, 9, Liverpool | Council Council Private |

Conflicting objectives

| Issue | Sites | Ownership |
|---|--|------------------------------|
| Conflicting management objectives | Sefton Pine Woods | Multiple |
| Public access conflicting with some management objectives | Rimrose Valley, Clock Face, St Lukes, Widnes | Council Council Church |

Fragmented management structures

| Issue | Sites | Ownership |
|--|--|--|
| Management organisations divesting authority and implementation to different departments | Croxteth Hall, Rimrose Valley St Christopher's Av, Naylor's Wood, | Council Council Council Council |
| No overall responsibility for implementation | Sefton Pine Woods Areas 7, 8, 9, Liverpool | Multiple Private |

Landfill issues

| Issue | Sites | Ownership |
|-------------------|--------------|------------------|
| Ground subsidence | Stadt Moers | Council |

| | | |
|-----------------|--------------------------------|--------------------|
| Gaseous exhaust | Stadt Moers, Rimrose Valley | Council Council |
|-----------------|--------------------------------|--------------------|

Utilities and enforced land acquisition

| Issue | Sites | Ownership |
|--|---|--------------------|
| Utilities crossing site | Rimrose Valley | Council |
| Land under threat of compulsory acquisition for road expansion | Rimrose Valley, St Christophers Avn, | Council Council |

Landscape value

| Issue | Sites | Ownership |
|--|-------------------|------------------|
| Lack of management leading to loss of landscape feature | Croxteth Hall | Council |
| Landscape feature creating a constraint on management strategies – woodlands a public good | Sefton Pine Woods | Multiple |

Other

| Issue | Sites | Ownership |
|--|--------------|----------------------|
| Designations on the site may require additional parties/agencies to be involved in the management of the woodland. | SSSIs | Private |
| Offer of grant aid does not guarantee that the work will be carried out. | All SSSIs | All types Private |
| SSSI status may mean that advised work can be enforced upon the landowner. ?? | SSSIs | Private |

Silvicultural Issues

Lack of management in recent past

| Issue | Sites | Ownership |
|--|---|---|
| Lack of management compromising woodland integrity | Croxteth Hall, St Christopher Avn, Clock Face, Taylor Park, Stadt Moers, Area 7, 8, 9, Liverpool, SSSIs, Home Farm, Poplar plantation | Council Council Council Council Council Private Private Private Private |

Over mature canopy

| Issue | Sites | Ownership |
|--|--|--|
| Long term management issues creating even-aged or over-mature canopy | Sefton Pine Woods, Area 7, 8, 9, Liverpool, Woodlands School, Poplar plantation | Multiple Private School Private |
| Dense over-canopy compromising under-canopy and regeneration | Sefton Pine Woods, Naylor's Wood, St Lukes Widnes, | Multiple Council Church |

Under thinned

| Issue | Sites | Ownership |
|--|--|---|
| Woodlands are over-stocked and under-thinned | Sefton Pine Woods, Stadt Moers, St Christopher's Avn, Clock Face, Home Farm Poplar plantation | Multiple Council Council Council Private Private |

Invasive weed species

| Issue | Sites | Ownership |
|---|----------------|------------------|
| Rhododendron understorey neglected over a long time | Croxteth Hall, | Council |

| | | |
|---|--|---|
| span | Taylor Park, Area 7, 8, 9, Liverpool, SSSIs | Council Private Private |
| Himalayan balsam and Japanese knotweed allowed to invade site | Rimrose Valley, Stadt Moers, Clinkham Wood, Naylor's Wood, St Lukes Widnes, Owley Wood, SSSIs Home Farm | Council Council Council Council Church Public body Private Private |
| Bracken and bramble neglected and spreading | Croxteth Hall, Clinkham Wood | Council Council |

Domination by non-native canopy species

| Issue | Sites | Ownership |
|--------------|---|--|
| Sycamore | Croxteth Hall, Sefton Pine Woods, Taylor Park, Clinkham Wood, Naylor Wood, Owley Wood Home Farm | Council Multiple Council Council Council Public body Private |
| White poplar | Sefton Pine Woods, Clock Face, | Multiple Council |
| Ornamentals | Croxteth Hall, Owley Wood | Council Public body |
| Beech | SSSIs | Private |

Lack of adequate regeneration

| Issue | Sites | Ownership |
|--|---|--|
| Perception by public that natural regeneration is too slow | Sefton Coast Woods, | Mutiple |
| Inadequate regeneration of desirable native species | Stadt Moers, Naylor's Wood, Woodlands School, St Lukes Widnes, Owley Wood, Home Farm | Council Council School Church Public body Private |

| | | |
|---|----------------------------------|---------------------|
| Excessive regeneration in undesirable areas or of wrong species | Clock Face, Sefton Pine Woods | Council Multiple |
|---|----------------------------------|---------------------|

Conservation constraints

| Issue | Sites | Ownership |
|---|---|--------------------------------|
| Red squirrel buffer zone and core area specifying species and planting areas | Sefton Pine Woods, Rimrose Valley, Woodlands School | Multiple Council School |
| Limit on habitat piles and standing dead wood | Sefton Pine Woods, Taylor Park, Clinkham Wood, | Multiple Council Council |
| Condition status i.e. Unfavourable, may require woodland to be managed in accordance with its SSSI designation rather than to standard silvicultural prescriptions. | SSSIs | Private |

Disease and pest problems

| Issue | Sites | Ownership |
|---|---|--------------------------------|
| Over dense canopy increasing incidence of disease | Sefton Pine Woods, Area 7, 8, 9, Liverpool, Poplar plantation | Multiple Private Private |
| Water-logging causing stag-headed oaks | Croxteth Hall | Council |
| Rabbit population damaging regeneration | Sefton pine woods Home Farm | Multiple Private |

Other

| Issue | Sites | Ownership |
|---|---------------------------------|--------------------|
| Previous management interventions neglected | Croxteth Hall | Council |
| Artificially maintaining 'sub-climax' species mixes | Rimrose Valley, Stadt Moers, | Council Council |
| Creation and maintenance of protection woodland areas | Sefton Pine Woods | Multiple |
| Excessive slope gradient | Owley Wood | Public body |

Climate Change Issues

Inappropriate Species Selection

| Issue | Sites | Ownership |
|--|--------------|----------------------|
| NVC classifications need to address suitability of species given predicted climate change. | All SSSIs | All types Private |

Changes in climate impacting regeneration

| Issue | Sites | Ownership |
|---|--|-------------------------------|
| Removal of sycamore regeneration should be reviewed | Taylor Park, Clinkham Wood Home Farm | Council Council Private |

Increase in rainfall causing problems

| Issue | Sites | Ownership |
|--|--|--|
| Predicted increased in rainfall causing frequent flooding | Croxteth Hall, Rimrose Valley, Stadt Moers, Clock Face, Naylor's Wood, Owley Wood | Council Council Council Council Council Public Body |
| Predicted increased in rainfall creating damper conditions likely to increase incidence of disease | Sefton pine woods, Area 7, 8, 9, Liverpool, Poplar plantation | Multiple Private Private |

Dry periods increasing drought effects

| Issue | Sites | Ownership |
|--|---|--------------------------------|
| Predicted dry periods causing drought stress | Croxteth Hall, Sefton Pine Woods St Christopher's Avn | Council Multiple Council |

Small size of planting blocks reducing habitat importance

| Issue | Sites | Ownership |
|--|--|--|
| Fragmented planting blocks reducing importance as woodland habitat | Rimrose Valley, Stadt Moers, St Christopher's Avn, Warrington structure | Council Council Council Council |

| | | |
|--|----------|--|
| | planting | |
|--|----------|--|

Rising sea levels and increased storm events

| Issue | Sites | Ownership |
|--|--|--------------------|
| Severity of storm events increasing wind throw | Sefton Pine Woods, St Lukes Widnes | Multiple Church |
| Rising sea levels affecting low lying areas | Sefton Pine Woods, Woodlands School | Multiple School |

2. The Case Studies

See Annex Document

CONTENTS

| | |
|--|-----------|
| Warrington Structure Planting | 1 |
| Taylor Park, St. Helens | 4 |
| Stadt Moers Country Park, Knowsley | 8 |
| St Lukes Church, Widnes | 11 |
| St Christopher's and Broad Hey, Netherton, Liverpool | 13 |
| Wimboldsley, Hatton's Hey and Pettypool Golf Course SSSIs, Cheshire | 16 |
| Rimrose Country Park | 21 |
| Sefton Pine Woods (Climate Change and Conflicting Objectives) | 25 |
| Old Lodge Farm Poplar Plantation, Burtonwood | 32 |
| Owley Wood, Vale Royal, Cheshire | 35 |
| Naylors Wood, St. Helens | 38 |
| Home Farm, Dog Kennel Plantation, St Helens | 41 |
| Croxteth Country Park | 44 |
| Clock Face Country Park, St. Helens | 49 |
| Clinkham Wood, St. Helens | 54 |
| Areas 7, 8 & 9, Liverpool | 58 |
| Woodlands Primary School, Formby | 61 |

Warrington Structure Planting

Introduction

The Context

The Warrington Structure Planting forms part of the landscape around the easternmost urban development of Warrington. The planting, established in the 1970s, was 'ecological woodland' within a new town setting where the new woodland was used to contain and structure the building development and the species used were based on existing plant communities. It was designed to mimic natural processes including the fact that a succession would change the vegetation composition and structure over time. However, adherence to the original concept has wavered with the 'ecological woodland style' falling into disrepute due to a perception of risk to personal security⁹.

The Site

Part of the massive mosslands that originally stretched between Warrington and Manchester, it is flat, sloping to the south-west, underlain with peat, but now much modified by drainage for farming and later urban development.

It is bounded to the north by the M62 motorway and the west by the M6 and lies entirely within the eastern boundary of Warrington town. There are significant housing and business developments in the area, but the landscaping ensures that the full extent is hidden within the woodland structure planting.

History

Much dreaded mosslands, often shrouded in mist, that were difficult to traverse and only 'tamed' once Stephenson's famous Rocket began to ply the first passenger railway between Liverpool and Manchester in 1829. By the end of the 1930s significant tracts were drained and ploughed up for agriculture and during the Second World War, a large area was given over to a huge munitions factory at Risley Moss which closed at the end of the 1950s and the site subsequently used by the Warrington and Runcorn Development Authority for the newtown development.

The Woodlands

⁹ Woodland as a Setting for housing-appreciation and fear and contribution to residential satisfaction and place identity in Warrington New Town, UK. Jorgensen A, Hitchmough J, Dunnett N. May 2006, Landscape and Urban Planning 79 (2007) 273–287.

67.49 hectares of structural planting, excluding the 20 has of predominantly birch woodland on the National Nature Reserve of Risley Moss, which was planted up in the mid 1970s with a native mix of oak, ash, birch, cherry, field maple, hazel, viburnum, elder, hawthorn and blackthorn.

The woodlands are often linear, sited along feeder roads and peripheral to housing and business complexes on average about 0.3 has and seldom exceeding one hectare in size.

Management

Management over the thirty years since planting has often been in response to complaints about overhanging vegetation, but has also involved some thinning and selective felling to encourage the maturation of the woodlands and vegetation, retaining the screening and encouraging desirable emergent trees, removing unwanted species and weeds. In other words the management has attempted to follow the original intentions of the planting when resources have allowed.

More recently some pressure has grown to reduce the woodland impact on residential areas with the result that some removal of emergent trees and thicker areas of vegetation has taken place, especially within two metres of buildings.

Current Management Strategy

Concern about personal safety and risk and the perception of 'wilderness' adjacent to residential areas has led the Local Authority to amend the original strategy from managing succession to one of managing perceived risk and health and safety hazards.

It is likely that the long-term approach by the Local Authority will be to reduce vegetation density, leaving non-hazardous emergent trees and low levels of understorey.

Issues

General Issues

- Perception of 'wilderness' adjacent to housing;
- Lack of funding to carry out work to desirable levels.

Silvicultural Issues

- Change in objectives;

Climate Change

- Small size or narrow shape of some of the blocks;
- Isolation of some blocks not enabling species migration;

Resolution

Optimal Resolution

- Clarified long-term management objectives;
- Public consultation and public awareness raising;
- Rationalisation of woodland areas to improve perception of safety in acute areas;
- Thinning and planting regime to strengthen natural processes in remaining woodland blocks;
- Sourcing of funding to ensure that optimal management continues.

Pragmatic Resolution

- Clarified long-term management objectives;
- Low level public awareness raising, piggy-backing on other events and programmes;
- Felling and thinning in acute areas.

Taylor Park, St. Helens

Introduction

The Context

Taylor Park as a whole is almost entirely surrounded by the residential areas of Toll Bar, Grange Park and Newtown, with Grange Park golf course being immediately adjacent to the west. The main access points into the park are at Grovsnor Road and Holme Road and both provide car parking facilities. Vehicular access on to the park can also be provided from these points. There are also four other pedestrian access points into the Park.

The Park's main asset is its lake of 4.8 hectares, which is used by local anglers and by various youth groups as a centre for water sports. There is a large field in its north western section which gives extensive views over St Helens, whilst almost all the rest of the park is made up of deciduous woodland and rhododendron, both of which are actively managed by the St Helens MBC Ranger Service. It is a Grade 2 listed on the Register of Historic Parks and Gardens.

The park facilities include a large dam, rock garden, quarry garden, children's play area, woodland walks, panoramic views across the surrounding landscape, boathouse, tearoom and a visitor centre.

The Site

The park is an important amenity open space which includes small compartments of woodland. These compartments sit adjacent to the Park's other features, such as the large dam, rock and quarry garden and amenity grassland.

History

Taylor Park was presented by deed of gift to St Helens Corporation in 1893 by Samuel Taylor. The area was formerly part of the ancient manorial estate of Eccleston, dating back to approximately 1100.

The Woodland

Many of the woodland compartments within Taylor Park, totalling 8.59 ha, contain a large proportion of sycamore and rhododendron, a legacy of Victorian management. Oak, birch, cherry, willow, alder, Corsican pine and Scots pine are interspersed in the

compartments. The understorey is dominated by rhododendron, but holly and elder are common where it is less dense. Sycamore is having a detrimental effect on the ground flora and as a result bramble, ivy and grass are the dominant field layer species. Japanese knotweed is also found on site.

One particular compartment contains a small lake, Bottom Eccleston Dam, a stream and surrounding wetland area. As a result of the wet conditions a small area of wet woodland has developed where willow and alder, have established well. This area has been designated SBI and LWS, containing important species and habitats.

Oak Wood, the name for one compartment, contains a higher proportion of oak and other native broadleaved species. This area is currently being managed to favour the native species, particularly the oaks. There are some particularly large notable specimens within the compartments which are survivors from the Victorian era.

Other areas contain some notable beech trees and a particularly large sycamore coppice.

Unmanaged rhododendron growth has encroached on paths in the past and created a very unsafe environment for visitors.

There are many more trees within the parkland that do not fall into the designated woodland compartments, but help form the wooded landscape of Taylor Park. These are mostly mature sycamores that were either planted or were self-seeded.

Management

Currently owned and managed by St. Helens Borough Council, Taylor Park and has achieved Green Flag status. The current management approach aims to provide parks and open spaces of an appropriate character and high quality which fulfil the recreational needs of the community. The intention is that the facilities should be safe and protected from vandalism, contribute to the distinctive visual quality of the town and to be of nature conservation interest.

The Council was successful in securing a Heritage Lottery Fund (HLF) grant in 2003 to support a major programme of restoration and improvement. The regeneration of the woodland was included in the programme as part of improvement to the natural environment.

Before any major restoration work was undertaken within the Park, the rhododendron understorey was reduced to improve woodland health and increase public safety. A large proportion of the rhododendron has therefore been cleared leaving only some clumps to maintain some of the Victorian landscape. Thinning has helped to improve the structure of the woodlands and arboricultural work is improving safety by dealing with dangerous trees adjacent to woodland paths.

Current Management Strategy

Following the major restoration work within the Park, management has fallen back to a reactive mode within the woodland compartments when it is necessary to respond to safety issues. The rhododendron is being controlled and occasional winching exercises removes some stems from within compartments and adjacent to paths.

Oak is being favoured within the Oak Wood as replacement canopy trees and natural regeneration is being encouraged.

Issues

General Issues

In the past, the Park was very rarely used by the general public. Years of neglect had left the rhododendron to dominated a large area of the woodland compartments and other areas where they had been planted (e.g. the old carriage driveway, an important historical feature of the Park). Pathways had been almost completely over-grown creating a very enclosed and unsafe atmosphere. The Park became a hot-spot for criminal and anti-social behaviour.

The removal of much of the rhododendron has created a more open and safe atmosphere, resulting in an increase in use by the public and has allowed the woodland understorey to develop, with evidence of improved tree regeneration. The remaining rhododendron is now managed by the Ranger Service to ensure that it does not spread again.

Silvicultural Issues

The woodland canopies are generally dominated by the presence of mature sycamore and sycamore regeneration. Although sycamore is an important cultural species within the park, having been planted by the Victorians, a more diverse woodland is desired. Management now aims to replace canopy species with oak and other native broadleaves where they occur. Self-seeded sycamore remains a problem.

Standing deadwood resources are likely to be limited due to health and safety issues.

Climate Change

Climate change is likely to benefit species such as sycamore. Management for a more mixed broadleaved canopy through gradually replacing mature sycamore and the removal of sycamore regeneration is going to take time and a commitment of resources. The question remains whether it might be best to encourage the naturally developing sycamore woodland to so helping to save resources.

Resolution

Optimal Resolution

- Accessing additional funding streams to continue to reduce the rhododendron understorey.
- Larger on-site work force to continually improve and maintain the woodland compartments and parkland landscape.
- Native replacement trees for maturing sycamore canopy.
- Concerted effort to eradicate Japanese knotweed.

Pragmatic Resolution

- Resources restrict the level of restoration work that the Ranger Service can undertake. However, now that the majority of the restoration has been completed, the Ranger Service will be able to manage with current staffing levels. Small projects, for example, underplanting limited areas of woodland with more broadleaved species, could be undertaken, particularly if EWGS grants are applied for.
- The Council will always favour health and safety work within the parkland landscape, particularly of site furniture and structures such as the boat house.
- Gradually reduce mature sycamores
- Favour native broadleaved species as replacement canopy trees.
- Gradually reduce rhododendron in woodland compartments and manage remaining areas of rhododendron growth.
- Continue health and safety arboricultural work.

Stadt Moers Country Park, Knowsley

Introduction

The Context

The Park lies on the eastern boundary of Liverpool in the Borough of Knowsley, it straddles the M57, just north of the M62 and bisected by one of the Liverpool to Manchester railway lines. The configuration of motorway and railway line leaves the Park neatly divided into four sections, each providing slightly different resources to the local community. The Park is surrounded by housing and industrial estates within Huyton-with-Roby and Prescot. In all it is 89 hectares with nearly 27 hectares of woodland within grassland.

The Site

Much of the landscape is shaped subsequent to closure of the landfill in 1983 and soils imported to cap off the site. There is localised subsidence in the Pottery Fields quadrant where the underlying landfill is settling. Judging by occasional water logging, the soils are likely to be heavy, with high clay content.

Underlying soils and geology not known.

History

Stadt Moers has a varied, but largely industrial heritage, which led to it being twinned with the town Moers in Germany (hence Stadt Moers). The site was originally farmland centred on Latham's Farm located close to what is now the Visitor Centre, however, the land east of the motorway was subsequently used for coal mining and brickworks and finally given over to landfill for domestic refuse. By 1983 the site had been closed and reclamation begun to turn the site into a country park, landscape work being carried out by Groundwork.

The Woodlands

The woodlands, planted in the late 1980s are blocks of landscape-type planting of birch, poplar, cherry, field maple, Scots pine, larch, oak, ash, sycamore and alder within a grassland mosaic. Despite the mixture, the blocks tend to be dominated by landscaping-type species, with poplar and birch being the predominant emergents. There are over 60 blocks of woodland, averaging about 0.4 ha, the largest 2.6 hectares and the smallest, 0.02.

Management

Little woodland management has been undertaken subsequent to planting as the woodlands are too young. Given the close landscape-type planting, they are currently impenetrable and are moving into a phase of somnolence, with the main canopy species prevented from emerging.

Current Management Strategy

The Borough has embarked on a process of management planning with the aim of taking the Borough into UKWAS certification. The woodlands will be managed on the basis of their use as a natural resource – broadly for community, landscape, amenity, conservation and education purposes.

Issues

General Issues

- The more hidden parts of the site are subject to anti-social behaviour;
- Unauthorised access by off-road vehicles is currently controlled, it is a long term problem;
- Ground subsidence will have to be monitored and the usual problems of gas exhaust from the underlying landfill is subject to regular health and safety inspection;
- Low levels of funding.

Silvicultural Issues

- Invasion by Japanese knotweed, Himalayan balsam, possibly introduced by the grass mowing machinery from off-site, is a management issue in the quadrant;
- Overstocking;
- Low density of suitable canopy species.

Climate Change

- Heavy clay soils will be subject to increased flooding if higher rainfall is a feature of future weather patterns leading to low-lying or undulating areas requiring drainage or a change of vegetation.

Resolution

Optimal Resolution

- Regular thinning;
- Concerted effort to eradicate weed species;
- Cyclical updating of management plans;
- Under-planting with suitable emergent species;
- Maintenance of boundary structures to limit unauthorised access;

- Public awareness programmes;
- Active participation of local community in resource management.

Pragmatic Resolution

- Thinning programme suited to available resources;
- Concerted effort to eradicate weed species;
- Cyclical updating of management plans;
- Under-planting with suitable emergent species;
- Maintenance of boundary structures to limit unauthorised access when funds permit;
- Active participation of local community in resource management.

St Lukes Church, Widnes

Introduction

The Context

St Lukes Church, Farnworth is one of the oldest buildings in the north-west of England, the original church being built in the 12th Century. The Church and churchyard is located in Farnworth District of Widnes which was originally the largest most significant village in the area, but now subsumed into a northern suburb of Wides town.

The Site

The site is 2.1 hectares and the churchyard is bounded to the south, west and north by housing and to the east by the church itself. The whole site is bounded by a sandstone wall, some of which is in poor condition. Topography is reasonably flat, soils and geology not known.

Access is by a gate in the eastern wall providing public access at all times.

History

The church, founded in 1180, was dedicated to St Wilfrid, but re-dedicated to St Luke in 1859. The building has undergone various phases of extension and renovation. No information is available on changes to the churchyard.

The Woodlands

The site is still an active churchyard and the trees, predominantly sycamore, are limited to the western boundary and along two central paths. Significant areas are given over to meadow and wildflower planting within areas still managed for burial.

Management

Health and safety felling and arboricultural work has removed problem trees and reduced crown density to improve ground flora by increasing light penetration. Underplanting with bulbs and wildflowers and a diversification of species used in replacing felled trees has sought to improve the value of the site as a community resource.

Current Management Strategy

Increase light penetration, improve range of species in the canopy and understorey.

Issues

General Issues

- Working churchyard;
- Fly tipping;
- Limited funding for maintenance;

Silvicultural Issues

- Knotweed infestation;
- Lack of species diversity;
- Heavy shading;

Climate Change

- Species used will have to be suitable for significant public access in the event of increased storm events;

Resolution

Optimal Resolution

- Identification of resources for churchyard management;
- Felling of trees before becoming diseased or moribund;
- Increased range of species planted, taking account of changing climate;
- Intensive Knotweed eradication;
- Identification of infestation source and elimination;

Pragmatic Resolution

- Gradual replacement of trees;
- Use of volunteers to achieve limited churchyard management;
- Maintenance of woodland and meadow wildflowers.

St Christopher's and Broad Hey, Netherton, Liverpool

Introduction

The Context

The site consists of two areas (St Christopher's and Broad Hey) divided by the Leeds to Liverpool canal. It is within some of the larger Litherland housing estates, generally suffering from high unemployment and declining population. Regeneration in nearby Bootle has provided some housing renewal for the area.

These open spaces lie along a north-south axis that has been left undeveloped in the event of feeder roads being built to connect the M57 and M58 motorways to the nearby Seaforth Docks.

The Site

An area of 11.5 hectares, undulating site artificial land form created at the time of the housing developments. The area is underlain with Triassic 'Sherwood' sandstone and across the site the soils are typical of the area, a mix of boulder clay and brown sands.

History

Originally an agricultural area and very poor, the area saw development from 1774 onwards once the Leeds to Liverpool canal was built (completed in 1816), the railway in 1840 and the docks developed by the end of the 19th Century.

Little is known of the actual site, it is owned by the Sefton Metropolitan Borough Council and retained as an open space with potential for infrastructural development.

The Woodlands

The woodland planting, about 20 years old, covers 1.26 hectares, composed of birch, alder, oak, cherry and Scots pine as upper canopy species and rowan, hazel, hawthorn as sub dominants.

Management

The site is managed by the Leisure Services Department of SMBC as an open space composed of informal grassland with 24 discrete woodland blocks aligned along the axis. Desire lines cut through the site, the paths used by people accessing shops and facilities.

The grass is cut on a low-frequency, but regular regime and the woodlands have received little attention since planting, except to a light thinning to improve visibility. The original protective post and rail fencing is still in place, though often badly damaged, around most of the woodland blocks.

The area is heavily used by dog walkers and people using the site as a short-cut. Social problems abound as the blocks act as litter traps for wind blown litter and fly-tipping and screen anti-social activity from the adjacent housing. It has been reported that women are fearful of crossing the site (especially on the slightly more remote southern section).

Current Management Strategy

As part of the process of certifying SMBC woodland management, the intention has been stated to thin the woodlands where too thick and strengthened blocks where the original planting has failed or was too narrow (on the Broad Hey section). Old fencing will be removed and access into the blocks developed to encourage use by the public and decrease danger of anti-social use.

Issues

General Issues

- Antisocial behaviour;
- Fly-tipping and wind-blown litter;
- Development of the site as a feeder-road to nearby motorway.

Silvicultural Issues

- Poor design of planting areas;
- Small size of the woodland blocks;
- Lack of thinning and maintenance;
- Lack of 'ownership' within the Council;
- No long term objectives for the woodlands on the site.

Climate Change

- Site is well-drained and undulating, so will not be unduly affected by changes, unless drought is an issue;
- The small size and separation of the blocks will provide little benefit to species.

Resolution

Optimal Resolution

- Development of 'friends of' groups from adjacent communities to partner management initiatives;
- Liaison with community policing services;
- Regular thinning;
- Clarified management objectives;
- Redesign of planting patterns;
- Redesign of grass-cutting regimes;
- Regular removal of litter and fly-tipping;
- Development of high quality access facilities;
- Removal of fencing;
- Provision of facilities to nearby education establishments.

Pragmatic Resolution

- Cyclical thinning;
- Clarified management objectives;
- Redesign of grass-cutting regimes;
- Liaison with community policing services;
- Improvement of access facilities;
- Removal of fencing;
- Provision of facilities to nearby education establishments.

Wimboldsley, Hatton's Hey and Pettypool Golf Course SSSIs, Cheshire

Introduction

The Context

Reasonably large areas of woodland in multiple private ownership, part of a series of SSSIs important for fauna and flora typical of site conditions that have developed on 'clough' and wet sites.

Management for game and other objectives in the past and under-management more recently, have led to the sites being in unfavourable condition and there is currently some pressure to bring them into condition. Natural England is working in partnership with The Mersey Forest to encourage the owners to manage the woodlands to achieve nature conservation targets.

The Sites

Three SSSIs in Cheshire, all woodlands that have features of natural importance.

Pettypool Golf Course – one of seven units, varying from 17 to 2.5 hectares, totalling 47 hectares. The golf course comprising 9.99 hectares, situated on the north edge of Delamere Forest, four miles south west of Northwich.

The valley lies in an undulating landscape of sandy soils deposited during the last glacial retreat. Where the flow of acidic water draining from these sands has been impeded accumulations of peat have formed locally along the valley floor. Variations in local conditions and land management have subsequently allowed the development of a wide range of habitats including open water, emergent reedbeds, marginal fen, mossland, extensive carr woodland and small areas of dry acidic grassland and woodland.

Wimboldsley Wood – one of three units, from 1 to 11 hectares, totalling 16.45 hectares. The ownership being considered is 4.26 hectares. The site is situated on the eastern bank of the River Weaver and in two steep sided valleys.

It contains a variety of woodland types and is particularly notable for an extensive wet area dominated by alder *Alnus glutinosa* and crack willow *Salix fragilis*. Areas of scrub, unimproved grassland, open water and a saliferous spring, a rare habitat nationally, are included and add significantly to the value and scientific interest of the site.

Hatton's Hey – one of two units in total 27.3 has, Hatton's Hey, Whittle's Corner (11.11 ha) and Bank Rough (16.19 ha), are situated on the south facing slopes of the River Weaver valley and together form one of the largest blocks of semi-natural clough woodland in the county. Of particular importance are the nationally rare stands of ash *Fraxinus excelsior* and small-leaved lime *Tilia cordata* which occur on the poorly-drained and mildly acidic slopes.

History

Not known

The Woodlands

All three woodlands are privately owned and are part of larger woodlands and wider habitats:

Wimboldsley Wood – 4.26 ha.

Much of the woodland is dominated by pedunculate oak and ash with small stands containing wild cherry, field maple and elm, most of which is dead. In wetter areas the shrub layer is dominated by grey willow. Elsewhere hazel, hawthorn, holly and guelder-rose occur with occasional spindle.

Between the pools and the tops of the slopes the ground flora is rich and varied and includes species such as harts-tongue fern, woodruff, wood millet and early-purple orchid. The pools themselves are fringed by lesser and greater pond sedge, reed canary-grass and yellow iris.

The grassland at the north-west end of the site is diverse and contains species such as burnet saxifrage, teasel and hoary ragwort with nodding bur-marigold, common fleabane and the uncommon cowbane.

Hatton Heyes – 11.11 hectares

Over much of the site ash, pedunculate oak and wych elm (now only present as young growth) are dominant with locally abundant birch, wild cherry, small-leaved lime and sycamore. The uncommon wild service-tree is also present.

The shrub layer contains elder, hawthorn and hazel with occasional holly.

At the base of the slope on alluvial silts, alder and goat willow are present with a typical wetland flora of yellow iris, common reed, marsh-marigold and great willowherb. Less abundant are pendulous sedge and thin-spiked wood-sedge.

Pettypool Golf Course

A different type of alder woodland rarely found in lowland Cheshire has developed on flushed slopes north west of Petty Pool. It contains very old coppiced alders with a ground layer of mosses and opposite-leaved golden-saxifrage.

Areas of dry woodland also occur throughout the site. They are particularly important for their ancient specimens of pedunculate oak and beech, the dead wood of which supports a characteristic invertebrate fauna. Clumps of over-mature beech are scattered around Petty Pool, and many old oaks are found on open bracken-dominated slopes north west of the pool.

Management

SSSIs are intended to safeguard the best of England's wildlife and geology and the Government has a Public Service Agreement (PSA) target to bring 95%, by area, of nationally important wildlife sites, into favourable or recovering condition by December 2010. The three woodland SSSIs are currently deemed to be in unfavourable condition. There is a potential issue of managing the woodland for its designated status and also what climate change function it can provide. Whilst these areas are deemed unfavourable there is still expectation that a land owner would have to spend over and above the grant aid currently available to manage these sites. e.g. WIG SSSI can cover 80% of agreed standard costs.

Wimboldsley Wood – Reasons for adverse condition: Game management - pheasant rearing, inappropriate scrub control, undergrazing

Pettypool Golf Course – Reason for adverse condition: Inappropriate scrub control, inappropriate weed control. The high cover of rhododendron is the principle reason for the unfavourable condition. Although big inroads have been made in controlling it further areas require future treatment using a systematic approach. The deadwood invertebrate community was not directly assessed although the levels of deadwood appear satisfactory. A future goal should be to regenerate the ancient oak trees using seeds collected from the site.

Hatton Heyes – Reason for adverse condition: Inappropriate weed control

Current Management Strategy

There may be several different ways in which the woods can be managed to best conserve their value for wildlife – by promoting an appropriate woodland structure, by ensuring regeneration and by looking after features that give the woodlands their designation.

The aim will be to create a diverse woodland structure with some open space, some areas of dense understorey and an overstorey of more mature trees; a range of ages and species within and between stands is desirable. Some dead and decaying wood such as fallen logs, old hollow trees or old coppice stools should be left as they are essential habitats for fungi and dead wood invertebrates. It may be necessary to make safe dangerous trees where they occur in areas of high public access.

Where they are a threat to the interest of the wood, invasive introductions such as rhododendron, Japanese knotweed and Himalayan balsam should be controlled.

Issues

General Issues

- Lack of management
- SSSI Woodland Units in different ownerships. Which can lead to inconsistent levels of management
- Designations on the site may require additional parties/agencies to be involved in the management of the woodland.
- Offer of grant aid does not guarantee that the work will be carried out.
- SSSI status may mean that advised work can be enforced upon the landowner.

Silvicultural Issues

- Condition status i.e. Unfavourable, may require woodland to be managed in accordance with its SSSI designation rather than to standard silvicultural prescriptions.

- Non-native weed species
- In Hattons Hey, beech is seen to be unacceptable due to the shading out of native ground flora, however sycamore is seen as acceptable.

Climate Change

- NVC classifications need to address suitability of species given predicted climate change.

Resolution

Designations on the site may require additional parties/agencies to be involved in the management of the woodland.

Optimal Resolution

- ;

Pragmatic Resolution

- ;

Rimrose Country Park

Introduction

The Context

The Rimrose Valley Country Park, with Rimrose Brook at its centre, runs approximately north to south, curving in a broad crescent to the east. It follows the sweep of the Leeds and Liverpool canal that forms the border on most of the eastern edge of the Park. All other boundaries of the Park butt into the surrounding housing estates of Waterloo, Litherland and Great Crosby.

The 128 hectares of the Park lie wholly within Sefton Metropolitan Borough Council providing a key greenspace in an otherwise highly urbanised area but, as it is a river valley within a low-lying coastal zone it is not visible from the surrounds, except from the raised tow-path of the canal to the east.

The Park's location separates the towns of Crosby and Litherland, ensuring that it is heavily used as a means of crossing from one urban area to another which is key to understanding patterns of use. Being within the urbanised landscape it provides an important amenity resource to the local communities.

The Site

The site is drained by Rimrose Brook which runs north to south and exits in the southern-most tip of the Park—the Brook is not always visible as it is culverted in the central section.

There is no significant aspect as the 'valley' is coastal and very broad in character. A few features developed after the landfill was closed provide some small relief or 'mounding' in the topography, being slightly raised above the surrounding valley.

Broadly, the Park is underlain with Triassic 'Sherwood' sandstone and across the site, the soils are typical of the Mersey valley. However, there are differences in the geology and hydrology between the north and south of the Park. For example, much of Brook Vale LNR lies on an exposed peat bed underlain by brown sands, however, a large section of the bed of the brook has been made impermeable which has reduced the wetting of the adjacent ground. In general the northern section of the Park is underlain with a boulder clay to the west and brown sands to the east.

History

The presence of ridge and furrow in the north of the Park indicates agricultural activity in the valley from medieval times, however the 19th and 20th Centuries saw an increasing urbanisation on the land around the valley, restricting agriculture to the lower land along the river margins (generally too wet for development). The growth of a significant urban population in close proximity to the valley led to an increase in problems associated with urbanisation, causing agriculture to become less viable in the valley, but equally led to the potential of the land to serve the urban population as a key element of green infrastructure.

Household and industrial waste was tipped in parts of the valley for a significant period prior to the 1950s, but a section of the valley was then used for commercial landfill up to the 70s. Cessation of tipping was followed by a superficial restoration of the land, sufficient for the valley to be declared part of the Merseyside Greenbelt in 1983. Plans were put in place to improve the site for social purposes and by 1990 Sefton Council had written a feasibility study for the future amenity use of the valley. A project programme and funding was put in place to enable eight phases of development between 1992 and 1998, with work finally concluding in 2001.

The Woodlands

There are 28 hectares designated as woodland within the Park, most of which lie within the central area of the Park dating from planting undertaken between 1995 and 2001 as part of the restoration work on the landfill. The woodland blocks, varying in size from 7 to 0.06 hectares, provide visual features within the Park, using amenity and lowland broadleaf species such as oak, ash, field maple, Scots pine, holly, birch, cherry.

There are also blocks of willow and alder scrub which have developed within the wetland areas between 1990 and the 2006 as a result of natural colonisation and are leading to a process of drying within the wetland habitats. In the wettest areas, alder (*Alnus glutinosa*) and grey willow are the dominant species, but where ground conditions are drier, birch (*Betula sp.*), poplar sp. (*Populus sp.*) and sycamore (*Acer sp.*) begin to make an appearance.

The oldest woodland around the boundary of the Park is of variable age and consists of a mix of sycamore, willow and poplar. It would have formed parts of hedge lines,

natural seeding and boundary planting associated with the older field boundaries, allotments and the original tipping areas.

Management

Apart from beating up, limited weeding after establishment, health and safety felling in the boundary areas, little or no woodland management has taken place as much of the woodland is still very young.

Some of the wetland woodland areas have been subject to clearance to reduce the natural colonisation and degradation of reedbed habitat.

Current Management Strategy

Each of the habitats within the Park are considered to be of significance in the Borough and the current configuration of woodland planting and natural colonisation is having a negative impact on all the habitats: The natural colonisation of the wetlands is leading to a loss of reedbed; the small blocks of woodland planting fragments the grassland habitat; and small size of many of the woodland blocks will prevent the development of true woodland habitat.

The woodland areas will therefore be consolidated and managed as sub-climax lowland broadleaf woodland (ash, field maple, birch, alder, hawthorn, holly) in accordance with the Park being within the Sefton red squirrel refuge buffer zone. Connectivity will be developed by establishing hedges and screens of suitable species.

Isolated blocks will be cleared and restored to hay meadow.

Issues

General Issues

Landfill, contaminated land, road building, habitat fragmentation

Utilities cross the Park – high pressure gas main, Rimrose Valley sewer and overhead high voltage cables.

Anti-social behaviour: Fly-tipping, off-road vehicles, alcohol and drug abuse.

Silvicultural Issues

Fragmented habitat

Squirrel buffer zone

Colonisation of other habitats

Maintenance of sub-climax lowland broadleaf woodland

Climate Change

Predicted increases in rainfall will enhance wetland habitat, but threaten adjacent amenity areas and habitats

Resolution

Optimal Resolution

- Adequate funding to maintain boundary integrity and patrolling levels
- Adequate funding to consolidate habitats and improve connectivity – especially woodland planting
- Improve water management techniques and structures
- Involve local communities and interest groups in habitat management and maintenance
- Intensive information dissemination programmes to surrounding communities and schools
- Youth ranger programme

Pragmatic Resolution

- Maintain manning levels and existing patrolling
- Improve boundary security in key areas
- Establish interest group links
- Maintain liaison with housing groups
- Establish woodland consolidation project, using EWGS and other habitat management funding to support woodland clearance, replanting, public consultation
- Clear scrub colonisation from hay meadows and reedbeds on annual basis

Sefton Pine Woods (Climate Change and Conflicting Objectives)

Introduction

The Context

The pinewoods on the Sefton Coast were planted at the end of the 1800s and beginning to the 1900s in an attempt to stabilise parts of the shifting sand of the dune complex that stretches 30 kilometres between the Mersey and the Ribble estuaries in the north west of England. Today, what remains of the original planting is about 420 hectares that lie between Hesketh and the Alt estuary. Land ownership is distributed between 27 different organisations and private individuals, varying in size from 160 to 0.20 hectares.

The sand dune complex has considerable conservation value with international designations, having the European status of candidate Special Area of Conservation (cSAC) for the fixed and shifting dune habitats, it is a Special Protection Area (SPA), a Ramsar site and has both national and local designations, including an SSSI, several National Nature Reserves (NNR), an RSPB managed wildfowl site, red squirrel refuge and buffer zone, several Local Nature Reserves (LNR) and numerous Sites of Local Biological Interest (SLBI).

The Site

There is 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).

The 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 is has a high pH and low organic matter content, but with time and increasing stability organic matter in the upper sections of the profile increases lowering the pH which drops even further under the pine plantations, at times contributing to a poorly developed iron pan at 20cm. Those areas regularly below the water table exhibit anaerobic profiles with reduced organic decay and higher pHs, causing peats to form in some dune slacks.

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

Prevalent sea currents, offshore topography, onshore geomorphology, soils, wind patterns and vegetation all play a role in changes that occur along the coastline. It is likely that the sea currents and offshore topography determines the major developments such as accretion in the northern and southern sections of the coastline or erosion at Formby Point.

History

Management of the dune area extends back for some centuries with some of the earliest recorded examples in the form of Acts of Parliament passed in the eighteenth century to control the over-grazing of vegetation by sheep and rabbits on the dune areas. By the nineteenth century, the threat of encroachment by windblown sand on the developing railway system, on large private properties and on valuable agricultural hinterland ensured that there were concerted efforts to stabilise the dunes using brush faggots and planting of marram grass.

As consistently successful techniques for dune stabilisation were established, the landowners began to look for opportunities to make best commercial use of the land. Where marram grass became marginally successful inland, a policy of conifer tree planting was adopted following the example in *Les Landes* on the west coast of France. The Weld-Blundell estate initiated a large-scale planting scheme using mainly Corsican and Austrian pines and some Scots, mountain and maritime pines. By 1920 the Formby and Blundell estates had planted significant areas, in the region of a thousand hectares, between Ainsdale and Freshfield.

During the Second World War substantial areas were felled for timber to make up the shortfall caused by the reduction in imported timber. Although some of the areas were replanted, towards the south much of the felled area remained unplanted. By the 1960s the old estates were sold off and broken up with landholding divided up between some 30 different owners.

The Woodlands

The 420 hectares designated as woodland is divided into 380 hectares of actual woodland, 15 hectares of scrub and 21 hectares bare ground (grassland). This woodland component is composed of 270 hectares of pinewood, the remainder being broadleaf and mixed woodland. The conifer component is made up of a majority of Corsican pine (158 hectares), some Scots pine (21 hectares) with the remainder being

mixed conifer. The broadleaf component is mostly natural regeneration of birch and sycamore, though some sycamore, willow and white poplar and a few other species (beech, oak, elm) were planted as part of the original design.

The age profile is significant, with 160 hectares over 70 years old, 96 hectares between 40 and 70, 142 hectares less than 40, with the majority of the latter two age groups being made up of natural regeneration. Looking at only the pine, the age imbalance becomes very pronounced with 144 hectares over 70, and only 55 hectares between 40 and 70 and 50 hectares under 40 years old—clearly skewed.

Management

Management of the woodlands can be divided into four phases: The first being from the late 1800s to 1950 with their establishment as protection woodlands and utilisation for commercial purposes; the second being between 1950 and 1980 with the breaking up of the ownerships and selling off to a number of landowners, with little or no management being undertaken; the third being from 1980 to 2000 with somewhat uncoordinated, limited and reactive management being undertaken for largely conservation and landscape purposes and further clearance of woodland to restore key dune areas; the most recent phase being from 2000 onwards has seen a concerted effort to consolidate and affirm the importance of the remaining woodland for red squirrel conservation and landscape value, coordinating activity and inputs and proactively dealing with issues.

Attempts to address the skewed age structure within the woodlands were first made in 1980 where a working plan prescribed restructuring of the forest to achieve 'normality' in age profile. A subsequent plan in 1997 specified a rate of felling at 2.8 hectares per year to restructure the woodland on the NNR. Finally a strategy written in 1999 proposed 3 hectares per year over the whole area of woodlands. In reality the plans and strategy were only partly implemented and were quickly outdated. After significant public opposition grew to the conservation felling of the frontal woodlands all woodland work on the coast was suspended by the Forestry Commission until a comprehensive management plan could be written for all the woodland area and consulted on to achieve broad consensus for further implementation.

Current Management Strategy

A 20 year plan was compiled in 2000 "to provide a coherent, comprehensive and long-term view of the woodland management" with a 20 year vision and 10 years of

management activity specified to help the owners work towards the vision. The plan was commissioned by a partnership between the Forestry Authority, owners, managers, interest groups and local residents to run between 2003 and 2022.

To achieve the plan's vision there are a series of management objectives which have broad principles dictating good silvicultural practice and partnership in achieving the vision. In isolation the many owners of the woodland cannot hope to see the objectives achieved, but as a co-ordinated whole they can be. In brief, the principles are:

- The creation of a 'healthy' age profile.
- To maintain the focus on a mixed pine species content as a food source for the red squirrel and to retain the existing woodland character.
- To maintain areas of indigenous mixed broadleaf, up to and no more than 10% of the total area—alder, birch, willow, hawthorn, elm and coppiced understory sycamore.
- To maintain a mosaic of broadleaf, pine, mixed woods, scrub and open areas providing diversification of habitat and species.
- To maintain dead wood within many of the compartments, where it is not a health and safety and fire risk, for conservation purposes.
- To work towards a mosaic of woodland structures (as well as species) by breaking up age and species mixes within stands, utilising natural regeneration potential where it exists.
- To monitor and provide for suitable habitats within the woodland structure for appropriate Priority Species.
- Finally, ensure an economic return where feasible.

Issues

General

- Strategy being event driven – a number of radical changes in the Government's forest strategy through the 1980s and 90s, changes in funding patterns, changes in ownership, pressure from active lobby groups and changing social needs meant that management was reactive and protective, rather than proactive and forward looking.
- Lack of adequate funding for management;
- Landscape and Social:
The pinewoods are perceived as a key feature of the Sefton Coast and as such are regarded as a public good;

A large, active urban population (c. 1,400,000 people) lives within 30 kilometres at a very high density of 21.4 per hectare (England average being 3.2).

Silvicultural

- The frontal woods serve as 'protection forest' and suffer the effects of strong, desiccating, on-shore winds.
- Climatic and site conditions throughout the woodlands are hostile with only trees and shrubs well-adapted to the conditions survive, with establishment often incurring high maintenance costs in some years.

- The growth rates, height and ultimate survival of mature woodlands are determined by a number of interrelated exposure factors such as topography of the dunes; the predominant wind direction; shape, width and orientation of woodland areas and coupes; shelter provided by other vegetation; the species, type and variety, utilised in regeneration; and the density of the regeneration.
- Wind throw—where height has exceeded 20 metres in the pine plantations localised wind-blow has occurred. Great care has to be exercised in thinning plantations and opening regeneration coupes, with each site being assessed for susceptibility.
- The pinewoods are ageing, the majority having been planted in the early part of the twentieth Century.
- Due to the landscape importance of the area, extensive clear-fell for regeneration is socially unacceptable.
- Natural regeneration of many species is occurring, where encouraged and the conditions are suitable.
- Often the slow impact of natural regeneration is perceived as inactivity by the public and precludes its use in regenerating plantations.
- Habitat requirements of the red squirrel require adequate cover of suitable coning pine and other small seeded species.
- The woodlands are generally underthinned.

Climate Change

- Increasingly wet winters leading to higher incidence of fungal attack – this increases the chance of *Dothistroma pini* attack on Corsican pine, highly susceptible to the disease.

Conflicting Objectives

- Significant conflict between conservation objectives for open dune habitat and red squirrel habitat:
 - The pinewoods are a refuge for the red squirrel (BAPs, National Red Squirrel Refuge).
 - The woods adjoin important wader bird and wildfowl sites (Ramsar, SPA, SSSIs and LNRs).
 - The woods adjoin important open dune habitat (NNR, SSSIs and BAPs).
 - The woods adjoin important open grassland bird sites (BAPs).
- Significant divergence in site objectives between public body and private organisations and individuals, some being open access, some not, but the public still regarding the woodlands as a public resource (even if only landscape), e.g. Sefton Council, golf courses, rifle range, private houses, The National Trust, National Nature Reserve.
- Strategies historically event driven – a number of radical changes in the Government forest strategy through the 1980s and 90s, changes in funding patterns, changes in ownership, pressure from active lobby groups and changing social needs have meant that management was reactive and protective, rather than proactive and forward looking.
- Lack of funding.
- Landscape and Social:
 - The pinewoods are perceived as a key feature of the Sefton Coast;

A large, active urban population (c. 1,400,000 people) lives within 30 kilometres at a very high density of 21.4 per hectare (England average being 3.2).

Resolution

General Issues

Optimal Resolution

- Maintain the 20-year plan, reviewing on a regular basis;
- Actively seek out additional funding sources;
- Mix of planting and natural regeneration;
- Accept higher levels of birch regeneration;
- High levels of coordination, activity monitoring;
- Maintain high levels of public consultation through life of plan.

Pragmatic Resolution

- Maintain the 20-year plan, reviewing on a regular basis;
- Actively seek out additional funding sources;
- Utilise natural regeneration potential where ever possible;
- Piggy-back coordination on other structures and events.

Silvicultural Issues

Optimal Resolution

- Maintain robust weather-proof frontal woodland area;
- 15 hectares of regeneration over each 5 year cycle of operations;
- Regenerate using planting in public areas;
- Regular thinning schedule to improve root stability, stand structure and to open up air flow;
- High levels of coordination, activity monitoring.

Pragmatic Resolution

- Maintain robust weather-proof frontal woodland area;
- 15 hectares of regeneration over each 5 year cycle of operations;
- Regular thinning schedule to improve root stability, stand structure and to open up air flow;

Climate Change

Optimal Resolution

- Regular thinning schedule to improve root stability, stand structure and to open up air flow;
- Change in species mix – less Corsican pine, more Scots pine, hybrid larch, Norway spruce;
- Accept higher levels of birch regeneration;
- Increase levels of hygiene to prevent importation of infected material (nursery stock etc);
- Monitoring of leaf browning incidence (to distinguish from salt damage etc);
- High levels of coordination, activity monitoring.

Pragmatic Resolution

- Regular thinning schedule to improve root stability, stand structure and to open up air flow;
- Change in species mix – less Corsican pine, more Scots pine, hybrid larch, Norway spruce;
- Accept higher levels of birch regeneration;
- Increase levels of hygiene to prevent importation of infected material (nursery stock etc);

Conflicting Objectives

Optimal Resolution

- Maintain the 20-year plan, reviewing on a regular basis and revisit vision every 10 to 20 years;
- High levels of coordination, activity monitoring.
- Maintain high levels of public consultation through life of plan.

Pragmatic Resolution

- Maintain the 20-year plan, reviewing at least every 10 years and revisiting the vision every 20 years;
- Piggy-back coordination on other structures and events activity monitoring.
- Piggy-back public consultation on changes to plan on other events and activities, engaging with free press whenever possible.

Old Lodge Farm Poplar Plantation, Burtonwood

Introduction

The Context

The woodland is in private ownership and is part of an agricultural complex, set within Old Lodge Farm, Burtonwood. It is surrounded by agricultural land and the open space of the old war-time Burtonwood airfield. The site is adjacent to the M62 Liverpool to Manchester motorway, not far from the M6 interchange and about 5 miles from Warrington, 10 miles from St Helens.

The Site

This area of Burtonwood is relatively flat with little aspect and few distinguishing land marks and is therefore known locally as 'the desert'. Being so flat and open, the poplar plantation is a prominent feature within the landscape.

The surrounding agricultural land is predominantly grade 2 with some grade 3 to the north, so the soils and drainage ensure that the land is reasonably productive.

History

The site is within Old Lodge Farm, Burtonwood and was an area of set-aside agricultural land planted with poplars in 1997 both as a commercial venture and community woodland. The original owner sold the plantation in 2008 in an attempt to realise some of the value on investment, after thinning operations were not carried out in 2004 and 2007.

The Woodlands

The plantation amounts to 8.9 hectares and was planted as a commercial venture and community woodland by the original landowner, comprised solely of poplar species – 75% *Populus beupre* and the remaining 25% a mix of *P. trichobel*, *P. ghoy*, *P. gaver* and *P. gibecq*. The latter three species were planted on the woodland fringe as they are wind-firm varieties. The planting was grant aided by the Forestry Commission through their Woodland Grant Scheme and payments were also made through the Farm Woodland Premium Scheme, which compensate for loss of agricultural income for 15 years. The project was a joint venture between the owner, The Mersey Forest and The Poplar Tree Company. Unrooted poplar setts of 1.2m in height were planted at a stocking density of 1200 per Ha in 2m x 4m spacing.

Management

Management was originally focused on enhancing the commercial value of the plantation with inter-row cultivation taking place from years 1 to 3 and mown annually in subsequent years. First thinning was scheduled for year 7 with alternate rows to be removed in year 10, however, the thinning operations have not taken place. Paths were mown to enable public access.

Management was overseen by the Poplar Tree Company.

Current Management Strategy

The current owner, who owns areas of woodland elsewhere, has revived interest in managing the plantation and whilst still wanting to maintain a commercially viable crop, would like to see more variety within the plantation. This would include the introduction of native broadleaved tree and shrub species under-planted after the thinning operations to maintain a continuous cover.

It is unlikely that a detailed management plan will be written for the plantation and The Mersey Forest will advise the owner on an annual basis utilising available resources to best effect to work towards the long term goal of achieving a mixed, native broadleaf woodland.

Issues

General Issues

Accessibility to the site is somewhat limited along a farm track.

The poplar plantation may not make a return on original financial investment due to the lack of management and possibility of disease within the crop.

Silvicultural Issues

Change of long-term management objectives;

Neglect of the first thinning operation;

As a commercial plantation, the woodland is all of uniform age structure;

Poplar species can be susceptible to *Melampsora medusae* which causes leaf rust and affects the timber quality and growth rate of the trees. It appears that *Populus beaupre* is more susceptible than some of the other species planted.

Climate Change

Wet humid conditions tend to increase the likelihood of *Melampsora medusae* affecting the plantation.

Resolution

Optimal Resolution

- Catch up with the thinning programme. i.e. alternate removal of rows;
- Under-plant mixed broadleaves and shrubs;
- Sell thinnings to maximise return on the crop;
- Try to balance the commercial viability with the goal of continuous woodland canopy cover;
- Harvest final crop at appropriate time.

Pragmatic Resolution

- Identify with the Forestry Commission the most appropriate way of accessing funding through EWGS to change the composition of the woodland;
- Identify a contractor who may take the thinnings in return for providing the labour for felling and extraction.

Owley Wood, Vale Royal, Cheshire

Introduction

The Context

Owley Wood situated at the north-eastern edge of the village of Weaverham (population of about 7,000) lies at the very heart of Vale Royal, Cheshire.

The wood is owned by the Cheshire Wildlife Trust (CWT) and is actively managed with the help of the Friends of Owley Wood (FoOW). Due to the location close to Weaverham (a large housing estate lies to west of the woodland) it has a high level of public use and suffers from social problems such as fly tipping and vandalism.

The Site

The woodland is bounded by the River Weaver to the east, open fields to the north and the village to the west. Aspect is sloping, running from west to north east. The soil, although of good quality, is thin in parts and prone to erosion due to the gradient of the site. The site lies largely upon Mercia mudstone, with smaller areas of pebbly sand and gravel.

History

The site was formerly owned by James Hugh Smith-Barry of Marbury and was originally known as Howley Wood. One of the earliest maps to show the woodland was one drawn up for the Weaver Navigation, an addition to the existing river Weaver to enable the passage of large transport ships. The woodland has never been clear-felled although more recently trees have been removed for health and safety reasons. At the south-eastern corner lies an area, which can still be seen on old maps of the site, that at the end of the last century was used as a rifle range.

CWT gained ownership of the site in the late 90's.

The Woodlands

6.27 hectares of woodland designated as an Ancient Semi-Natural Woodland, dominated by sycamore and oak, with species such as ash, sweet chestnut, birch and wych elm in the mix. The sweet chestnut, whilst being non-native, forms large structural features within the woodland. The sycamore is having a detrimental effect on the ground flora and is dominating the regeneration found within the woodland.

There is a high diversity of shrub species throughout the site: Rowan, alder, elder, blackthorn, dogwood, guelder rose, hawthorn, hazel, holly, field maple and privet.

Ground flora is bramble, ground ivy and bracken under heavier canopy. A higher diversity can be found in more open areas where gaps have formed within the canopy. Invasive species such as Himalayan balsam is present, as too are introduced flora such as the Spanish bluebell and crocus.

Management

FoOW was formed in 1993 in response to the problem of vandalism and fly-tipping and has ensured permissive public access ever since. Management work tends to be undertaken through a partnership between the FoOW, The BTCV, CWT and The Mersey Forest. It has included work such as footpath creation, creation of stiles, placing of boardwalks in wet areas, dangerous tree removal and minor clearance work. Litter is actively removed by the FoOW.

A circular permissive path way runs through the woodland and with five main access points to the woodland.

Current Management Strategy

The long-term vision is to improve the bio-diversity, native species composition and public access throughout the site.

The strategy is tied into the objectives and can be summarised by the following points:

- The woodland will be managed on a continuous cover basis and will favour the regeneration of native species.
- Invasive species will be actively removed throughout the period of the management plan.
- Deadwood will be created throughout the woodland by various methods depending on location.
- Site to be worked on by the relevant parties a rotation basis; i.e. five sub compartments over five years. Once areas have been cleared time will be given in order to evaluate the amount of regeneration and ground flora present.
- Permissive paths will be kept safe and clear.
- All works within the management plan will adhere to national guidelines for the management of sustainable native woodlands.

Issues

General Issues

- social problems such as fly tipping and vandalism;

Silvicultural Issues

- Domination by non-native sycamore, sweet chestnut, Spanish bluebell;
- Invasive species – Himalayan balsam;
- Lack of regeneration of native species;
- Gradient of slopes.

Climate Change

- Increased rainfall prompting damage to thin soils.

Resolution

Optimal Resolution

- Management partnership maintained;
- Continuous cover regime established;
- Non-native species removed over time;
- Replanting only with species appropriate to W10, Lowland Mix Broadleaved Woodland with Bluebell / Wild Hyacinth;
- Vandalism controlled and fly-tipping removed promptly;
- Deadwood retained away from paths.

Pragmatic Resolution

- Management partnership maintained;
- Continuous cover regime established;
- Non-native species reduced over time;
- Replanting only with native species;
- Vandalism reduced and fly-tipping removed when resources allow;
- Deadwood retained away from paths.

Naylors Wood, St. Helens

Introduction

The Context

Naylors Wood is situated in Newton-le-Willows, close to the eastern boundary of St. Helens Borough Council. Naylor Wood sits immediately adjacent to Newton Brook and is bordered by Park Road North, Network Rail and local residencies. It is an important amenity woodland, regarded as part of the adjacent Mesnes Park amenity area, regularly used by dog walkers and as a walk through from Church Street to Park Road North. The permissive footpath means that it is easily accessible.

The Site

The site slopes gently towards the Newton Brook. A small tributary runs through the middle of the woodland and into the brook. Both the tributary and the brook occasionally flood the lowest levels of the woodland during the winter months.

History

Unknown

The Woodland

A semi-mature / mature riparian woodland of 1.6 ha which contains a mix of ash, sycamore, willow, elm and alder. The willow and alder thrive particularly well next to the watercourses which flow through and adjacent to the woodland. Very wet / damp soils near these watercourses have developed into wet woodland habitat. Mature sycamore trees are more dominant on the higher, drier area to the north of the site adjacent to Church Street.

Natural regeneration is very limited, although advanced regeneration of sycamore, willow and oak is present. Understorey density is sparse and consists of hawthorn, elder and a yew. There is a large woodland opening within the compartment and Japanese knotweed covers a very large proportion of this, with particularly bad areas concentrated next to the water courses. This area of knotweed is limiting floral diversity and is likely to spread rapidly throughout the woodland field layer if left un-checked. Himalayan balsam is also a problem.

Timber potential from existing mature trees is very poor due to bad form and the lack of previous management aiming to produce viable timber. There are many semi-mature trees which could be developed and the small population of young oaks should be encouraged as future canopy trees in drier areas.

Management

The woodland is managed by the St. Helens Ranger Service. Currently, only reactive management is undertaken, for example, in response to trees falling onto footpaths. Older management activity is evident by the presence of old large stumps in the undergrowth.

The Mersey Forest is now helping to write an UKWAS compliant management plan for Naylor's Wood, along with the small area woodland that exists in Mesnes Park.

Current Management Strategy

Reactive management to dangerous or fallen trees is the only management strategy used within Naylor's Wood by the St. Helens Ranger Service. The Mersey Forest has previously submitted applications to the Forestry Commission for Woodland Management Grant funding and will continue to help provide funding through the EWGS.

Issues

General Issues

Lack of specific woodland management plan stating clear objectives.

Fragmented Council structure leading to broken lines of communication and responsibility.

Lack of time, money and resources held by the Ranger Service.

Silvicultural Issues

Lack of management leading to the development of poor woodland structure, diversity and regeneration. There is a distinct lack of an understorey layer.

Non-native species – the presence of Japanese knotweed is a particular problem. It has dominated a large area of the woodland floor, particularly close to the water bodies

limiting natural regeneration. Although a policy exists within the council to eradicate the weed from its land, a lack of a concerted and sustained effort is evident. There appears to be no specific plan to control the invasive weed. The rangers, who directly manage the site, do not have immediate responsibility for the spraying of Japanese knotweed (this responsibility lies with the maintenance unit).

In other areas there is a distinct lack of natural regeneration occurring. Again, it is the wish of the rangers to underplant the woodland, but time and resources do not allow them to do so.

Climate Change

Increased rainfall may mean flooding of the woodland floor is more prevalent. The presence of Japanese knotweed impeding any alder, willow regeneration, which thrive along the riparian areas of the woodland, will exacerbate flood alleviation problems in the future.

Resolution

Optimal Resolution

- Clear management objectives and up-to-date management plan.
- Regular spraying and monitoring of Japanese knotweed and Himalayan balsam population.
- Increased number of rangers to deal with work load.
- Regular woodland management work to improve woodland structure (including thinning out of younger areas of even aged regeneration) and negate neglected look.
- Underplanting to supplement natural regeneration and improve species diversity.

Pragmatic Resolution

- The limited amount of time the rangers can afford to spend on the woodland is spent maintaining site safety, with more time always being afforded to the frequently used, high profile sites. The completion of an UKWAS compliant management plan outlining low-impact silvicultural prescriptions should be useful to focus the limited amount of time available to the most important tasks (excluding safety work).
- Renewed spraying of the Japanese knotweed by the maintenance unit, to be monitored by the rangers while on patrol.

Home Farm, Dog Kennel Plantation, St Helens

Introduction

The Context

Home Farm is situated in south St. Helens, adjacent to Griffin Wood. Dog Kennel Plantation runs through the land and forms part of a belt of woodland that extends from Griffin Wood to the top of Hall Lane.

The Site

The site slopes slightly from north to south. The soil is a brown earth with a thick layer of humus. A deep ditch runs through the woodland along its length on the eastern side and continues south through the rest of Dog Kennel Plantation.

History

The woodland was part of the old Bold Hall Estate which dates back to the 1600s, though only came into prominence in the 1700s when Peter Bold, MP for Wigan had a significant mansion built by a Venetian architect. The Hall was demolished in the early 1900s. The woodlands were used mainly for pheasant rearing and shooting.

The Woodlands

Dog Kennel Plantation is 1.63 hectares in extent. The canopy is dominated (85-90%) by mature sycamore trees, interspersed with specimens of silver birch, oak, beech and elm. The majority of the woodland understorey is composed of a dense, impenetrable rhododendron cover. Regeneration and ground flora diversity is, as a consequence, very poor and where rhododendron does not dominate, bracken and bramble exists at a low density. There are several small areas of wet ground where nothing grows.

Old pheasant pens litter the woodland in the undergrowth and there is evidence of local kids using the woodland as a hide-out.

Management

Since Bold Hall was pulled down in the early 20th Century, there has been very little management in the woodland, which was planted up with sycamore to form the woodland canopy and rhododendron to form the understorey. Until recently, there have

been no management objectives and as a consequence, the woodland has been left to develop on its own for a significant length of time.

There has been a change in ownership once Home Farm was developed into a series of houses, with the largest house owning the woodland and some farmland. The owner is keen to bring the woodlands back into management.

Current Management Strategy

The landowner has applied for money from the EWGS to remove the rhododendron understorey and begin to thin the sycamore canopy. Although removal of sycamore is not a primary objective, under-planting will be with a more diverse native species mix and where they exist, native species will be favoured in thinning and cleaning exercise over the long term. Bramble and bracken growth is to be monitored to ensure it does not inhibit tree regeneration and ground-flora following management work.

Japanese knotweed is present on site and will be removed.

Issues

General Issues

Although grant money will pay for roughly half of the costs for the management work, the landowner is naturally reluctant to cover the remaining costs. A continued lack of investment will threaten the long term health and value of the woodland.

Silvicultural Issues

Very little natural regeneration due to the sycamore canopy and heavy rhododendron understorey.

The even-aged mature canopy means that there is little structural diversity.

Heavy shading prevents ground flora development.

The rabbit population also limits regeneration.

Climate Change

The sycamore canopy may become more important in future years as one of the more suitable species to cope with climate change.

Resolution

Optimal Resolution

Complete funding for management work through the grant schemes would encourage landowners to undertake work;

Complete removal of rhododendron and Japanese knotweed;

Annual management, including weeding and cleaning around natural regeneration and underplanting, thinning where necessary and bramble and bracken clearance;

Control of the rabbit population.

Pragmatic Resolution

Funding through EWGS (most likely WIG) to carry out work in priority areas, but this will be dependent on the landowner's finances.

Croxteth Country Park

Introduction

The Context

Croxteth Country Park is situated on the north eastern boundary of the City of Liverpool, surrounded by housing developments built in last 30 years on land that was sold off from the original Earl of Sefton estates. The remnant Country Park is a mosaic of park land, pasture, meadow, grassland, woodland, scrub, shelterbelt and hedgerow with the original, largely Edwardian family house still at its heart.

The Site

The topography is generally flat and soils are heavy clayey loams with low permeability that are typically seasonally flooded. The extensive network of drains installed by the estate in the 18th and 19th Centuries has reduced flooding, but in areas where the drains have been disrupted by the construction of the surrounding housing, the soils have once again become waterlogged, with indications of crown die-back in many mature trees.

The River Alt runs through the woodlands, just to the north of the main house, forming the watershed for the whole area and is the backbone to a drainage system.

History

Up until the 16th Century the whole area would have had a good woodland cover, part of an ancient natural woodland stretching from Formby into northern Cheshire. Changes in agricultural practices in the 17th Century and the land enclosures of the 18th Century led to the woodland becoming fragmented with land cleared and drained to make way for 'improved' arable and livestock farming.

Croxteth Park was owned by the Molynux family from the mid 16th Century until 1972 when the 7th Earl of Sefton died and the estate was broken up to pay for the death duties. The estate was taken into public ownership in 1975 by the Merseyside County Council who subsequently passed it on to Liverpool City Council when dissolved in 1989.

A part of the woodland—Mull Wood—was designated as Local Nature Reserve in 2004 and is being reviewed for expansion.

The Woodlands

There are 90 hectares of woodland within 218 hectares of country park setting, predominantly over-mature, under-thinned oak woodland with a rhododendron lower canopy, originally managed as game cover. Some compartments contain trees of straight stem, potentially good timber trees, but have been reported as having either ring or star shake.

Sessile oak is the main canopy species, though there are areas of sycamore, common lime, wheatley elm and Turkey oak and mixtures that include horse chestnut, lime, rowan, Japanese larch and Scots pine. The number of different species in the upper canopy is typical of such estates, reflecting experimentation by the woodland managers looking for suitable timber and ornamental species. The woodlands have been classified as Recent Secondary Woodland with few or no Ancient Woodland indicator species.

Management

It is apparent that the present Croxteth Park woodlands are part of a mosaic of estate woodlands that were re-established over a period of 130 years from the mid 1800s. The woodland were managed for their importance in the landscape, as a source of timber and as structured game cover. The high levels of rhododendron in the lower canopy are a result of their use as cover for game bird shooting.

Some effort to improve the age structure of the woodlands was made between 1982 and 1986 when about 8 hectares were subject to remedial felling and underplanting. Subsequent slimming down of property management teams and budgets within the Council led to neglect of the planting sites and cessation of any further remedial work, with the result that they have been inundated with birch and sycamore regeneration where it has broken through the bracken and bramble undercover.

With the help of Lancashire Wildlife Trust, about 22 hectares of woodland were designated as a Local Nature Reserve, leading to volunteer-driven efforts to improve biodiversity by reducing sycamore and rhododendron and the redevelopment of small areas of the woodland with more native species.

Funding through The Mersey Forest managed ICEP fund between 2005 and 2008 provided some resources for Lancashire Wildlife Trust, in partnership with the Biodiversity Officer within the City Council, to carry out some additional woodland management work in the LNR.

In 2004/2005 The Mersey Forest Team helped write an UKWAS compliant woodland management plan for the Park.

Current Management Strategy

A pragmatic approach to managing the woodlands requires a relatively low input method of management. A selection forest system was adopted, utilising natural regeneration of suitable native species where abundant, together with a schedule of understorey and weed cleaning—reducing rhododendron and competition from weeds—to coincide with funding cycles.

In the short term the Mersey Forest ICEP forestry grants and in the longer term, the England Woodland Grant Scheme help to fund a proportion of the management costs, but additional funding will always have to be forthcoming to ensure resources adequate for sustainable management of the woodlands.

Issues

General Issues

Social issues within the outlying woodland—vandalism, substance abuse, guns;

Significant loss of landscape value with decay in woodland structures;

Fragmented Council structure leading to broken lines of communication and responsibility;

Lack of clearly stated management objectives until 2005;

Silvicultural Issues

Oak shake caused by water stress in dry summers;

Broken drainage systems creating soil water-logging;

Tip die-back causing stag headed oak due to water-logging;

Preponderance of non-native species;

Excessive rhododendron undercover;

Previous neglected management interventions;

If there continues to be a low level of investment by the City Council, the condition of the woodland will continue to deteriorate within the next 20 years to a point where damage will be irredeemable.

Climate Change

Predicted increase in winter rainfall and summer temperatures will lead to a greater incidence of oak shake in the timber and stag headed trees on the clayey soils of the Park.

Resolution

Optimal Resolution

Active management to reduce the impression of neglect

The existence of responsible staff on site

Clarified management objectives

Responsive management structures

Sustainable funding streams

or phasing of work to coincide with funding

Reduction of non-native species

Concerted effort to reduce rhododendron

Reinstatement of drainage systems

or species adaptation

Pragmatic Resolution

The reality of the situation is that there is unlikely to be a more stable funding flow; structures within the Council will always tend to give greater priority to more immediate site management issues (the house, the ornamental trees within the parkland, health and safety); money will not be available to rectify the drainage problems; money will not be available to significantly reduce the weed species like rhododendron;

The bottom line will be to:

- Maintain the UKWAS compliant management plan, updating every 10 years
- Tap funding streams to carry out woodland management work as when available
- Utilise volunteers to maintain priority areas (LNR)
- Gradually reduce non-natives

- Gradually favour pedunculate oak (*Quercus robur*), birch, alder, hornbeam, ash, with crab apple and hazel in the understorey.

Clock Face Country Park, St. Helens

Introduction

The Context

Clock Face Country Park has been created on the site of a former colliery that dates back to 1890. It is situated in south St. Helens, just to the east of the parish of Clock Face. The site was reclaimed by St. Helens Council as a community woodland and public open space in the late 1990's. The park contains young, developing woodland, footpath networks, meadow areas and a fishing pond that is leased to a local fishing club.

The surrounding area is largely agricultural and relatively 'leafy', although it is close to larger residential areas to the east and north. It is linked to the Sutton Manor woodland along the reclaimed mineral railway route and located near other young, planted woodlands of Maypole Wood and Griffin Wood, in total creating a relatively large area of partial woodland cover.

Clock Face Country Park is a community woodland and public open space and, as such, its primary use is as an amenity area.

The Site

The site is within the relatively flat south St. Helens area, but the park is raised slightly from its local surroundings, having been reclaimed from old colliery spoil heaps. As a result, the site is fairly exposed. The soil is relatively poor with trees having been planted into an imported topsoil layer above a layer of clay capping. Drainage can be an issue with water running off the mounds and pooling in hollows during heavier or prolonged rain events. This has led to localised tree and ground flora mortality. Drainage ditches have been dug around compartments to help cope with waterlogged soils and feed into the fishing pond, but they are prone to getting blocked and overgrown by alder suckering.

History

Previous to the Park's creation the site was used for dumping colliery spoil, hence its topography. The site was reclaimed by the council in the 1990's and developed as a community woodland once all the colliers were closed – the last (Sutton Manor) being closed in 1991. The woodland compartments were planted by the Forestry Commission (FC) in 1997/98.

The Woodlands

Woodland areas:

The woodland compartments were planted in 1997/98 and are composed of a mix of broadleaved and coniferous species. One compartment contains some older semi-mature species which regenerated naturally on-site before other woodland compartments were planted. Poor soils and exposure has led to white poplar, alder, willows and birch thriving throughout the site. In particular, white poplar and alder are suckering prolifically, representing the only substantial natural regeneration within the country park and where it has been planted at compartment edges it is spreading into adjacent open areas. Other species, such as oak, although established, are slower growing and, in places, is being out-competed. Several compartments contain a substantial amount of Corsican pine which has established well.

The compartment adjacent to the M62 is predominantly a stand of poplars interspersed with mixed broadleaved species. The understorey is lacking, but gorse is starting to spread through the stand from the south. The poplars act as a screen against the motorway for walkers along the permissive footpath system.

Some compartments suffer from anti-social behaviour, particularly fire lighting.

Amenity areas:

The permissive footpath system runs through the open grass and meadow areas, adjacent to the woodland compartments. However, unofficial desire lines have developed through some of the woodland areas and there is potential for them to be developed into permissive routes in the future. Only one compartment has a short section of footpath running through it, connecting to the road.

In general, there is 2-10m strip of grassland between the woodland edge and the hard surface pathways.

The open grassy areas and meadows which surround the compartments are subject to their own management regime.

Management

The St. Helens Council Ranger Service has recently taken over the management of the woodland compartments from another department within the St Helens Council from March 2008. Since establishment there has been very little management.

The surrounding meadow and open amenity grass areas are regularly mown under their own, separate management regime, overseen by a different department within St.

Helens Council. The fishing pond is undergoing management works to improve its condition, including path improvement.

Current management of the woodlands is reactive to health and safety issues.

The pathway network has just been resurfaced, although the paths do not enter the woodland compartments.

Current Management Strategy

The primary vision for the woodland areas is as an amenity resource and landscape feature within the Country Park. Commercial harvesting, when the woodland has developed further, would be unlikely due to the low volumes of saleable timber likely to be removed through thinning and felling work. There is, however, a good potential source of timber for 'in-house' use by the ranger service provided stands are thinned regularly to promote quality stems.

Management will therefore aim to develop the woodland structure and wildlife value, whilst ensuring it remains an important landscape and amenity resource within the Clock Face Country Park as a whole. The woodland compartments are going being entered into a certification scheme and as such will be comply with UKWAS and Forestry Commission guidelines.

Issues

General Issues

Clock Face Country Park, as with many urban/peri-urban woodland sites, has been a focus point for anti-social behaviour. This site has suffered from fires and other illegal activities. The problem occurs mainly in the car park area where people can park and be screened from the road by the planting on an adjacent raised, landscaped mound.

Lack of management in the past has meant some areas have become very dense and dark, giving a uninviting feel to them as well as beginning to develop tall spindly trees.

Several desire lines have been created through some of the woodland compartments, leading to potential safety issues (i.e. poor lines of site).

Silvicultural Issues

The woodland compartments are relatively young and, as a result, are even-aged. Over time, management will encourage a more diverse structure as the woodlands

develop into maturity. As the soil is particularly poor, white polar and alder was planted to ensure at least some tree cover was established. These species have established so well that they are suckering prolifically and could eventually threaten the development of a diverse species mix. These suckers are also spreading outwards from compartment edges, potentially reducing grassland and meadow space and blocking drainage ditches.

Climate Change

Flood damage.

Resolution

Optimal Resolution

- The continuous presence of ranger service on site to limit anti-social behaviour and carry out regular management work;
- Regular thinning regime to encourage the development of a healthy, structurally diverse woodland;
- Removal of landscaping mound adjacent to car park to increase visibility from the road and improving lines of site within woodland compartments;
- Conversion of favourable desire lines into official, hard-surfaced pathways;
- Clear and precise management plan;
- Sourcing of sustainable funding streams for the Council to continue woodland management work.

Pragmatic Resolution

The St. Helens Ranger Service is over-stretched and unable to adequately manage all the woodland areas with the Borough. Only a small amount of time is delegated to each site, often leading to the minimal amount of work being completed, with health and safety management taking precedence over other work. At the very least management input should include:

- Continued weekly ranger patrols;
- Heavy thinning in compartment adjacent to car park to discourage anti-social behaviour;
- First thinning throughout to improve structure;
- Selective felling throughout rotation as and when funding or resources allow;
- Investigation of potential funding sources for future development of path network;
- Removal of suckering in unwanted areas;
- Writing UKWAS compliant management plan.
- Access to EWGS to contribute towards costs of basic management work.

- Increase volunteer involvement as a way of increasing management resources.

Clinkham Wood, St. Helens

Introduction

The Context

Clinkham Wood Local Nature Reserve (LNR), owned by St Helens Metropolitan Borough Council, is an important amenity area located to the north of the Moss Bank ward, St. Helens. There are two smaller areas of woodland within about 0.2km north of Clinkham Wood. It lies within an area of residential housing which abuts onto the site on all sides, though the woodland is separated from the housing along some of the boundary by four large areas of amenity grassland.

The site is very close to the A580 and can be easily accessed from all sides. The woodland is a popular amenity woodland which is heavily used by the local community. Sculpture and sensory trails increase the opportunity for both able and less-able visitors to explore the woodland.

The Site

The woodland sits in a small 'clough', with a spring-fed stream running through it. The site generally slopes from north to south towards the A580. There are several small man-made ponds to the north of the site.

The soils are rich sandy loams overlying gravel and sandstone.

Permissive access is provided through several stone pathways. Desire lines have also been formed, creating a network of paths within the woodland. A stream, fed by a spring, runs most of the length of the wood.

History

Clinkham Wood has been a green space since the Industrial Revolution. Although Moss Bank has traditionally been an agricultural area producing potatoes, wheat and oats, the industrial revolution saw the development of quarrying and nail-making industries with an associated community growing up around the woodland.

Following the decline in nail-making in 1900, Clinkham Wood was neglected and little used, becoming overgrown.

The Woodlands

The LNR contains a relatively large broadleaved urban clough woodland with a spring-fed stream, open areas and glades.

The woodland is 8.05 ha in extent, the canopy composed of sycamore and oak, with ash and birch scattered throughout. Mature willow and alder have colonised the

damper areas around the stream to the south of the wood. A few specimens of red oak and black poplar also persist. The mid-range age class is lacking but advanced regeneration, particularly ash, is prolific in places, with oak (including red oak) and sycamore also regenerating. Advanced regeneration of all species is present.

Understorey species are sporadic and where it exists is mostly hawthorn and elder. Rhododendron, once a strong feature of the understorey, has been reduced and is now found in small clumps in a few areas.

The field layer contains wildflowers, including bluebell, wavy hair grass and wood sage, but bramble has colonised in areas of past thinning forming dense carpets and is preventing tree regeneration. Himalayan balsam and Japanese knotweed are present but are being actively controlled.

The northwest corner of the woodland has been left open and is dominated by bracken. The woodland glade to the south contains many naturally regenerated oak trees. Standing deadwood is well represented by some large dead trees away from any permissive paths but deadwood on the ground has been limited due to fire risks. Small fires caused by arson are a common problem.

Management

In the recent past the site was under-managed and as a result was under-used due to the perception of it being an unsafe place. Relatively recent management has improved the situation with the result that there has been an increase in everyday-use of the site.

Sycamore and some oak has been thinned across the site allowing more light onto the woodland floor helping to increase flora and fauna diversity. Open space has also been created through selective felling which is allowing natural regeneration of woodland floor species to develop. The rhododendron cover has been drastically reduced.

The ponds in the north of the wood have been recently restored (de-silted) and will be used as an educational resource for local schools. A stone path and board walk system are being constructed to allow access to the ponds.

Several stone paths have been installed to enable less-able visitors to gain access to the heart of the wood. Litter bins and dog waste bins have been installed to help reduce levels of litter and dog fouling. Metal chicanes at entrances limit unauthorised access into the park.

Clinkham Wood is one of seven parks in St. Helens that has achieved the national Green Flag awards which recognise and reward the best green spaces in the country.

Current Management Strategy

The site will continue to be managed for amenity and to enhance its value as a wildlife refuge. Quality timber production is not a priority.

Much of the management is reactive, responding to health and safety issues. The site is regularly patrolled by the rangers.

Issues

General Issues

The woodland is an urban woodland and as a result is heavily used. Anti-social behaviour can be a problem as the woodland naturally attracts youths from the surrounding community. The rangers are forced to remove fallen deadwood and are prohibited from creating habitat piles as they provide fuel for fires. Domestic waste bins from the local vicinity are regularly taken into the woodlands and burnt, sometimes at the base of trees which leaves them severely damaged and 'unsightly'. Benches and installed features are often vandalised, litter is also a problem and regular clean-ups are organised and undertaken by the 'Friends of Clinkham Wood' group.

In general the woodland is well maintained and is a very popular woodland resource, but a very small proportion of people seem to misuse the site.

Silvicultural Issues

Sycamore is a major component of the woodland and is viewed by some as an undesirable species. There will always be a need to gradually reduce sycamore in favour of naturally regenerating native broadleaved species as the regeneration is often prolific and it can be difficult to ensure native species also regenerate.

The open 'meadow' to the north is completely dominated by bracken. The lack of adequate resources mean that controlling the bracken is a low priority and will only be tackled if EWGS funding is granted, which means that meadow species are not developing within the grassland.

Himalayan balsam and Japanese knotweed are a problem.

Climate Change

It is possible that sycamore will be an increasing component of semi-natural woodland canopies as climate change progresses. If this is the case, then the policy to remove sycamore regeneration in favour of native broadleaves should be revisited.

Resolution

Optimal Resolution

The continued presence of rangers on site to reduce anti-social behaviour and manage the woodland;

A precise management plan with clear objectives;

Sustainable funding streams;

Removal of all rhododendron, balsam and knotweed.

Pragmatic Resolution

The St. Helens Ranger service is doing a sterling job at managing the majority of their woodland resource, including important amenity sites like Clinkham Wood, but it is overstretched and cannot work to the optimum resolution. With many existing and new woodland to manage, it means only a small amount of time is dedicated to each site, often leading to a minimal amount of work being completed and a focus on health and safety management.

Writing of an UKWAS compliant management plan;

Access EWGS funding to contribute towards management costs;

Encourage volunteer help and involvement to help increase available resources;

Continual monitoring and removal of non-native species;

Retain a proportion of sycamore within the canopy, favouring natives.

Areas 7, 8 & 9, Liverpool

Introduction

The Context

The three areas of woodland, known as Areas 7, 8 and 9 were originally part of the Earl of Sefton estates and are adjacent to and in part contiguous with the Croxteth Country Park in the north east of the City of Liverpool. The land, inclusive of the woodland was sold for housing development by Liverpool City Council approximately 30 years ago. As part of the development the woodlands were divided into three management areas and handed back to the residents with a financial dowry for their management. The residents set up three individual management companies (Parkland Area Management Company (Croxteth) Limited). Areas 7 and 8 are publicly accessible, however Area 9 was closed to the public due to anti-social behaviour, but is still accessible to the residents from their rear gardens.

The Site

The woodlands surround the Coachman's Drive housing estate which hosts over 400 properties and are highly visible from within and outside the estate. They are used by the residents and general public for informal recreation.

The topography is, as for the Country Park, generally flat and soils are heavy clayey loams with low permeability that are typically seasonally flooded. The area is extensively drained, originally by the Sefton Estates and later by the developers to reduce flooding typical of these heavy soils.

The River Alt runs through the woodlands forming the watershed for the whole area.

History

Up until the 16th Century the whole area would have had a good woodland cover, part of an ancient natural woodland stretching from Formby into northern Cheshire. Changes in agricultural practices in the 17th Century and the land enclosures of the 18th Century led to the woodland becoming fragmented with land cleared and drained to make way for 'improved' arable and livestock farming.

Croxteth Park was owned by the Molynux family from the mid 16th Century until 1972 when the 7th Earl of Sefton died and the estate was broken up to pay for the death duties. The estate was taken into public ownership in 1975 by the Merseyside County

Council who subsequently passed it on to Liverpool City Council when dissolved in 1989. The City Council sold some of the original estate land for housing development in the 1970s but required that the pockets of woodland and the old Coachman's Drive—a direct link between the Sefton and Knowsley Estates—be retained.

The Woodlands

The three areas of woodland amount to about 12.5 hectares and are within a designated conservation area. The woodland is typical of 17th and 18th Century estate-managed broadleaf woodlands consisting of beech, horse chestnut, Turkey oak, English oak, sycamore, ash, alder, holly, hawthorn, elder and some dense areas of rhododendron, having been used for game cover.

Management

Since the woodland was taken over by the management companies, input to their management has been *ad hoc* and reactive, often dealing with health and safety issues rather than working to a well-defined long-term plan.

In the last decade selective felling of dangerous or diseased trees has taken place, with some of the felled trees and branches being cut up and arranged into habitat piles. Replanting of mainly native species has also taken place within the same compartments, much of the work being undertaken by The British Trust for Conservation Volunteers (BTCV).

Current Management Strategy

The Mersey Forest has become involved in the past five years developing UKWAS compliant woodland management plans for each of the areas (2007).

As part of the push to improve management, Areas 7 and 8 have recently commissioned a full arboricultural survey to help identify dangerous trees in need of removal or surgery to make safe. Area 9 has attempted to reduce its public liability by closing the woodlands to public access.

Issues

General Issues

The burden for managing the woodlands has been placed on the management companies and the residents have come to feel that they would in fact be better managed by the Local Authority or the original developer. The liability for providing safe

public access is significant and the knowledge, skills and funding to meet those responsibilities are severely limited.

Anti-social behaviour has been a feature of these (and surrounding) woodlands, especially in Area 9 and it has led to the woodland being closed to the general public.

Silvicultural Issues

Ad hoc management over the past 20 years has resulted in an aging and decaying upper canopy and poor lower canopy biodiversity due to the rhododendron cover.

Location of the housing within the original design of the estate means that over-mature trees are too close to some of the houses with subsequent damage to both.

The lack of management has left the woodland over-mature with dense upper and lower canopies giving rise to a high incidence of disease within individual trees: There is evidence of artist's fungus in some of the Turkey oaks and bleeding canker on some of the horse chestnuts. The blocks of Corsican pine, in an un-thinned woodland and on clayey soils, are susceptible to red band needle blight—there is currently no evidence of the disease.

Climate Change

Changing weather patterns may make species more susceptible to fungus and disease and increase incidence of timber shake in the oak species.

Resolution

Optimal Resolution

- Maintain the UKWAS compliant management plan, updating every 10 years;
- Manage all three woodlands (Areas 7, 8 and 9) as one unit;
- Tap into increased woodland funding sources to ensure that the management companies carry out prescribed management plan activities;
- Create an active community involvement in the management of the woodlands.

Pragmatic Resolution

- Continue with the current management approach, accessing funding primarily through EWGS;
- Undertake urgent work indicated in the arboricultural surveys where the funding is available;
- Carry out minimum levels of management to maintain the woodlands as a safe public resource.

Woodlands Primary School, Formby

Introduction

The Context

The school is sited centrally within Formby, formerly a Lancashire residential town, now within Sefton Borough. The school is close to the Sefton Coast pine woodlands, a refuge for the red squirrel, and a small area of white poplar within the school grounds is probably remnant woodland originally part of the wider Formby family woodland estate.

The Site

Formby is built on a low-lying sand dune complex that stretches between the rivers Mersey and Ribble. There is blown sand up to a depth of 6 metres overlying boulder clay, with silt and peat lenses for a further 25 metre, eventually overlying the Keuper Marl series typical of the area. The topography is of dune and slack modified by the construction of the town infrastructure – the school grounds having been levelled and turfed to provide a suitable school environment.

History

The school has been in existence since 1967.

The Woodlands

A 0.34 hectare block of white poplar, up to 60 or more years old lying to the east of the school buildings. A photograph from the early days of the school show a much larger poplar plantation stretching along the southern boundary of the school, suggesting that the poplar was part of the long-standing initiative within Formby to stabilise the moving sand of the dune complex.

With the growing awareness of environmental issues, the school has turned the woodland into a nature trail for use as an educational resource. A circular path was laid down and information boards put in place to highlight points of interest.

Recent concern about the safety of the trees as they have aged has led the school to put the woodland block out of bounds to prevent any possibility of injury from falling branches.

Management

Apart from establishing the nature trail, bulb planting under a Mersey Forest initiative and minor health and safety work, little management has taken place within the woodlands with the result that the trees are moribund with little or no regeneration or suckering to ensure succession.

Current Management Strategy

Trees adjacent to an outlying school building and along a playing field boundary have been felled. Currently the woodland is closed off to allow for remedial work, if and when the money to undertake the work is found. Without significant resources it is unlikely that the woodlands will be brought back into management.

Issues

General Issues

- Lack of funding;

Silvicultural Issues

- Existing trees are moribund;
- No regeneration within the woodland;
- Within the red squirrel buffer zone;

Climate Change

- Rising sea-levels threatening the low-lying area;

Resolution

Optimal Resolution

- Funding is found through EWGS and other sources;
- White poplar is progressively cleared and replanted with species suited to the red squirrel buffer zone;
- A rolling programme of management allows the block to be reinstated as an educational resource with more features of interest.

Pragmatic Resolution

- Funding is found to make the woodland safe and carry out some thinning;
- Thinning allows for an under-planting programme of suitable species by volunteers and school children;

- Once the small work has progressed far enough, the nature trail can be safely reinstated.

Appendix 2

Historical Assessment of Woodland on the Sefton Coast - DRAFT

The Sefton Coast Woodlands: An historical perspective from 2012

Introduction

Drawing on historical and archaeological work undertaken on the Sefton Coast, this paper is an attempt to extract what is known about tree cover on the Coast and present that information as a story from the perspective of an observer in 2012. The scope of the work extends only to the area of blown sand on the coast—roughly speaking, west of the Liverpool to Southport railway line between Hightown and Ainsdale.

Information has been sourced from a variety of older and more recent work, such as: Sandy Shores in South Lancashire, the geomorphology of south-west Lancashire, written in 1953; An Archaeological Assessment of the Sefton Coast, written in 2007; Woodlands, written in 2006; Sand and Sea, Sefton's Coastal Heritage, Archaeology, History and Environment of a Landscape in North West England, the outcome of a conference held in 2004. Some time was also spent in the Merseyside and Lancashire Records Offices, looking at estate records for the area, the Yates map of 1786 and the OS mapping series from the 1840s onwards.

The approach has been to look at how the tree cover has changed over time from the end of the last UK ice age, but only in the context of human habitation of the coastal area. After the retreat of the ice sheets, about 10,000 years ago, the biological 'slate' on the land side was more-or-less wiped clean by the severity of the ice age¹⁰ and subsequent developments in the natural history have been heavily influenced by human activity from a very early age and so the two are considered in parallel.

A Narrative

Prehistoric Age

Up until 1086AD, there is no documentary evidence of changes in the Sefton area and the condition and extent of tree cover can, therefore, only be implied from archaeological findings and by the use of pollen analysis in soil deposits and lake sediments. As the location being considering is dominated by wind-blown sand, the

¹⁰ Woodlands. O Rackham. 2006. Collins.

opportunities to do this are very limited and so some inference is drawn from surrounding and underlying peat and clay deposits.

Palaeolithic – about 200,000 to 10,000 before present (BP)

The Palaeolithic is not dealt with in this paper as, in second half (100,000 to 10,000BP), the land was subject to an ice age, however, the geomorphology was clearly heavily influenced by the action of the resultant ice sheets and it is probable that sea levels were between 20 and 40 metres below the current level with the coastline much further west that it is today¹¹, perhaps even to the extent that the Isle of Man was part of the mainland¹²:



Early post-glacial coastline

(Reproduced with permission, Fig 6, Page 16, Sandy shores in south Lancashire, see reference)

Mesolithic or early Stone Age – about 10,000 to 6,000BP

This relates to a period in northwest England that begins roughly as the last sheets retreat from the area – about 10,000BP.

¹¹ Coastal Sefton in the Prehistoric Period. RW Cowell. 2008. Sand and Sea, Sefton's Coastal Heritage, Proceedings, ed JM Lewis, JE Stainstreet.

¹² Sandy Shores in South Lancashire, the geomorphology of south-west Lancashire. 1953. RK Gresswell. Liverpool University Press.

At the start of the period the sea levels were below the current levels, but as the ice melted the sea level encroached into the coastal plain and by about 7000BP it is considered to have moved as far inland as far today's Downholland Moss¹³. It eventually retreated again to the current coastline by the end of the period or early Neolithic. This was not a simple advance and retreat as the isostatic and eustatic movements of land and the climatic cycles would have 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 coastline)¹⁴.

This dynamic process does mean that archaeological information will have been lost to erosion or will have been submerged under what is now the Irish Sea. The significance for this paper lies in the fact that the low-lying coastal zone will have been important to human habitation as it was less harsh than the higher hinterland and would have provided an important source of wild food and other materials¹⁵ to Mesolithic man—apparently: “these freshwater wetlands are the second most productive sources of wild food in the world, after rainforests”⁴. The tidal zones, salt marshes and estuaries would have also provided specific wild food sources, which, when considered together would have enabled year-round living for hunter-gathers⁴.

It is likely that the coastal landscape would have consisted of:

“intertidal flats of sand and mud, merging into salt marsh which merged into freshwater swamp and fen woodland (woodland, such as alder, growing around the edges of swamps and pools).

Beyond the influence of this wet environment, the slightly higher ground was covered in woodland. This gradually changed in its composition throughout the early prehistoric period, from initially fairly open woodland of birch, hazel and pine to woodland dominated by alder, oak, hazel, elm and lime after about 7500BP”⁴

Pollen analysis of some of the Formby foot-bearing sedimentary layers show oak and hazel dominating with alder, birch and pine less well represented and finally small

¹³ Coastal Sefton in the Prehistoric Period. RW Cowell. 2008. Sand and Sea, Sefton's Coastal Heritage, Proceedings, ed JM Lewis, JE Stainstreet.

¹⁴ Sandy Shores in South Lancashire, the geomorphology of south-west Lancashire. 1953. RK Gresswell. Liverpool University Press

¹⁵ An Archaeological Assessment of the Sefton Coast, Merseyside – Part 1. M Adams, D Harthen (with a contribution by R Cowell). 2007. National Museums Liverpool.

amounts of lime and willow. It is also important to note that some of the soil samples have thrown up dune heath vegetation (of which the willow may also be an indicator) suggesting the presence of older stable dunes and sand dune ecosystems in the area from 9500BP¹⁶.

It is considered that man will have been too dispersed and limited in their technology to have much influence on the tree cover and will have hunted animals and gathered resources using their stone tools to hunt rather than modify their environment¹⁷. This supports the idea that the open woodland cover of the coastal zone would have provided a more suitable habitation for man than the thicker woodlands on the higher and drier ground of the hinterland—though even this is questioned by some authors and Rackham in his book *Woodlands*, suggests that the inland ‘wild wood’ was perhaps more open than is often portrayed. Whatever the condition of the wild wood, the rivers and fens of the Sefton coast would have provided natural breaks to live in and for movement around the region¹⁸.

Some of the footprints that have been found on the Formby beaches date from between 7000 and 6000BP and include prints of auroch, red deer, roe deer, wild boar, wolf, wading birds, unshod horses, cattle and goat/sheep interspersed with trails of human adults and children—the suggestion is that where the prints are associated this could reflect hunting or herding practices through their size, orientation, indentation and spacing. There is also evidence of the burning of trees and swamp vegetation associated with some form of management by people in nearby habitations indicated by the finding of wind-blown charcoal in the coastal mud flats near present-day Formby⁷.

Neolithic or Stone Age – about 6,000 to 4000BP (before present)

The pattern of living for the people of the Neolithic will have changed little from early Stone Age, though the quality of tool improved. Some hint of change is suggested in that the sites that have been found in Crosby, on the Wirral and on the upper Mersey show the settlements to be larger and the stone tools and flint knives very different to early times. Although there is evidence of the presence of domesticated animals, the

¹⁶ Evidence of Human activity in the mid-Holocene coastal palaeoenvironments of Formby, North West England. G Roberts, A Worsley. 2008. *Sand and Sea, Sefton's Coastal Heritage, Proceedings*, ed JM Lewis, JE Stainstreet.

¹⁷ *Woodlands*. O Rackham. 2006. Collins

¹⁸ Coastal Sefton in the Prehistoric Period. RW Cowell. 2008. *Sand and Sea, Sefton's Coastal Heritage, Proceedings*, ed JM Lewis, JE Stainstreet.

sites are still not considered to be permanent in the way that later farmsteads would be¹⁹.

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 and although the growing trees may not have been adjacent to the trackway itself, they will not have been brought from very far away. However, only a very few pieces showed evidence of being worked by tools⁹.

Gresswell and others reports findings (one going back to 1636) of stumps of oak and birch, that are associated with this period, in layers of clay exposed by the erosion of the frontal dunes between Blundellsands and Hightown and on the Wirral, broken off at about one foot and sometimes with logs lying adjacent to the stumps, between twelve to fifteen feet in length and a foot in diameter. This broadleaf forest, in which pine was no longer represented, was probably promoted by the falling of sea levels and the rise of the freshwater table which enable forest dwelling plants to develop, such as oak, birch and royal fern⁹.

Late Neolithic or Bronze Age – about 4500 to 2,800BP

It is in the early Bronze Age that significant disturbance to the 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, the clearance of woodland and settling 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 and was an ideal combination for the early agriculturalists. However, so far, no evidence of habitation has been found in the Formby area itself and

¹⁹ An Archaeological Assessment of the Sefton Coast, Merseyside – Part 1. M Adams, D Harthen (with a contribution by R Cowell). 2007. National Museums Liverpool.

inference has to be drawn from nearby settlements found at Lathom near Ormskirk (which itself is dated to a slightly later period, about 2200BP)²⁰.

It is possible that some of the smaller, more rounded charcoal fragments found in some of the soil profiles could be the result of early industrialisation. If this is correct, then the material can be associated with high-burning temperatures that would suggest the smelting of metals for tools and weapons²¹.

Iron Age – about 2800 to 2000BP (800BC to 50BC)

Elsewhere in the UK, there is evidence of a gradual shift to iron tools and weapons and an increase in material belongings as suggested by the finding of pottery shards and other material associated with settlement sites. The more settled pattern of living, taking advantage of rich agricultural soils and herding of domesticated animals increases and evidence of permanent structures are found in places such as Lathom, only about 10 or 11km northeast of Formby. It is possible that the wetlands remained important areas for summer grazing with seasonal structures to enable people to live there for several months at a time and although currently there are no findings in the Sefton area, parallels can be drawn from structures found in the Severn estuary that has some similarity to Sefton¹¹.

Roman occupation – about 50BC to about 410AD

Although the Roman occupation of England is by no means undocumented, there is no information available on the Sefton Coast and very little in terms of archaeological findings to provide insight, hence it is lumped into the undocumented, pre-historical section for this paper. Generally, 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”¹¹.

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 therefore an increased water-logging of the tidal flats making them less

²⁰ An Archaeological Assessment of the Sefton Coast, Merseyside – Part 1. M Adams, D Harthen (with a contribution by R Cowell). 2007. National Museums Liverpool.

²¹ Evidence of Human activity in the mid-Holocene coastal palaeoenvironments of Formby, North West England. G Roberts, A Worsley. 2008. Sand and Sea, Sefton's Coastal Heritage, Proceedings, ed JM Lewis, JE Stainstreet.

attractive for settlement or even seasonal habitation, but this is by no means certain and is disputed by some authors. It is also probable that the River Alt provided access to the area as part of the west coast trading activities during the Roman period. Some evidence of Roman settlement is provided by a series of small finds at Ince Blundell and has been associated with a farmstead¹¹.

In general, there is not much known about the landscape in Roman times as much of the evidence and writing concerns settlements and interlinking road systems. Peripheral areas such as the Sefton Coast are unlikely to feature in any account of life at the time. However, it is suggested that England was becoming recognisable in its 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 economy²², but this would not have stretched into this more remote part of the coast, so the remaining tree cover in the Sefton area is likely to have been more 'wildwood' in nature and it would have comprised of areas of open canopy woodland, either oak or alder dominated, depending on the water table, with some hazel understorey and birch mixed in.

Early Medieval Age – about 500 to 1000AD

It is not clear at what pace the Anglo-Saxon incursion from AD500 onwards proceeded into the Sefton area with the subsequent displacement of native Celtic population. Some indication of their presence is provided in place names such as Melling, 12km east of Formby, which is thought to be derived from a people who settled there that were followers of *Maella*, possibly from the Northumbrian Anglo-Saxon kingdom. Co-existence with the Celts was probably peaceful until the Anglian victory at the battle of Chester in AD614-616 when incursions 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 made the Sefton area uninhabited²³. There was also thought to have been a deterioration of climate at this point and an increase in

²² Woodlands. O Rackham. 2006. Collins

²³ An Archaeological Assessment of the Sefton Coast, Merseyside – Part 1. M Adams, D Harthen (with a contribution by R Cowell). 2007. National Museums Liverpool.

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 but was not part of the invading armies from Scandinavia, as in the east of England (apparently only reaching as far west as Manchester), 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, also the suffix *byr* as in Formby and Crosby. It is probable that the Alt provided a natural point for incursion into land that was sparsely populated having been abandoned due to the changing Anglo-Saxon settlement patterns and more hostile climatic conditions¹⁴.

Recent Historical Age

It is not until the Domesday survey of AD1086 that, for the first time, there is documentary evidence of how the land was being managed.

Medieval Age – about 1000 to 1400AD

The Norman invasion of 1066 and defeat of the Saxon king Harold at Hastings led to the establishment of the Norman kingdom and distribution of English land to the Norman barons. It is thought that periods of Saxon revolt and their quashing and threats to the Norman homeland led William to establish a commission to survey England in order to raise money for the defence of his realms. The Forest Law of 1072 and subsequent survey of 1086 recorded a quarter of the land and all forest in the title of King and his family, two-fifths as being held by the barons, with the remainder held by the church²⁴.

Most of the land north of the Mersey was awarded to the baron Roger de Poitou, but by the time of the 1086 survey, the land, part of 'the West Derby Hundred' in Cheshire, was listed as belonging to King William. There is not a lot of detail about the Formby area, except that the manor was held by three thanes (free men) and Formby itself was in the hands of the family of Roger son of Ravenskil, which may then have passed to the Formby family in 1400s.

Archaeological work on the lost settlements of the Sefton Coast suggests a process of early reclamation from the moss on the eastern side but also of loss to sand and sea incursion on the western edge, with whole settlements and field systems that were

²⁴ ???

recorded in 1086 survey being subsequently abandoned—Argarmeols at today's Birkdale (lost in the 1300s), Ainsdale (abandoned in the 1800s) and Ravenmoels (lost in the 1700s)²⁵.

That settlements and associated agriculture in this area 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 1086²⁶.

Post Medieval – 1400 to 1860AD

Examination of 19th Century estate plans to determine field patterns and names lead to the conclusion that extensive drainage programmes in the 1600s 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 coastal erosion and 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. However, this does not go as far as talking about cropping patterns or of giving any information on pastoral agriculture¹⁴.

It was in this period that reference is made to rabbit warrens and wardens in the records. It is generally thought that it was the Normans that introduced wild rabbits into the English countryside for meat and pelts²⁷ (this is disputed and the alternative theory of a Roman introduction is given small credence by the finding of rabbit bones in a Roman archaeological dig, though it is probable that the Romans kept the animal entirely domesticated). Henry Blundell and Robert Formby established formal rabbit warrens in the Sefton dunes in 1667, an ideal site with light sandy soils and plentiful vegetation. Maps from the 1818 Greenwood Map up until the 6 inch Lancashire OS XC SE sheet of 1909 still show some of this legacy by depicting rabbit warrens in the dunes.

²⁵ Searching for Lost Settlements – the example of Meols. R A Philpott. 2008. Sand and Sea, Sefton's Coastal Heritage, Proceedings, ed JM Lewis, JE Stainstreet.

²⁶ Woodlands. O Rackham. 2006. Collins.

²⁷ An Archaeological Assessment of the Sefton Coast, Merseyside – Part 1. M Adams, D Harthen (with a contribution by R Cowell). 2007. National Museums Liverpool.

The Yates Map of 1786 is probably the first accurate modern representation of the landscape and it is apparent that there is no woodland vegetation on the coast between Ainsdale and the Alt. It is necessary to go further south to Little Crosby before coming across Sniggery Wood, which is still there today as a small, isolated sycamore woodland, and the park at Ince Blundell:

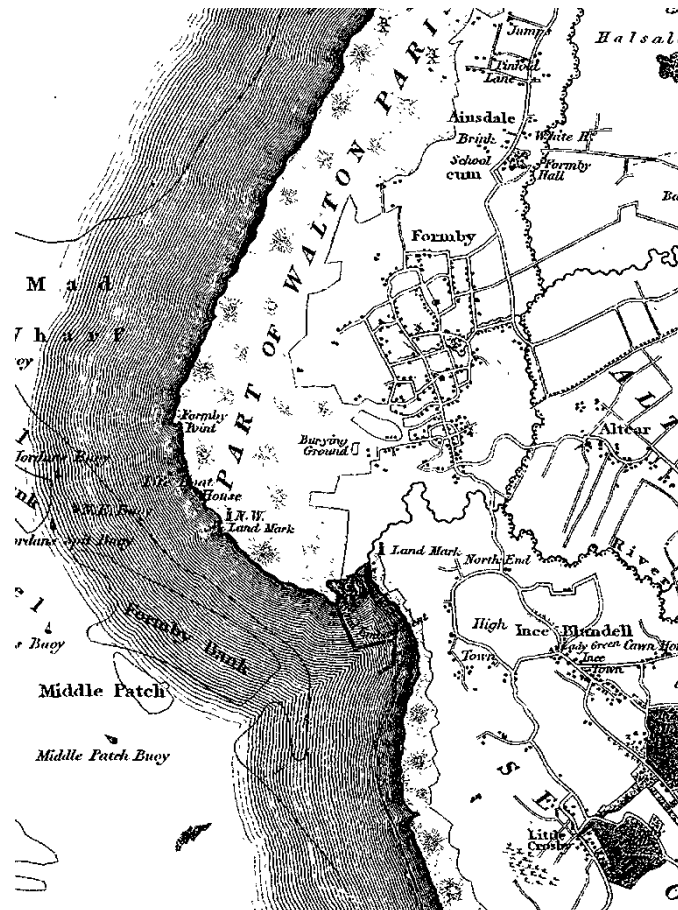


Part of the Lancashire Yates Map of 1786
(Reproduced with permission, Lancashire Records Office)

It is recorded that a Dr J Aikin in 1795 talked of sand hills, “in some places more than half a mile broad” and with few or no trees within the landscape and any that did exist were bent over against the wind “shorn on the west side, and bent the opposite way, would be apt to conclude that none would grow” somewhat reminiscent of trees found on the frontal dunes today²⁸.

²⁸ An Archaeological Assessment of the Sefton Coast, Merseyside – Part 1. M Adams, D Harthen (with a contribution by R Cowell). 2007. National Museums Liverpool.

The Greenwood Map of 1818 and Hennet Map of 1830 both confirm what is shown on the Yates map, there being no woodland cover in the area, with the exceptions of Sniggery Wood and the Ince Blundell park and also show rabbit warrens along the coast line:



Part of the Lancashire Hennet Map of 1829

(Reproduced with permission, Lancashire Records Office)

It is recorded that in 1795 the Reverend Richard Formby planted an area at the south western edge of Formby in what is now know as Firwood, an area of about 1.25 hectares which still exists as a mixture of pine and various broadleaf, though whether it is still the original planting is not so clear as modern (but by no means definitive) records give the age as 1900²⁹. Interestingly Firwood is not shown on any of the maps subsequent to the planting until the 6 inch 1850 OS map which otherwise shows the same landscape pattern as the older 1818 Greenwood and 1830 Hennet Maps.

The significance is that it is possible to say that trees on the modern day Sefton Coast have been introduced only after 1860, with the slightly earlier exception of the Formby

²⁹ The Sefton Coast Woodland and Scrub Management Strategy. 1999. JCAS, SMBC.

Firwood and a small area around The Grange on Altcar. The introduction of trees into the landscape coincides with the decline of rabbit 'farming' and the upsurge of asparagus cultivation, beginning in the 1700s for which Formby was ideally suited and subsequently became famous.

Modern Age

1860 to 1990AD – The increase in tree cover

A certain amount of the following information has been gleaned from estate records held in the Merseyside Records Office, it has also greatly benefited from work undertaken by Reginald and Barbara Yorke. However, most of the information comes from comparison and interpretation of the series of OS maps available from 1850 onwards (1850, 1893, 1908, 1927, 1956-70).

Tree planting along the coastal dunes has been linked with dune stabilisation and efforts to reduce sand blow into the asparagus growing areas and onto the Liverpool to Southport railway line which had been built in the 1840s. Prior to this land reclamation and dune stabilisation had involved marram grass (or sea reed or star grass) planting and the placing of gorse faggots into moving sand to trap it and subsequent grass planting to stabilise it. The planting of willow has also been associated with this stabilisation work in the early 1700s. Land reclamation was undertaken at the mouth of the Alt, to the extent that today's Altcar Rifle Range is largely sited on what was reclaimed poor quality agricultural land³⁰—comparison between the 1850 and 1893 OS maps clearly shows an area of tidal flat brought into rough pasture.

It is in 1885 that extensive tree planting began to play a part in dune stabilisation when Dr Richard Formby renewed his father's experiment at Firwood on a larger scale by the planting of about seven hectares of Austrian and maritime pine on Shorrocks Hill. This coincided with Charles Joseph Weld-Blundell inheriting his estate in 1887 from his father and immediately beginning the planting (about 9 hectares) of Scots pine south of Victoria Road in what he called Jubilee Wood. It is the first planting in the area now known as the National Trust squirrel reserve on Formby Point and in all some 25 hectares were established over the whole area in the period up to about 1893.

³⁰ The Sands of Time, An introduction to the Sand Dunes of the Sefton Coast. PH Smith. 1999. National Museums & Galleries on Merseyside

The initial use of Scots and maritime pine was superseded when a very limited success in establishment prompted a visit by Charles Weld-Blundell to *Les Landes* on the north west coast of France to see the much more successful Corsican pine grown there by the French foresters. Both estates subsequently used Corsican pine together with a nurse crop of French hybrid black poplar²². The origin of the Corsican pine would have been France in the first instance, but was later sourced from a number of places and eventually the Weld-Blundell estate developed its own tree nursery to raise planting material from seed brought in from Denmark.

In the subsequent decade between 1890 and 1900, about 157 hectares of dune were planted on the Weld-Blundell estate, largely of Corsican pine and included significant areas of frontal dune from Lark Hill lane up to Fisherman's Path.

The next tranche of planting was undertaken in the decades leading up to the 1930s when nearly 120 hectares were planted of, again, mostly Corsican pine. The areas included some in-filling but also a new block north of Fisherman's path and some areas on the remnant of the Formby estate including about five hectares on the dunes at Ravenmoels. With the death of Charles Weld-Blundell in 1927, the estate passed to Captain EJ Weld-Blundell who was subsequently advised by the estate manager not to continue tree planting for the time being for adverse tax reasons³¹.

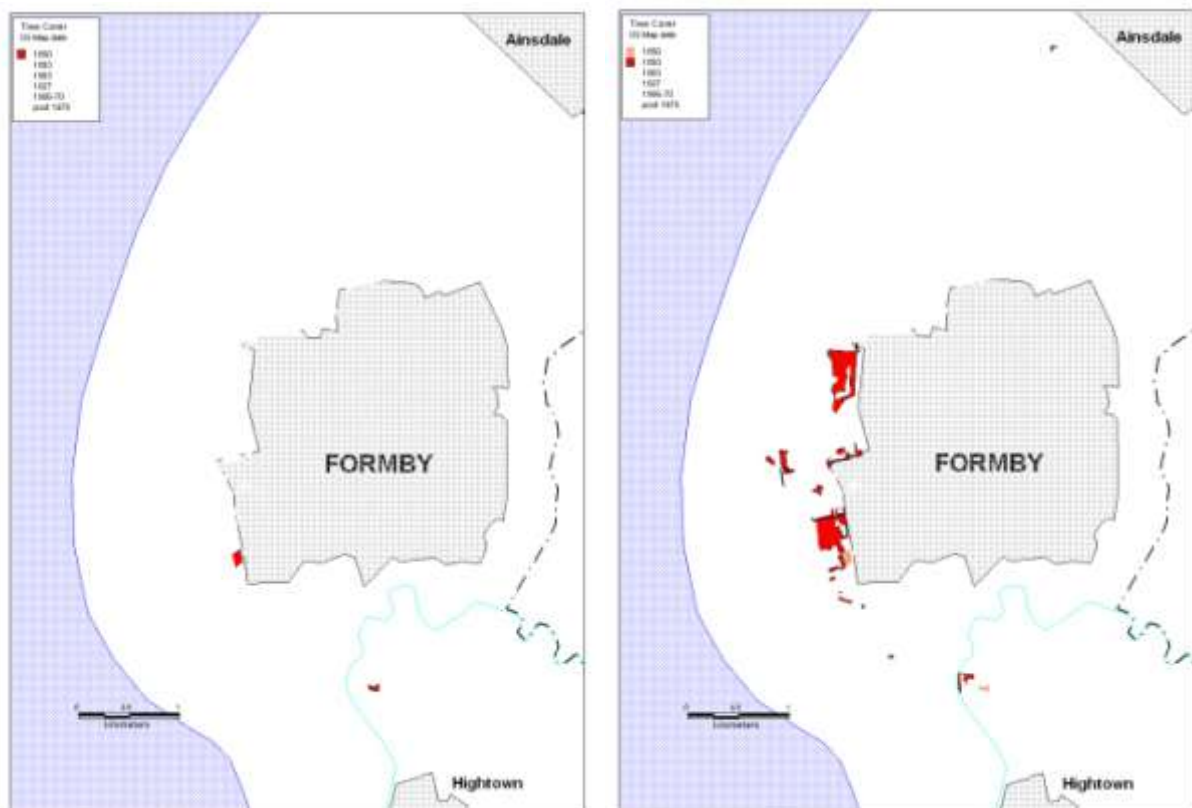
The last major push to plant the dunes occurred in the period after the war and up to the mid 1950s, with another 100 hectares planted, again in-filling with Corsican pine north and south of Fisherman's Path. It is probable over this time that some 20 or so hectares of what was probably open dune scrub began to evolve, or was allowed to evolve, into more identifiable birch woodland. This phase drew to a close with the death of EJ Weld-Blundell in 1958 and saw the break-up of the Weld-Blundell estate and sale of the land and trees to the Nature Conservancy Council in 1965 and the National Trust in 1967²¹.

The only other significant areas planted subsequent to the 1960s has been on the Altcar Rifle Range and Formby Golf Courses which have had introduced about 35 hectares of small blocks of largely pine planting in unused sections of the Range and Course to provide shelter and wind breaks for their activities. The bulk of the planting was carried out between 1970 and 1990, though 7.5 hectares were planted between

³¹ Pine Trees and Asparagus – the development of a cultural landscape. R & B Yorke. 2008. Sand and Sea, Sefton's Coastal Heritage, Proceedings, ed JM Lewis, JE Stainstreet.

2000 and 2005 by the National Trust, Sefton Council and Altcar Rifle Range to provide wind breaks and protection within or in front of areas of deteriorating pine woodland. It was also in these decades that a significant amount of dune scrub developed into what is now considered to be woodland cover—this is distinguished from those areas that have also developed thick scrub but are not designated as ‘woodland’, some of which have been subsequently cleared under various dune scrub management programmes.

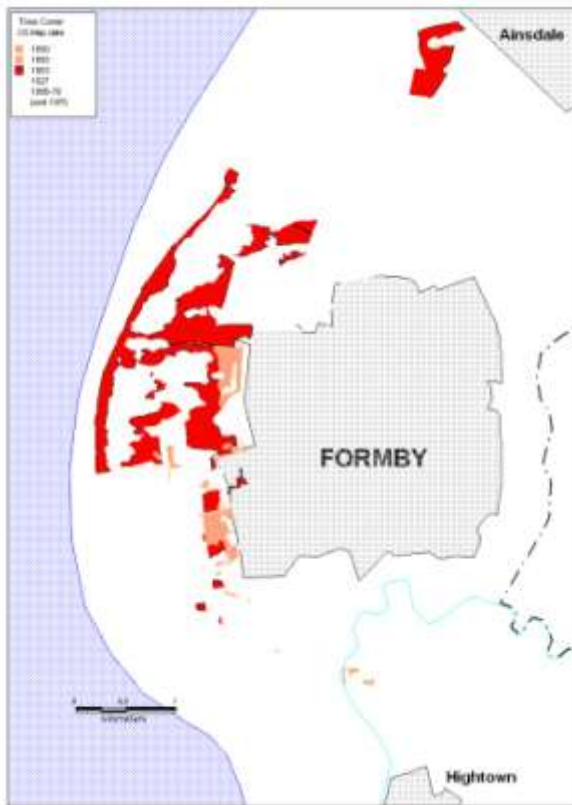
The following diagrams show the changes over the series of OS maps – the time line is dictated by the mapping period and has no other significance. These maps are not definitive as current woodland management plans and maps were not available to verify actual boundaries, however, it is considered to be a reasonable representation, despite some small differences with Creswell’s maps of plantation cover³², as it appears to coincide fairly accurately with the woodland as it exists today:



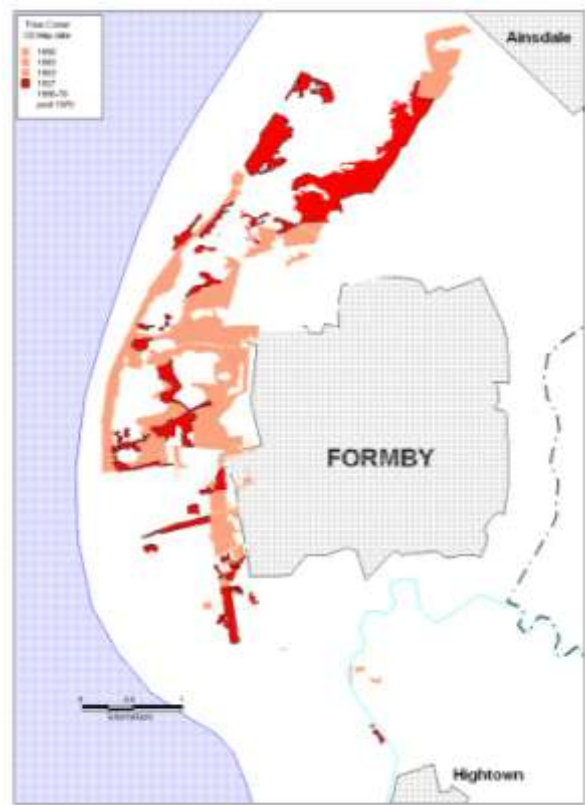
From 1850 OS Map

From 1893 OS Map

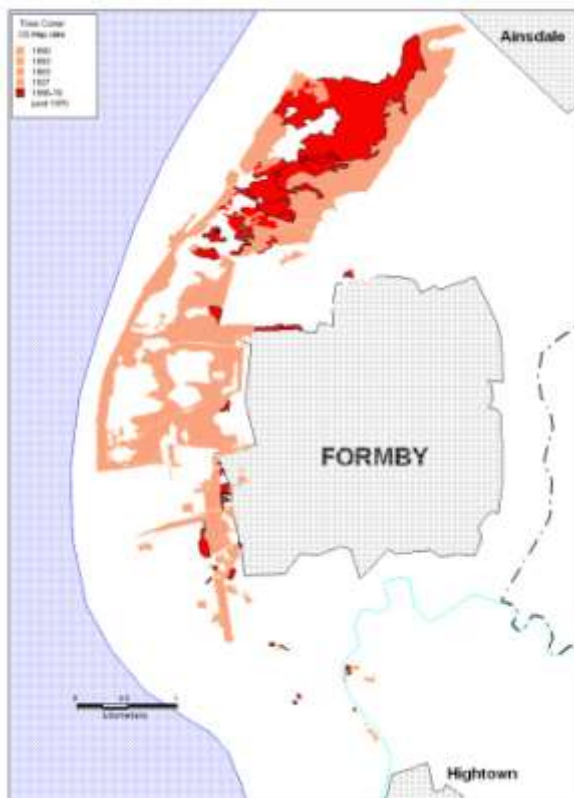
³² Sandy Shores in South Lancashire, the geomorphology of south-west Lancashire. 1953. RK Gresswell. Liverpool University Press



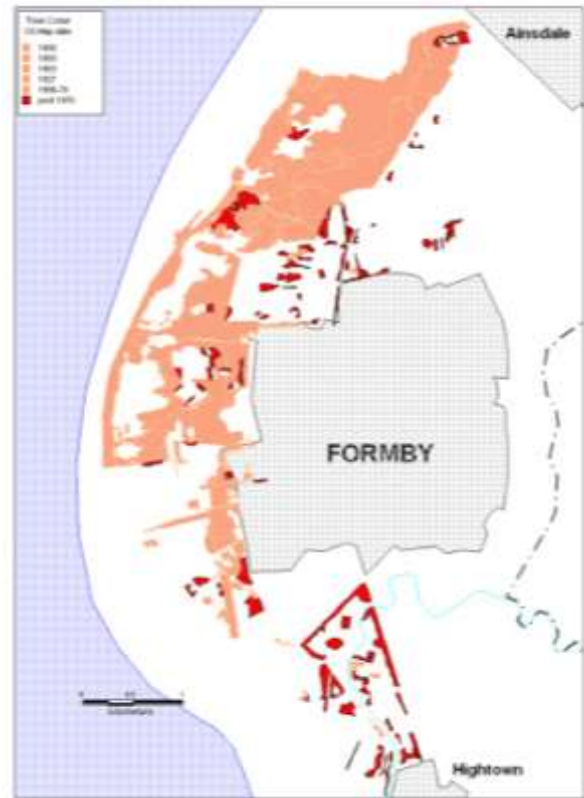
From 1903 OS Map



From 1927 OS Map



From 1956-1970 OS series

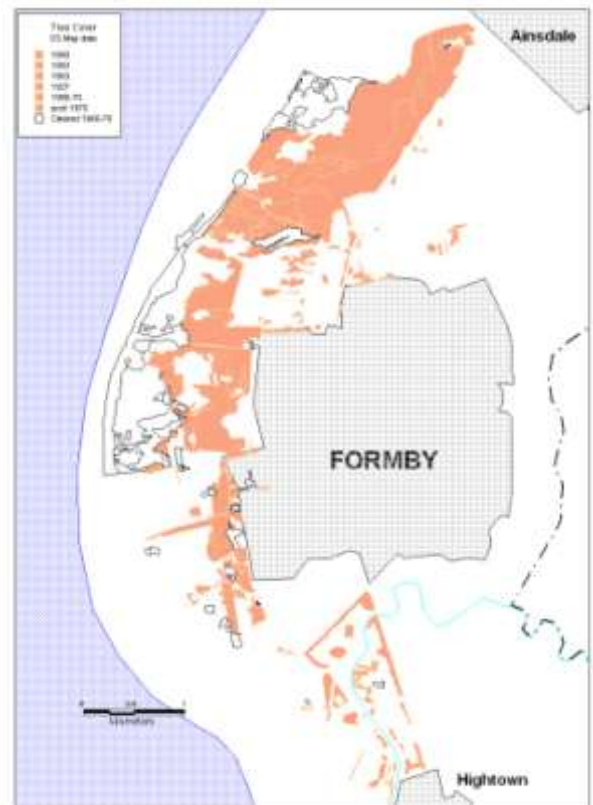


From 2004 OS Map

1930 to 2012AD – Management of the tree cover

A significant development occurred in the period between 1940 and 1970 in which some 40 hectares of frontal woodland, established in the late 1800s and early 1900s, returned to open dune, either directly because of coastal erosion (Gypsy Wood on the National Trust property is often mentioned in accounts of change on the coast) or was damaged by German bombing raids during the Second World War or was subsequently cleared in anticipation of the shore-line moving inland.

The plantations on the Formby Golf Course have provided a backdrop to the course since its founding in 1884, but it was only in 1950 that the Course was able to acquire the land that it had previously leased from the Weld-Blundell estate. It was in 1970 that coastal erosion



created the need to realign the portions of the course that were sited within the frontal dunes. This led to a small clearance of trees to create new holes within the original plantation area.

Between 1991 and 1996, in two phases, another 20 hectares of frontal woodland were felled on the National Nature Reserve to restore the open dune vegetation in that area:

Management of the woodlands has not been limited to removal of the plantations. The plantations have also been actively managed for their commercial potential up to the 1950s and it is reported that during the Second World War, areas that needed thinning or were mature enough, were thinned and felled to provide timber for the war effort. It is suggested that poles were put into the sands of the beach as upright posts to prevent

the possibility of enemy aircraft using the foreshore as an invasion landing site³³. Some of those areas felled were replanted and can be traced by looking at the reported age structure of the relevant compartments³⁴. Interestingly, by taking account of this factor it is possible to see that the Creswell diagrams³⁵ begin to coincide more closely with the series featured in this paper.

The Forestry Commission wrote a management plan for the Weld-Blundell woodlands in 1957 in preparation (it is assumed) of their intention to purchase the land and trees—records indicate that the Commissioners were offering the estate £26,600 for 1,378 acres (558 hectares), but later withdrew their interest in favour of the Nature Conservancy Council. Records of management prior to this are not readily available to provide detail of changes in tree cover. A paper written by EJ Weld-Blundell in 1934 for presentation to the XXXXXX Society talked of dune stabilisation, timber and landscape value as major objectives behind the establishment and management of the woodlands, but also talked of the problems encountered in establishment, fire damage (from the steam trains running on the Liverpool to Southport Railway), insect and rabbit damage and talked of ways that the estate mitigated against each issue. Interestingly other matters touched on included the increasing problem of trespass, with some indication of overcrowding on bank holidays with up to 11,000 vehicles coming down onto the foreshore on some days. Mention was also made of the damage to fauna a flora and the need to stop wanton killing of birds on the foreshore³⁶. All the issues seem very familiar from the 2012 perspective.

Since the 1960s management has tended to be more reactive than proactive, with the exception of the removal of the frontal woodlands on the National Nature Reserve in the 1990s and the new planting on Altcar Rifle Range. Thinning of the older plantations on the National Nature Reserve and felling and re-planting on National Trust and Sefton Council land in the 1990s are among the limited maintenance activities undertaken by land owners, otherwise much of the work appears to have been to do with maintaining safety for public access.

³³ Pine Trees and Asparagus – the development of a cultural landscape. R & B Yorke. 2008. Sand and Sea, Sefton's Coastal Heritage, Proceedings, ed JM Lewis, JE Stainstreet.

³⁴ The Sefton Coast Woodlands, a 20 Year Woodland Working Plan, 2003-2023. Volume 1, Overview. The Mersey Forest, 2002.

³⁵ Sandy Shores in South Lancashire, the geomorphology of south-west Lancashire. 1953. RK Gresswell. Liverpool University Press.

³⁶ Forestry at Formby. EJ Weld-Blundell. 1934. Paper for presentation at XXXXXXXXXXXXXXXX.

It was the clearance of the 28 hectares of frontal woodlands on the NNR in the 1990s that prompted a public outcry among the local population as to why there were significant changes being made to the landscape without prior consultation. In response, a woodland strategy was written for the Sefton Coast woodlands and scrub by Sefton Council³⁷, the NNR also commissioned several management plans, but in the end the sensitivity of the whole issue of woodland management and woodland clearance led to the Forestry Commission declaring, in 1999, a moratorium on all tree work in the area, leaving all the woodland owners (31 in number) in 'limbo' until 2003 when a new plan was put in place and approved by the Forestry Commission.

To resolve the issue, The Mersey Forest, based in Warrington, offered to coordinate the development of a management plan for all the woodlands with the view to providing a clear statement of intent for the woodlands. This in conjunction with Natural England (to later become English Nature) commissioning a review and Environmental Assessment of the policy to clear all the frontal woodlands on the NNR has provided the basis for continuing management of the woodlands up to 2012.

Another piece of the jigsaw has been the writing of a Nature Conservation Strategy and Biodiversity Delivery Plan in 2006 which provides for an overview of coastal conservation and biodiversity issues and highlights the need for finding a way through the competing demands on the coast, balancing national and international conservation priorities with local interests and cultural perspectives—a complicated task requiring, perhaps, decades to find a suitable balance. The landscape partnership scheme, put in place in 2007 to take advantage of Heritage Lottery funding, is then adding value by incorporating landscape, people's use and community participation in management initiatives and projects that are being carried out by the Sefton Coast Partnership.

A Timeline

³⁷ The Sefton Coast Woodland and Scrub Management Strategy. 1999. JCAS, SMBC.

Appendix 3

Regeneration Coupes on the Sefton Coast:

Size and Orientation Impacting on Tree Growth and Regeneration Success.

Introduction

As part of the ForeStClim project The Mersey Forest are creating a support tool that will enable woodland managers to identify ways in which they can adapt management prescriptions to meet the challenges that projected climate change. Moving toward coupe systems and systems of continuous cover forestry is being promoted through the new UK Forest Standard. The work to assess the effects of coupe size and orientation on success of regeneration will help to improve the guidance that can be provided to woodland and forest managers.

Nick Roche, a forester associated with the Team, was asked to investigate the impact of changing climate on regeneration success within woodland coupes over the area of the Sefton Coast Forest Plan (Hightown to Southport).

Background

In 2003 a coordinated programme of management was instigated by The Mersey Forest for 410 hectares of predominantly conifer woodland on the Sefton Coast. Over 20 landowners were involved in the initiative that took a landscape perspective to improving the age profile of the woodlands. The aim was to introduce a cycle of regeneration that would 'normalise' the age profile and therefore maintain a suitable habitat for the resident population of red squirrel.

To this end a target to fell and regenerate 3 hectares of woodland on an annual basis was instigated. The intention was to use a simple coupe regeneration system, replanting with a predominantly pine mixture to achieve a species mix suited to red squirrel habitat.

In general coupes were planned between 0.15 and 0.5 hectares in size to help minimise the visual impact of the work in the woodlands. The hope is that the mosaic of ages and species will, in the long term, enhance the value of the site to a range of species as well as diversify the landscape for the surrounding population and many visitors to the area.

The Survey

Methodology

Regeneration coupe size and success of establishment was investigated across the 400 hectares of managed woodland of the Sefton Coast pine woods. Those areas that were investigated were selected on the following basis:

- Those land owners that felled woodland for regeneration were invited to participate in the review.
- A few owners that planted open areas of meadow or scrub were also invited to participate.

Five landowners participated and 61 coupes and planting areas that were established between 2003 and 2010 were then inspected.

Each coupe was assessed for:

Size, shape, aspect and orientation;

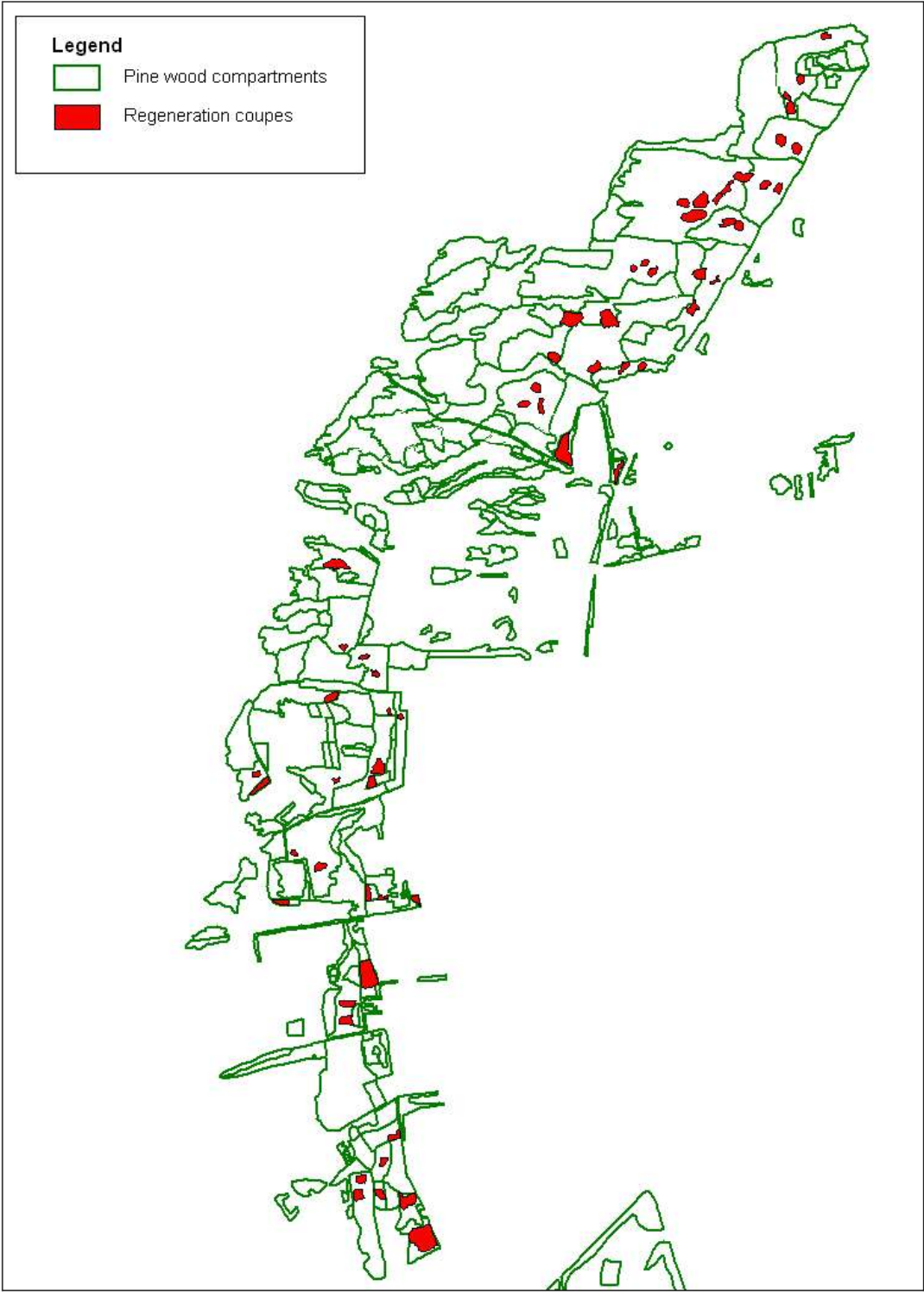
Survival of the planting and notes taken of natural regeneration and its cover;

A sketch map was made recording coupe shape, aspect, topography, surrounding tree cover and internal shading;

Incidence of disease was noted where evident;

The boundary of every coupe was walked with a GPS and a centre point 'way-marked';

Other relevant anecdotal information was gathered from landowners where it existed.



The Results

Ownership 1 (Formby Golf Club)

| ID | Comp No | Species | Size | Survival | Orientation | Slope | Issues | Description |
|----------------|---------|---------|-------------|------------|---------------|-----------------|---------------|---|
| 1 | 8e | CP / SP | 0.19 | 73% | North / south | Flat, n/s ridge | Gorse & broom | No shading, 360° open, scrub to north |
| 2 | 8b | CP / SP | 0.7 | 71% | North / south | Flat undulating | Birch regen | Little shading, 360° open, few mature trees |
| <i>Total</i> | | | <i>0.89</i> | | | | | |
| <i>Average</i> | | | <i>0.44</i> | <i>72%</i> | | | | |

Ownership 2 (Lark Hill Farm)

| ID | Comp No | Species | Size | Survival | Orientation | Slope | Issues | Description |
|----------------|---------|---------|-------------|------------|---------------|----------------|-----------|---|
| 1 | 99c | CP / SP | 0.11 | 87% | North / south | Flat | Shading | Significant pine canopy in small comp. |
| 2 | 99d | CP / SP | 0.08 | 100% | East / west | Flat e/w ridge | | Shading to west, open to east and south |
| 3 | 99c | CP / SP | 0.15 | 100% | North / south | undulating | Syc regen | Isolated scrub trees, some shading |
| <i>Total</i> | | | <i>0.34</i> | | | | | |
| <i>Average</i> | | | <i>0.11</i> | <i>96%</i> | | | | |

Ownership 3 (Natural England, Ainsdale NNR)

| ID | Com p No | Species | Size | Survival | Orientation | Slope | Issues | Description |
|----|-------------|--------------------|------|----------|------------------|--------------------|-------------|--|
| 1 | 68 | CP / SP | 0.12 | 65% | n/s rectangle | n/s ridge | Syc regen | Heavy shading east and south |
| 2 | 68 | CP / SP | 0.22 | 91% | n/s rectangle | South facing | Birch regen | Tall trees west and north |
| 3 | 68 | CP | 0.10 | 57% | circular | Centre dome | Birch regen | 360° tall trees |
| 4 | 66 | CP / larch | 0.21 | 38% | circular | Centre hollow | Birch regen | 360° tall trees, vandalised |
| 5 | 66 | CP / SP / larch | 0.19 | 68% | circular | Centre dome | Birch regen | 360° tall trees, vandalised |
| 6 | 64 | CP | 0.15 | 65% | ne/sw rectngl | Flat, n/s ridge | Syc regen | Tall trees s, w, n, regen to east |
| 7 | 64 | CP / larch | 0.16 | 38% | ne/sw rectngl | Flat, dome | Syc regen | Almost 360° tall trees |
| 8 | 61 | CP / larch | 0.14 | 25% | circular | Flat | Birch/syc | Tall pine e/w, single row n between coupes |

| ID | Com p No | Species | Size | Survi val | Orientation | Slope | Issues | Description |
|----|-------------|------------|------|--------------|------------------|-------------------|--------------------|--|
| | | | | | | | regen | |
| 9 | 61 | CP / larch | 0.20 | 17% | e/w ellipse | n/s ridge | Birch/syc regen | Tall pine e/w, single row s between coupes |
| 10 | 63a | CP / larch | 0.12 | 88% | ne/sw rectngl | n/s ridge | Birch/syc regen | Tall pine e/w/s, firebreak north |
| 11 | 63a | CP / larch | 0.15 | 83% | ne/sw rectngl | flat | Birch/syc regen | Tall pine w/s, firebreak south |
| 12 | 63a | CP / larch | 0.38 | 88% | n/s triangle | Nr flat | Birch/syc regen | Almost 360° tall trees |
| 13 | 63a | CP regen | 0.52 | good | e/w ellipse | Central hollow | Birch regen | 360° tall trees |
| 14 | 63a | CP regen | 0.18 | good | circular | Central hollow | Birch regen | 360° tall trees, regen weak on north side |
| 15 | 63a | CP | 0.30 | 97% | e/w rectangle | Central dome | Heavy birch rgn | 360° tall trees, heavy bi scrub to east |

| ID | Com p No | Species | Size | Survival | Orientation | Slope | Issues | Description |
|----|-------------|-------------|------|----------|------------------|--------------------|---------------------|---|
| 16 | 62a | CP | 0.08 | 50% | Circular | Central dome | Heavy birch rgn | 360° tall trees, low survival on north aspect |
| 17 | 62a | CP | 0.09 | 55% | circular | Flat, e/w ridge | Heavy birch rgn | 360° tall trees, low survival on north aspect |
| 18 | 62a | CP | 0.13 | 11% | Off circular | Heavy dunes | Heavy birch rgn | 360° tall trees, generally low survival |
| 19 | 68 | CP/SP | 0.10 | 20% | Off ellipse | Slight n face | Heavy syc rgn | 360° tall trees, very poor survival |
| 20 | 60 | CP/SP | 0.07 | 22% | Irregular | Flat | Bracken/bramb b | Some trees on boundary, south open to path |
| 21 | 58a | CP/birch | 0.52 | 57% | e/w ellipse | e/w ridges | CP nat regen | 360° tall trees, variable survival |
| 22 | 58a | CP/birch | 0.53 | 65% | e/w rectangle | Undulating | Variable survive | Tall pine e/s/w, FB to north |
| 23 | 56 | Larch | 0.12 | 85% | Nr circular | South slope | Syc regen | Tall pine around except to south |
| 24 | 56 | SP/larch/CP | 0.14 | 48% | n/s ellipse | e/w ridge | Syc regen | Tall pine around |
| 25 | 55 | CP/SP/larch | 0.23 | 90% | Half circle | South slope | Heavy var | Tall pine around, path to south |

| ID | Com p No | Species | Size | Survi val | Orientation | Slope | Issues | Description |
|----------------|-------------|-------------|------|--------------|------------------|------------------|---------------------|--------------------------------|
| | | | | | e/w | | regn | |
| 26 | 53 | CP/larch | 0.17 | 80% | Nr square | Flat, rise to e | None significant | Tall pine except to south |
| 27 | 53 | CP/larch | 0.14 | 62% | n/s ellipse | e/w ridge | Birch regen | 360° tall pine |
| 28 | 53 | CP/larch | 0.13 | 65% | e/w ellipse | Dme, stp drop | Some bi regen | 360° tall pine |
| 29 | 54 | CP/SP/larch | 0.23 | 82% | e/w rectangle | e/w ridge | Birch regen | Tall pine to n/e, regen to s/w |
| 30 | 60 | CP/SP | 0.21 | 80% | n/s irregular | Centre dome | Syc coppice | 360° tall pine |
| 31 | 60 | ? | 0.26 | ? | nr square | ? | ? | No data |
| <i>Total</i> | | | 6.29 | | | | | |
| <i>Average</i> | | | 0.20 | 60% | | | | |

Ownership 4 (Sefton Metropolitan Borough Council)

| ID | Com p No | Species | Size | Survival | Orientation | Slope | Issues | Description |
|----|-------------|-----------------|------|----------|------------------|-------------------|---------------------|--|
| 1 | 12g | CP/SP | 0.22 | 61% | e/w rectangle | Slope to n | Bi, wil, syc rgn | Tall pine, n/s, young pine e/w |
| 2 | 12g | CP/SP/lrch/oth | 0.21 | 74% | e/w rectangle | Slope to ne | Syc, bi regen | Tall pine, n/s, young pine e/w |
| 3 | 102b | CP/SP/larch | 0.87 | 77% | n/s rectangle | Nr flat | Syc, bi, pop rgn | Little shading , mature pop to north |
| 4 | 18l | CP/SP | 0.17 | 82% | e/w rectangle | Flat, n/s rise | Syc regen | 360° tall pine |
| 5 | 18l | CP/SP/NS/lrch | 0.22 | 86% | Nr square | Slight slope | Syc regen | n/s/e tall pine, some low pine to south |
| 6 | 18m | CP/SP | 0.18 | 71% | n/s lozenge | Flat n slope | Syc/pop regen | Tall pine east, low pine/scrub north |
| 7 | 18n | CP/SP/NS | 0.43 | 69% | n/s triangle | Flat e slope | Syc/pop regen | Tall tree surrounding except to east nr path |
| 8 | 18f | SP/CP/mix BL | 1.17 | 63% | Off square | Flat, undulate | Some syc/pop | Open new planting, some scrub regen |

| | | | | | | | | | |
|----------------|-----|-------|------|-----|---------------|-------------|------|-----------------|----------------------------------|
| 9 | 18i | CP/SP | 0.11 | 25% | n/s rectangle | Flat, slope | sl s | Heavy syc regen | mature syc e/n, tall pine w/s |
| 10 | 18j | CP/SP | 0.17 | 75% | e/w ellipse | Flat | | Syc regen | 360° mature broadleaf (sycamore) |
| <i>Total</i> | | | 3.75 | | | | | | |
| <i>Average</i> | | | 0.37 | 68% | | | | | |

Ownership 5 (The National Trust)

| ID | Comp No | Species | Size | Survival | Orientation | Slope | Issues | Description |
|----|---------|----------|------|----------|--------------|----------------|-----------------|--------------------------------------|
| 1 | 37e | CP/SP/MP | 0.15 | 67% | e/w triangle | Flat | Exposure | Scrub to north, open meadow to south |
| 2 | 37a | CP/SP/MP | 0.17 | 97% | e/w lozenge | Sloping to s | Birch regen | Spaced mature trees all round |
| 3 | 37a | CP/? | 0.07 | 1% | Circular | Flat, undulate | Swamped rgn | 360° tall pine, mature syc |
| 4 | 36a | CP/SP | 0.07 | 73% | S triangle | Slope to n | Birch regen | 360° tall pine, some within coupe |
| 5 | 35e | CP/SP | 0.18 | 33% | Off square | Flat, old aspf | Birch/syc regen | Surrounded by poplar/pine |

| | | | | | | | | |
|--------------|-----|-------|------|-----|------------------|--------------------|--------------------|--|
| 6 | 35b | CP/SP | 0.32 | 61% | n/s triangle | Flat, undulate | Birch/syc regen | Mature pine to n/e |
| 7 | 38d | CP/SP | 0.23 | 98% | e/w rectangle | Flat | None | Mature pine to n |
| 8 | 38a | CP/SP | 0.09 | 54% | e/w rectangle | Flat, rise to e | Slgh syc/bi rgn | Mature pine to n/e/w |
| 9 | 35a | CP/? | 0.05 | 1% | Circular | Flatish | Shade, syc rgn | 360° tall pine |
| 10 | 34a | CP/SP | 0.05 | 36% | n/s ellipse | Slight hollow | Shade, bi rgn | 360° mature pine and BL |
| 11 | 33a | CP/SP | 0.20 | 50% | ne/sw ellipse | Slope to s | Swamp rgn/brm | Presence of mature trees on boundary & within |
| 12 | 32 | CP/SP | 0.09 | 38% | n/s triangle | n/s ridge | Birch rgn | 360° mature pine and within coupe |
| 13 | 32 | CP/SP | 0.09 | 26% | e/w ellipse | Sl slope to e | Birch regen | 360° mature pine and within coupe |
| 14 | 29 | CP/SP | 0.08 | 72% | n/s triangle | Slope to w | Birch regen | 360° mature pine |
| 15 | 25 | CP/SP | 0.39 | 63% | e/w rectangle | Rise in centre | LP regen | Reasonably open, some trees within coupe |
| <i>Total</i> | | | 2.23 | | | | | |

| | | |
|----------------|-------------|------------|
| <i>Average</i> | <i>0.15</i> | <i>51%</i> |
|----------------|-------------|------------|

Initial Findings

Analysis of the findings from the regeneration plot survey indicates the following:

Facts and Statistics

- A total of 13.5 hectares was regenerated in the period 2003 to 2010 across the 5 participating ownerships;
- Coupe size varies from 0.05 to 0.87 hectares with one of the planting areas rising to 1.17 hectares, averaging 0.22 ha across the whole area.
- Establishment survival ranges from 1 to 100%, with the mean at 69% weighted for ownership.
- Excluding two very small plots that had almost completely failed, the average rises to just above 70%.
- Taking the data's normal distribution (see Appendix), the plots outside minus one standard deviation (-23% of the population mean of 64%) are less than about 0.15 hectares—exceptions appear to have valid reasons for high failure (narrow plots, vandalised, heavy bracken and bramble infestations).
- Again, taking the data's normal distribution (see Appendix), the plots outside plus one standard deviation (+23% of the population mean of 64%) are above 0.20 hectares—the few exceptions receiving good annual maintenance and beating up or are on south facing slopes.

Observations

- Failure in establishment is marked in plots below 0.1 hectares.
- Failure in establishment is marked in smaller or narrow plots with shading.
- Success of establishment is low in plots that are narrow and with an east / west orientation.
- Low survival is marked on the south and west side of coupes with mature over-shading canopy.
- Survival is generally lower in plots within areas of mature woodland that is un-thinned or has had a lower thinning regime over its lifespan.
- In the natural regeneration coupes, regeneration is strongest on the southern and western (un-shaded) areas.
- North facing slopes in smaller coupes has lower establishment survival than other areas.
- Coupes adjacent to more open areas or areas with bracken and bramble understorey are quickly invaded, often swamping the regeneration.
- Quality of after-care (grass cutting and beating-up) markedly improves success in smaller and more shaded plots.
- Large open coupes and planting areas have better survival rates on north facing slopes and in areas with lower maintenance regimes.
- Anecdotal reports of low survival in some regeneration coupes on the NNR was linked to infestation by pine weevil.

- Natural regeneration of sycamore and birch is ubiquitous across the study area to the extent that, in order to achieve the Forest Plan objectives, it has become a silvicultural problem in many coupes.

Silviculture Notes

Characteristics of the *Pinus* genus are that they are light demanders and usually gregarious, often capable of growing on infertile soils, pioneers and naturally regenerating on bare or burnt soils. They are often adapted to periodic fires, with thick bark, dense foliage in young trees that protect vulnerable stems and the cones that in some species remain closed until exposed to fire³⁸.

Characteristics of the UK indigenous *Betula* genus are that they are very hardy with few climatic limitations (*B. pendula* tolerating quite dry conditions). Although they are light-demanding trees, they will grow in the understorey where there is sufficient light penetration. They are short-lived pioneers often regenerating prolifically in the right conditions, growing fast when young and suffering few diseases³⁹.

Characteristics of *Acer pseudoplatanus* (sycamore) are that it is an opportunistic species spreading rapidly into canopy gaps when parent seed sources are nearby. It is not particularly site demanding (though it requires some degree of soil formation on sandy soils) and in early years is reasonably shade tolerant. Seedlings do suffer badly from grass competition on more fertile sites and mature trees die back in unthinned woodlands when the canopy becomes suppressed².

The pine weevil lays eggs on newly felled conifer stumps with emerging adults then feeding on the bark of the main stems of young pine plants, effectively ring girdling them. Treatment is either the delay in planting by two years to ensure that the adults, when hatched, have dispersed away from the coupes, or by using treated planting stock⁴⁰.

Discussion

The Findings

The analysis of the findings does not throw up anything unexpected given that the key species are light demanding pines:

³⁸ Manual of Afforestation in Nepal, Vol2. 1994. JK Jackson.

³⁹ The Silviculture of Trees used in British Forestry. 1991. PS Savill.

⁴⁰ Managing pine weevil on lowland pine. FC Practice Note. June 2007, D Wainhouse, S Brough, B Greenacre

- Broadly speaking, the smaller plots are not successful (less than 0.15 hectares).
- Shading is important, affecting success of regeneration and planting, with narrow and small coupes within mature woodland suffering from low survival rates.
- Shape and orientation of coupes is important when placed within smaller compartments of mature woodland.
- The quality of after-care is important for survival, especially in the smaller plots.
- Swamping of regeneration by bracken and bramble is a silvicultural problem in areas where light penetration has allowed their establishment over years.
- Disease was not obvious from observation (there is anecdotal evidence), but the importance of hygiene and the use of treated planting stock is basic and must form part of 'good practice'.

Climate Change

The effects of climate are not obvious from this study as changes over time are not factored into the analysis. It is possible that if the study is repeated at the end of each 10 year cycle of implementation, it may be possible to observe changes that could be attributed to the effects of climate change.

However, consideration given to some of the issues raised elsewhere in climate change literature can throw some light on establishment practices. To summarise the findings of UKCIP08⁴¹, the report suggests that there will be increasingly warmer and drier summers, wetter and stormier winters, with the severity of the storm events increasing. A 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 rotation, average temperatures will relate to those currently seen in the south east around the Thames Valley.

The key impact of climate change on tree regeneration can therefore be summarised as follows (more detail can be found in published literature⁴²):

A rise in temperature and CO₂ will alter photosynthesis and respiration in young plants; it will reduce winter chilling effect, increasing premature bud burst in mild winter spells exposing trees to late frost damage. Increased temperatures will also change rates of soil organic matter decomposition and mineralization affecting nutrient availability. The possibility of summer droughts will increase plant stress and increase the incidence of

⁴¹ UKCIP08, The climate of the United Kingdom and recent trends. December 2007. Met Office, Hadley Centre.

⁴² Forest management and silvicultural responses to projected climate change impacts on European broadleaved trees and forests. GE Hemery. International Forestry Review Vol.10(4), 2008

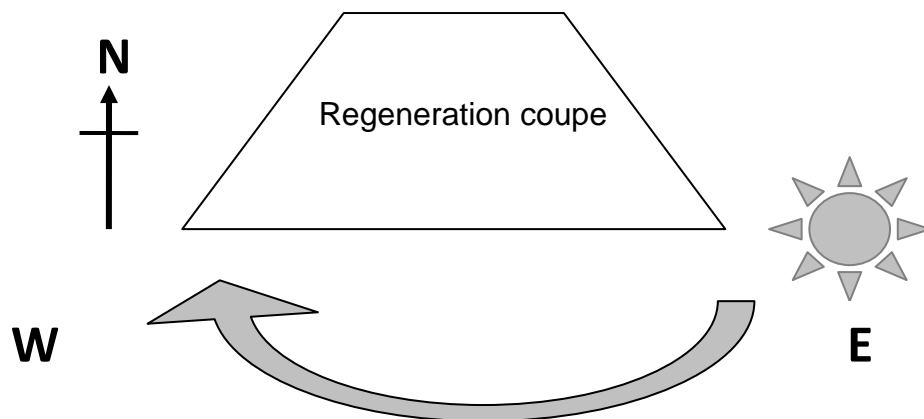
fire, but the heavier winter precipitation will increase risk of loss of fertile top soils, increase water-logging in heavy soils and increase atmospheric humidity. Finally, the rise in frequency of winter storm events will increase windthrow which, apart from damage to the older trees, may impact regeneration sites sited within mature woodland where trees could fall across the coupes.

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 ecosystems⁴³.

Silvicultural Response to Findings

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

1. Increase the minimum size of regeneration coupes to above 0.2 hectares where possible, with no coupe going below this unless it is completely free of all shade to the south and west.
2. Orientate and shape coupes so that a broad side is facing south:



3. 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.

⁴³ Exploring Aspects of Silviculture in The Mersey Forest Area in North-West England. ForestClim. N Roche. October 2009.

4. Stumps should be treated with urea and planting stock pre-treated to combat diseases (*Heterobasidion annosum*)⁴⁴ and pests (*Hylobius abietis*)⁴⁵.
5. Excessive or unwanted regeneration should be re-spaced or cleared after five years and again after ten years.
6. 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 but rot (*Heterobasidion*), root rot (*Phytophthora*) and red needle blight (*Dothistroma septosporum*)⁴⁶.

In the long term:

1. Continue to assess the viability of the key species designated as suitable to meet the objectives of the Forest Plan.
2. Managers should keep abreast the developments in forest pathology from the Forestry Commission and other relevant sources.
3. Managers should be kept informed of research that is undertaken regarding 'suitable' species for the Northwest and particularly the Sefton Coast. This is a complicated issue as The Forestry Commission uses the National Vegetation Classification (NVC)⁴⁷ to determine suitable species for each region. For the Merseyside and north Cheshire, this is W8, W10 (lowland mixed broadleaf) and possibly W16 (lowland oak-birch woodland). However, the particular circumstances of the Sefton Coast have determined that the pine woods are suitable for red squirrel conservation and so the species suited to this are small-seeded broadleaf and conifer.

Conclusion

The study has not thrown up anything unexpected, instead it has tended to confirm the importance of a number of basic principles about silviculture and forest hygiene. Firstly that in managing light demanding species, true continuous cover management cannot be achieved and instead it is necessary to adopt a modified 'group selection system'. Secondly that if regeneration coupes fall below 0.2 hectares in size, they will require weeding and beating up for as many years as it take to successfully establish a desirable tree cover. Thirdly that given the presence of a number of 'aggressive' pioneers and opportunists (birch, sycamore, bramble and bracken), it is essential to plan and budget for intensive after-planting care for up to five years on more fertile sites.

⁴⁴ [http://www.forestry.gov.uk/pdf/FR0102stump.pdf/\\$FILE/FR0102stump.pdf](http://www.forestry.gov.uk/pdf/FR0102stump.pdf/$FILE/FR0102stump.pdf)

⁴⁵ Managing pine weevil on lowland pine. FC Practice Note. D Wainhouse, S Brough, B Greenacre. June 2007.

⁴⁶ Red band needle blight of conifers in Britain. Forestry Commission Research Note. A Brown, J Webber. June 2008

⁴⁷ Creating New Native Woodlands. FC Bulletin 112. J Rodwell, G Patterson. 1991.

Two aspects of climate change for consideration are, firstly, the need to reduce winter humidity by adequately thinning woodlands away from exposed faces—the exposed face being increasingly buffeted by storm events—to reduce the potential for disease infestation. Secondly, to keep under review the species used in regeneration projects and where long term objectives allow, utilise those species that thrive under the new climatic conditions.

The difficulty comes when objectives conflict and resources are scarce, but the default position of 'do nothing' will result in woodlands that do not meet objectives and diminishing resources that disappear into bottomless pits.

Appendix

| Ownership | ID | Comp No | Species | Ownership | | | Size | Survival | Orientation | Slope | Issues | Survival |
|--------------------|----|---------|-----------------|--------------------|---------|---------|----------------|----------|-------------|-------|--------|----------|
| | | | | ID | Comp No | Species | | | | | | |
| The National Trust | | | | The National Trust | 4 | 36a | CP/SP | 0.07 | | | 73% | |
| | | | | SMBC | 2 | 12g | CP/SP/lrch/oth | 0.21 | | | 74% | |
| The National Trust | 3 | 37a | CP/? | | | | | | | | | |
| The National Trust | 9 | 35a | CP/? | | | | | | | | | |
| | | | | SMBC | 10 | 18j | CP/SP | 0.17 | | | 75% | |
| NE, Ainsdale NNR | 18 | 62a | CP | | | | | | | | | |
| | | | | SMBC | 3 | 102b | CP/SP/larch | 0.87 | | | 77% | |
| NE, Ainsdale NNR | 9 | 61 | CP / larch | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 26 | 53 | CP/larch | 0.17 | | | 80% | |
| NE, Ainsdale NNR | 19 | 68 | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 30 | 60 | CP/SP | 0.21 | | | 80% | |
| NE, Ainsdale NNR | 20 | 60 | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 29 | 54 | CP/SP/larch | 0.23 | | | 82% | |
| NE, Ainsdale NNR | 8 | 61 | CP / larch | | | | | | | | | |
| | | | | SMBC | 4 | 18l | CP/SP | 0.17 | | | 82% | |
| SMBC | 9 | 18i | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 11 | 63a | CP / larch | 0.15 | | | 83% | |
| The National Trust | 13 | 32 | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 23 | 56 | Larch | 0.12 | | | 85% | |
| The National Trust | 5 | 35e | CP/SP | | | | | | | | | |
| | | | | SMBC | 5 | 18l | CP/SP/NS/lrch | 0.22 | | | 86% | |
| The National Trust | 10 | 34a | CP/SP | | | | | | | | | |
| | | | | Lark Hill Farm | 1 | 99c | CP / SP | 0.11 | | | 87% | |
| NE, Ainsdale NNR | 4 | 66 | CP / larch | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 10 | 63a | CP / larch | 0.12 | | | 88% | |
| NE, Ainsdale NNR | 7 | 64 | CP / larch | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 12 | 63a | CP / larch | 0.38 | | | 88% | |
| The National Trust | 12 | 32 | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 25 | 55 | CP/SP/larch | 0.23 | | | 90% | |
| NE, Ainsdale NNR | 24 | 56 | SP/larch/CP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 2 | 68 | CP / SP | 0.22 | | | 91% | |
| NE, Ainsdale NNR | 16 | 62a | CP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 15 | 63a | CP | 0.3 | | | 97% | |
| The National Trust | 11 | 33a | CP/SP | | | | | | | | | |
| | | | | The National Trust | 2 | 37a | CP/SP/MP | 0.17 | | | 97% | |
| The National Trust | 8 | 38a | CP/SP | | | | | | | | | |
| | | | | The National Trust | 7 | 38d | CP/SP | 0.23 | | | 98% | |
| NE, Ainsdale NNR | 17 | 62a | CP | | | | | | | | | |
| | | | | Lark Hill Farm | 2 | 99d | CP / SP | 0.08 | | | 100% | |
| NE, Ainsdale NNR | 3 | 68 | CP | | | | | | | | | |
| | | | | Lark Hill Farm | 3 | 99c | CP / SP | 0.15 | | | 100% | |
| NE, Ainsdale NNR | 21 | 58a | CP/birch | | | | | | | | | |
| | | | | Lark Hill Farm | 2 | 99d | CP / SP | 0.08 | | | 100% | |
| SMBC | 1 | 12g | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 31 | 60 | ? | 0.26 | | | ? | |
| The National Trust | 6 | 35b | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 13 | 63a | CP regen | 0.52 | | | good | |
| NE, Ainsdale NNR | 27 | 53 | CP/larch | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| SMBC | 8 | 18f | SP/CP/mix BL | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| The National Trust | 15 | 25 | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| NE, Ainsdale NNR | 1 | 68 | CP / SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| NE, Ainsdale NNR | 6 | 64 | CP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| NE, Ainsdale NNR | 22 | 58a | CP/birch | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| NE, Ainsdale NNR | 28 | 53 | CP/larch | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| The National Trust | 1 | 37e | CP/SP/MP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| NE, Ainsdale NNR | 5 | 66 | CP / SP / larch | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| SMBC | 7 | 18n | CP/SP/NS | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| Formby Golf Club | 2 | 8b | CP / SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| SMBC | 6 | 18m | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| The National Trust | 14 | 29 | CP/SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |
| Formby Golf Club | 1 | 8e | CP / SP | | | | | | | | | |
| | | | | NE, Ainsdale NNR | 14 | 63a | CP regen | 0.18 | | | good | |

Appendix 4 - Sustainability

Assessment

DRAFT



Sefton Coast Woodlands Management Plan Review 2013



Sustainability Appraisal

March 2012

Draft Scoping Report

Sefton Coast Woodlands Management Plan Review 2013

Sustainability Appraisal

Draft Scoping report

Sefton Coast Woodlands Task Group

**Sustainability Appraisal of Sefton Coast Woodlands Management Plan Review 2013:Draft
SA Scoping Report March 2012**

Prepared by:

Heidi Curran, Curran Environmental Consulting Ltd

Email: heidi.curran@curran-environmental-consulting.co.uk

For:

The Woodlands Task Group, Sefton Coast Partnership



Tel: 0161 980 4934

Mob: 07785572098

Sefton Coast Woodlands Task Group

Sustainability Appraisal of Sefton Coast Woodlands Management Plan Review 2013:Draft SA Scoping Report March 2012

| | | |
|------------|---|-----------|
| 1.0 | INTRODUCTION..... | 26 |
| 1.1 | The Sefton Coast | 26 |
| 1.2 | The Sefton Coast Woodlands | 27 |
| | Fig 1.1 Sefton Coast Woodlands - Ownership | 28 |
| 1.3 | The Sefton Coast Woodlands Management Plan – “The Plan” | 29 |
| 1.4 | The Review of the Plan 2013-2023 | 29 |
| 1.5 | The Sefton Coast Woodlands and ForeStClim | 30 |
| 1.6 | Assessing the plan..... | 32 |
| | Sustainability appraisal/Strategic Environmental Assessment | 33 |
| | Habitats Regulation Assessment | 34 |
| | Process | 35 |
| 1.7 | This Report | 37 |
| 2.0 | THE SCOPING STAGE | 38 |
| 2.1 | Purpose..... | 38 |
| 2.2 | Tasks in the scoping stage..... | 38 |
| | Identifying the policy context | 38 |
| | Establishing baseline sustainability conditions | 38 |
| | Identifying sustainability issues | 39 |
| | Developing the sustainability objectives..... | 39 |
| | The Appraisal Framework..... | 40 |
| | Producing and consulting on the scoping report | 40 |
| 3.0 | BASELINE CONDITIONS..... | 41 |
| 3.1 | The Legislative and policy context..... | 41 |
| | International legislation..... | 41 |
| | National legislation, policies and strategies | 41 |
| | Regional strategies | 42 |
| | Local plans and strategies | 43 |
| 3.2 | Baseline information | 44 |
| 4.0 | SUSTAINABILITY ISSUES | 53 |
| 4.1 | Introduction | 53 |
| 4.2 | Interest Group Panel workshop..... | 53 |
| | Economic growth and reducing the deficit..... | 53 |
| | Maximising wellbeing..... | 53 |
| | Protecting the environment | 54 |

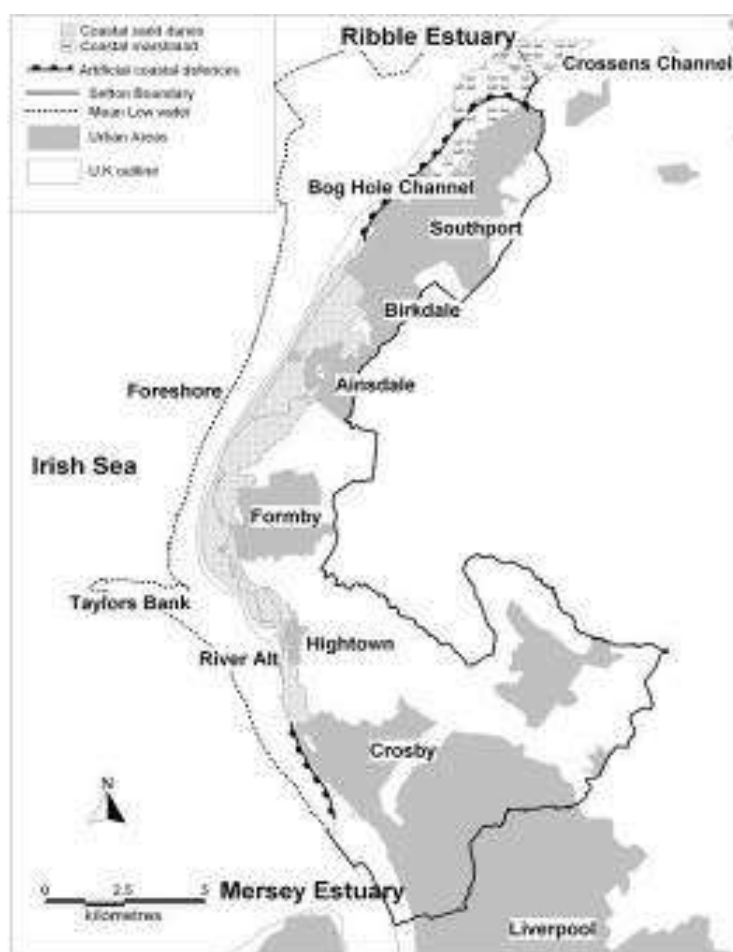
| | | |
|------------|--|-----------|
| 4.3 | Issues arising from the baseline data and plans & policies..... | 55 |
| | Economic growth and reducing the deficit..... | 55 |
| | Maximising wellbeing..... | 56 |
| | Protecting the environment | 57 |
| 4.4 | Sustainability objectives – the appraisal criteria..... | 61 |
| 5.0 | THE NEXT STAGES IN THE SUSTAINABILITY APPRAISAL..... | 64 |
| 5.1 | Immediate next steps..... | 64 |
| 5.2 | The Appraisal Framework | 64 |
| 6.0 | QUESTIONS FOR THE SCOPING REPORT CONSULTATION | 66 |
| | APPENDIX 3A: PLANS AND PROGRAMMES..... | 67 |
| | APPENDIX 3B: BASELINE INFORMATION | 68 |
| | APPENDIX 3C: DESIGNATED SITES | 69 |
| | APPENDIX 4A: ISSUES AND POINTS RAISED AT THE IGP WORKSHOP | 74 |
| | APPENDIX 5A: THE APPRAISAL MATRIX | 77 |
| | APPENDIX XX CITATIONS AND BIBLIOGRAPHY | 79 |

Introduction

The Sefton Coast

- 1.1.1 The Sefton Coast is an area of coastland which lies between the estuaries of the Mersey and Ribble in North West England. The dunes of the Sefton Coastline are an example of a fragile system where the dunes perform a coastal defence role and support an exceptionally rich bio-habitat (Gresswell, 1954). It owes this in part to the variety of habitats that can be found in the relatively small area, but also largely due to its geographical position which allows the overlap of “northern” and “southern” species and mild conditions for wintering birds.
- 1.1.2 Although perceived to be “wild”, most of the area would be better described as semi-natural habitats. The marine zone, beaches and fore dunes are relatively natural but beyond the salt marshes and mobile dune ridges the landscape becomes more influenced by human activity.
- 1.1.3 Landowners in the nineteenth century developed the area with new housing, golf courses and extensive pine plantations. On the coast today is a combination of two landscapes: an older open, semi-agricultural landscape and a more recent twentieth century landscape.
- 1.1.4 The sand dunes, beaches and marshes of the Sefton Coast are important areas for nature conservation: the intertidal foreshores, salt marsh and grazing marshes form part of the 12,400 hectare Ribble and Alt Estuaries Special Protection Area (EU Birds Directive). This area, along with the wet slack system in the dunes, is also designated as a Ramsar Site (internationally important wetlands), in addition, 4,500 hectares of the Sefton Coast are designated as a candidate Special Area for Conservation (SAC) under the Habitats Directive. The sand dunes system, which is the largest in England, is one of the best remaining strongholds of the Natterjack Toad. The Natterjack Toad is one of two toads native to the British Isles and it is a protected species under UK and International legislation, including the Habitats Directive.

Figure 1 The Sefton Coast

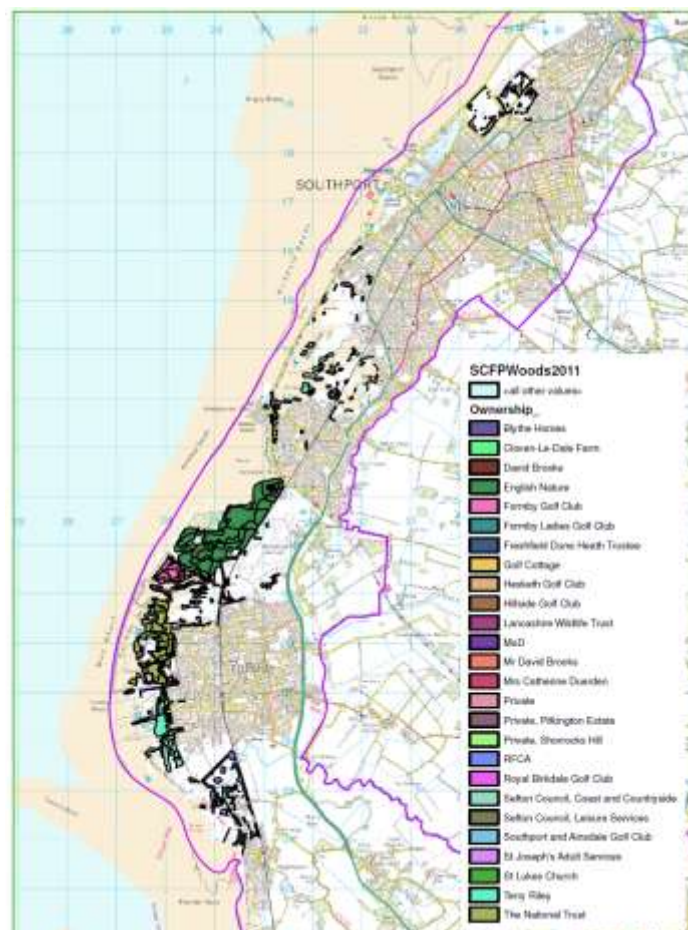


1.2 The Sefton Coast Woodlands

1.2.1 Today pine woodlands form an important part of the Sefton Coast landscape. There are 419.4 Ha of woodland, of which 263 Ha is pinewood. The woodlands were established at the turn of the twentieth century in order to counter the encroaching sand dunes and have become famous nationally for their role as a refuge for Red Squirrels; the Red Squirrel, a protected species under UK law, is under great pressure in the UK, especially in England where it is threatened by Grey Squirrels, fragmentation of habitat and disease.

1.2.2 The woodlands are now owned by 27 different owners and have been managed principally for recreation and conservation objectives. Landowners along the coast include The National Trust, Natural England, The Royal Birkdale Golf Club and the MoD.

Fig 1.1 Sefton Coast Woodlands - Ownership



1.3 The Sefton Coast Woodlands Management Plan – “The Plan”

The “Sefton Coast Woodlands Management Plan “(SCWMP) (The Mersey Forest, 2003) is a 20 year plan compiled "to provide a coherent, comprehensive and long-term view of the woodland management”. There is a 20 year vision with ten years’ of management activity specified to help the owners work towards the vision, from 2003 to 2013.

1.3.1 The plan is a voluntary agreement between the owners of woodland along the Sefton Coast and is concerned with a range of management principles. The baseline situation for the 2003 Forest plan was that the frontal woodlands were eroding, the rear woods were ageing and only small areas were being regenerated. The broad objectives of the plan, therefore, were:

- to achieve a “normal” distribution of age of trees
- to strengthen the woodland’s role as a refuge for the red squirrel
- to provide for an economic return where possible

1.3.2 The Sefton Coast woodlands sit in an area of important coastline. A proportion of the woodlands lie within the candidate Special Area for Conservation (cSAC).

1.4 The Review of the Plan 2013-2023

1.4.1 Funding from the wider Landscape Partnership scheme and the EU Interreg IVB programme ForeStClim has been provided to the SCWMP Partnership to enable them to review and renew the plan, ten years on.

1.4.2 The review will assess progress towards the plan’s original objectives and targets and will look again at the objectives and targets themselves.

1.4.3 Why look again at the plan?

- It is likely that baseline situation in terms of the environment and socio-economic issues will be quite different from 2003 – how will this affect the objectives?
- There may have been practical difficulties in delivering the plan – were the original objectives and targets reasonable and realistic?
- There continues to be wide range of stakeholder opinion – has all of this been captured and used so that the plan is well supported?
- In the past ten years there have been a number of developments in relevant policy and legislation – what impact does this have?

1.4.4 The SCWMP partnership has commissioned The Mersey Forest to assist them in the review

1.5 The Sefton Coast Woodlands and ForeStClim

1.5.1 ForeStClim is an EU-funded environmental project addressing forests and climate change. The short name stands for “Transnational Forestry Management Strategies in Response to Regional Climate Change Impacts”.

1.5.2 The project brings together 21 partners with a wide range of experts from United Kingdom, Germany, France, The Netherlands and Luxemburg. The main aim of this transnational cooperation is to develop proactive and adaptive regional forestry management and forest protection strategies in the face of the expected climate change scenarios. Consequently, it will contribute to the economic and ecological stability of the forests in North-West Europe (NWE).

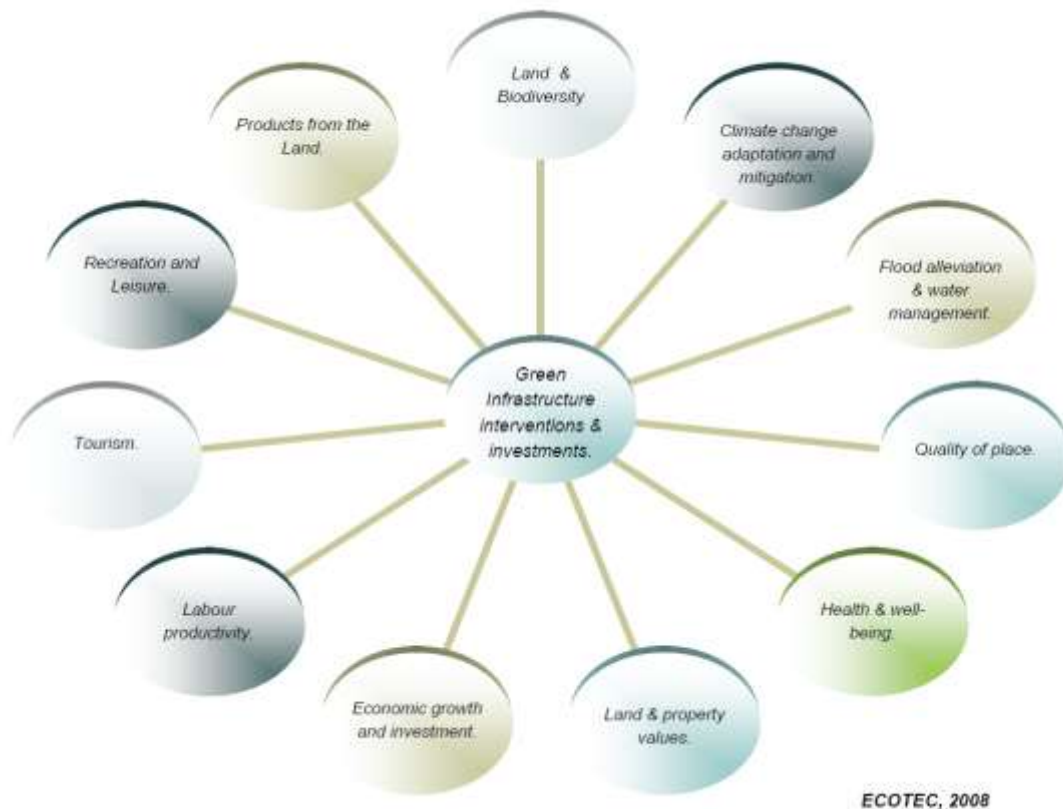
1.5.3 ForeStClim in The Mersey Forest focuses on:

- Managing the woodland resource in a changing climate;
- Seeking new silvicultural regimes; and
- Promoting new woodland planting and management to land owners.

1.5.4 Through their work on Green Infrastructure (GI), including elements developed through ForeStClim, The Mersey Forest has identified and promoted a methodology to evaluate GI (including trees and woodlands) functionality and helped to develop a framework to assess the benefits. They have developed an 11 benefit model, shown in Fig 1.2.

Fig 1.2 ForestClim Benefits Model

The economic benefits of Green Infrastructure



1.6 Assessing the plan

1.6.1 It was determined in early 2011 (CEC Ltd, 2011) that the SCWMP would be subject to both Sustainability Appraisal and Habitats Regulation Assessment. These assessments, and the reasons for carrying them out, are described, briefly, below:

Sustainability appraisal/Strategic Environmental Assessment

1.6.2 Sustainability appraisal is a process by which plans and programmes can be assessed for their contribution (positive or negative) to the delivery of sustainable development.

Sustainable development is defined as “*Development which the needs of the present without compromising the ability of future generations to meet their own needs*” (The Brundtland Commission, 1987).

1.6.3 Sustainability appraisal and “strategic environmental assessment” are often used interchangeably. In fact they are different but they come from the same position; the need to assess the effects of certain plans and programmes with a view to promoting sustainable development.

1.6.4 Essentially, Strategic Environmental Assessment (SEA) concentrates on largely environmental-based criteria in the assessment of plans whilst Sustainability Appraisal (SA) explicitly takes into account wider social and economic considerations.

SEA is mandatory for certain plans and programmes Directive 2001/42/EC (*The SEA Directive*) (European Commission, 2001) which requires member countries to assess certain plans for their environmental effects. The UK ratified this directive and transposed it into UK law as The Environmental Assessment of Plans and Programme Regulations (*The SEA Regulations*) (UK, 2004).

1.6.5 Through the Planning and Compulsory Purchase Act (UK, 2004), SA is mandatory for Development Plans; for example, Local Development Frameworks’ Core Strategies.

1.6.6 However these plans come under the auspices of the SEA Directive and so in order to ensure compliance with the directive, the process guidance for SA builds in the requirements of the SEA Directive.

1.6.7 Voluntary plans, or plans produced by non-statutory bodies, are not usually required to undergo SA or SEA. However this changes where it is considered that the plan is likely to result in significant environmental effects.

1.6.8 In the case of the Sefton Coast Woodlands Management Plan (the Plan), it was decided that an SA would be carried out as an example of best practice and as a

precautionary move; if a “Likely Significant Effect” on a Natura 2000 site is identified, an “Appropriate Assessment” must be carried out. According to the SEA Directive, any plan that undergoes an Appropriate Assessment must undergo an SEA as well.

Habitats Regulation Assessment

1.6.9 Habitats Regulation Assessment (HRA) is a process by which plans and programmes are assessed for their impact upon specific sites of European interest, known as “Natura 2000” sites.

This process was instigated by European Directives 79/409/EEC (*The Birds Directive*) (European Commission, 1979) and 92/43/EEC (*The Habitats Directive*) (European Commission, 1992). These were also transposed into UK law as The Conservation (Natural Habitats & c.) Regulations (*The Habitats Regulations*) (UK, 1994).

1.6.10 Under this legislation, it is necessary, when developing such a plan or project that may affect a Natura 2000 site, to determine whether any aspect of the plan or project is “likely to have a significant effect” on that site. In order to establish this, a “Likely Significant Effects Assessment” or “screening assessment” is carried out. If after this assessment, and the implementation of any recommendations arising from it, the plan or project is still considered likely to impact upon the Natura 2000 site, an “Appropriate Assessment” will be carried out.

1.6.11 The Sefton Coast Woodlands sits in an area of coastline of significant conservation importance; a portion of the woods lies within a cSAC – a candidate Special Area for Conservation (these are protected areas, specifically under the Habitats Directive) and is also within the Ribble and Alt SPA - a specially protected area (under the Birds Directive). SACs and SPAs together make up the Natura 2000 network of sites. Any plan involving the woodland may have a significant effect on the cSAC, the SPA or both; hence the legal requirement for the HRA.

1.6.12 Please note that the HRA will not involve an assessment of the effects of the plan on sites under other protection designations such as SSSIs. These are outside the scope of the HRA and so will be picked up by the SA, alongside other important sustainability issues.

Process

1.6.13 The two assessments are quite distinct but feed into and from each other as well as the plan in preparation. This is shown in Fig 1.3.

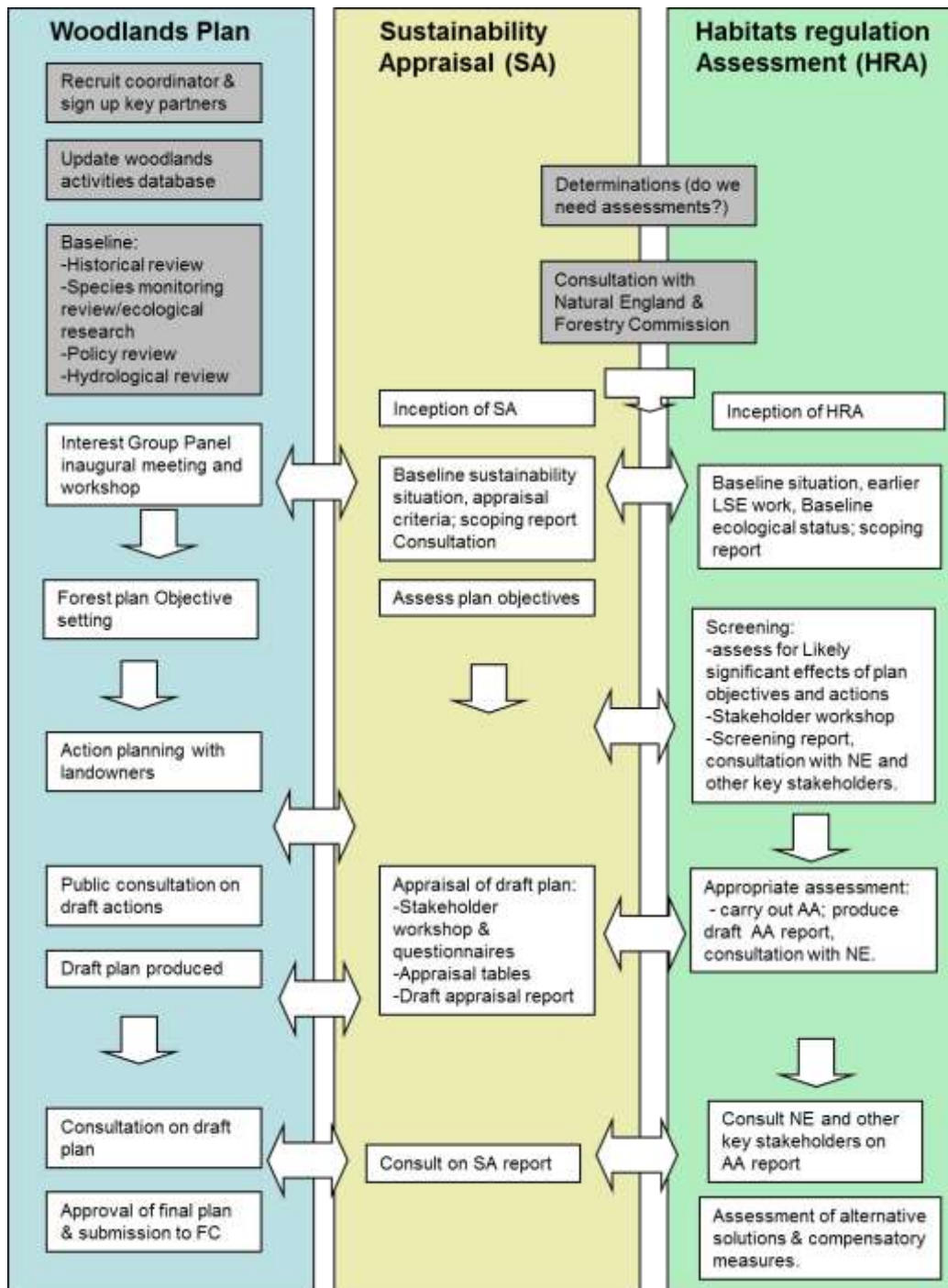
1.6.14 It is important to note that these assessments have different outcome requirements: sustainability appraisal assesses a plan's contribution to sustainable development and the process aims to optimise the net positive contribution made by the plan; habitats regulation assessment is specific test regarding the impact (or otherwise) of a plan or project on a Natura 2000 site.

1.6.15 There are five stages to sustainability appraisal:

- Stage A: Scoping stage
- Stage B: Appraisal
- Stage C: Sustainability report
- Stage D: Consultation
- Stage E: Monitoring

1.2.1 Fig 1.3 shows how these stages work in the context of the development of the SCWMP and the HRA.

Figure 2 Plan, SA and HRA processes



1.7 This Report

1.2.1 This report is the first report of the SA and describes the *Scoping Stage*.

1.7.1 There are a series of sections:

- Section 2.0: a description of the first stage in the SA; the scoping stage;
- Section 3.0: a summary of relevant legislation, plans, policies and programmes and the baseline sustainability situation in the Study Area;
- Section 4.0: the identification of sustainability issues and sustainability objectives (appraisal criteria);
- Section 5.0: the next stages in the SA – The Appraisal: the Appraisal Framework and methods for determining the significance of effects; further steps in the Consultation Process, including the methods to be used;
- Section 6.0: the questions for the Scoping Report Consultation and how to respond.

The Scoping Stage

2.1 Purpose

- 2.1.1 The Scoping Stage determines the “scope” of the SA, i.e. the boundaries of the appraisal; what will be looked at, how will it be looked at and how will the results be consulted upon?

To assess the effect of the Plan on the objectives, the baseline is used to illustrate what would have happened without the intervention, i.e. without the plan. The difference between the “do nothing” scenario for the future and the “do the Plan” scenario is how the effect is measured.

2.2 Tasks in the scoping stage

Identifying the policy context

- 2.2.1 The policy context within which the Plan sits provides important parameters for the appraisal process. Relevant plans, programmes and initiatives are identified and used in the development of sustainability objectives. They are used further in the identification of recommendations during the appraisal itself. These are summarised in Section 3.0 and detailed in Appendix 2.

Establishing baseline sustainability conditions

- 2.2.2 A variety of social, economic and environmental indicators are used to form an assessment of the baseline “sustainability conditions” of the study area. Included in this assessment, for example, are economic activity, health, water quality and climate change.
- 2.2.3 The purpose of the baseline assessment is to set the “business as usual” scene in the plan area, understand how good or bad the current situation is and how it is expected to perform into the future. This is very important in the appraisal process,

in order to establish the specific effect of particular interventions on the area in question. The baseline conditions for Sefton Coast Woodlands are summarised in Section 3.0 and detailed in Appendix 1

Identifying sustainability issues

2.2.4 The baseline data is used to identify key sustainability indicators for the area.

2.2.5 Typically these include:

- indicators which show poor local performance compared to local or national averages;
- indicators which show good or improving performance compared to local or national averages and need to be protected or enhanced;
- indicators with trends in the “wrong” direction
- indicators of issues raised locally as a cause for concern
- indicators of particular importance (local, national or international)

Using these indicators, it is possible to identify the most important sustainability issues of relevance to the Plan. These are described in Section 4.0.

Developing the sustainability objectives

2.2.6 From the sustainability issues it is possible to develop a set of sustainability objectives; for example, if there is concern about the local economic performance, then an objective could be “To improve the local economy”. These are listed in Section 4.0, Table XX.

2.2.7 SA is different from many other forms of appraisal because it uses these objectives as criteria in the appraisal.

2.2.8 The objectives add an extra dimension to the appraisal process: the appraisal is not just a calculation of what changes can be expected from the baseline following various interventions; using the objectives, it is possible to deduce how the interventions will contribute to the sustainability aspirations for an area.

The Appraisal Framework

- 2.2.9 An “Appraisal Framework” is simply a table or “matrix”, used to aid the appraisal process. It is described in detail in Section 5.0 and an example matrix given in Appendix 3.
- 2.2.10 Using the Framework, the appraisal team takes the objectives, policies and actions from the Plan and looks at them in turn with respect to their effect on each sustainability objective.
- 2.2.11 In considering the effects, the appraisal team assesses both the nature and magnitude of the effect on the objective and whether it is short, medium or long term. All of this is recorded in Appraisal Framework.

Producing and consulting on the scoping report

- 2.2.12 A scoping report is published which includes all of the information gathered and produced during tasks described above. This report is then published to enable interested parties to comments upon it.
- 2.2.13 In order to comply with the SEA Regulations, three statutory consultees must be consulted: The Environment Agency, Natural England and English Heritage.
- 2.2.14 In addition, the consultation period for the scoping report must be for a period not shorter than five weeks.

Baseline conditions

The Legislative and policy context

There is a wealth of information available in the literature which has direct or indirect relevance to this sustainability appraisal. Of particular importance are legislation, policies and strategies; these occur at international, national, regional and local levels. Also important for this work is the range of studies that have been carried out along the Sefton Coast. This literature is detailed in [Appendix 3A](#) and summarised here.

International legislation

The Sefton Coast is internationally recognised and protected for its outstanding biodiversity. International directives such as the Birds and Habitats Directives require National Governments to identify special sites – Special Areas for Conservation (SAC) – which will be subject to special protection because of their biodiversity value and an International Level.

This is relevant to the SCWMP because it lies within part of a cSAC – a *candidate* Special Area of Conservation. The cSAC forms part of the Natura 2000 network of protected sites and, as a result, plans, programmes and projects which may affect the integrity of the site are subject to Habitats Regulation Assessments.

The SCWMP *is* subject to HRA, the results of which will feed into this assessment as well as forming a stand-alone test and report.

The SEA Directive, which forms the framework for sustainability appraisal in the UK is, as has been mentioned, an important piece of legislation for this plan. The appendix details UK guidance on the implementation of this directive in UK planning assessments.

National legislation, policies and strategies

UK Sustainable Development Vision

The Government produced a short document in February 2011, entitled “Mainstreaming Sustainable Development”.

It stated that:

"Our vision is of stimulating economic growth and tackling the deficit, maximising wellbeing and protecting our environment, without negatively impacting on the ability of future generations to do the same."

This is a return to the original three-legged stool of SD - which had changed somewhat in the UKSD strategies of 1999 and 2005, these strategies split SD into more categories, e.g. environment was about protection as well as resources.

There had been some concerns about the environment being too heavily weighted in assessments because of the effective 50% "share" it had in national objectives. Perhaps this is one of the reasons the three-pronged approach has been returned to? The new approach does, however, build on the five SD principles from the 2005 strategy.

In carrying out this SA, we will use the three categories identified in the UK Vision:

- Stimulating economic growth and tackling deficit
- Maximising wellbeing
- Protecting our environment

Forestry

The “Trees strategy” for England (DEFRA, 2007), uses the following principles:

- long-term sustainable management of trees, woods and forests
- the right tree in the right place
- effective use of public investment
- synergy with other Government policies

It combines these principles with themes, such as Community and Places, Land and the Natural Environment, Working woodlands etc.

These principles and themes are important and helpful in developing the objectives for the assessment as they put sustainable development into a context for woodlands.

Other national significant strategies include: the designation of Natural Areas by Natural England, the UK BAP and Sustainable Forestry Guidelines. There are many more.

Regional strategies

The Northwest has had numerous plans and strategies written for it over the years, most over the last ten to fifteen years during the existence of the Northwest Regional Assembly (NWRA/4 NW) and the Northwest Development Agency (NWDA).

Mandatory strategies and plans in this period included the Regional Spatial Strategy (RSS) and the Regional Economic Strategy (RES). These were in the process of being joined into a single Regional Strategy when the Coalition government announced that the regional tier of planning would be abolished under the new Localism Act.

Although the RSS is still a material consideration in local planning regimes until the Localism Act has finished its route through parliament, we have not considered it, or the RES for this appraisal.

We have, however, looked at other important documents to come out of the regional “regime”: Everybody has an Impact (Climate change in the NW) and Climate change and The Visitor Economy in the NW. Further details from these are given in the discussion of baseline sustainability issues in [Section 3.2.X](#)

Local plans and strategies

There are a number of plans and strategies at the “local” level of relevance to the appraisal. For the purposes of this report, we consider “Local” to be anything at a Sefton MBC geographical level or smaller.

Sefton MBC Core Strategy

Sefton MBC’s Core Strategy is currently in development: An options paper and a report on Green Belt was released in the summer of 2011 for consultation.

Whilst this is in development planning policy is governed by “Saved” policies from the UDP - adopted 2006. Directly relevant policies are listed in [Appendix 3A](#). There are a number of other policies within the UDP which are also relevant but have not been listed, including Nature Conservation, Environmental Protection, Transport Infrastructure and Green Belt and Countryside. Full details of these policies can be found at www.sefton.gov.uk.

Three coastal policies are of particular importance:

- Development in the coastal planning zone
- Coastal protection
- Coastal landscape conservation and protection

The appraisal of the SCWMP will take these into account in the development of the appraisal criteria.

Related to the Core Strategy is “Sustainable Sefton”. This is the scoping report for the sustainability appraisal of the Core Strategy. It provides extremely valuable information for the identification of sustainability issues and the formulation of criteria for assessment.

Sefton Coast strategies

The Sefton Coast Partnership, the ultimate commissioning body for the SCWMP, has over the years produced numerous strategies and reports for the Sefton Coast. These are all directly relevant for the SCWMP and the appraisal and will be used in the identification of issues and criteria for the assessment.

The SCWMP sits within a hierarchy of plans, with the Integrated Coastal Zone Management Plan (Sefton Coast Partnership, 2006) at the “top”, followed by the Nature Conservation strategy (Sefton Coast Partnership, 2007) and the Landscape Strategy (Sefton Coast Partnership, 2008).

The writing of the Nature Conservation Strategy for the Sefton Coast led to a focus on landscape-scale management and in turn this has led to the development of a Landscape Strategy for the coastal area.

In 2007 the Sefton Coast Partnership was awarded a planning grant from the Heritage Lottery Fund for the preparation of an application to their Landscape Partnership Scheme fund. This has given the Sefton Coast Partnership an opportunity to develop a package of projects for the coast, to celebrate natural and cultural heritage and to encourage as many people as possible, from all backgrounds, to get involved in activities.

Other strategies for the Sefton Coast have been produced by Sefton MBC, including the Strategic Flood Risk Assessment (Sefton MBC, 2009) and the Climate Change Adaptation Study (Sefton MBC, 2010).

Baseline information

Methodology

The baseline data was gathered from a number of sources, including Government web sites such as ONS, the web-sites of interested parties and agencies, such as The Sefton Coast Partnership and personal communications with local experts and stakeholders, such as the IGP Meeting January 2012.

Most of the data collected as in electronic format, with a few reports being provided as hard copy by The Mersey Forest.

There are some gaps in the data; the filling of these gaps was outside of the brief for this study. They have been highlighted in the Baseline Data Table in **Appendix 3B**, for future reference.

In order to understand the Study Area at as local a level as possible, data was used, where it was available, at a ward level; the wards used to represent the study area were:

Cambridge
Dukes
Ainsdale
Harrington
Ravenmeols
Manor

By way of comparison, another ward from Sefton, from an urban population in the South was also used; Derby ward. Data was also looked at for Sefton as a whole, the Northwest and England.

Much of the social and economic data dates to the 2001 ONS Census; the ONS has not updated its statistics for the 2011 census yet.

The Data – summarised

Detailed baseline information can be found in Appendix 1. A summary of the key findings is listed in Table 1.

Table 1: Summary of baseline data for the SA of Sefton Coast Woodlands Management Plan

| <i>Topic area</i> | <i>Baseline</i> |
|---|-----------------|
| Economic growth and tackling the deficit | |

| <i>Topic area</i> | <i>Baseline</i> |
|------------------------|--|
| Economic activity | <p>The study area is similar to other parts of Sefton in its proportion of economically active people in part-time and full time work. There is a significant difference in the number of self-employed however, with the study area having twice the level of (e.g.) Derby ward.</p> <p>Of the economically inactive, a significant proportion are retired (53%); this compares to 33% in Derby ward and 40% in Sefton as a whole. There is a relatively low level of people sick or disabled however (17%), compared to Derby ward (29%) and Sefton (21%).</p> |
| Income | <p>The average weekly wage for the study area is above the regional average. However Sefton as a whole has disparities in income levels with Derby ward having a significantly lower average weekly income than the study area wards.</p> |
| Benefits claimants | <p>There are incomplete datasets for the study area with respect to benefit claimants; however Sefton as a whole has 2.9% of the working age population claiming jobseekers, compared to the Northwest's 2.5% and national average of 2.1%. The figures for Sefton have, however, improved dramatically from the mid-90s when figures reached almost 8% of the working age population.</p> |
| Industry of employment | <p>Just less than 1% of people in the study area who are employed work in agriculture, forestry or hunting. The biggest employment sectors are wholesale and retail, followed by health, real estate and public admin.</p> |
| Land types | <p>The vast majority of the study area (85%) is classified as water or green-space. This is in contrast to Derby ward, where just 25% is water and green-space. Derby has significantly more land devoted to domestic buildings (13%); compared to the study area's 2.5%.</p> <p>The majority of employment land is in the south of the Sefton with Formby and Southport lacking sites.</p> |

| <i>Topic area</i> | <i>Baseline</i> |
|-------------------------------------|---|
| Forest economy | <p>There are 27 separate owners of the woodland; the three major landowners are also public bodies; Sefton MBC, National Trust and Natural England. Natural England is the largest, owning 160.81Ha. The smallest, privately owned part of the woodland is 0.11Ha.</p> <p>Data linked directly to the woodland is not readily available at this time; of particular interest are:</p> <ul style="list-style-type: none"> • Numbers employed by landowners in the woodland for woodland work; • The value of forest products (biofuel, timber etc.); • Numbers of visitors (for all owners) <p>Sefton MBC has a Timber workshop which uses some of the timber it fell in its woodland, as well as timber from other sources, to make products for use in the woodlands (and in the wider community from time to time). These products include signs, bins and gates.</p> <p>Sefton also has a relationship with the other two largest landowners, National Trust and Natural England and will receive timber from them in exchange for some of these products. The Timber Workshop employs adults with learning disabilities and young people from disadvantaged backgrounds.</p> |
| Tourism | <p>The Sefton Coast draws significant visitors every year – hundreds of thousands. Visitors are attracted to the beaches, the dunes and the woodlands.</p> <p>National Trust alone receives 350,000 visitors a year to its land in Formby. There are direct benefits from this in terms of employment of staff to manage visitors and income to the landowners (National Trust charges £4.50 per car for non-members).</p> <p>There are also indirect benefits to the providers of other services in the area such as hotels, restaurants and shops; this is not quantified, however visitor spend in Sefton as a whole was £125m in 2001; this is 11% of the visitor spend in the entire region, which is high considering Sefton’s population represents just 4% of the region.</p> |
| Maximising wellbeing | |
| Index of Multiple Deprivation (IMD) | The IMD rank illustrates the significant differences in deprivation across Sefton; with Cambridge ward, in the study area being scored at 1743 and Derby being scored at 312. |

| <i>Topic area</i> | <i>Baseline</i> |
|-------------------|--|
| Health | <p>The health of the population in Sefton appears to be similar to the national averages with three quarters claiming to be in good or very good health. There are inequalities across the borough however in terms of life expectancy with the North of the borough expecting to live up to 10 years longer than those in the south,</p> |
| Population | <p>The population of Sefton has been decreasing since the early 1970s, although this decrease is predicted to slow now. Again this masks differences across the borough with the north having an increase in population of 4% and the south having up to 13% reduction.</p> <p>The age structure varies north to south as well. The study area shows an age structure skewed towards the over 50s; whilst Derby ward shows a younger population.</p> <p>There is a very small ethnic population across Sefton, both in the study area and the wards in the south.</p> <p>61% of people in the study area are social grades AB and C. This compares to just 37% in Derby.</p> |
| Transport | <p>A high proportions (almost 40%) of workers study area travel over 10km to work, with 4% travelling over 30km; this compares to 11% of workers in Derby, 28% in Sefton and 22% in the Northwest, travelling these distances.</p> <p>There is a greater use of the car in the study area compared to Derby but it is at the regional average; there is less than half the use of public transport as compared to Derby but again it is about the same as the regional average.</p> <p>There are excellent north to south routes through Sefton, linking towns such as Liverpool, Crosby and Formby to Southport but poor from east to west and vice versa. East-west bus routes are also considered inadequate.</p> |

| <i>Topic area</i> | <i>Baseline</i> |
|-----------------------------------|--|
| Crime and safety | <p>In 2006/7 the total number of crimes in Sefton was 14,316. This is a 13.2% reduction since 2004/05. One of the wards in the study area, Dukes, had one of the highest levels of recorded crime; most of the wards in the study area had much lower concentrations of crime than the Sefton average.</p> <p>South Sefton has higher proportions of violent crime than the Sefton average, with the north and central areas having a higher proportion of vehicle crime.</p> <p>In a Sefton MBC “Perceptions of crime” survey, the top fear of people in Southport, Crosby and Formby was of being the victim of burglary; this compares to south Sefton (including Derby ward) where the top fear was of being assaulted and beaten up.</p> <p>There are no specific data sets for the woodlands area; however there are significant issues of anti-social behavior being experience by the local population at peak visitor times. This is discussed further under “sustainability issues”.</p> |
| Educational achievements | <p>Qualification levels in the study area are better than local, regional and national averages, particularly at the higher Levels 3 and 4. Derby ward by contrast has significantly poorer educational achievements than both local and national averages.</p> |
| The woodlands and society | <p>The woodlands represent a significant recreational and educational asset within Sefton and the northwest region. There are a variety of recreational uses of the woodlands (and dunes), from dog walking to kite sailing, picnicking and squirrel spotting. All of these bring significant health benefits to those involved.</p> <p>The woodland also receives a significant number of students and school children each year (National Trust receives 20,000 to its site alone, 8,000 of which it deals with directly through its own education officers).</p> |
| Protecting our environment | |

| Topic area | Baseline |
|---|--|
| International protected habitats | <p>There are a number of international designated sites within the Plan Area and outside of the area, but with the possibility of being affected by the plan. Figures # to # in Appendix 3C.</p> <p>These include:</p> <ul style="list-style-type: none"> • Sefton Coast RAMSAR site • Sefton Coast SPA • Sefton coast cSAC <p>Information for these sites is given in detail in the HRA and summarised below:</p> |
| Nationally and locally protected habitats | <p>There are also a number of nationally designated site:</p> <ul style="list-style-type: none"> • Sefton Coast SSSI (Figure # in Appendix 3C) <p>Under this designation, the Sefton coast is of special interest for the diversity of coastal landforms that occur, in particular for the large, mobile dune system.</p> <ul style="list-style-type: none"> • Sefton Coast Site of Local Biological Importance • Ainsdale National Nature Reserve <p>Ainsdale NNR is designated as such because of the beach, dune and pinewood habitats which support a large number of important species, such as the Natterjack Toad, the Sand Lizard, wading birds, the northern dune tiger beetle, the mining bee and the red squirrel.</p> <p><i>Data gap: current condition of NNR and SSSI. SSSI in “unfavourable status”?</i></p> |
| Important species | <p>Natterjack toad: <i>data gap</i></p> <p>Sand lizard: <i>data gap</i></p> <p>Red squirrel: 2011 at 60% of 2002 baseline level – significant improvement from the extreme low of 15% of 2002 levels in 2009 following the outbreak of Squirrel Pox.</p> |

| Topic area | Baseline |
|----------------------------|---|
| Air quality | It is difficult to assess the air quality in the Plan Area because the main monitoring station for Sefton is in the south of the borough. There are three Air Quality Management Areas, none of which are within the Plan area. There is, however, a possibility that poor air quality in some parts of the borough may still be affecting the habitats of the Sefton coast; NOx from traffic may be causing adverse effects. <i>Data gap.</i> |
| CO2 emissions | 2005 1.5 million tonnes of CO2 emitted. This equates to 5.4 tonnes per person. For domestic use, Sefton is comparable with the Northwest and national averages, but 40% lower for total emissions. Overall emissions in Sefton have fallen slightly but within this fall there is an increasing level of emissions from transport. |
| Climate change projections | <p>UKCIP09 projections for Sefton indicate we are likely to see over the next 50-100 years:</p> <ul style="list-style-type: none"> • A rise in maximum summer temperatures by 2-4 °c • The warmest day of the year to rise by 4 °c • Increased occurrence of “mini heat waves” • Summer rainfall may decrease by on average 11% • Winter rainfall may increase on average by 20% • Extreme storms may be more frequent and intense with rainfall events in excess of 150-200mm in one day leading to increased flooding events • Sea levels may rise by up to 85cm |
| Flood risk | Within the Strategic Flood Risk Assessment, Formby has having the potential to receive flooding from the River Alt and its tributaries (fluvial flooding) and sewer flooding as a result of drains "backing up" in high flows in the local rivers and ditches. Hightown is also identified as being at risk from tidal flooding as a result of coastal erosion. |
| River water quality | Just over 50% of Sefton’s river length is classed as a good chemical quality, compared to 64% in England as a whole. The River Alt, from Alt Bridge to Altmouth Pumping Station has a Chemical Classification of C and a biological classification of E (2009). |

Sefton Coast Woodlands Task Group

Sustainability Appraisal of Sefton Coast Woodlands Management Plan Review 2013:Draft SA Scoping Report March 2012

| <i>Topic area</i> | <i>Baseline</i> |
|-----------------------|--|
| Bathing water quality | Formby bathing water typically achieves a high water quality standard. This bathing water a history of phytoplankton blooms which are not harmful but can result in the water appearing discoloured or foam forming on the water. |
| Sefton Coast woodland | There are 419 Ha of woodland and scrub in the study area; 83% is woodland. Of this, more than 70% is pine woodland. 53% of the trees are over 60 years old. This varies for different species; 79% of the pine woodland is over 60, for example. The frontal woodlands are eroding, the rear woodlands are ageing. |

4.0 Sustainability Issues

4.1 Introduction

In order to identify the sustainability issues for the appraisal, we have used the information gathered from the assessment of plans and programmes and data, but also input from personal communication and a workshop held in January 2012.

4.2 Interest Group Panel workshop

- 4.2.1 The Interest Group Panel is a group of stakeholders brought together by the Mersey Forest to act as a sounding board for the Plan, the SA and the HRA. It includes representatives from the local authority (councilors and officers), woodland owners, wildlife experts and local businesses.
- 4.2.2 The Interest Group Panel Workshop, January 2012, identified a number of issues, which are summarised below, using the categories established in the baseline assessment, and listed with more detail in Appendix 4A, Table 4.1. Further details of the workshop are in the workshop report which is available on request.
- 4.2.3 Issues identified:

Economic growth and reducing the deficit

- The economic value of the woodland to the owners, not in (e.g.) timber sales, but in its contribution to their businesses; for example, Altcar rifle range, Formby Golf Course.
- The benefit to house prices in the area as a result of being close to an excellent quality environment.
- The value of visitors to the area, although this is not as great as it might be as many visitors go to and from the beach and do not spend money in the local towns and villages.

Maximising wellbeing

- The variety of different interests and agendas on the coast, highlighting the importance of involving the community and working in partnership to plan for and manage the woodland.
- The significant difference in the resources (financial, time, skills etc.) between the largest and smallest woodland owners.

- The negative aspects of lots of visitors, including congestion, car crime, drug and alcohol abuse, burglary and increased frequency of fire.
- The significant anti-social behavior experienced in the peak visitor periods requiring special police task forces.
- The “curse of the car”: significant congestion on the roads in the peak visitor periods with cars parked inappropriately and sometimes dangerously because of a lack of parking spaces and/or a reluctance by some to pay for parking (e.g. at National Trust car park) or to walk a short distance.

Protecting the environment

- The negative aspects of lots of visitors, including the trampling of protected sites and litter.
- The coast has numerous designations which are intended to protect it from harm, however it is the management of the sites which actually delivers the protection, not the designations.
- The difficulties of managing “coastal squeeze”, where the shoreline erodes as the dunes move closer and closer to the woodland. If the trees are removed to allow for the dunes, how far back towards the town does this continue? How long before the dunes reach the town? *This is an especially sensitive issue in Formby where the coast is eroding at a significant rate each year.*
- The pros and cons of climate change include: potential increases in visitors due to warmer weather (which has its own pros and cons), potential increases in coastal erosion, storminess and effects on hydrology (water tables).
- The health of the woodland, in terms of age structure, pest and diseases.

4.2.4 These issues were discussed in more depth in an afternoon session of the workshop, where priorities were identified and some possible solutions to the problems were put forward. These included:

- Visitors: it was considered that towns like Formby need to change and adapt to manage visitors better so that increased visitor numbers in the future can be beneficial rather than a burden. The Plan could contribute to this by including activities to improve signage and education.
- Dune protection: it was considered that the protection of the dunes had been overlooked in the 2003 woodlands plan and that the objective for “no net loss” of woodland was unsustainable. The dunes and woodland had to be considered together in the Plan.
- Red squirrels: it was considered that since the squirrels are now recovering following the outbreak of squirrel pox, the Plan could support their recovery with the protection of their habitat.
- Coastal squeeze: it was considered that this was a critical issue and had been heading in that direction for many years, ever since the Sefton coastline was first developed with hard infrastructure. If the dune wildlife corridor along the coast was to be kept intact, then the trees

would have to be removed in places. There were no easy solutions to this issue but it was felt that it must be considered in the Plan.

- Congestion: it was considered that the Plan should consider the traffic impacts of visitors to the woodlands and put forward ideas to improve the situation for the local community; for example, promoting other woodland sites such as Sefton MBC land and lobbying for the provision of better public facilities at these sites.

4.3 Issues arising from the baseline data and plans & policies

Economic growth and reducing the deficit

4.3.1 From the data relating to the economy, two significant issues present themselves:

- An unequal distribution of employment and wealth across Sefton, with the wealthiest being in the Plan area, the poorest in the south of Sefton;
- The lack of real economic benefit to coastal towns (with the exception of Southport) from the significant visitors received each year.

4.3.2 Inequalities across Sefton are recognised in the Core Strategy for Sefton (Sefton MBC, 2011). The Core Strategy also notes that there has been a loss of traditional industries such as manufacturing in key areas such as south Sefton and new job opportunities in the private sector. It states that:

“These (opportunities) are linked to tourism, leisure, recreation, broadening the rural economy and renewable energy”.

4.3.3 It is ambitious to believe that a woodland management plan can contribute to the resolution of this issue, but it is not unrealistic, given Sefton MBC’s own analysis of where new opportunities will be found.

4.3.4 If visitors can be persuaded to use more facilities in the towns and villages as a result of their proximity to the woodlands and dunes, economic benefit will come to those places through new and/or improved businesses supplying the tourists.

4.3.5 This also provides a chance to deal with the issue of inequalities. It is known that the population of Sefton as a whole is declining; it is also a fact that there is a significantly higher number of retired people in the Plan area than in other areas of Sefton. This means that new employment opportunities could be taken up by people across Sefton, especially as there are excellent transport links between towns such as Formby and more deprived areas of Sefton such as Bootle.

Maximising wellbeing

Social inequalities

- 4.3.6 As there are inequalities in the economic fortunes of populations across Sefton, so too are there inequalities in health, educational attainment and access to green-space.
- 4.3.7 These are not issues caused directly by the dunes and woodlands but it cannot be ignored that the existence of a pleasant, high quality environment has made certain towns and villages along the coast very attractive to live in, for those that can afford to.
- 4.3.8 The Plan could make a positive contribution to these local issues through activities relating to healthy pursuits, exercise (including voluntary ranger work for example) and education/skills development.
- 4.3.9 Access to the woodlands could also be considered in the plan; access is not only about being physically able to go to the woodland. The Forestry Commission Scotland (The Forestry Commission Scotland, 2009) has identified a number of barriers to access, including lack of knowledge, negative perceptions, lack of time, physical ability and lack of reasonable facilities.

Transport

- 4.3.10 Transport or, should we say, congestion is also a significant issue. There are good north to south rail links but poor east west links. Workers in the Plan area are more likely to use their cars to commute to work than those in south Sefton and they commute further, perhaps to jobs in the cities such as Liverpool and Manchester. The high level of car use in the Plan area is significantly increased by visitors during peak periods. This makes congestion a significant local issue, for the economy (goods and people take longer to get places), for the peaceful enjoyment of the countryside and for air quality; all of which have further “knock-on” effects on, for example on health, wealth and a high quality environment.
- 4.3.11 Transport could be considered in the plan. Whilst it is not within the scope of the Plan to address commuting patterns in the Plan area, it is possible for the Plan to include activities to influence visitor behavior, as was discussed in the IGP workshop.

Crime

- 4.3.12 Whilst we do not have individual datasets on crime for the Plan area, we do have the results of a “perceptions of crime” survey by Sefton MBC which gives an insight into the different types of crime experienced across Sefton.
- 4.3.13 In the Plan area, communities are concerned about burglary and car crime.

4.3.14 There are a variety of reasons why there may be more of these types of crime in the Pan area than, say, violent crime, including: the relative wealth of the communities, the “accessibility” in terms of a strategic north south road network and a regular train service and the high number of visitors to the area.

4.3.15 The Plan could consider how its activities could contribute positively to reducing crime, especially during peak visitor periods, when other concerns also arise such as drug and alcohol abuse and fires in the woodlands.

Protecting the environment

4.3.16 There a variety of important environmental issues identified from the data and plans.

Protecting the dunes

4.3.17 The dunes habitat on the Sefton Coast is an extremely valuable and increasingly rare habitat at an international level, not just a local or even UK-wide level.

4.3.18 It provides a home for rare species such as the Natterjack Toad and the Sand Lizard as well as a variety of invertebrates such as the Mining Bee.

4.3.19 However the dunes are not in a “favourable condition”, i.e. the habitat is not as good as it should be. European and UK law mandate that the dunes be restored to favourable condition as quickly as possible.

4.3.20 The Plan will need to take this into account in developing its objectives and activities.

4.3.21 Protecting and enhancing the dunes, however, is not a straightforward matter because the dunes are mobile, and they need to remain mobile. Yet the Sefton Coast is not undeveloped coastline and so other issues become apparent.

Protecting species: The Red Squirrel

4.3.22 To put it simply, for most species protecting their habitat is the single most important activity in protecting them.

- 4.3.23 As well as the species associated with the dune habitats, the Plan area has important species associated with the woodland habitat; in particular the Red Squirrel.
- 4.3.24 The Red Squirrel is rare in the UK, especially in England, although it is not rare across the rest of Europe. It is not protected by European legislation like the Natterjack Toads and the Sand Lizards but it does have its own UK Biodiversity Species Action Plan and is somewhat of a “mascot” for the woodlands in Formby.
- 4.3.25 The Red Squirrel enjoys its refuge in the Formby woodlands because of the predominant species of woodland present there, which is pine. In much of England, the Red Squirrel is out-competed by its more adaptable, aggressive relation, the Grey Squirrel and is in decline across the country.
- 4.3.26 However it appears that the Grey Squirrel does not do so well in the Pine Woodland habitat and so here the Red Squirrel is able to maintain a foothold.
- 4.3.27 In considering the management and species mix of the woodland, the Plan should consider the effect that this may have on the Red Squirrel population.

Coastal squeeze

- 4.3.28 In some parts of the Sefton coast, the coastline is eroding as the dunes move inland. In other parts, the coastline is extending out to sea as the dunes “accrete” i.e. they deposit sand.
- 4.3.29 This has been occurring for centuries, but as the coast began to become more developed, local communities became tired of losing land to the sea and began to find ways to arrest the erosion.
- 4.3.30 The use of marram grass is documented back several hundred years as a method to slow the moving dunes; it is a relatively recent development (100 years ago) on the coast to use trees to stabilise them. The Sefton Coast Woodland, as it is now, was first planted to “hold the line” and defend local communities and their land from continued loss.
- 4.3.31 Even so, since the National Trust acquired its significant landholdings in 1967, it has “lost” 65 acres to erosion; it is estimated that the frontal dunes are eroding at a rate of at least four metres per year. As a result, the National Trust needs to consider how it can continue

to manage its land and provide for visitors under such conditions and it is developing a coastal adaptation plan to address the different issues.

4.3.32 The woodlands have become an important part of the local environment as well as providing a defense against loss and the debate between protecting the mobile dunes and protecting the woodland has become heated in the local communities. Many consider that the solution must be one or the other.

4.3.33 However, this is not necessarily the case. Whilst Sefton MBC has been experimenting with different ways of slowing the dunes before they get to the trees, the National Trust has been looking at how the woodland can accommodate the dunes without significantly reducing their mobility.

4.3.34 In the 2003 Plan, the frontal dunes were not considered because of the uncertainty around what should be done about them. In the ensuing ten years, there has been much thought and effort put into the issue and there is now the possibility of a win-win scenario

4.3.35 The Plan must consider the frontal dunes issue this time.

4.3.36 The Shoreline Management Plan (SMP) which covers the Plan area is also an important consideration for the Plan. The SMP has a policy of “managed realignment” for the Formby Dunes, which means:
“To allow the shoreline to move forward or backwards in a controlled way, to manage the risk from coastal flooding or erosion to assets and interests. Managed realignment provides the opportunity to create a more natural coastline by allowing sediment movement which helps maintain beaches or provides space for natural landwards roll-back of saltmarsh, beaches or dunes in response to ongoing coastal change and sea-level rise”

4.3.37 This policy must also be taken into account in the development of the Plan.

Water

4.3.38 There are a number of significant water-related issues in the Plan area.

- 4.3.39 The changing water table in the dunes is a problem for species such as Natterjack toads; to what extent is this caused or exacerbated by the woodland?
- 4.3.40 The bathing water quality along the coast is considered to be high quality, yet the coastal rangers spend much of the summer picking up litter left behind by visitors.
- 4.3.41 River water quality is not very good in the River Alt catchment, although it is outside of the scope of the Plan to either address this directly or even to contribute much to it since there are no significant water courses in the woodlands.
- 4.3.42 Fluvial (river) and sewer flooding are causes for concern in Formby but, again, it is difficult to see how these can be influenced by the Plan beyond landowners keeping their ditches running freely.
- 4.3.43 Tidal flooding is only identified as a risk at Hightown, as a result of coastal erosion.

Air quality

- 4.3.44 There are two issues related to air quality:
- Emissions related to visitors' cars; and
 - The deposition of NO_x on dune vegetation.
- 4.3.45 The woodland and dune ecosystems both contribute to, and are affected by, poor air quality.
- 4.3.46 The consideration of NO_x and SO_x emissions in the Plan should be focused around travel patterns to and from the woodland.
- 4.3.47 Damage to vegetation and habitats as a result of NO_x and SO_x deposition is an issue that cannot be fully addressed by the Plan as the sources extend much more widely than the Plan area. As a result, the Plan must provide its own mitigation wherever possible and taken account of this problem in planning its activities.

Climate change mitigation

- 4.3.48 Here again the woodland has two roles:
- Contributor to CO₂ emissions from visitors' cars; and
 - "Soaking up" (Sequestration) of CO₂ in the trees and dune habitats.

- 4.3.49 The CO₂ emissions can be addressed in the same way as the NO_x and SO_x emissions, through dealing with visitor travel patterns.
- 4.3.50 The role of the woodland as a “carbon sink” has not been considered before and could be looked at in this Plan. In the past ten years there has been a significant increase in companies and organisations offering to “offset” the carbon footprints of other businesses and individuals. As a result, the Forestry Commission has developed the “Woodland Carbon Code” which certifies (or not) planting schemes claiming to deliver CO₂ benefits.
- 4.3.51 The financial “reward” for being involved in such as scheme, from a woodland owner’s perspective is to have planting, and possibly management activities, funded by a third party that wishes to offset its CO₂ emissions.

Climate change adaptation

- 4.3.52 For the most part, climate change is likely to exaggerate issues (and benefits) which already exist in the Plan area.
- 4.3.53 In addressing issues such as Visitor pressure and coastal squeeze, the Plan could incorporate a precautionary approach and plan for “more”.

The Sefton Coast Woodland

- 4.3.54 Whilst there are many direct and indirect issues and benefits arising from the woodland, it is also important to consider the woodland in its own right with respect to its health and longevity if potential benefits are to be realized in the long term.
- 4.3.55 The National Trust proposes to produce a Coastal Adaptation Plan for 100 years. The SWMP needs to identify activities for the next ten years but have a vision which goes much further in years in addressing the species mix age structure and maintenance of healthy plantations.

4.4 Sustainability objectives – the appraisal criteria

- 4.4.1 Using the issues identified in Sections 4.2 and 4.3, sustainability objectives have been developed for use as appraisal criteria. These are listed in Table 2.

Table 2: Sustainability Objectives

| Proposed Sustainability objective | Proposed Indicators |
|---|--|
| Economic growth and tackling the deficit | |
| To increase the economic return from the woodland to woodland owners | <ul style="list-style-type: none"> • Timber sales • Forest products • Use of woodland in core business • Carbon code projects |
| To increase the economic benefit to local towns and villages from visitors to the woodlands | <p>This is a difficult one to quantify but with help from local communities it could be done. Ideas for indicators include:</p> <ul style="list-style-type: none"> • Number of visitor related businesses • Visitor spend in towns and villages close to the woodlands |
| To reduce economic inequalities and support regeneration | <p>It would be unfair to use outcome indicators such as IMD to judge the Plan's contribution to this objective and so it is proposed that woodland related indicators are used such as:</p> <ul style="list-style-type: none"> • Number of employees and average in woodland related work • Number of employees and average income in businesses within the woodland • Number of employees and average income in businesses related to tourism in the Plan area |
| Maximising wellbeing | |
| To reduce crime and improve safety | <ul style="list-style-type: none"> • Anti-social behaviour • Burglary rates • Car crime rates • Numbers of fires in the woodland and on the dunes |
| To improve health | <p>Here again, it is unrealistic to use health outcome indicators (such as life expectancy) to judge the contribution of the Plan to health and health inequalities. It is proposed that health-related woodland activities are used instead:</p> <ul style="list-style-type: none"> • Physical activity events (e.g. Walk in the Woods and Running Rings") |

| | |
|---|---|
| | <ul style="list-style-type: none"> • Number of volunteers involved in woodland projects |
| To improve access to the woodland | <ul style="list-style-type: none"> • Number of visitors to the woodland • Number of disabled visitors • Signage and information • Projects to reach out to deprived communities • Providing for different physical abilities • Visitor facilities |
| To reduce congestion and the negative effects of car use on local air quality | <ul style="list-style-type: none"> • Visitor rates at different sites e.g. Victoria Road versus Life Boat Road. • Signage from the station to the woodland • Active promotion of “park and walk” or take the train to potential visitors. |
| Protecting the environment | |
| To protect the mobile dune habitat | <ul style="list-style-type: none"> • Condition of designated habitats and species |
| To protect the Red Squirrel | <ul style="list-style-type: none"> • Population statistics for the red squirrel |
| To address the issue of coastal squeeze and the policy of “managed realignment” | This is a slightly different objective as it is an “input” objective, rather than an outcome objective. That being so, indicators for other objectives would be used to assess progress – the first two environmental objectives, for example, are coastal squeeze in a nutshell – how to achieve both? |
| To mitigate CO2 emissions | <p>In terms of the Plan’s contribution to CO2 emissions, refer to the indicators for transport.</p> <p>For carbon sequestration:</p> <ul style="list-style-type: none"> • Tonnes of CO2 “captured”/offset |
| To adapt to projected climate change effects | This is another input objective; for this it is necessary to consider the potential effects of Climate change on each of the other objectives and plan for it. |

| | |
|---|---|
| To improve the health and longevity of the woodland | <ul style="list-style-type: none">• Age structure of trees• Species mix• Prevalence of pests and diseases |
|---|---|

5.0 The Next Stages in the Sustainability Appraisal

5.1 Immediate next steps

- 5.1.1 This scoping report is subject to consultation; consultation questions can be found in Section 6.0.
- 5.1.2 Through this consultation exercise, we can establish the significant sustainability issues for all in the community and agree the objectives to use in the appraisal.

5.2 The Appraisal Framework

- 5.2.1 The Sustainability Objectives developed in Section 4.0 and agreed through the consultation on the scoping report will be used as criteria in the assessment of the Plan.
- 5.2.2 In carrying out the assessment, a judgment has to be made as to the nature and the significance of the effect of the Plan on the achievement of the objectives.
- 5.2.3 To help us to do this, we use an “Appraisal Framework”. This is simply a table or “matrix” to help us look at each aspect of the plan with respect to its effect on each objective and whether the effect is:
- Positive or negative

- Large or small or negligible
- Short, medium or long term
- Permanent or temporary

5.2.4 An example matrix is shown in Appendix 5A.

6.0 Questions for the scoping report consultation

Appendix 3A: Plans and programmes

Appendix 3B: Baseline information

Appendix 3C: Designated sites

Figure 3 Sefton Coast RAMSAR site

Sefton Coast Woodlands Task Group

Sustainability Appraisal of Sefton Coast Woodlands Management Plan Review 2013:Draft SA Scoping Report March 2012



Figure 4 Sefton Coast cSAC



Figure 5 Sefton Coast SPA



Sefton Coast Woodlands Task Group

Sustainability Appraisal of Sefton Coast Woodlands Management Plan Review 2013:Draft SA Scoping Report March 2012

Figure 6 Sefton Coast SSSI



Appendix 4A: Issues and points raised at the IGP workshop

| Issue | Points raised |
|--|--|
| Partnership working | <ul style="list-style-type: none"> • Ability of different sized landowners to be involved in the SA/HRA is variable it may be too complex and time-consuming for small landowners. • Need to recognise the importance of the woodlands for the landowners, regardless of size. • Plan belongs to the community as well as the SC partnership. • The woodlands also provide benefit to local community: e.g. Altcar Rile Range, trees provide sound buffer, sell an image of the coast to thousands of soldiers and provide a refuge for the red squirrel |
| The value of the woodlands to landowners | <ul style="list-style-type: none"> • As an asset in the pursuit of their business interests e.g. Formby Golf Course has been transformed from a previously links course to one with significant tree cover which has helped to reduce wind, improve the amenity and attract top golfers. • Timber sales were discussed as a potential opportunity, although it was acknowledged that on the Sefton Coast, all tree-planting tends to be for biodiversity or amenity purposes. |
| House and land prices | <ul style="list-style-type: none"> • House prices in Formby are above the local and regional average, with Altrincham cited as being the only place in the Northwest where average house prices are higher. • The local environment of Formby, i.e. the dunes and woodlands, plays a significant role in making the area attractive to live in |

| Issue | Points raised |
|---------------------|---|
| The visitor economy | <ul style="list-style-type: none"> • The coastal environment is a critical factor in attracting tourists to the area, providing some economic benefit to towns nearby such as Formby and Southport. • Benefits to towns such as Formby could be strengthened; many visitors drive straight to the beach or woodlands and do not spend money in the town. • How can the coast be managed to bring benefits to the whole community, especially the local communities? • There are some negative impacts from visitors to the area. These include: <ul style="list-style-type: none"> ○ Trampling of protected sites ○ Increased frequency of fire ○ Congestion of local roads ○ Increased crime, especially in the summer • Formby has the largest number of visitors because of the woodlands (red squirrels) and the dunes and so it is felt experiences the greatest level of visitor pressure. • Formby Pool Trust is keen to lend its services to the town to help with visitors. |
| Protected sites | <ul style="list-style-type: none"> • Virtually all of the Sefton Coast is protected, internationally and/or nationally and has been for a long time. • The designations of protected status do not, in themselves, protect the coast; rather it is the management of the various sites that makes the difference. |
| Coastal squeeze | <ul style="list-style-type: none"> • This is considered the biggest environmental issue; at certain points along the coast, the dunes are eroding and would naturally move backwards from the sea. However the presence of woodlands behind the dunes at these points prevents this process. This is, of course, the reason many of the trees were planted in the first place. • It was felt by some that although the sand dunes are “living” they could not just keep moving the trees back to allow the dunes processes to “do their thing” because this would go on forever. • Other options are to halt the erosion; Sefton MBC has been using Christmas trees, planted in some of the frontal dunes, to halt the erosion; the National Trust is employing a similar scheme. Christmas trees cannot be planted in all locations, however; marram grass is also used to stabilise the dunes in other places. |

Sefton Coast Woodlands Task Group

Sustainability Appraisal of Sefton Coast Woodlands Management Plan Review 2013:Draft SA Scoping Report March 2012

| Issue | Points raised |
|---------------------------------------|--|
| Climate change | <ul style="list-style-type: none"> • Climate change studies for the Northwest have suggested that as cities become warmer under climate change, the coast will become more popular for visitors. • Important to capture some of the economic benefits that an increase in the number of visitors will bring, but at the same time more thought needs to be put into how to manage the landscape and local community better in response to climate change and to increased visitor pressure. |
| Crime and safety | <ul style="list-style-type: none"> • In hot weather there is a large influx of visitors by train, some of whom are consuming alcohol and/or drugs. • There is now a large summer problem of alcohol and drugs on the beaches; the local police man stations to ensure drugs do not get through, but it is a difficult area to police. • The police and the local community have now set up “Beach Safe” to try to combat these difficulties. |
| Transport | <ul style="list-style-type: none"> • Most visitors come to the woodlands and coast by car. • Parking is restricted near to the dunes. Visitors park further back towards the town, although not in the town; here too parking is limited, by space and by parking regulations. • Local roads become congested with traffic and parked cars during the summer months. • Formby, which is significantly affected by these issues, has, through the Parish Council, promoted the use of more sustainable transport modes, encouraging people to come by train and walk. However, whilst the North South train line works well from Liverpool to Southport, there are no East West links. • Shuttle buses from the station and town centre were attempted six or seven years ago but visitor numbers were too high for them to cope with and the buses became stuck in traffic as well. |
| The woodlands’ health and composition | <ul style="list-style-type: none"> • Pests and diseases can be an issue across the woodlands, although good management should help to prevent the spread of these. • In terms of composition, the woodland is mostly Pine Trees but a significant amount of scrub and broadleaved trees make up the whole. The current plan has a target of 10% broadleaved trees – where did this figure come from? Incidentally the current figure is close to 25% broadleaved. • There is a need to balance dune and woodland management – maybe they should not be considered as two separate habitats but just one ecosystem? • The plan should consider the future inclusion of other areas of woodland, not currently in the plan. |

Appendix 5A: The Appraisal Matrix

| SA Objective | To increase the economic return of the woodland to woodland owners | | | | | |
|----------------------|--|------------------|-----------|-----------|------|---------------------|
| Indicators | Baseline | Nature of effect | Magnitude | Timescale | | Comments/mitigation |
| | | | | Short | Long | |
| Timber sales | | | | | | |
| Forest product sales | | | | | | |
| Carbon Code | | | | | | |

| | | | | | | |
|----------|--|--|--|--|--|--|
| Projects | | | | | | |
|----------|--|--|--|--|--|--|

Appendix XX Citations and Bibliography

- CEC Ltd. (2011). *SCWMP SA and HRA Determination Report*.
- DEFRA. (2007). *A Strategy for England's Trees, Woods and Forests*.
- European Commission. (1979). *The Conservation of Wild Birds*.
- European Commission. (1992). *The Conservation of Natural Habitats and of Wild Fauna and Flora*.
- European Commission. (2001). *The Assessment of The Effects of Certain Plans and Programmes on the Environment*.
- Gresswell. (1954).
- Sefton Coast Partnership. (2006). *Integrated Coastal Zone Management Plan 2006-2011*.
- Sefton Coast Partnership. (2007). *Nature COnservation Strategy and Biodiversity Delivery Plan*.
- Sefton Coast Partnership. (2008). *Sefton Landscape*.
- Sefton MBC. (2009). *Sefton & Knowsley Strategic Flood Risk Assessment*.
- Sefton MBC. (2010). *The Sefton Coast Climate Change Adaptation Study*.
- The Brundtland Commission. (1987). *Our Common Future*.
- The Mersey Forest. (2003). *The Sefton Coast Woodlands Management Plan*.
- UK . (2004). *Planning and Compulsory Purchase Act*.
- UK . (2004). *Statutory Instrument 1633: The Environmental Assessment of PLans and Programmes*.
- UK. (1994). *Statutory Instrument 2716: The Conservation (Natural Habitats, & c.) Regulations*.

