New Forest Heritage Area

# *Indicators and Monitoring*

Report to:

**New Forest District Council**

**New Forest Committee**

March 2000

UC370

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# *A Monitoring Strategy for the New Forest*

## *Executive Summary*

Whatever our interest in the New Forest, we all share a commitment to ensuring that its present-day pressures are managed in such a way that its future is not just conserved, but enhanced. To achieve this aspiration in an area of such great complexity and vulnerability requires an exceptional vision – and the eyes through which we see both the problems and the potential of our responses are provided by monitoring. It is no coincidence that responsible authorities and agencies across Europe are turning to programmes of monitoring to underpin their management efforts. As we become ever more aware of the difficulty of predicting environmental, social or economic change in a world that interacts at a global scale, we adopt instead an approach based on options appraisal and flexible adjustment. By monitoring both the Forest and our management and development activities, it becomes possible to steer a course that reflects the many changes that are taking place around us. Monitoring provides us with the strength and resilience that come from responding to change as it happens, rather than gambling on predicting what will happen before we start.

### The role of monitoring

Monitoring is essentially a process by which we make and record observations on a regular and relatively long-term basis. Many aspects of the economy, society and environment of a region such as the New Forest can be monitored relatively simply provided that we identify the right indicators (to take the "pulse" of our economy, for example). But when we face a crisis (maybe of decline in one economic sector, or degradation of a part of the environment), intensive monitoring may be necessary to allow us to respond quickly and effectively. In all of this, it is clear that monitoring has a *purpose* – often a very specific purpose, since the observations that we make are gathered so that they can be used to assist us in responding to the situation that is revealed. Monitoring is the basis for *reporting* on the state of our region. These reports allow decision makers and the public to know what is happening and to judge whether the present position or recent changes in that position require any specific response. Monitoring provides information for *forecasting* (prediction). If we understand how a system works, such forecasts can be invaluable in allowing us to prepare for, adjust to, or alter these future conditions. But at the same time, we have seen that regular monitoring allows us to *adjust to change* and therefore *steer* our response effectively. This is an ideal approach when aspects of the future for which we are planning remain uncertain. It promotes flexibility, and thus sustainability. Finally, monitoring is often used to *evaluate performance* and to provide the evidence on which we can ensure that we have achieved *value for money*, and the information that is the vital foundation for specifying and justifying future *funding requirements.*

### Developing a monitoring programme to meet these aims

This study has been funded by the New Forest District Council and the New Forest Committee to identify the monitoring currently undertaken, and to consider the extent to which it reflects the effectiveness of the *Strategy for the New Forest*, particularly in relation to nature conservation and landscape interests. The report identifies an initial set of indicators which aim to describe the performance of the strategies being adopted, and which reflect other policy developments affecting the Forest. It recommends timescales on which the results of such indicators might be reported, and reviews both the practicalities of using these indicators and the methodology, data sources and organisational frameworks to implement them.

It is helpful to simplify our approach to monitoring by distinguishing between the present situation (*state*), the factors affecting it (*pressure*) and what we can do about it (*response*). This pressure-state-response framework is much used in planning and management, and helps to sort out the role of monitoring and indicators. In the first instance, monitoring focuses on the state of the environment and economy, since this reflects both the impact of the pressures and the success of

the responses. But if we understand the situation sufficiently, it is also possible to monitor the pressures directly. Monitoring is a process of observation and recording: indicators are the selected properties that we believe are relevant to our management challenges. It is easy to recognise the importance of selecting the "right" indicators, but very difficult to achieve that target. Much of this Report is concerned with identifying what indicators are currently available, and considering the extent to which they can meet the needs of New Forest planning and management.

## Appreciating the limits of monitoring

It is important not to assume unreasonable expectations of what an affordable monitoring strategy can achieve. Change related to the implementation of planning or management strategies is often masked or confused by other *types of change* and separate analysis may be difficult. It is inevitable that there should be some trade-off between the advantages and disadvantages of *accuracy, precision and resolution*, and in any case *continuously variable properties* have to be measured by some form of statistical averaging or sampling. Further *bias* can be introduced when the sampling procedures over- or under-represent some aspects of the pattern that is being monitored, and if there are no available direct measures, *surrogate indicators* have to be employed. Also, to make use of the monitoring, some *compound or aggregate indices* may be necessary.

## A framework for New Forest monitoring

It is suggested that the New Forest should adopt a two-level monitoring strategy based on around 12 key indicators drawn from some 45 secondary indicators. Such prioritising requires careful selection of indicators, but is subsequently both cost-effective and efficient, since it provides a clear view of the major trends in the area through the key indicators, supplemented by a degree of supporting detail in the secondary indicators. There is general agreement that key topics to be represented are recreational pressure from visitors and residents, traffic pressure (mainly from roads), development pressure and control, changes in agricultural and forestry economy (particularly through their impact on Commoning), and global climatic/environmental change.

The existing overall level of survey and monitoring for the New Forest is relatively good, and indeed may be better than most areas of the country for issues relating to landscape and nature conservation. However, it is apparent that commitment to repeat survey (as opposed to collection of an initial data set) is often lacking, so that adoption of some of the available indicators as key or secondary priorities for the New Forest would involve establishment of a repeat survey schedule. A wide-ranging review of existing data sources has been undertaken, focusing on those which are available for the New Forest area, but also reflecting national or international programmes and standards. Visits and telephone interviews have been held with major data holders and suppliers within the Heritage Area to identify the range of data sets and to discuss the limitations in using these data within indicator development.

The proposed key indicators cover: for *Agriculture and Commoning*, the number of practicing commoners and number of stock depastured; for *Forestry and Economy*, the Forest Landscape Indices and a development control index; for *Heritage and Archaeology***,** land cover change may be the most appropriate indicator; for *Nature Conservation***,** damage to protected sites, habitat condition surveys and changes in priority biodiversity species; for *Landscape*, some landscape metrics are recommended; for *Recreation, Tourism and Access***,** tranquillity and remote area assessment, erosional impact on the path network, and a measure of visitor numbers: for *Transport*, a selected indicator of traffic statistics appears most useful.

## Practical issues for the monitoring strategy

The co-ordination of monitoring and the development and reporting of indicators for the *Strategy for the New Forest* introduces a number of operational and practical management issues including:

- *Who should coordinate the implementation of the monitoring*? The framework suggests that an annual review by the NFC should determine whether modifications to the monitoring strategy are required. The selected indices will be monitored for the most part through existing programmes, though some modification or additions could be considered. Raw data from monitoring should be compiled by a designated New Forest Monitoring Coordinator (possibly within NFC), who would manage release of the derived monitoring information.

- *How often should reporting of indicators take place*? Many long-term monitoring programmes have a 5 or 6 year repeat cycle while others offer the opportunity to report annually. Some topics, such as visitor numbers, may usefully be represented on a monthly or even finer resolution. An annual status report should be produced, but some indicators will be revised only on a significantly longer cycle.

- *Who should undertake or commission the analysis of the indicators*? Indicators should be defined by the NFC/NFDC through the Monitoring Coordinator system. The Coordinator may derive some of the indicators/indices from the raw data, while others will be supplied by the data-collecting agencies. All indicators and indices should be archived in a central New Forest Monitoring Database, though it will generally not be necessary to archive the raw data centrally.

- *How will be the monitoring and indicator information be published and queried*? An Annual Report on the State of the Forest could be presented to, and subsequently published by, the New Forest Committee. Following publication, the indices would be available for *ad hoc* internal or external queries, possibly on a cost-recovery basis.

- *Who will assess performance against targets*? As well as reporting the results of the monitoring, the NFC should formally review their implications as indicators of the success of the planning and management strategies in place.

Monitoring is currently undertaken by a large number of organisations, each with their own timescales and recording/reporting structures. However, there appears to be great potential for the co-ordination of reporting for the Heritage Area on behalf of all interested parties. The organisations responsible for data collection (generally already members of the NFC) are the appropriate bodies to maintain and update their own data, and effective coordination could take place without a centralised data archive if properly organised. However, there is some need for an improved commitment to repeat survey, notably with the land cover and land use mapping.

**CONTENTS**

# *Background to a Monitoring and Indicators Strategy for the New Forest*

**The structure of the Report:**
The report is divided into three parts that combine to provide a background to a monitoring and indicators strategy for the New Forest. Parts 1 and 3 form an executive statement on the need for, and design of, such a strategy. Part 2 provides a systematic review of existing data sources, and evaluates their suitability for planning and management use in the New Forest.

**Part 1: A background to monitoring**
A broad perspective on monitoring in New Forest planning and management opens with a consideration of the purpose of monitoring. The distinctions between monitoring, indicators and indices are clarified, and the ideal attributes of indicators are introduced. This permits a discussion of the principles through which priority indicators could be identified for the New Forest, including the appropriate number of indicators. Finally, some limitations of monitoring are highlighted so as to avoid setting unrealistically high expectations of a strategy. *Part 1 is designed for general consideration.*

**Part 2: A review of existing data sources**
The bulk of this Part comprises a topic-by-topic review of the major existing indicators, both in terms of their content and quality. This provides the essential factual background for the design of a monitoring strategy for the New Forest. The review permits selection of priority indicators, but also serves the purposes of accountability by offering justification of this choice. The review of indicators is prefaced by a brief discussion of the geographical context for monitoring (boundary issues and currently established monitoring programmes). *Part 2 is designed for specialist readers with a professional interest in data sources.*

**Part 3: Towards a monitoring strategy for the New Forest**
A full monitoring strategy is likely to develop through time rather than being pre-designed, but a firm foundation can be laid to launch the process. Consideration is given to the tasks to be performed, the allocation of responsibility, and the vital preliminary of selecting key and secondary indicators for the New Forest. *Part 1 is designed for general consideration.*

# *PART 1:*

# *A BACKGROUND TO MONITORING*

## 1. MONITORING FOR NEW FOREST PLANNING AND MANAGEMENT

### 1.1 Putting monitoring in perspective

At first sight, monitoring and its associated indicators appear to be technical formalities – just one stage (and for many people a rather boring stage) in the processes through which we record whether targets are being met. The reality could hardly be more different! Monitoring provides us with eyes through which we can see the world (in this case, the world of the New Forest) more clearly than ever before. It offers us invaluable flexibility in the way in which we respond to the uncertainties and changes that bedevil any attempt to adopt a fixed approach to management, particularly one that claims to predict the needs and priorities of future years. Above all, monitoring is modern – for once, in the very best meaning of the term. It constantly encourages people at every level to remain involved in the shared task of assessing how things are working out, and whether any changes are necessary. It helps to ensure that our actions are sustainable. And it does all of this by helping us to understand what is happening, and how we relate to it.

Viewed in this light, it almost appears that monitoring is being seen as all-powerful, and that would be a mistake. Certainly, it offers enormous potential power as a support to the planning and management of the New Forest, but turning that potential into reality is a complex and challenging business. Luckily, the New Forest is not alone in realising that effective monitoring is vital but, at the same time, extremely difficult to pin down. Nationally and internationally, major effort is being devoted to developing approaches that provide the desired but elusive mix of reliable, useful, understandable and affordable information. In working towards a strategy for the New Forest, we are able to learn from these initiatives elsewhere, while developing our own particular approach that meets our own particular needs. This report on Monitoring and Indicators takes an important step in that direction, and provides a basis for reaching decisions on the direction to be taken over the next few years.

If we are to appreciate the needs, opportunities and constraints through which a monitoring programme can be developed, it is useful to start at the end rather than the beginning, by identifying the purposes for which monitoring will ultimately be used. On this basis it is possible to think about the issues that have to be clarified before such aims can be achieved. And then, we can look at the monitoring processes and indicators themselves. Finally, we will return to some overall perspectives and recommendations for immediate discussion and action within the New Forest community as a whole.

### 1.2 A purpose for monitoring

Monitoring is essentially a process by which we make and record observations on a regular and relatively long-term basis. Almost every aspect of our lives functions better when it is supported by monitoring. We monitor the speed of our car through the speedometer, our children's educational progress through examinations and our health through simple checks that become more complex as our health declines. The same is true of the economy, society and environment of a region such as the New Forest. Many aspects can be monitored relatively simply provided that we identify the right indicators (the "pulse" of our economy, for example). But when we face a crisis (maybe of decline in one economic sector, or degradation of a part of the environment), intensive monitoring may be necessary to allow us to respond quickly and effectively.

In all of this, it is clear that monitoring has to have a *purpose*. The observations that we make are gathered so that they can be used to assist us in responding to a problem or need. Some of these purposes may be unique to the New Forest, but others are found repeatedly. These general applications of monitoring can provide us with a starting point:

- Monitoring is the basis for *reporting* on the state of our region. These reports allow decision-makers and the public to know what is happening and to judge whether the present position or recent changes in that position require any specific response. The Census of Population is an excellent national example of this type of monitoring.

- Monitoring can provide information for *forecasting* (prediction). If we understand how a system works, such forecasts can be invaluable in allowing us to prepare for, adjust to, or alter these future conditions. The weather forecast is a short-term example, employment forecasts operate in the medium term, and sea-level rise is now entering our long-term predictions. All need monitoring as a basis.

- Regular monitoring allows us to *adjust to change* and therefore *steer* our response effectively. This is an ideal approach when aspects of the future for which we are planning remain uncertain. It promotes flexibility, and works with complex as well as simple situations. Try steering a car with your eyes shut, and you'll soon find out why trying to steer the economy or environment would be impossible without monitoring.

- Monitoring is often used to *evaluate performance*. Are current approaches to footpath management working? Does current service provision meet visitor needs? We monitor to find out.

- Monitoring provides the evidence on which we can ensure that we have achieved *value for money*, and the information that is the vital foundation for specifying and justifying future *funding requirements*.

### 1.3 Designing a monitoring strategy to meet these aims

To be effective, the chosen approach to monitoring must fit into the existing local framework and support existing local initiatives. In 1996 the New Forest Committee (NFC) published the *Strategy for the New Forest*, following a series of earlier consultation drafts. The Strategy suggested that in order to ensure their effectiveness, almost all of the Recommended Actions would require monitoring. This task provides a context for the present study. In addition the announcement of the intention of Government to designate the New Forest as a National Park introduces the likelihood that further important applications for monitoring and indicators will emerge. The present Monitoring and Indicators programme has addressed the reporting requirements for the four broad policy aims of the *Strategy for the New Forest*, namely:

- To promote the conservation of the New Forest through the effective coordination of policy and action.

- To maintain and enhance the traditional character of the New Forest landscape and the diversity and distribution of the habitats and wildlife within it.

- To ensure that the social and economic needs of the New Forest community are met in a manner which is compatible with the traditional character of the New Forest.

- To ensure the use of the New Forest for tourism and recreation does not prejudice the quality of its traditional character or the pursuit of quiet enjoyment.

This is an extremely broad agenda, and creates a real need to identify key indicators, and their possible combination into composite indices. Without such clear priorities, the demands of monitoring could become excessive. The Monitoring and Indicators study has been funded by the New Forest District Council and the New Forest Committee to address these issues. It aims

to identify the monitoring currently undertaken by the constituent bodies of the New Forest Committee and others with responsibilities and interests within the area. It considers the extent to which the monitored information can report on and evaluate the effectiveness of the *Strategy for the New Forest*, particularly in relation to nature conservation and landscape interests. This supports several other strategic initiatives, including biodiversity planning, Agenda 21, National Headline Indicators and sustainable development measures. The development of indicators has also drawn from monitoring and indicator programmes for the review of local plan policies and the NFDC State of the Environment reporting.

The study assesses whether existing monitoring programmes provide scope for reporting on the *Strategy*, and identifies other actions that may be needed to address any shortfalls in monitoring. This document identifies an initial set of indicators which describe the performance and effectiveness of the strategies, and which reflect other policy developments affecting the Forest. It recommends timescales on which the results of such indicators might be reported, and reviews both the practicalities of using these indicators and the methodology, data sources and organisational frameworks to implement them.

### 1.4 A framework for monitoring, indicators and indices

Whether we are dealing with our own health or the "health" of the New Forest, it is helpful to simplify our approach by thinking of three aspects – the present situation (*state*), the factors affecting it (*pressure*) and what we can do about it (*response*). This pressure-state-response framework is much used in planning and management, and helps to sort out the role of monitoring and indicators. In the first instance, monitoring focuses on the state of the environment and economy, since this reflects both the impact of the pressures and the success of the responses. But if we understand the situation sufficiently, it is also possible to monitor the pressures directly. For example, if it we are convinced that hiking damages footpaths, then the situation could be assessed by monitoring either the state of a sample of footpaths or the pressure represented by pedestrian counts. State monitoring is less specific but more robust than pressure monitoring unless we have very good level of understanding. For example, if the footpath erosion is actually caused by cycles, then pedestrian counts will not provide an accurate representation of the problem.

This is why it is so important to identify effective indicators. Monitoring is a process of observation and recording: indicators are the selected properties that we monitor. All too often, carefully designed monitoring programmes use inappropriate indicators - and then no-matter how precise the results are, they give a poor representation of the situation that we are trying to assess and manage. Unfortunately, it is easy to recognise the importance of selecting the "right" indicators, but very difficult to achieve that target. Much of the rest of this Report is concerned with identifying what indicators are currently available, and considering the extent to which they can meet the needs of New Forest planning and management.

Before starting on that task, however, it is useful to distinguish between indicators and indices. The terms are similar, but in the present context they refer to rather different functions. We have defined an indicator as a property that represents the state that we need to monitor: thus temperature is a climatic indicator and unemployment is an indicator of the state of the local economy. But it is immediately clear that many other properties are involved in climate and economy, so we may well decide to construct an index which combines these factors but represents them as a single value or class. Thus river habitats are complex amalgams of hydrology, geology, biology and geomorphology – but the Environment Agency has designed a Habitat Quality Index (HQI) for rivers which draws these many indicators together into a single index of state or change. The concepts of "remote areas" or "quality of experience" in the New Forest are notions which suggest composite indices. Monitoring, indicators and indices thus work together to support our awareness and management of the complex environmental, social and economic situations which characterise the New Forest. Just occasionally, a single indicator may serve as an index – but this is not often possible.

It is clear that monitoring is usually undertaken to assess the extent to which something is changing – is footpath erosion getting better or worse? This means that the observed indicators

need to be compared with a reliable starting point, and this is where baseline data become invaluable. A baseline survey is often more detailed than a subsequent monitoring programme, but this is necessary to ensure that there is a really firm basis for identifying change. At the same time, baselines often help to establish a sufficiently clear picture of the present state to make recognition of problems and possible pressures realistic. Not surprisingly, initial baseline surveys and periodic repeat baselines often form a part of an overall monitoring strategy. Indicators may also be related to quality and performance targets or standards - local, national or international - which are to be met.

## 1.5 An introduction to indicators

We have seen that indicators are a way of simplifying and communicating how specific attributes of the New Forest are changing. They do not always provide an explanation of why that change is taking place, but they give a broad picture of the degree of change to enable the review of the effectiveness and performance of existing strategies for management. It has also been stressed that there is a possible lack of causal relationship between the chosen indicators and the monitored change: thus, we may monitor pedestrian use of footpaths, but the erosion may be caused by something else. This stresses that indicators do not replace the need for research, detailed studies and baseline surveys. Thus while indicators may be useful in highlighting problems and providing a proxy measure of more complex trends they do not in themselves define the solution. Opportunities for public consultation and participation should supplement formal monitoring, particularly in terms of assessment of the success in delivering the Strategy for the New Forest

The breadth of purpose of monitoring has been defined in Section 1.2, and the chosen indicators will need to meet the needs of the full range of these objectives, including:

- to identify the current state of the environment against a baseline
- summarise and communicate large volumes of data to give clear measures of change
- provide an early warning of adverse changes and actions on the environment
- measure the extent to which response policies, strategies and actions are successful
- focus attention on issues and environmental changes, present and future

Typically, indicators are used to identify and communicate changes over time. However, within a specific locality such as the New Forest Heritage Area, there may be equal value in producing indicators for spatial trends, showing how the states and pressures of one area compare with those of another. Such spatial approaches make it possible to assess the effectiveness of a strategy, for example by contrasting areas inside the Heritage Area with those outside, or with national trends.

Putting all of these requirements together, it is possible to suggest what makes a good indicator. The Department of Environment in 1996 suggested that indicators should ideally:

- be representative
- be scientifically valid
- be simple and easy to interpret
- show trends over time
- give early warning of irreversible trends
- be sensitive to changes in the environment and to the parameters under investigation
- respond to change in a known (and ideally rapid) way
- be based on readily available data or be available at reasonable cost
- be based on data of known quality
- be capable of being updated at regular intervals
- have target levels or guidelines against which to make comparison.
- be capable of showing both negative, positive and stable trends

It is unlikely all these requirements will be met by any one indicator. It is also important to provide a balance between pressure, state and response indicators. Perhaps ideally each issue or

strategic objective should have an indicator of pressure, state and response - though this may be neither cost-effective nor technically achievable, especially where existing data are to be used. For most purposes, it is more important to identify an indicator that meets as many of the criteria as possible yet still provides a sensitive and interpretable measure of change. Within the task of identifying indicators for the New Forest, the review has focused on existing data, but also has recognised that there may be a requirement to supplement monitoring in some areas.

### 1.6 How many indicators?

The selection of indicators specific to the Strategy for the New Forest should be viewed within the context of the overall framework of indicator development within the UK (DETR 1998). Many indicators have been proposed as Headline Indicators through the UK Government's mechanism for reporting on overall sustainability objectives. Below this level are an increasing number of indicators that reflect the more specific issues within specific sectors, or regional and local scales (CLIP 1998) – including indicators for National Parks.

Some programmes recommend a large suite of indicators (OECD 1991), but in practical terms within the New Forest Heritage Area this may produce a resource burden and detract from the impact of a few well-chosen indicators. A restricted choice will inevitably omit some topics, but the results can be understandable and effective if the selection is carefully made. Given the relatively high level of data availability for the New Forest, this should be an entirely realistic proposition – even if it is assumed that the chosen indicators should be based on existing measures with only a relatively small commitment to further survey and analysis. The approach here suggested (see Section 5.4) is based on a core set of 10 or 11 key indicators. These are drawn from a full list of some 44 proposed secondary indicators (see Table 5.1) which would be used less prominently but would nevertheless add to the ability to reflect the overall character of the New Forest.

The selection of key and secondary indicators is a process through which clear priorities can be set for the New Forest's monitoring strategy. It was a primary objective of the present study, but one that had to be undertaken against a background of awareness of existing local measures and of prevailing approaches regionally, nationally and internationally. Without the capability to achieve a degree of compatibility with practice elsewhere, the New Forest would lose the power to undertake, or contribute to, major comparative assessments. This broad context is provided as an introduction to the local indicators that are reviewed in Part 2 of this report.

### 1.7 Selecting priority indicators for monitoring

It has already been suggested that the New Forest could justifiably adopt a two-level monitoring strategy based on key indicators and secondary indicators. Such prioritising requires careful selection of indicators, but is subsequently both cost-effective and efficient, since it provides a clear view of the major trends in the area through the key indicators, supplemented by a degree of supporting detail in the secondary indicators. No claim to comprehensive representation is made, since such an approach would make undue demands on existing resources, and at the same time would suffocate decision-making in a flood of partially-relevant data.

The essence of the proposed strategy lies in the selection of the key and secondary indicators, and their incorporation within a robust framework for commissioning the monitoring and utilising the results. These tasks are the core of Part 3 of this report, but some preliminary comments are helpful here as a basis for reviewing the indicators presented in Part 2. Even the most cursory glance at the planning and management needs of the New Forest alongside the availability of existing data makes it obvious that there are three levels of information potential to be considered:

- Indicators for immediate use - data sets that are immediately available, through they would probably need to be presented in a way that fitted the New Forest's needs.
- Medium- and long-term indicators - those requiring more fundamental changes or additions to the monitoring network or to the analysis of the indicators.

- Long-term development of target levels and design/interpretation of indices.

Against this background, the search for key indicators starts with the four broad policy aims of the *Strategy for the New Forest* (Section 1.3) and the *purpose* of the monitoring programme (Section 1.2). The overall requirement is broad, but in the New Forest there is an acknowledged focus on Landscape and Conservation which will be used to steer the priorities. The discussion of indicators in Section 1.5 makes it clear that they need to be both representative and sensitive to the parameters of interest. The next stage in designating priorities is therefore to consider the main factors that are felt to be associated with change in the New Forest – the *pressures* that are a part of the Pressure-State-Response model. A definitive list would require careful research, but most people would be happy to include the following (which are inherent to the structure of Table 5.1 and 5.2, though not specifically used as table headings):

- Recreational pressure from visitors and residents
- Traffic pressure (mainly from roads)
- Development pressure and control
- Changes in agricultural and forestry economy (particularly through their impact on Commoning)
- Global climatic/environmental change

An ideal set of key and secondary indicators should also use existing (albeit slightly modified) data sets where possible, should be transparent and easy to use and understand, and should fit existing monitoring programmes. It is thus clear that the indicators reviewed in Part 2 will require very careful assessment. Key and secondary indicators will then be identified in Part 3 as part of a proposed New Forest Monitoring Strategy.

## 2. SOME LIMITATIONS OF MONITORING AND INDICATORS

### 2.1 An introduction to monitoring constraints

Indicators do not form a panacea for all ills, and whilst they may be used to indicate both positive and negative changes they do not in themselves provide the solutions to problems that may be identified. It is also important to acknowledge that indicators do have a series of limitations, including the fact that:

- Change related to the implementation of planning or management strategies is often masked or confused by other **types of change**.
- It may be necessary to accept a trade-off between the advantages and disadvantages of **accuracy, precision and resolution**.
- **Continuously variable properties** have to be measured by some form of statistical averaging or sampling.
- **Bias can be introduced** when the sampling procedures over- or under-represent some aspects of the pattern that is being monitored. This bias may be **spatial** (some areas not fully represented) or **temporal** (some times, days or seasons not fully represented).
- **Surrogate indicators** may have to be employed where no direct measure is available.
- **Compound or aggregate indices** may be necessary, since many of the influences on strategies and their outcomes are multi-dimensional and reflect the balance of a range of influences.
- Some existing indicators are restricted to addressing **target levels** that serve as pre-set objectives against which changes must be checked. The definition of target values lies outside the scope of the present study.

These important considerations are further discussed below, since they influence the review of existing indicators and the selection of priority indicators.

## 2.2 The nature of change

Change itself presents real challenges to the design of monitoring programmes. Monitoring often aims to detect the impact of management and planning strategies, but the systems being monitored may also change as a result of the influence of other external and internal factors. For example, environmental systems are subject to natural changes that may be difficult to separate from the kinds of pressures and responses that are of greatest interest in the New Forest. Thus, some variations in flora or fauna may increasingly result from climatic change rather than human pressures. Ideally, monitoring strategies should be able to distinguish between these types of change, but this may be difficult. Many natural systems may also reflect cycles of internally-driven change, such as the maturation and decay cycle described for heather stands (Gimmingham 1972). The stage within these natural cycles at which monitoring takes place, and the frequency of repeat measurement, should recognise such complexities when describing and interpreting change.

Given the complexity of the New Forest, it is sometimes difficult to devise effective quantitative measures to serve as indicators and as the basis for easily-aggregated indices. However, monitoring should not neglect the use of qualitative and categorical observations. For example, chemical and biological water quality monitoring generally uses quantitative indicators which are reported as annual statistics and summarised by a Water Quality Index created from a series of indicators. The Environment Agency is also establishing a qualitative measure of river aesthetics that includes such observations as odour and landscape appreciation. Assessed against national trends or against change over time, these observations can be equally effective as numerical indicators. The establishment of a repeatable sampling strategy from which to assess qualitative changes remains challenging, since the observation may be particular to a specific observer. The use of sequences of photographs or sound recordings may provide a solution.

## 2.3 Accuracy, precision and resolution

In seeking to identify efficient and cost-effective indicators for the New Forest, it may well be necessary to accept a trade-off between the advantages of accuracy, precision and resolution. In the present context, accuracy can best be thought of as meaning representativeness. Thus soil moisture deficit (dryness) may be a more accurate (representative) measure of drought than precipitation. Precision refers to the detail recorded by the measure itself: thus a temperature of $7.43^{O}C$ is a more precise measure than one rounded to $7^{O}C$. Resolution refers to the fineness of the observation framework. Thus, daily measurements have a higher temporal resolution than annual measurements, and ten samples per $km^2$ represents a higher spatial resolution than one sample per $km^2$. It is important to select appropriate data quality standards when designing a monitoring programme. For example large-scale variations may be established from measurements at a broad scale (for example, gross land-use change), they may effectively use a coarse resolution and they do not require high precision measures. On the other hand, finer resolution and more precise measurements may be required for sensitive specification of other trends such as population changes of scarce species. High resolution and precision may appear to be advantageous, but in practice they are expensive and yield data volumes that may be far higher than is strictly necessary.

## 2.4 Minimising sample bias

Monitoring is almost always based on sample observations rather than on measurements of the whole population. Thus there is always a risk that the monitoring results will be biased and not fully accurate (representative). The science of sample statistics aims to assess the extent to which conclusions drawn from samples do represent real patterns, but every effort should be made to reduce bias at the stage of sampling design. Since one possible source of bias is the framework of geographical boundaries within which data are collected and analysed, the reduction of bias may not be easy. The *Strategy for the New Forest* is being applied by a number of agencies, each of which uses its own data collection boundaries. This lack of compatibility may be manifested in the overall extent of the observations (Perambulation, Heritage Area, District Council etc.), or in the sub-areas or points used for measurement. Since

there is a strong scientific and financial argument for adopting existing monitoring programmes whenever possible, the problem of bias introduced by sampling frameworks may be intractable. It is important to appreciate at the outset that the boundaries of administrative areas such as the New Forest and Heritage Area, and the roles of the bodies working within these boundaries, change significantly through time. For example, the New Forest Heritage Area itself is a relatively recently defined boundary which has been subject to small-scale modifications that need to be recalled when establishing changes through time. Even apparently-official statistical units such as Enumeration Districts, Wards and Postcode Zones are subject to change, so that samples from different dates are differently biased. National Park Status may well not accord precisely with the New Forest Heritage Area boundary, adding to the difficulty of achieving accurate comparison through time. Increasing technical capacity to compare or aggregate data that have been sampled against varied boundaries is offered by Geographic Information Systems, and the use of spatial statistical techniques will be important in the application of monitoring and indicators in the future.

## 2.5 Surrogate indicators

It is often difficult to obtain a direct measure of a variable of interest. For example, a concept such as "visitor pressure" is both vague and ill-defined when it comes to devising a monitoring strategy. Do visitors to the heathland include residents? Is visitor pressure indicated by the number of parked cars? Is pressure on a wet winter day the same as that on a dry summer day? Even when an indicator is chosen, measurement may remain extremely difficult, as is evident from the varied estimations of the numbers of day visits per year estimated by the recreational study (1998). A more effective measure recommended by Tubbs uses the consequences of recreational disturbance for the number of ground nesting birds within the Forest. Such surrogate measures require rely on there being a clear and demonstrable relationship between the two parameters. These implicit relationships may need to be substantiated through research programmes, but these may not be part of the monitoring programme. In practice, most indicators are surrogates to some extent.

## 2.6 Indicators or indices?

The indicators discussed so far have been observations of a single parameter (such as water temperature), but monitoring often uses indices and classifications based on aggregate indices (such as water quality). Indices essentially combine a number of measures of change into a single representative value or category. For example, the water quality indices used nationally (and within the New Forest) by the Environment Agency combine measures of dissolved oxygen, biological oxygen demand, ammonia concentrations in the water, toxicity to fish and water potability standards. The resulting water quality class conveys a clear and nationally-established framework for the description of quality that is easily interpreted. Such indices often take the form of classes which may be used to set performance targets or trigger management responses. In contrast to the target level approach used for rivers, the estuary quality criteria are based on somewhat more subjective, point-based criteria with the quality classes derived from breakpoints of combined quality scores. The parameters measured for both rivers and estuaries are part of the routine quality monitoring undertaken by the Environment Agency.

The use of such indices requires considerable testing and validation. The range of likely values must be appreciated in setting the breakpoints between classes, especially where management action is likely to be based on such trigger levels. This study has not included setting target levels, but the range and sensitivity to change in the indicators must be understood in order to interpret trends and develop meaningful class boundaries. Both indicators and indices aim to show whether the factor being monitored is changing and in what direction. In a management context this often raises the question of what is meant by "better" or "worse", and at what specific level or rate of change an issue is seen as deteriorating or improving. Within multi-criteria situations, where a number of factors (perhaps combined into a single index) may be changing at the same time, there is an even greater problem of setting the values at which an issue is considered to have changed significantly, either for the better or for worse.

# *PART 2:*

# *A REVIEW OF EXISTING DATA SOURCES*

## 3.0 BACKGROUND TO EXISTING DATA SOURCES AND MONITORING

### 3.1 The current availability of monitored indicators

The overall level of survey and monitoring for the New Forest is relatively good, and indeed may be better than most areas of the country for issues relating to landscape and nature conservation. However, it is apparent that commitment to repeat survey (as opposed to collection of an initial data set) is often lacking, so that adoption of some of the available indicators as key or secondary priorities for the New Forest would involve establishment of a repeat survey schedule.

The review of existing data sources that follows focuses on those which are available for the New Forest area, but many of these reflect national or international programmes and standards. It is important, therefore, to preface this review with a brief consideration of the regional, national and international context (Section 3.2). Similarly, at the local scale there are important issues relating to the precise geographical boundaries used in monitoring, and these too are addressed (Section 3.3) before proceeding to the data review (Section 4.0).

### 3.2 The regional, national and international context

It has already been stressed that the design of monitoring and indicators programmes is a general priority at the present time. The potential New Forest indicators reviewed here are relevant to specific document, the *Strategy for the New Forest*, but this can be seen as part of a wider development of indicators at Government, Agency and European level. A generally-acknowledged ideal for monitoring is that it should be compatible with, and potentially contribute to, existing programmes. Thus a brief introduction to present practice may be helpful.

Frameworks for indicators have been established and revised by the Organisation for Economic Co-operation and Development the OECD (OECD 1993, 1994, 1997, 1998) across a number of sectors including agriculture, energy, transport and overall sustainable development. The UK Government has established a series of 120 Indicators of Sustainable Development (DoE 1996), and more recently has introduced a series of Headline Indicators (DETR 1999) which seeks to introduce a more comprehensive set of core indicators together with a "handful of indicators" to indicate performance. Non-government agencies have also made proposals for monitoring and indicators for describing the state of the environment in the UK (Environment Challenge 1995).

The SAC designation of the New Forest Heritage Area highlights the development of a range of other indicators associated with protected areas. The indicators being developed for the established National Parks will be relevant to the New Forest. The Protected Areas Funding Study (1998) has resulted in a series of Corporate Financial Planning (CFP) indicators for National Parks in general, and a range of park-specific indicators that may be used to evaluate the budget allocation. Many of these CFP indicators also stress the landscape and conservation values of the sites, and the costs involved in maintaining these features. The development of these indicators also reflects the notion of a “basket” of indicators that combines sets of criteria with varied weightings, equivalent to the design of composite indices. The monitoring and indicators strategy being developed within the New Forest candidate SAC is more closely integrated with the New Forest Management Plan and conservation targets through a programme jointly undertaken by English Nature and Forest Enterprise under the LIFE programme.

The present development of a series of New Forest priority indicators may require some revision in relation to the New Forest National Park status. This might also modify the established mechanisms and responsibilities for monitoring, as new functions and administrative roles emerge. However, such new strategies and plans would still be likely to require performance monitoring. Given the important links between the *Strategy for the New Forest* and local plans (at least those of the New Forest District Council), it is not surprising that the Strategy and the local plans share common monitoring targets. This is reflected in the NFDC State of the Environment reporting (NFDC 1998).

Local Authorities and County Councils are also developing sets of indicators, within Local Agenda 21 (LGMB 1995) initiatives, and the Central and Local Information Partnership (CLIP) Task Force on Sustainable Development has consulted on local indicators for change. Many of the 33 draft indicators proposed by CLIP also recognise the potential for multi-purpose indicators with links to other initiatives such as the Government "headline" indicators. Other indicator suites are proposed by the recent joint consultation document from the DETR and the Audit Commission on Best Value and local authority performance indicators (DETR 1999). Although these are largely targeted at service levels within local authorities, there is some overlap with the *Strategy for the New Forest*, particularly in terms of transport and planning.

At county level, Hampshire County Council has a current European-funded programme to assess the European influences on biodiversity (landscape and conservation) and the use of indicators to chart these influences. Clearly, there are many areas of overlap in terms of landscape and nature conservation monitoring with New Forest interests. When the results of the HCC programme are available, it will be useful to review them for their potential contribution to the *Strategy for the New Forest* monitoring, especially given the importance of the Habitats Directive in the New Forest.

In addition, many new initiatives in the Heritage Area further promote the role of monitoring. These include World Heritage Status, Species and Habitat Biodiversity Action Plans, and SAC Management Plans. The new Minister's Mandate (1999) to the Forestry Commission will also encourage development of a new, New Forest Management Plan and monitoring programmes.

### 3.3 Monitoring boundaries and geographical framework

Section 2.3 introduced the problems associated with the influence of data-collection boundaries on possible sample bias. If the areas from which different data sets are collected do not coincide, then direct comparison of the data is extremely difficult. This applies also to monitoring programmes in which data-collection boundaries change from time to time. In practice, monitoring tends to use a variety of jurisdictional and administrative boundaries. Local Authority monitoring usually applies to a specific district boundary. There are, however, real difficulties in drawing together information recorded across different sampling areas or using different data formats. Hampshire County Council is taking a wider view, whereby areas outside the county are included so as to encompass the whole of the New Forest Heritage Area. Around 70% of the area of the New Forest District Council falls within the New Forest Heritage Area. Of the 525 $km^2$ of the Heritage Area, 13$km^2$ is in Salisbury District Council and 31$km^2$ in the Test Valley Borough Council area.

Comparison of strategic objective performance within and beyond the Heritage Area provides a further challenge to monitoring. If comparison is to be made with external areas, selecting features to determine an appropriate zone for comparison is difficult, given that the Forest is described as unique. Comparisons suggested here are with other protected areas (such as National Parks), with the rest of the planning authority areas (in particular that of the New Forest District Council) and with national environmental trends. Boundaries relevant to this assessment are illustrated in Table 3.1 below.

| Boundary | Description |
|---|---|
| Crown Lands | Area managed by the Forestry Commission on behalf of the Crown. 263.78 $km^2$ (Inclosures 85.13 $km^2$, unenclosed land 178.65 $km^2$) |
| Open Forest | Common land within the Perambulation that consists of heathland, grassland, bog and shrubby vegetation. |
| Inclosures | Areas set-aside for forestry, including the Statutory Inclosures, Verderers' Inclosures, Crown Freehold and Leaseholds. |
| Enclosed lands | Privately owned and fenced lands. |
| Forest Perambulation | 376.75 $km^2$ under New Forest Acts of 1964; Crown Lands and the private and manorial wastes. |
| New Forest SSSI | Area designated by English Nature for its conservation significance, including much of the Open Forest, with excluded areas of agricultural and private lands. |
| Candidate SAC designation boundaries | Area identified under the EU Habitats Directive, including much of the SSSI boundary. (includes part of the maritime sites). |
| New Forest Heritage Area | Area includes Crown and Perambulation land together with a wider zone identified by a New Forest Committee. Area 565.75 $km^2$ |
| LEAPs | Local Environment Agency Plans (three catchment areas: Forest Streams and the Avon). |
| Natural Areas | Identified by English Nature as coherent natural areas to serve as a planning framework |
| Landscape Character Areas | Identified by the Countryside Agency as areas of coherent landscape character |
| HCC Character Areas and Landscape Types | HCC identified a local level of definition of coherent landscape zones |
| County and District boundaries (and parishes) | There are two counties (Wiltshire and Hampshire) and three districts (New Forest, Test Valley Borough Council, Salisbury District Council) within the Heritage Area. Numerous parishes |

Table 3.1: Boundaries relating to monitoring programmes

The Crown lands form 47% of the Heritage Area and 70% of the New Forest Perambulation. A fuller description of the legal status of these areas and their relationship to the associated rights and responsibilities is set out in the New Forest Management Plan 1992-2001 (Forestry Commission 1992). Other boundaries may also be of relevance to specific aspects of monitoring where these are undertaken across authority boundaries. For example, two Environment Agency regions encompass the Heritage Area, and two Regional Development Agencies.

Further problems relate to changes that are made to boundaries, and these must be considered when comparison or analysis of trends is being undertaken. Local Government reorganisation on 1st April 1997 removed significant population areas (Portsmouth and Southampton) from Hampshire County Council, and thus the HCC responsibility for monitoring has also changed. Earlier changes to administrative boundaries equally affect the ability to compare historic and current reporting. Double counting provides another potential problem where areas are covered by multiple designations (e.g. active conservation management schemes). The plethora of separate conservation designations attached to areas of the New Forest requires that any area-based measurement of the protected status is made within carefully specified categories and geographical boundaries. The use of databases and GIS may help to overcome some of these constraints with their ability to resample on a spatial basis.

# 4.0 REVIEW OF EXISTING DATA SOURCES

## 4.1 Methodology

This section of the report reviews the current status of the development of indicators and monitoring. Visits and telephone interviews were held with major data holders and suppliers within the Heritage Area to identify the range of data sets and to discuss the limitations in using these data within indicator development. Several theme-based meetings were held to discuss particular aspects of the use of indicators, in particular in the context of conservation, heritage and planning issues. This following review also takes a theme-based approach, which echoes those used within the Strategy for the New Forest. The emphasis within the identification of indicators on nature conservation and landscape has included consideration of a wide range of measures that affect the health of the New Forest Heritage Area. Specific themes covered include:

- 4.2 Agriculture and Commoning
- 4.3 Forestry and Woodland Management
- 4.4 Heritage and Archaeology
- 4.5 Nature Conservation
- 4.6 Landscape
- 4.7 Recreation, Tourism and Access
- 4.8 Transport and transport

Each section begins with a brief overall assessment of the background to the issues within the specific theme. More detail on these issues can be found within the *Strategy for the New Forest* and within the Local Plans and other policy documents and management plans that apply to the New Forest. The review identifies the organisations that are statutorily involved within the New Forest and the present impetus for monitoring actions. The data covered by this review represent potential sources for the development of indicators.

On the basis of this assessment, potential indicators are identified in Part 3 to meet the criteria for indicator selection introduced in Section 1.7 of the Report. The measurement units and links to the pressure-state-response framework are summarised for each potential indicator, and their relevance to wider national indicator programmes is examined. The data availability of the indicator and the scope for involvement of other organisations are also discussed.

Where data are either not available, collected for a limited area or at a frequency or distribution that limits their usefulness in developing indicators for the Heritage Area, recommendations are made for the enhancement of the monitoring programme. Data availability and the timetables for repeat survey are provided where known, and the organisations that would be likely to be involved in the stages of reporting to the New Forest Committee are identified.

Agencies consulted within this project expressed a broad willingness to contribute data, and where necessary to modify or take on new reporting tasks for the Heritage Area. The role of public participation in developing and refining the indicators needs further consideration to establish the appropriateness of the recommended measures. The potential ease of interpretation is discussed, although these assumptions may require testing if the Forest community is to be part of the audience for the indicators.

**Strategic Objectives**
*S.O: To ensure the continued future of commoning in the New Forest [SO 4.1]*

***Recommended Action***
*Work with appropriate bodies such as the Commoners' Defence Association to assess commoning needs and develop new initiatives for the support of commoning as opportunities arise. [RA4.1a.].*

*Investigate management arrangements to promote the supply of land suitable for back-up grazing for Commoners[RA4.1b]*

*Continue to support the New Forest Commoning Trust in facilitating the provision of housing for young Commoners. [RA4.1c]*

*Seek to ensure an appropriate level of funding for the Verderers, particularly in respect of their role in the management and welfare of stock. [RA4.1d]*

*Review and implement outstanding recommendations of the Illingworth Report. [RA4.1e]*

***Farming***
*S.O: To ensure that New Forest farming is sustainable and is carried out in a manner which supports the aim of the strategy. [S.O. 4.2]*

**Recommended Action**

*Work with landowners/ land managers to encourage environmentally sensitive farming by utilising the mechanisms and incentives in existence. [RA4.2a]*

*Encourage diversification where it helps to maintain the rural economy, without diminishing the traditional character of the New Forest. [RA4.2b]*

*Influence Government policy and programmes so that they may benefit the New Forest. (e.g. Set-Aside, ESA). [RA4.2c] see also RA4.4a*

*Develop economic initiatives which create added value for New Forest based products, including agricultural and wood based products [RA4.4a]*

## 4.2 Agriculture and Commoning

### 4.2.1 Introduction

The traditional practices of agriculture and land management of the New Forest and over much of the surrounding land is often described as essential to the fabric, nature conservation, heritage status and economy of the New Forest.[1] Tubbs records the New Forest as the largest single area of small holding and cottage-stock keeping economy in England; which has remained largely intact through strenuous defence of the common rights[2]. Commoning as an activity within the Forest is also increasingly being seen as under threat and of marginal economic viability, thus raising concerns for the continuance of such land management practices.[3],[4],[5]. Farming and commoning reviews have sought to examine and propose mechanisms for support of the traditional agricultural practices, including the influential Illingworth[4] report and more recent reviews by ADAS[3].

Commoning activities also extend to a number of areas adjacent to the Crown lands of the Forest to which rights of common exist. However, commoning is only part of the agricultural activity within the Heritage Area and often only part of the activity undertaken by those depasturing animals on the Forest. Although the Forest remains largely pastoral there are trends towards recreational horse-keeping and land coming out of agriculture. The land use changes within the Crown lands, within the Heritage Area and immediately outside, have particular relevance to the ability of the area to support Forest agriculture (and as comparative in policy and support mechanism terms). The pattern of land holdings also plays a significant part in how the land use and landscape has evolved (with large number of tenant farmers and major estate land holdings).

Commoning within the Forest perambulation, to which the rights apply, is not the whole story as it is impossible to disentangle the Forest from the Heritage Area and areas beyond. Diversification of agriculture and financial incentives to support the rural economy are important mechanisms for retaining the agricultural community. In particular. planning control on development, and support for rural housing, and commoners dwellings also contributes to the maintenance of the agricultural community viability.

The nature of commoning and agriculture is not static, responding, often rapidly, to changes in land use, stocking numbers payments through subsidies and economic influences. Agri-environment schemes such as Countryside Stewardship and Environmentally Sensitive Area (on the outer edges of the western Forest in the Avon Valley) have the potential to deliver biodiversity and environmental benefits that meet objectives of the Strategy. Other mechanisms under Arable Area payments and field margin and non-field margin mechanisms have potential to provide benefit to biodiversity[6].

Commoning agriculture also contributes to the attractiveness of the Forest to visitors because of its free-ranging animals. But visitors may generate problems for grazing and stock management through disturbance and increasing the risk of loss of stock through road deaths or injury. Annual losses are around 160 stock per year.

### 4.2.2 Why Monitor?

PPG7 (The Countryside and the Rural Economy)[7] sets out Development Plan policy guidance for the countryside, including: environmental enhancement and protection, landscape conservation and improvement, encouragement for recreation opportunities

[1] *A Strategy for the New Forest 1996*
[2] *Tubbs 1984 The Development of the Smallholding and Cottage Stock-keeping Economy of the New Forest (1).*
[3] *Ivey 1991*
[4] *ADAS 1993*
[5] *Illingworth Report 1992*
[6] *IACR 1998 Agricultural management for biodiversity: a review of non-field margin options. Report to MAFF Institute of Arable Crops.*
[7] *PPG 7 The Countryside and the Rural Economy January1992*

and economic activity in rural areas. PPG7 further provides special guidance on policy in areas with special countryside designations. A number of policies within the Local Plans relate to agriculture and to the support for traditional rural economy within the Forest and areas outside the New Forest. For example, through the support for dwellings for agricultural or forestry workers [Policy NF-H5, NF-H6] and support for commoners housing through the New Forest Commoning Trust [Policy NF-H7] along with a number of other policies which seek to support the rural community. Monitoring the performance of these policies is fundamental to effective plan review.

Other policies developed within the Local Plans by the New Forest District Council have a bearing on the delivery of the Strategic Objectives of the Strategy for the New Forest relevant to agriculture. For example, the New Forest Transport Strategy (Targets and Monitoring) aims to reduce animal deaths and injuries on Forest roads by 30 per cent on 1996 levels.

Monitoring is also a specific requirement of agricultural activity. Agricultural and Horticultural Census monitoring is undertaken annually by MAFF. This is a legal requirement under the Agricultural Statistics Act 1979 on landholders; conducted by the Agricultural Census Branch.

FRCA is promoting Integrated Crop Management and Whole Farm policies and plans that aim at producing economically-viable and environmentally-responsible yields and "aims to minimise the environmental risks while conserving, enhancing and recreating that which is of environmental importance". These management plans set targets at the local level and thus there is also at least implicit monitoring of the implementation of the plan and the progress towards the goals.

The programme of sustainable development indicators for UK (within the DETR 'Opportunities for Change 1998') is being promoted and consulted on by the DETR and MAFF has also consulted on the development of a range of indicators for sustainable agriculture reporting at national level[8]. These indicators have sought to introduce a level of integration of agricultural measures with wildlife indicators and take a wider environmental audit of agricultural activity. Rural and land use indicators will also form part of the Sustainability Strategy Headline Indicators and performance indicators will also form part of the strategy to be drawn up by the Regional Development Agencies.

Reform of the Common Agricultural Policy CAP- Agenda 2000 and the policy response to The Rural Development Regulation (1257/1999) have potentially significant impacts on support for the rural economy and new measures for supporting agri-environment schemes. The Rural Development Proposals will include the preparation and implementation of seven-year Rural Development Plans/Programmes. These Plans will describe "which measures will be used, the geographical areas covered, the proposed expenditure and the economic, social or environmental justification"[9]. At present, the proposal for the geographical coverage of the Plans coincides with the government office boundaries. The New Forest would form a very distinctive area with special characteristics within such a boundary. Monitoring and the development of appropriate indicators form part of the current consultation on the DETR Rural England: A Discussion Document 1999[10] and the identification of verifiable standards of Good Farming Practice within the MAFF England Rural Development Plan 2000-2006[11].

### 4.2.3 Who is involved?

The Ministry of Agriculture Fisheries and Food is not represented on the New Forest Committee, although MAFF elects one Verderer. MAFF is involved within the Forest through the agricultural census taken annually and thorough the administration of a number of agri-environment schemes and specific agricultural incentives. It is also involved through its executive agency, the Farming and Rural Conservation Agency (FRCA) which "assists

[8] *MAFF (1998) Questionnaire on indicators for sustainable agriculture in the UK, MAFF undertook a consultation exercise and priority ranking of indicators for agriculture in 1998.*

[9] *MAFF The Rural Development Regulation: Consultation on implementation in England*

[10] *Department of Environment, Transport and Regions, 1999 Rural England: A Discussion Document February 1999*

[11] *MAFF 2000 England Rural Development Plan 2000-2006 Annex VII Good Farming Practice.*

government in the design, development and implementation of policies on the integration of farming and conservation, environmental protection and the rural economy".

The Verderers of the New Forest are the statutory body responsible for regulating development and for overseeing commoning, stock condition in the Forest (Stagg and Roberts 1997). The role of the Verderers is wide-ranging and incorporated within the New Forest Acts to represent commoners and the preservation of the flora and fauna of the New Forest.

The New Forest Commoning Trust administers the applications regarding commoners dwellings to secure the long-term use of commoning housing stock. New Forest Pony Breeding and Cattle Society also contribute to recording within the Heritage Area. Commoners Defence Association acts to protect the interests of commoning within the Forest.

A number of other bodies support and represent sectors of the rural economy including the National Farmers Union (NFU) and the Country Landowners Association (CLA) although they undertake little survey and often the information they do hold may be confidential. Other groups such as Hampshire County Council also collect data of relevance to agriculture and commoning and have sponsored research surveys. The National Trust supports agriculture within its own land holdings within the Heritage Area.

### 4.2.4 Existing Monitoring and Survey Activity

Two specific programmes seem to be of most relevance to monitoring and indicators – recording of commoning activities by the New Forest Verderers and MAFF Agricultural Census data. A number of other monitoring programmes may be relevant to the normalisation of the data when monitoring results are used in developing indicators, to provide ratios. e.g. total numbers of commoners and number of holdings may be a valuable measure against which to ratio the number of active commoners.

Verderers' recording is generally annual with a full commoners census being undertaken at 5 yearly intervals. A wide range of information is collected; marking fees, horse sale prices, stud book records, pony premium scheme and stock kills and injuries and stock condition records.

Marking Fees provide a measure of the total number of stock depastured on the Forest annually (ponies, donkeys, cattle, pigs, sheep). There is full cover of the NFHA and there is a text record dating back to 1957. The six Agisters who ride the Forest and look after the day-to-day welfare of the Commoners stock are additional contributors to the data.

Beaulieu Road Horse Prices are in a text record and reflect the annual price of the ponies at auction.

Annual Stud Book records are produced annually for the NFHA by the New Forest Pony Breeding and Cattle Society and comprise a record of all the branded mares, geldings and colts. This information does not differentiate between commoners and private owners. The Stud Book includes public records of all those people with brand rights, i.e. that have the potential to turn stock out onto the Forest, but there is no actual record of how many of these are used.

Harmed/killed stock data is collected by the Agisters for stock within the perambulation as a map and text record. In addition, monitoring of animal condition occurs and records of stock removed from the Forest are kept. Access to unofficial records would require clearance through the Verderers Court. The physical condition of animals on the Forest is considered to have been greatly improved, and is being further promoted through the Pony Premium Scheme. The Highways Safety Group at HCC is responsible for collecting data where humans have been injured from accidents involving animals

Commoner's data is collected from the Electoral Register of the Verderers. The last sample data was in 1997 and the next study will coincide with the next Verderers Election year (2001). There is full cover of the NFHA, and the study is currently being updated, relying on the parish boundaries of 1887. The parameters recorded include; total number of commoners; number of

stock turned out per parish; ages of commoners; number of commoners turning out for less than 5 years; and number of commoners with back-up grazing. Much of this data is confidential and access would need to be sought from the Verderers Court and there would be need to aggregate the data to avoid disclosure of personal details. A members list of practising commoners may also be available from the New Forest Commoners Defence Association.

The Pony Premium Scheme is a mechanism for supporting the best five hundred mares on the New Forest. This scheme is not currently monitored, although the expenditure on the scheme could be derived from existing records. The effectiveness of the mechanism in improving commoning stock is perhaps a longer term objective, which would repay appropriate measures of performance monitoring beyond any financial measures.

A Census of Commoners was undertaken in September 1990 (Ivey 1991) and is the last comprehensive survey of commoners based on members of the Commoners Defence Association and others paying marking fees. This report provides valuable insights into the role, restrictions and difficulties faced by continued commoning and hence useful input to understanding the needs and priorities of this practice. It identified the state of commoning at the time and made recommendations for their future well-being. This expanded on earlier studies for the Countryside Commission[12]

The Ministry of Agriculture, Fisheries and Food undertake an annual census (the June Census) of agricultural and horticultural activity under the Agricultural Statistics Act 1979 (as amended by the Agriculture (Amendment) Act 1984). The Agricultural Statistic Branch of MAFF collates the questionnaire information for each land holding and produces annual statistical summaries and comparative figures presented for the past two years. The questionnaires provide a wide range of data items on land tenure, land use, employment, stock and agricultural and horticultural crops, land taken over and land given up. Farmed land which meets certain minimum criteria are included in the survey, with only minor holdings excluded. Census information is usually published in the year following data collection and new questions may be added from time to time, as specific issues or legislative changes direct. Such changes may limit the ability to make comparative assessments.

Broad comparative figures are available nationally from the June Census and the Statistics Branch also generates a number of other regional reports. Given the nature of the information management, using database and GIS, the Statistics Branch is able to query and analyse data for varied areas. The FRCA has published an Agricultural Information Report for the period 1987-1997 for the New Forest District[13]. Information is not identifiable at the individual holding level and is only available for aggregated areas, such as at county level, to prevent disclosure. This personal or commercially sensitive data may limit some statistics and the volume of suppressed data is likely to increase as the sampling area reduces. This may limit the ability to distinguish between areas within the Heritage Area. There are also questions as how to aggregate and report statistics, as total area, as random samples or aggregates for policy or jurisdictional boundaries (e.g. Heritage Area, parish, per $km^2$).

There are a number of further limitations and caveats to use of the MAFF Census. Data is collected by landowner and thus multiple units may be farmed both within and outside the Heritage Area, introducing some mismatch between statistics and location. Care must be applied to using these statistics as percentage figures since small changes in small holdings may indicate a large percentage change, and interpretation must recognise these variances. There are also problems of sampling within a consistent area for year on year comparative figures as ownership does not match to the Heritage Area boundary and which are in any case subject to change through sales.

MAFF is also responsible for the administration and monitoring of many of the agri-environment schemes. Data is recorded on stewardship applications and although the existence of an agreement is non-confidential the personal and financial details are confidential.

[12] *Countryside Commission 1984 The New Forest Commoners, Countryside Commission, Cheltenham.*
[13] *FRCA 1999 Agricultural Information Report: New Forest District 1987-1997.*

However, financial information can be aggregated to avoid disclosure. The records allow the identification of the location, areas covered, scheme options, availability of access and whether the land is subject to any statutory designation.

The Nature Conservancy Council (English Nature) commissioned a study on the grazing and browsing habitats of New Forest animals (stock and deer) and the interaction with vegetation cover and nature conservation. Subsequent studies by the University of Southampton are important in understanding the ecological position of grazing within the Forest[14] which relates to advice on the distribution of grazing, stocking levels and control of deer numbers. More recent evaluation of deer numbers and management has been reviewed within the Forest (Putman and Langbein 1999). This study recommends approaches to correcting the estimates of deer numbers undertaken by Forestry Commission visual census of deer within the Forest Beats.

Hampshire County Council recently commissioned a study of agriculture and its impact on the social, economic and environmental well-being of rural Hampshire (Hampshire Farming Study 1998). This study undertook an extensive questionnaire survey of the farmers within the region and analysed the MAFF June returns at District and County Level. It also undertook assessment of the statistics at the Landscape Character Area level. Despite the problems associated with reporting within particular boundaries the statistics allowed regional, county and national comparisons to be drawn.

### 4.2.5 Indicators

Agricultural and horticultural indicators aim to assess the effectiveness of the Strategic Objectives to ensure that the social and economic needs of the New Forest community and agriculture within the Heritage Area are met in a sustainable manner, compatible with the traditional character of the New Forest. The fact that this traditional character is intimately tied to the landscape, heritage and conservation aspects of the Forest suggests that the commoning and agricultural indicators may be reflective of much wider land use and socio-economic performance within the Heritage Area. A number of the elements of sustainable agriculture are also echoed within the landscape and environmental conservation indicators. Cross-reference to these sections should be made.

Development of local indicators for agriculture within the Heritage Area should also seek to complement national level indicators for sustainable agriculture currently being identified by MAFF[15]. Many of these measures and indicators have strong links to biodiversity and landscape indicators and would also be resonant within the Heritage Area. This report has not sought to identify sustainability indicators *per se*, although some of those discussed may parallel the requirements. Rather, the indicators seek to represent the special character of the New Forest commoning and farming.

[14] *Putman 1986 Grazing in Temperate Ecosystems: large herbivores and the ecology of the New Forest. Croom Helm .pp210*
[15] *MAFF 2000 England Rural Development Plan 2000-2006 Annex VII Good Farming Practice.*

The table below summaries key aspects of the potential indicators.

| Indicator | PSR | Data | Meaningful | Resonant | S.O. |
|---|---|---|---|---|---|
| **Land tenure (proportion of tenanted land)** | **S** | **MAFF Census** | **Y** | **?** | **SO3.2** |
| **Proportion of farm types within the HA.** | **S** | **MAFF Census** | **Y** | **?** | **SO3.2 SO3.4** |
| **Holding size by area** | **S** | **MAFF Census** | **Y** | **?** | **SO4.2 SO3.2** |
| **Take up of Agri-environment schemes** | **R** | **MAFF/FRCA figures.** | **Y** | **?** | **SO4.2 RA4.2c** |
| **Number of active commoners and number of stock depastured** | **S** | **Commoning Census and Marking Fees** | **Y/?** | **Y** | **SO4.1 RA4.1b, RA4.1d** |
| **Animal welfare** | **R** | **Agisters statistics and HCC** | **Y** | **Y** | **RA4.1d** |
| **Percentage of farms with 'whole farm management plans.** | **R** | **Farming and Rural Conservation Agency** | **Y** | **?** | **SO4.2 RA4.2a RA4.2c** |
| **Planning response: changes affecting agriculture** | **R** | **New Forest District / Salisbury District Test Valley Borough, Hampshire County Council** | **Y** | **Y** | **SO4.2 RA4.2b** |

| **Potential indicator:** | **Land tenure** |
|---|---|
| **Units** | Percentage/proportion – within Heritage Area and comparative with District/Landscape Character Area and Hampshire, potentially with National Parks comparison. |
| **Type of indicator** | State |
| **Wider relevance** | National Parks Corporate Financial Indicators, also relevant to the strategic objective, Built Environment SO3.4 and Landscape SO3.2. |

**Significance:**
Land tenure indicates the nature of the holdings and may have resonance with landscape and sustainability of the commoning system within the New Forest. The Hampshire Farming Study 1998[16] indicated a decrease in the proportion of rented land within Hampshire, whilst the New Forest Lowland and Heathlands[17] landscape area, which includes much of the Heritage Area, showed higher proportions of tenanted land. No direct comparison can be made with the Heritage Area and the Hampshire.

The Farming Study used Landscape Character Areas as dividers, however these data are valuable in pointing towards possible trends that might be examined further within new boundaries. The majority of farms are still owner managed despite trends towards larger units and links to owner/manager and the holdings size statistics would provide added dimensions to the indices.

**Data availability:**
Data is readily available within the MAFF Census. Additional analysis and spatial sampling of the data would be required to provide figures for the Heritage Area. Comparison of data based on different aggregation areas would require an approach to the MAFF Agricultural Statistics Branch and would need to ensure that the data could not be disclosed at a sub-regional level for commercial confidentiality reasons. However, it is considered that valuable indicators may be

[16] *The Hampshire Farming Study 1998 Report to Hampshire County Council: Sparsholt College*

[17] *New Forest Lowland and Heathland is one of the 8 Landscape Character Areas identified by the Countryside Commission as having a coherent suite of landscape parameters. This area is not wholly consistent with the Heritage Area which also includes areas of the New Forest Coast and the River Valleys LCA's.*

derived from this data. Similar issues of security of non-disclosure occur for all indicators built from the MAFF June census.

Organisations Involved:
MAFF Statistics Branch, FRCA.

| **Potential indicator:** | **Proportion of farmland use within Heritage Area.** |
|---|---|
| **Units** | Percentage – within Heritage Area and comparative with District/Landscape Character Area and Hampshire, potentially with National Parks comparison. Arable:pasture ratio. |
| **Type of indicator** | State |
| **Wider relevance** | National Parks Corporate Financial Indicators, also relevant to the strategic objective, Built Environment SO3.4 and Landscape SO3.2. |

**Significance:**
Measures of agricultural land use change have parallels with the measures of land cover change (using comparative land cover maps), but may be derived from agricultural land holdings data within the June Census. However, there are some limitations with using such data within the Forest where common land is excluded from the Census, although the open grazing makes up a significant proportion of the area. The New Forest Heritage Area includes high levels of grazing land (c 70%), which is a significantly higher percentage than within Hampshire generally. Associated indicators on farm woodland may provide the opportunity to categorise land use change within agricultural holdings. The limitations of the use of MAFF census statistics outlined above must be considered when making such comparative assessment.

Given the wide range of information collected within the MAFF census various indicators may be identified, such as arable / pasture ratios. Farming patterns within the Forest may not show rapid changes in these statistics, but when compared with areas outside the Heritage Area the comparison may provide a more sensitive response indicator. The farmland use figures may also be used to provide information on horse-riding and associated developments. Within the Forest the level of grazing is and remains high the Forest edge and changes in marginal lands towards an increased percentage of arable land may provide a measure of agricultural change. This indicator can be taken together with other measures of the changing farming patterns, including changes in farm woodland areas, grazing area and stocking levels.

The inter-period assessment of change from these statistics also provides an effective measure that may be interpreted as land use change. This type of information is generally not available within land cover maps where repeat survey is more sporadic. The values for change in coverage also need to take into account net changes in the extent of all agricultural land and thus percentage of all land use may be a more descriptive and comparative measure. This also provides the potential for assessing the changes in the diversity of the rural economy (RA4.2b).

**Data availability:**
Data is available within the MAFF June returns. No MAFF data exists for the open Forest although values may be derived from land cover maps, although the rates of change within this area may be small and thus may be insensitive measures.

**Organisations involved**:
MAFF Statistics Branch, FRCA.

| **Potential indicator:** | **Holding size by area** |
|---|---|
| **Units** | Percentage – within Heritage Area and comparative with District/Landscape Character Area and Hampshire, potentially with National Parks comparison. Change within size categories |
| **Type of indicator** | State/Pressure |
| **Wider relevance** | National Parks Corporate Financial Indicators, also relevant to the strategic objective, SO4.2 Built Environment SO3.4 and Landscape SO3.2. |

**Significance:**
The size of the holdings is relevant to the assessment of agricultural structure within the Forest. Such a measure may be valuable in indicating the fragmentation or aggregation of farming units. However, the past surveys indicate that the relatively small degree of change within the holdings limits the sensitivity of the measure, although this may be a valuable longer-term indicator. There are also a number of limitations in the interpretation of the figures given the polarisation within the Heritage Area towards large operators and small farms, which in themselves may be declining in area. The MAFF annual census ignores agriculture holdings below c. 6ha although a five-yearly census covers the smaller agricultural holdings.

The smaller land holding component may be an interesting element in terms of commoning and small intensive agricultural activity.

**Data availability:**
Data is available within the MAFF June returns and the 5 yearly census. Data requires definition of meaningful categories of size within this area.

**Organisations involved**:
MAFF Statistics Branch, FRCA

| **Potential indicator:** | **Take up of agri-environment schemes** |
|---|---|
| **Units** | Area (ha), Percentage of agricultural land within Heritage Area and comparative with District/Landscape Character Area and Hampshire areas. Presentation by category of scheme. |
| **Type of indicator** | State/Response |
| **Wider relevance** | Land management schemes cover a broad range of land use types and objectives (agriculture, forestry, biodiversity, recreation and access). National Parks Corporate Financial Indicators, proposal for Indicators for Sustainable Agriculture in the UK (MAFF) Area of agricultural land under commitment to environmental conservation. Also relevant to Strategic Objective – Landscape SO3.2. Sustainable forestry monitoring and indicators UK Forestry Standard. RA4.2c SO4.2. |

**Significance**:
Capital and revenue agri-environment schemes may provide a range of strategic indicators of performance in conservation, landscape and agriculture. Much of the Forest has a long history of low intensity agriculture use and many of the agri-environment schemes encourage traditional management and set specific targets for conservation measures.

Set aside and tiers of agri-environment schemes may be especially useful in indicating commitment to environmental management. The distribution of the take up of agri-environment schemes may also be an important aspect of the development of environmentally sustainable agriculture within the Heritage Area and thus regional analysis may be valuable.

The various conservation schemes and grants[18] and subsidies that target the conservation value of agricultural land (see table) include a number of woodland and hedgerow schemes. These schemes are administered by various organisations including many of the NFC partners and MAFF. These measures support, in particular the indicators for Recommended Action RA4.2a.

| Scheme | Awarding body and purpose |
|---|---|
| ESA | MAFF protection of areas from agricultural change (applies only to the Avon Valley within the NFHA). |
| Farm and Conservation Grant Scheme | MAFF – traditional field boundaries, shelter belts, woodland enclosures, heather management, and repair of agricultural building |
| Habitat Scheme | To promote farm conservation over 20 years with sensitive environmental management.<br>Countryside Access Scheme to increase opportunities for public access.<br>Organic Aid Scheme to encourage organic production |
| Woodland Grant Scheme | Forestry Authority – to encourage expansion of private forestry – higher payments for broad-leaved and supplements for planting on arable land. |
| Farm Woodland Premium Scheme | Forestry Authority and MAFF – encourage woodland planting on productive agricultural land for the benefit of landscape and wildlife. Associated with Woodland Grant Schemes approvals. |
| Annual Management Grant | Forestry Commission work to maintain and improve woodlands, safeguard or enhance special environmental value; improve woods below current environmental standards; create, maintain or enhance public access. |
| Countryside Stewardship | MAFF and Countryside Agency – 10 year agreements to combine conservation and access with agriculture and land management. incorporates the former Hedgerow Incentive Scheme |
| Project Grants | English Nature - furtherance of nature conservation and understanding. |
| Wildlife Enhancement Scheme | English Nature – promotion of wildlife enhancement within protected sites |

Currently the Countryside Stewardship Scheme Target Areas being promoted in Hampshire and Wiltshire in 1999 include the New Forest Heritage Area[19]. The key stewardship objectives for restoration and sympathetic management within this area include; old meadows and pastures, heathlands and bogs, wood pasture, and applications are enhanced by inclusion of hedgerows and historic features. Within the Heritage Area the Countryside Stewardship scheme may also cover coastal areas where saltmarsh and access are targeted.

There is the opportunity to aggregate these measures within the indicator reporting both as area and financial measures. Financial and personal details are confidential but generally the location, areas covered and scheme options and access condition data are available. There are parallels with the habitat and landscape monitoring and indicators. Such an integration of data might also include tree planting and hedgerow grants (e.g. Woodland Grant Schemes and Farm Woodland Premium Schemes. Farm woodland figures are also available within the MAFF June census

**Data availability**:
Data is available through the recording undertaken by MAFF, Countryside Agency and English Nature.

**Organisations involved:**
MAFF, FRCA, EN

| **Potential indicator:** | **Number of active commoners** |
|---|---|
| **Units** | Numbers – potentially with a geographic distribution. For example, where commoners live, where they turn out or where their holdings. |
| **Type of indicator** | State |
| **Wider relevance** | SO4.1. |

[18] *MAFF 1994 Conservation Grants for Farmers.*
[19] *FRCA 1999 The Countryside Stewardship Scheme: Countryside Stewardship in Hampshire pp11.*

**Significance:**
The number of commoners actively depasturing stock on the Forest has been linked to the need for back-up grazing within the Heritage Area (LUC 1986). However, the relationship is not a simple one as different stock have differing grazing habits and exploit the vegetation in different ways. Equally, the trends in the numbers of commoners may not reflect the level of grazing, as fewer commoners are turning out larger herds and with a recent reversal of the ratio of cattle to ponies. Whilst not a conclusive indicator the number of active commoners might be presented as a proportion of those with commoning rights and against stock numbers (see below). Indicators such as commoning numbers may be misleading, as the figures may suggest stability or increase whilst the implications come from a changing commoning structure [20].

There is also a relationship between the geographical context of the practising commoner numbers and the environmental and landscape quality. Taken with a number of the other indicators it may be possible to provide greater interpretation of the trends within commoning practice. Fuller examination of the commoning census statistics may provide an appropriate route to the interpretation of the health of commoning. Further work is needed in developing a more meaningful measure of commoning value to the agricultural economy, traditional character and environment. For example, the number of commoners turning out and the number of years over which they have turned out, the number of commoners with back-up grazing land (and extent of provision) adjacent to the Forest, age of commoning community may provide useful inputs.

**Data availability:**
The census of commoners 1990 (Ivey 1991) provided a comprehensive assessment of the numbers and is currently maintained by the Verderers (Commoners Census). Programmed repeat survey in 2001 would allow these data to be compared. Data Protection Act regulations in force from March 2000 may alter the ability to report these figures.

**Organisations involved:**
Verderers

| **Potential indicator:** | **Numbers of stock depastured** |
|---|---|
| **Units** | Numbers and proportion of stock type – potentially with a geographic distribution. |
| **Type of indicator** | State |
| **Wider relevance** | SO4.1, RA4.1b, RA 4.1d. |

**Significance:**
The number of stock depastured on the Forest may act as an indicator for pressure on the Forest and further link to the requirement for off-Forest grazing land. As noted above the relationship is not a simple one as different stock have differing grazing habits and exploit the vegetation in different ways. The trends in numbers and proportion of stock and deer have fluctuated[13].

When taken with number of active commoners, the number of stock the may help to indicate the value (or lack of economic value) of stock depasturing. There are some potential problems with the figures as not all cattle marked are eventually turned out, although generally the data are of high quality with a long record from 1957. The confidentiality of some data may prevent the spatial distribution of turn out.

**Data availability:**
Annual marking fees enable the charting of the changes in the number and proportion of the different stock turned onto the forest and the owners, although new Data Protection Act regulations in force from March 2000 may alter the ability to report these figures. Further evaluation of the stock numbers is made within the Commoning Census on a per parish basis.

[20] *S. Westwood pers com 1999*

**Organisations involved:**
Verderers, Agisters

| **Potential indicator:** | **Animal welfare** |
|---|---|
| **Units** | Numbers of stock harmed, killed and removed from the Forest – within Heritage Area. |
| **Type of indicator** | State/Reponses |
| **Wider relevance** | Agricultural sustainability indicators. This measure also acts as an indicator for traffic pressure. (see transport indicators RA4.1d.) |

**Significance:**
Stock and other large animals killed within the Forest are of major concern with upwards of 160 animals affected annually by road strikes. Introduction of speed limits on unfenced Forest roads and increased awareness of the problem promoted by the Highway Strategy[21] has gone some way to addressing these concerns. Animal welfare is also affected by the loss of condition where grazing is poor and through neglect. Records for animal welfare are also held by the Verderers and would contribute to an overall index for the Forest of threats to depasturing stock.

**Data availability:**
Data would be available with the permission of the Verderers. Other data from the Hampshire County Council Highways Safety Group may also be relevant. Data would need collation from existing paper records.

**Organisations involved:**
Verderers, Hampshire County Council

| **Potential indicator:** | **Percentage of farms with 'whole farm management plans.** |
|---|---|
| Units | Percentage of agricultural land – within Heritage Area and comparative with District/Landscape Character Area and Hampshire, potentially with National Parks comparison. |
| **Type of indicator** | State/response |
| **Wider relevance** | Proposal for Indicators for Sustainable Agriculture in the UK (MAFF). |

**Significance:**
Environmental management systems uptake by farmers is likely to see significant growth and may form a valuable measure of the extent of appreciation of environment in land management. Various scales of management schemes are being promoted, such as Integrated Crop Management and Whole Farm Plans. Monitoring and targets are fundamental components of within the development of these plans and hence indicators play an important role in assessing performance against the stated farm strategy. The collation of information on the performance of individual plans provides the basis for finer resolution assessment across the Forest.

**Data availability:**
No current data is collated on a regional or national level. Data confidentiality may limit the collection of detailed information, although reporting at a regional level (Heritage Area) would provide valuable input.

**Organisations involved:**
MAFF, FRCA

[21] *Hampshire County Council (1989) Highway Strategy for the New Forest and HCC (1998) The New Forest Transportation Strategy*

| **Potential indicator:** | **Planning response changes affecting agricultural land** |
|---|---|
| **Units** | Number of application and percentage of all applications within an area. Percentage of agricultural land – within Heritage Area and comparative with District/Landscape Character Area and Hampshire, potentially with National Parks comparison. |
| **Type of indicator** | State/response |
| **Wider relevance** | Proposal for Indicators for Sustainable Agriculture in the UK (MAFF), See also Planning and Landscape Strategies. |

**Significance:**
Within the analysis of planning applications there lies the possibility of judging the nature of the changes and reasons for loss or change of agricultural land use. A number of separate measures may be generated from the same source data provided that the recording of the information is appropriate. Such measures based on the analysis of planning applications data might include the area of land lost to non-agricultural uses, the area of land with modified use for horse keeping or open space developments (forestry/golf etc), developments that meet the requirements for supporting local community and commoning.

The multi-purpose use of datasets recommends these measures within an overall suite of indicators built from planning control data. The anticipated introduction of new agricultural land value classification (ALVC) data by MAFF offers the opportunity to assess these changes based on the areas of specific land classes. This ALVC data has been developed for the Regional Planning within SERPLAN.

**Data availability:**
Data is collected by HCC for the whole of the Heritage Area, the attributes collected are however not consistent across the whole of the area, either within the format or content. Some co-ordination has occurred within a potentially one off assessment undertaken by the HCC.

**Organisations involved:**
Hampshire County Council, Wiltshire County Council

### 4.2.6 Recommendations

Testing the delivery of the Strategic Objectives for agriculture relies on being able to compare the indicators over time and against a baseline. Given the standardised and repeat nature of the data within the MAFF Census it is recommended that a suite of measures be used to indicate trends in the character of agriculture within the Heritage Area. Use of these statistics would require the treatment of the New Forest Heritage Area as a specific data aggregation unit and it is recommended that MAFF Agricultural Statistics Branch be approached to request such collation. Comparison at District or other regional level may be possible, but further evaluation of the zones used for statistical aggregation will be necessary.

It is recommended that the New Forest Committee seek the support of the Farming and Rural Conservation Agency FRCA in preparing the agricultural statistics based on the Agricultural Census statistics and agri-environment scheme reporting. The agricultural indicators suggested based on the Agricultural Census should be sought at the Heritage Area boundary through liaison with the FRCA statistics branch.

It is recommended that the Verderers repeat monitoring of the commoning census be used to indicate the character and trends in commoning practice. Further analysis of a range of measures from the census appears to offer additional insight into the overall structure of commoning which should be explored with the Verderers. Confidentiality may limit the scope of all these measures. The next scheduled survey is in 2001 although consideration of annual census to tie these data with other information may be useful. In addition the inclusion of stock depastured provides a valuable additional measure when taken with the geographical location and the practising commoners in showing trends in the level of activity.

It is recommended that the planning control monitoring database be further assessed to ensure that the information required to indicate changes that affect agriculture and commoning is collected in a consistent manner across the whole of the Heritage Area.

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## 4.3 Forestry and Economy

***Woodlands***
*S.O: To promote the conservation and enhancement of woodland for its historic, landscape, ecological and amenity value. [S03.6i]*

*S.O: To encourage the sympathetic management of woodland landscapes, increasing the broad-leaved component, where appropriate and promoting measures to increase biodiversity.[SO3.6ii]*

***Recommended Action***
*Review and define the traditional character of the New Forest woodland resource and seek to sustain and enhance this traditional character through appropriate management and new planting. [RA3.6a],see also RA3.2a,b, RA4.3a*

*Research and stimulate local markets for wood products which would encourage the more effective management and expansion of broadleaved woods. [RA3.6b],*

*Identify options to expand the current broadleaved resource. [RA3.6c]*
*Foster a greater awareness of landscape and nature conservation issues in woodland planting and management. [RA3.6d]*

Identify important designed elements within the woodland landscape and incorporate into management advice and decisions. [RA3.6e]

### 4.3.1 Introduction

The New Forest includes extensive areas of both Forest Enterprise and private woodlands (including Ancient and Ornamental (A+O) woodland and timber enclosures). The forestry role within the Crown lands and the objectives and programmes are set out in the New Forest Management Plan 1992-2001 (Forestry Commission 1992). This document applies the Minister's Mandate, which directs the Forestry Commission's role and their management priorities. The Mandate has recently been reviewed and will result in the development of a revised New Forest Management Plan.

Commercial forestry forms only one aspect of the Forest Commission activity within the New Forest, yet remains a traditional element of the Forest character and an important cultural and economic contributor. This multi-purpose role includes duties to conservation, recreation, education, landscape, access, drainage and infrastructure within the Crown lands. These duties are reflected in the stated Forestry Commission's objectives and the Forest Enterprise's environmental and social objectives. The Minister's Mandate established conservation of the Forest's traditional character as the priority for Forestry Commission's management. This priority acknowledges that many of the woodlands within the Forest are of national or international conservation importance and should managed without regard to timber production. Forestry Commission management and the Management Plan encompasses the Open Forest under the various New Forest Acts; which represents over two thirds (178.65 $km^2$) of the Crown lands.

The management of the commercial forest Inclosures is subject to approval and monitoring by Forestry Authority and is agreed by a consultative group, the Forest Design Plan Forum, which was established in 1997. The Forest Design Plan process applies currently only to the Inclosures, but also encompasses amenity and conservation aspects of the multipurpose forest plan. The Forum consists of representatives from the commoners and conservation, planning and recreation organisations. Within the Open Forest and including the A+O woodlands the FE management is subject to consultation with the Verderers, English Nature and within the Open Forest Advisory Committee. A number of schemes are being promoted that aim to restore or rehabilitate areas adversely affected in the past to semi-natural communities. Restoration of broadleaved woodland from conifer plantation, floodplain broadleaved woodland and longer broadleaved rotations within the inclosures are typical of such measures which seek to enhance the landscape and ecology.

The Ancient and Ornamental woodlands, including areas identified under the Habitats Directive (Beech forest with *Ilex* and *Taxus*, rich in epiphytes) are seen as essential elements of this "traditional character". Detailed assessment of management options for the Ancient and Ornamental woodlands has been undertaken in 1996 (Peterken, Spencer and Field 1996). The results of this evaluation are being incorporated within the LIFE programme actions and monitoring, such as holly pollarding, rhododendron clearance activities and removal of certain tree species and pine clearance. The assessment is limited to within the Crown lands, although the historic boundary of the New Forest and the survival of A+O woodlands outside this boundary suggests that similar interests extend to the Heritage Area (Chatters and Sanderson 1994, Sanderson 1996).

Timber production and associated activities of conservation and recreational management form an essential element in the local economy of the New Forest, both within the Forestry Commission's own operations and those of local estate woodlands and landowners. An important local contractor community is also supported by forests, recreational and tourism activity. Many of these activities can be given direct financial measures within the development of monitoring and indicators, which are perhaps more difficult to apply in accounting for performance and effectiveness of many of the strategies.

***Strategic Objective***
*To ensure that forestry and woodland management remains a significant land use within the New Forest. [S04.3]*

*To ensure that the social and economic needs of the New Forest community are met without prejudicing the traditional character of the area. [S04.4]*

***Recommended Action:***

*Encourage owners of woodland to take up woodland grant schemes with the Forestry Authority. Increase broadleaf planting where appropriate. [RA4.3a]*

*Develop the recreational potential of woodland areas, where opportunities exist and without prejudicing landscape and nature conservation interests. [RA4.3b]*

*Develop economic initiatives which create added value for New Forest based products, including agricultural and wood based products [RA4.4a]*

*Examine needs and sources of training in skills which are important in supporting the character of the Forest [RA4.4b]*

### 4.3.2 Why monitor?

Monitoring and the development of indicators is a key element in the Forestry industry both for commercial timber growing, forecasting and for the broader missions "to protect and expand Britain's forests and woodlands and increase their value to society and the environment". This aim reflects the development of a framework for sustainable forestry incorporated within a sequence of national policy documents (HMSO 1994, Forestry Authority 1998, Forestry Commission 1999). At a research and European level the Forestry Authority is working with European partners[22] to investigate indicators for monitoring and evaluating forest biodiversity through a series of key attributes.

From a wider perspective the Helsinki Ministerial Conference on the protection of Forests[23] in Europe identified the need for measurable criteria and indicators for implementation of sustainable forest management and conservation of biodiversity within Forests.

At a national level "The UK Forestry Standard" sets out the Government's Sustainable Forest Management aims and objectives for the UK's woodlands and forests. It also sets the objectives for scientific and national survey and monitoring that is required to assess whether the UK Standard is being met. Much of this monitoring role is now taken by the Policy and Practice Division of the Forestry Authority which co-ordinates the monitoring and forecasting. At a more local level the UK Forestry Standard also identifies a series of criteria and indicators for sustainable management for the Forest Management Unit[24] level and is reflected in the principles of the Minister's Mandate.

### 4.3.3 Who is involved?

Forest Authority, Forestry Commission, Private woodland and forest owners, English Nature, Verderers, HCC. HWT and WWT, CLA, NFU.

### 4.3.4 Existing Monitoring and Survey Activity

Changes within the Forestry Commission in the early 1990s resulted in the management of the Crown lands by Forest Enterprise, an operational arm of the Forestry Commission. Both Forest Enterprise and the Forest Authority carry out the monitoring of forest operations and management. Monitoring covers all aspects of the Management Plan implementation within the New Forest together with a number of national programmes of woodland and forest inventory[25], condition survey[26] where sampling within the Forest takes place. In addition, the actions under the New Forest LIFE programme are monitored and include a number of specific Forest management objectives, although those with specific biodiversity objectives are described in Section 4.5 (Nature Conservation).

Condition Survey of forests is undertaken by the Forestry Commission and includes plots within the New Forest which monitor crown health. Surveys have been conducted annually since 1984 on sitka spruce, scots pine, oak and beech to monitor a range of factors affecting plant health. Data is collected every 5 years and stored on a database. The original data goes back to 1923 and this enables long-term growth curves to be drawn. When linked to plant health data, inferences can be made about climate change and the relative importance of other factors affecting tree growth. This is one of a range of research initiatives within the woodland management of the New Forest which includes studies on forest dynamics[27] and repeat monitoring, such as the Denny transect.

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[22] *Concerted action research programme headed by the Swedish Environmental Protection Agency*
[23] *Finnish Ministry of Agriculture and Forestry 1996. Intergovernmental Seminar on Criteria and Indicators for Sustainable Forest Management. Final Document. August 19-22 1996 Helsinki, Finland.*
[24] *The Forest Management Unit (FMU) is a management level set by the Forestry Commission for monitoring the progress of implementing the principles of Sustainable Forest Management (SFM) through the UK Forest Standard. Criteria and indicators at FMU level aim to show planning and operations meet the principles of the Standard. This unit may equate to a farm, estate or Forest District.*
[25] *Forestry Authority 1998 National Inventory of Woodland and Trees*
[26] *Forestry Authority 1998 Forest Condition 1997 Published in June 1998 issued by Forestry Practice*
[27] *Hank Coop, a Dutch researcher from the University of Wageningen, Holland, has been studying forest dynamics. He has monitoring natural change in forests across Europe and has a few plots within the NFHA.*

Much emphasis is being placed on establishing measures of woodland biodiversity. A Forest Research programme[28] is currently monitoring stand structure, invertebrate communities, soil microflora and fauna. On 5 survey plots throughout the Forest taxa relationships are being examined with surrogate measures for diversity. The objective is to highlight indicator species for biodiversity. Currently dead wood is considered to be a good indicator in terms of the fungal growth and lower plant species that live upon it.

An inventory of Forestry Commission land is undertaken every 15 years. The estates were last surveyed 8-9 years ago. Environmental data collected includes soil type, moisture content and nutrient regimes. Within the New Forest the recently conducted (1997/98). Ecological Site Classification provides assessment of the soils nutrient and moisture status based on vegetation associations as the basis for ecological target setting as well as forestry potential assessment.

Changes in the extent of the UK's woodland and forests are assessed by the National Woodland Inventory. This desk and field survey was last undertaken in 1980 and is currently being completed. The new survey started in 1994 and is due for completion in 2000. The results will be mapped at a scale of 1:25,000 and statistics reported at County level. All private and public woodlands over 2 ha are included in the aerial photograph based interpretation and an evaluation is made as to the woodland class. The 1980 survey is in paper format but the new survey is digitised into a GIS format that will enhance the ability to analyse data for varied areas. Earlier woodland surveys dating from 1947 provide a valuable historic perspective to these newer surveys.

It is intended that the Woodland Inventories will be updated on a 10 year census cycle.[29] Whilst the data provide a national picture the classification of woodland types (e.g. conifer, broadleaved, mixed) is coarser than those used for management and conservation purposes. Small woodlands and trees are also covered within the programme on a sampled basis. The full national mapping is followed by field sampling, based on a stratified cluster sampling method with information similar to stock mapping. This includes a National Vegetation Classification for ancient woodlands. The woodland inventory data complements the data already held within the Forestry Commission's Inclosures as part of the digital stock maps ('Forester', a GIS and database application) for production forecasting and subcompartment data management.

Hampshire County Council's aerial photographic interpretation has included the delimitation of woodland and forest blocks recorded within eleven woodland classes, but without ecological or management details. More regional survey of woodlands has formed part of the Hampshire Wildlife Trust Woodland Surveys which provides a more detailed ecological assessment with specific woodland ecological recording. Neither of these approaches is currently scheduled for resurvey.

Woodland Grant Schemes, (which offer Forestry Authority-administered grant aid to expand or enhance woodlands and access) have been assessed as part of a Hampshire-wide study, but the data is not specific to the NFHA. The scheme is reported to have lower take-up where recreational access is required (due to the already perceived wide access within the perambulation). No monitoring programme is in place, and there is a level of confidentiality attached to specific details of schemes, although numbers of schemes are recorded. Individual text reports and maps exist for each application so in theory a picture of adoption would be created. The thirty or so schemes in Hampshire may provide a small sample from which to base monitoring, although when aggregated with other agri-environment schemes may contribute to wider monitoring.

Operating within the Crown Lands the Forestry Commission has developed a GIS-based information system (Heathland Management System) for recording and monitoring the Open Forest management tasks, such as burning, swiping, clearance, drainage etc. Whilst this system may be seen more as a management planning tool the recording of actions over time allows the analysis of trends in management input and the development of response indicators.

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[28] *Assessing Biodiversity in Managed Forests (Richard Ferris, Forest Research)*

[29] *Forestry Commission 1997 Report on Forest Research 1997. Forestry Commission: Edinburgh.*

### 4.3.5 Indicators

Given the forest management prescriptions within the New Forest a range of indicators is already being used to assess the effectiveness of strategies for forestry planning and management. This includes largely financial reporting of the expenditure on forestry, conservation, recreation and education. The Life programme has introduced another tier of recording to identify the ecological potential within existing forested areas. The approach being developed by Forest Research uses plant communities and species indicators to predict soil quality (soil nutrient and moisture regime) which identify certain combinations that define site ecological potential (Pyatt et al. 1999, Pyatt, and Saurez 1997). This method has been piloted for the New Forest as an input to the ecological management and the Forest Design Plans.

| Indicator | PSR | Data | Meaningful | Resonance | S.O. |
|---|---|---|---|---|---|
| **Extent of broad-leaved woodland** | **P / R** | **Y –** | **Y** | | **SO3.6ii** |
| **Landscape indices** | **S / R** | **Requires analysis** | **Y** | **?** | **S03.6i.** |
| **Area with Forest Design Plans prepared** | **R** | **Y –** | **Y** | **Y** | **SO3.6i.** **SO3.6ii.** |
| **Educational / recreational expenditure** | **R** | Y – | **Y** | **Y** | **SO4.3 RA 4.3b and 4.4** |
| **Take up of woodland grant schemes** | **R** | **Y-** | **Y** | **Y** | **SO4.3 RA4.3a** |
| **Development control index** | **P/R** | **Y** | **Y** | **Y** | **SO4.4** |

The development of corporate financial plan indicators for National Parks contain some basic indicators for woodlands and forestry (Native Woodland Accord measures and area of forested land with public access or access agreements). Although these indicators apply to National Parks there is some overlap with potential indicators for the New Forest, although they relate more to planning and access than to the strategic objectives of the Strategy for the New Forest, which emphasises sustainable forest economy.

Other indicators relevant to the Forestry encompass landscape, biodiversity, amenity and heritage and are covered within the other sections. Indicators described here seek to reflect the more commercial aspects of forest management and the implementation of the New Forest Management Plan and thus include a number of financial indicators.

| **Potential indicator**: | **Extent of broad-leaved woodland** |
|---|---|
| **Units** | Area (within specific geographical zones), units may be specific to woodland types. |
| **Type of indicator** | State / Response |
| **Wider relevance** | Sustainable Forestry, Biodiversity Action Plan, Native Woodland Accord. |
| | SO3.6ii |

**Significance:**

The extent of broadleaved woodland within the New Forest Heritage Area may reflect a number of policy initiatives, action plans for particular habitats and restoration actions under LIFE and Forest Design Plan proposals. The measure also may be reflective of the uptake of agri-environment schemes promoting increased woodland planting and woodland grant schemes. Such an indicator clearly overlaps with landscape and forest design initiatives and hence also with economic felling proposals and biodiversity targets for the New Forest.

The wider relevance of the Native Woodland Accord specifically recognised the importance of semi-natural woodlands in landscape and biodiversity in National Parks. Given the NP-equivalent planning status of the New Forest and the present initiatives to consider some form of special administration, the accord (between the NPA and the FA) to promote management and expansion of native woodlands may also be applicable to the New Forest. Existing Forest Design Plans may already be said to be promoting this process. Wider-ranging local accords (with other agencies such as EN, EA MAFF) may be more appropriate to the existing multi-agency responsibilities within the Forest.

The regional coverage of the HCC aerial photographic interpretation and the National Woodland Inventory offer the scope for comparison of woodland cover with areas outside the Heritage Area and allows comparative trends to be assessed.

**Data availability:** Multiple datasets exist which contribute to the full coverage of the New Forest Heritage Area. These include the FE stock map, Open Forest (Clarke and Westerhoff) mapping, and the National Woodland Inventory. The datasets cover inconsistent areas, making update and repeat surveys problematic. However, the National Woodland Inventory provides the most up to date and consistent coverage with potential for national comparison.

**Organisations involved:**
Forest Enterprise, Forest Authority, HCC.

| **Potential indicator**: | **Landscape indices** |
|---|---|
| **Units** | Varies depending on index, usually a numeric estimate and map based assessment |
| **Type of indicator** | **State /Pressure / Response** |
| **Wider relevance** | Landscape, Ecological indicators S3.6ii. RA3.6d, to foster greater awareness of the landscape in woodland planning and management. |

**Significance:**
Landscape indices are measures within datasets that describe the pattern and association between elements of the landscape. Indices may be built from a range of sources, but typically land cover maps are used. These measures may be described as landscape ecological approaches that seek to identify patterns that have specific ecological significance. For example, indices may include, habitat adjacency, habitat diversity, measures of fragmentation and habitat edge.

The role of landscape indices within forestry is tied to the landscape-scale design, conservation and enhancement of biodiversity. These indicators are discussed further within the relevant sections (landscape) emphasising the specific aspects of the indices relevant to these themes. Many of the most advanced landscape ecological indicators have been developed for assessment of forest structure to benefit species ecology or habitat diversity within forest management and to provide a predictive function in forest design. Forest Research (the research arm of the Forestry Commission) has commenced a programme of research into the use of landscape ecological measures of forest structure, composition and management to achieve specified biodiversity objectives.

Landscape indices complement the ecological site classification methods, which are based on the assessment of soil moisture and nutrients to generate a site suitability matrix for woodland planting and for ecological potential within a site. These techniques within woodland and forest indicators have the potential to generate a number of measures of the effectiveness of forest Strategic objectives. The measures address the Strategic Objectives [S03.6i. and SO3.6ii.] to enhance the conservation and enhancement of the biodiversity, as well as Forest Design and broader landscape.

**Data availability:** see landscape and biodiversity – based on land cover maps of the New Forest Heritage Area.

**Organisations involved:**
Forest Authority, Forest Research. HCC, Research organisations.

| **Potential indicator**: | **Area with Forest Design Plans prepared** |
|---|---|
| **Units** | percentage of estate covered by appropriate forest design plans percentage of SSSIs managed in accordance with plans endorsed by conservation agencies, percentage of land comprising endangered habitats managed in accordance with plans endorsed by relevant authorities, percentage compliance with forest design plans as monitored by the Forestry Authority, percentage of Inclosures managed for differing conservation objectives (e.g. riparian corridors, restoration of heath/broadleaved woodland). |
| **Type of indicator** | **Response** |
| **Wider relevance** | Area of land under positive ecological management. DETR 1996 Indicators of Sustainable Development indicator (percentage of FE woodland with approved Design Plans). Needs its own measures of effectiveness of the implementation based on the assessment of compliance with the Forest Design Plans. SO3.6ii. SO3.6i. RA3.6e. |

**Significance:**
Examining the effectiveness with which endorsed Forest Management Plan proposals are implemented offers a potential indicator for a range of Strategic Objectives including: forestry, conservation and recreational aspects of the forest management plans.

The application of Design Plans is currently restricted to the management planning within inclosures within Crown lands. The same principles of "design" may not apply effectively within the Open Forest, but may be applied to other managed landscapes within the Heritage Area. These approaches have similarities to Habitat Action Plans under biodiversity initiatives.

The Forest Design Plan process provides a vision for the inclosures that takes account of the consultation, forest design guidance and the conservation status and targets within the Forest. Design Plans within the New Forest have included the potential to return areas of the Inclosures to broadleaved woodland, riparian woodlands or other habitats as recommended by the New Forest Review. This vision has taken account of the results of the ecological site classification undertaken for the inclosures.

Inclusion of private woodland design plans approved under Woodland Grant Schemes may be appropriate to add to the Forest Enterprise estate figures. DETR figures suggest a rapid rise in Woodland Grant scheme area, although the number adjacent to the Crown lands is considered to be below average. The shortfall of this indicator may be the fixed programme of Design Plan development, beyond which little effective change may be noted. Subsequent monitoring may focus on the effectiveness with which the FDP objectives are implemented and provide another suite of indicators.

**Data availability:** Data is available in GIS digital format. Currently around 25% of the Inclosures are covered by Design Plan consultation draft proposals.

**Organisations involved:**
Forest Authority (as auditors of the performance), Forest Enterprise, consultees on Forest Design Plans.

| **Potential indicator**: | **Take up of woodland grant schemes** |
|---|---|
| **Units** | Financial, number of schemes and category of schemes. |
| **Type of indicator** | Response |
| **Wider relevance** | Links to agriculture and economy. SO4.3 and RA 4.3a |

**Significance:**
Various grants are available to support woodland improvements for existing woods, hedges and restoration of existing areas. The specific allocation of grants is for both planting and post-planting. Different grants target different land type changes or ancillary management objectives, such as promotion of access. These woodland grant-aid schemes seek to contribute to sustainable rural development objectives.

Within the Crown lands the management by FE limits the potential for woodland grants, but within the wider Heritage Area the Woodland Grant Scheme and the Farm Woodland Premium Schemes offer potential measures towards various Forest objectives. The conditions placed on grants (such as for access provisions or specific land use changes) contribute to other management objectives including wildlife, landscape, recreation and help to diversify rural income.

Measurement of area of the woodland grant take up might be categorised in terms of the resulting land use change, e.g. from arable or from improved grassland. Area measurement of schemes offers the opportunity for repeat surveys, but care is needed to avoid double-counting as the Farm Woodland Premium Scheme may also be applied to Woodland Grant Scheme areas. A financial measure of the payments made may provide a better measure of the annual trends, although confidentiality may limit the resolution within which the data were reported.

Additional woodland improvement grants may also apply within the Heritage Area in certain circumstances, such as the Better Land Supplement, Community Woodland Supplements, County Council schemes. Set-aside with woodland planting may also now qualify under EC Arable Area payments scheme, and the estimated 70% (Marshall 1998) of the land in set-aside allowed to revegetate naturally may also promote woodland cover. Countryside Stewardship also offers grant opportunities, but is limited for woodland planting or maintenance, other than within field boundaries.

**Data availability:**
Data is recorded within MAFF and the Forestry Authority specifically related to woodland improvement grants. The selection of the woodland component within other agri-environment schemes would require further data processing. Some level of generalisation of the reporting might be necessary to maintain commercial confidentiality.

**Organisations involved:**
Forestry Authority (WGS), FWPS (MAFF)

| **Potential indicator**: | **Expenditure on recreational facilities/management** |
|---|---|
| **Units** | Financial, measures of recreational expenditure. Ratios with occupancy levels and visitor numbers. |
| **Type of indicator** | **Response** |
| **Wider relevance** | Cross-references to access and recreation where the indicator may also be applicable.<br>SO4.3 RA 4.3b and 4.4 |

**Significance:** Within the New Forest Crown lands and adjacent areas the multi-purpose forest objective includes the provision and maintenance of recreational facilities. The activity that this represents provides an indicator of the significance to the forest economy. In the New Forest camping and touring caravan sites represent a major woodland and forest recreational facility now managed by Forest Holidays. Of Forest Holidays English estate of 25 caravan sites, 9 sites

are in the New Forest and the income from recreation and camping is as high as for sales of timber from the New Forest.

The interpretation of economic value must recognise that the environmental objectives have been responsible for directing the closure of pitches and camping sites. The level of occupancy within the Forest may provide a normalisation of the income figures, as well as indicating trends.

The measure of the Recommended Action (to support recreation where it does not prejudice landscape and conservation) relies on recreational indicators taken alongside indicators of nature conservation and landscape condition. The reduction of pitches in the 1990's suggests that the environmental evaluation of recreational opportunities is as important as financial indicators in examining trends.

**Data availability:**
Forestry Commission financial data on recreational expenditure is available through the annual accounts, but there is no known ready source of data for the woodlands outside the Crown Lands.

**Organisations involved:**
Forestry Commission.

| **Potential indicator**: | **Development control index** |
|---|---|
| **Units** | Number of development applications received, nature of the development application, the decisions taken. |
| **Type of indicator** | **Pressure / Response** |
| **Wider relevance** | Cross-references to landscape<br>SO 4.4, RA4.3, RA 4.4. |

**Significance:**. Through planning guidance and planning consultation requirements the planning control system integrates a number of factors affecting the New Forest. Government Circulars and Planning Policy Guidance Notes, together with legislation, place obligations and controls on policy development and decision-making for planning applications. Planning control may be used to measure implications for forestry and economy as well as for wider issues such as nature conservation and landscape. Its basis as an indicator relies on the association between economic growth and development pressure. In the Heritage Area, with stringent planning controls equivalent to a National park the comparison with Forest edge development, scale of development application and refusal rates may all contribute to measurement of both pressure and response.

Hampshire County Council collates information on planning applications within the whole Heritage Area (including areas within Wiltshire). Digital monitoring from 1993 offers the opportunity to chart trends for both rural and urban development applications. The move towards GIS-based data handling will allow more specific geographical searches to be made and localised influences of development control on forestry and economy to be assessed. Closer co-ordination of the information recorded between the contributory authorities would enhance the scope of the analysis.

**Data availability:**
Collated by Hampshire County Council. But contributed by the Local Authorities.

**Organisations involved:**
Hampshire County Council.

### 4.3.6 Recommendations

Existing survey and recording by the Forestry Commission and the Forest Authority provides a sound basis for monitoring the effectiveness of many of the Strategic Objectives of the Strategy

for the New Forest. Given the dominance of the activity of the Forest Enterprise and Forestry Commission within the forestry management of the New Forest Heritage Area it is apparent that the indicators, measurements and specific targets may best be distinguished from FE managed woodland and other estates. The ability to collate the information on the expenditure and revenue within private forestry may limit the scope for providing a whole Heritage Area indicator.

There is a need for a new indicator to evaluate the environmental implications of the actions within the Forest Design Plans. Such indicators will rely on the monitoring of the Plan performance although no specific programme has been established yet repeated land cover mapping may go some way to evaluating these objectives as will records from within the FC stock management system.

It is recommended that the various woodland inventories and mapping of woodland blocks be examined further to integrate the data wherever possible to provide a useful baseline dataset. The National Woodland inventory, Hampshire CC land cover map and the Hampshire Wildlife Trust Woodland Inventory provide useful data sources but duplicate woodland blocks. Such a collation provides the opportunity to develop effective monitoring of changes in extent.

The use of planning application and decision records offers a wide range of measures of the state, pressure and response to strategies and policies operating within the Forest, both to promote and protect the various sectors (economy, conservation). It is recommended that the collation by HCC of planning decisions be made a commitment for the future and that the records kept on decisions be reviewed to enhance the functionality of the data for analysis of change.

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**Strategy Objective**

SO3.5i To conserve and maintain archaeological features and their landscape settings.

SO3.5ii To interpret sites of archaeological and historic significance, where appropriate.

**Recommended Actions**

RA3.5a Support the work of the RCHME, County Councils and local bodies in surveying the archaeology and historic landscapes of the New Forest and extend as necessary.

RA3.5b Identify sites in need of protection and restoration.

RA3.5c Incorporate archaeological considerations into all site management documents and decisions.

Refer also to:
Planning and Development (Built Environment)

## 4.4 Heritage and Archaeology

### 4.4.1 Introduction

The long period of traditional management and the control on development has left a rich archaeological and heritage legacy within the New Forest. The area identified as New Forest has changed, with the medieval hunting forest thought to cover an area which encompassed much of the present Heritage Area and areas beyond. This changing scale means that many historical influences and features special to the Forest heritage and historic landscape may have remnants within areas currently outside the Forest.

Forest archaeological sites date from Palaeolithic times, but the pollen and organic remains of the New Forest mires present a longer palaeo-environmental record of special scientific importance. The coincidence of such waterlogged environmental and climate evidence with the remains of occupation make the Forest of particular archaeological significance. The record is varied, spanning Bronze Age burial mounds, remains of Roman 'New Forest Ware' pottery sites, and Saxon and later boundary and encroachment earthworks and the more recent military remains of mostly Second World War origin. Approximately 160 sites are designated as Scheduled Ancient Monuments (on Crown land), a statutory recognition of archaeologically important sites, making the Forest one of the densest accumulations of scheduled sites in the country. The numbers of these scheduled sites increase as more sites are identified and their significance evaluated. The Heritage Area contains numerous listed buildings and conservation areas also reflecting the traditional architectural character of the area.

The extent of preservation of archaeological sites within the Open Forest and "lost" within the forestry inclosures makes the Forest of special archaeological significance, although much must have been lost to past drainage, ploughing and post-war landuse changes. Recent surveys by English Heritage, Royal Commission on Historic Monuments in England, New Forest Committee and the Hampshire Field Club Archaeological Section) emphasise the importance of recognising sites on the ground to prevent significant damage. Present surveys by the Forestry Commission within the enclosures aim to provide the basis for more sensitive operations, recognising the archaeological significance. Little current archaeological excavation is undertaken in the Forest, although the Beaulieu River Project is investigating coastal industrial sites at Bucklers Hard. At a more general level the maritime heritage of the Forest is a significant component of the waterside and south coastal archaeological context. Survey has been conducted within the intertidal zone and from documentary evidence by the Hampshire and Wight Trust for Maritime Archaeology; linked to the development of coast protection and sea defence strategy.

### 4.4.2 Why Monitor?

Monitoring of the archaeological and architectural heritage forms part of the assessment of the effectiveness of planning policies to protect statutory and non-statutory site designations. There is also a need to monitor the effects of Forest management operations on the archaeological heritage given the forestry activities and the habitat management actions.

The proposal to submit the New Forest Heritage Area as a World Heritage Site on the basis of its cultural and natural heritage value would introduce the need for both survey and monitoring (UNESCO, 1998). The criteria for designation may provide a basis for selecting monitoring activity and indicators. These criteria include: the traditional character of the Forest management, existing and past administration and commoning, woodland management traditions, continuity of interaction between natural and social processes, habitats and their relationship to the traditional management.

Survey of the archaeological resource of the Heritage Area has also proposed monitoring activity (Wessex Archaeology 1996). This assessment recommends that it is essential to maintain the character, and to enhance it by benign or positive management and by making aspects of the record more accessible to the public. "Regular publishing of a review of all activities relating to the archaeological and historical landscape of the New Forest, which

stresses the inter-relationships of the area as a whole and the benefits of the co-ordinated approach".

Monitoring of heritage value is required as an integral part of UNESCO **World Heritage Site** status for which the New Forest is proposed as a candidate area for inclusion on both natural and cultural nomination criteria. Whilst criteria for selection are awaited (New Forest Committee 1998) it is relevant to consider the nature of the designation and values which would fulfil the WHS status and hence the potential monitoring requirements. These values include the cultural landscape, the continuing historic commoning practice, the continuity and interaction of the cultural processes with the natural landscapes and biodiversity, and the management plans for the area (both the cSAC and the Heritage Area plans). The justification of a WHS boundary would require further testing dependent on the selection of criteria, but on the basis of the natural and cultural criteria[30] the Forest would appear meet the quality requirements.

### 4.4.3 Who is involved?

English Heritage is responsible for the identification of Listed Buildings and maintains on behalf of the Secretary of state for National Heritage the list of Scheduled Ancient Monuments. English Heritage has also created a register of historic parks and gardens, although these are non-statutory designations. The Hampshire County Archaeologist and Wiltshire Archaeological Trust provides a major input to identifying sites of archaeological and heritage value, providing advice on sites and maintaining data through the sites and monument's record (the SMR). Local Planning Authorities are responsible for identifying areas of special architectural interest as Conservation Areas.

Wider survey is undertaken by the New Forest Section of the Hampshire Field Club and Archaeological Society in identifying sites and landscapes of importance within the Forest. Additional agencies have also set data standards and commissioned survey within the Forest, including the Royal Commission on Historic Monuments for England (RCHME), English Heritage, the Forestry Commission and the National Trust. The Forestry Commission is further involved through its application of Forest and Archaeology Design Guidelines and is currently developing management plans for Scheduled Ancient Monuments on Commission managed areas.

### 4.4.4 Existing Monitoring and Survey Activity

Within the New Forest archaeological and heritage monitoring is undertaken within national/regional recording programmes and as part of a number of area specific or group specific monitoring and survey initiatives. The table indicates the main repeated surveys.

| *Data name* | *Source/s* | *Policy/Legislative Requirement* |
|---|---|---|
| Listed Buildings | English Heritage<br>Local Planning Authorities (LPA) | Planning (Listed Buildings and Conservation Areas) Act 1990. PPG 15 Planning and the Historic Environment,<br>PPG16 Archaeology and Planning. Circulars 8/87 20/92 |
| Threatened Historic Buildings | LPA (Conservation and Urban Design Team) | County Council - Threatened Historic Buildings Register |
| Overall Condition Assessment | LPA (Conservation and Urban Design Team) | Condition survey of all listed buildings beyond those on the Threatened list, undertaken only within the NFDC |
| Sites and Monuments Record | County Councils | Contributed to the National Monuments Record maintained by the RCHME (now incorporated within English Heritage). |

[30] *New Forest Committee 1998 Committee paper: World Heritage Sites. 6th October 1998.*

| | | |
|---|---|---|
| Register of Parks and Gardens of Special Historic Interest | Registered by English Heritage | TCPA (Consultation with Garden History Society) Direction 1995. |
| Scheduled Ancient Monuments | Registered by English Heritage | Ancient Monuments and Archaeological Areas Act 1979 PPG 16 Archaeology and Planning. |
| Conservation Areas | LPA | LPA under the Planning (Listed Buildings and Conservation Areas) Act 1980 Section 69 and PPG 15. |

The Conservation and Urban Design section within the New Forest District Council undertake comprehensive monitoring of both Threatened Historic Buildings and Overall Condition Assessment of Listed Buildings for the whole of the District. Planning applications are referred to the Conservation and Urban Design Team if they affect Listed Buildings and a record is maintained in an MS Access database. In 1987, TVBC undertook a 'Buildings at Risk' survey following a standard English Heritage format. More recent monitoring of Threatened Historic Buildings (THB) has contributed to the County Council's Threatened Historic Buildings Register. There is no Overall Condition Assessment within the TVBC area comparable to that of the NFDC. SDC also maintain records of Listed Buildings and Listed Buildings at Risk.

At present HCC do not maintain their own dataset on Listed Buildings at Risk but it is the intention for a GIS-based data management by 2000. Once a building is defined as threatened its condition is monitored and action taken proportional to the degree of the threat. The collection of information is ongoing and on a case-by-case basis illustrates the requirement for council intervention. Monitoring highlights trends in the way the buildings are either managed or neglected. A text record of THBs dates back to 1987 and in digital format from 1997. To date there has been no analysis or interpretation of trends in Threatened Historic Buildings. The data forms the basis for the THB Annual Report. Data are available for the whole of the Heritage Area.

Overall Condition Assessment assesses the condition and status of all other listed buildings beyond the THBs list. The recorded information focuses on the degree of threat as directly related to their current condition. Roofs and walls are assessed for spread, sag, weather penetration, stability, plumb and bulging. Each building is noted as occupied or not and additional comments and relevant actions are included in each description. There are currently 1794 listed buildings in the New Forest District from which those within the Heritage Area could be extracted. Buildings may come onto the list and others drop off the list. There is the potential to produce figures of totals and additions annually. Monitoring is ongoing with entry into the Access database. Grade 1 Threatened Listed buildings (THBs) are monitored annually with a percentage of grade II and II* monitored every year. The survey is currently described as for internal use only and gives an indication of trends and changes in structure grading which may prompt action.

The National Trust completed a comprehensive Archaeological Survey in 1997 of all their properties in the NFHA with a text and map report. The objective was to record the state and location of all archaeological features to minimise damage during future habitat restoration undertaken under the LIFE programme. There is a stated potential to repeat the study in ten years.

The Sites and Monuments Record (SMR) is a database of information on archaeological and historical sites and monuments and includes details of spot finds. The SMR employs a standard data format for recording details such as; location, record type, period, description and bibliography. The Archaeology Section at Hampshire County Council is responsible for compiling and maintaining the Hampshire County Sites and Monuments Record. The data is collected on an ongoing basis from a wide variety of sources and is maintained on a central database. The whole of Hampshire is covered by the database, but information relating to the NFHA would require extraction. The Museum and Library Service at Wiltshire County Council are responsible for Wiltshire's SMR. A collation of sites has been mapped for 1996 for the NFHA by Wessex Archaeology (Wessex Archaeology 1996). For historical reasons the

Wiltshire recording follows a different classification methodology to that adopted within the Hampshire SMR. Data is compiled in-house from a wide range of identifiable contributors. Again this data is continuously updated and is stored within a database. The data has been mapped, but not analysed and it is not currently in GIS format.

There is an apparent bias in the extent of the field surveys and investigations in favour of the north west of the Forest and of a bias towards particular types of site, such as the Roman pottery kilns. This is emphasised by the changing recognition of what constitutes archaeological sites and the ability to recognise these in the field as evidenced by Pasmore's comments in following the route earlier of Heywood Sumner in identifying boiling mounds which Sumner's recordings by-passed. The record may also be subject to bias by virtue of access and changing survival, particularly through agricultural land use change

The Royal Commission for Historic Monuments for England maintains the National Monuments Register (NMR). RCHME at the National Monuments Record Centre in Swindon is responsible for compiling and maintaining the National Monuments Record (MONARCH). The NMR is a computerised register of sites of archaeological interest across the whole of England. RCHME has been carrying out a programme of work in the New Forest which is nearing completion. The work has involved survey of selected sites, mapping previously unrecorded earthworks and updating the National Monuments Record for the New Forest. This information will also be added to the County SMRs. The Government have confirmed the planned merger of RCHME and EH (New Forest Committee, 1998d). At least theoretically, this should simplify data storage, availability and access.

The Historic Towns Survey funded by English Heritage is aimed at creating an understanding of the nature and extent of historic towns. This survey includes sites bordering and within the New Forest: Lyndhurst, Lymington, Ringwood and Fordingbridge. This data is regarded as a one off survey, with data being available in May 1999. The Rural Settlements Project is the junior version of the Historic Towns Survey addressing the smaller rural locations; the aim of which was to anticipate development pressure.

There are a significant number of scheduled monuments in the New Forest (about 160) on Crown land and it is intended that management plans should be available for all of them by the year 2000. Known archaeological sites have been identified within the Forest Design Planning process. Through the Monuments Protection Programme promoted by English Heritage more scheduled monuments are being identified within the Forest and hence the number of SAMs is increasing.

The New Forest Section of the Hampshire Field Club and Archaeological Society maintains a large register of archaeological features and supplies regular updates to the Forestry Commission's maps. All sites notified to the Commission are graded according to their importance and vulnerability to forestry work (New Forest Committee, 1998d). The New Forest Section of the NFCAS has also undertaken a review and survey of the archaeological features of the National Trust Commons of the New Forest, with records of damage and recommendations for management.

Conservation Areas are identified and defined by the individual local authorities. 16 Conservation Areas have been designated in the New Forest. Conservation areas are identified under the Planning (Listed Buildings and Conservation Areas) Act 1990 as area retaining a traditional built character worthy of protection and active management. Conservation areas may be relatively static in number although the boundaries of the sites may change from time to time and the changes are reflected within the revisions of the Local Development Plan proposals maps.

The 1996 the New Forest Committee commissioned Wessex Archaeology to undertake The New Forest Archaeological/Historical Landscape Character Assessment. The aim of this assessment was to identify the key archaeological and historic landscape elements that characterise the historic and cultural development of the New Forest. The report documents the archaeology and historical records from the lower Palaeolithic to the present and provides a

baseline collation of archaeological material. The review includes the SMR for Hampshire and Wiltshire, the National Monuments Record (RCHME), information from secondary sources, published reports, and unpublished information supplied by individuals. An additional report covers areas within the Avon Valley, between Ibsley and Burgate; including areas currently outside the Heritage Area. (Wessex Archaeology 1996). On the basis of landscape characterisations the work divides the Forest into eight areas of Archaeological and Historical Character. This survey is the most recent area-wide inventory of heritage and archaeology within the New Forest Heritage Area. Despite not providing a specific monitoring dataset this survey will assist with the interpretation of other monitoring and indicators.

At the national level the Monuments at Risk Survey of England 1995, (MARS survey) took a sample based approach to the assessment of risk of heritage and archaeological sites, of which sites within the Heritage Area were included. English Heritage and Bournemouth University undertook this transect-based survey on field assessment, documentary and SMR records. The survey indicates the categories of risk to site preservation and this may act as a focus for selection of sensitive indicators. At present there are no plans to repeat this survey, although the sample-based structure offers the opportunity for evaluations on a national scale or at a local scale, especially given the adjacency of the research team to the New Forest.

Historic Parks and Gardens also contribute to the heritage resource of the area. English Heritage maintains a Register of Parks and Gardens of Special Historic Interest with paper copies held by the County and district councils. The Hampshire Garden Trust has site files for other parks and gardens within Hampshire, with the view of creating a local register. The original Hampshire-wide study was undertaken in the early 1980s, and has been updated on an ongoing basis with sites being added and removed as condition dictates. The aim of creating the register was to conserve and protect these sites from development pressure. The Trust is targeting the New Forest District sites (approximately 107 sites) for which there are varying levels of research. The current text record is being entered into a database, linked to HCC GIS, which is hoped will be completed by 2001. The data are also contributed to the Institute of Archaeological Studies database in York, where it adds to the Doomsday database for all parks and gardens.

### 4.4.5 Indicators

A wide range of potential indicators for heritage and archaeology may be proposed, although the existing survey and monitoring may be limited, with bias and with a focus on the inventory of sites rather than specific indicators of change or trend assessment.

| Indicator | PSR | Data | Meaningful | Resonance | S.O. |
|---|---|---|---|---|---|
| **Number of conservation areas** | **S** | **Y** | **?** | **?** | **SO3.4, SO3.2** |
| **Listed building status** | **P S R** | **Y** | **Y** | **Y** | **RA3.5b** |
| **Number of SAMS** | **S** | **Y** | **?** | **Y** | **RA 3.5b, SO5.3i.** |
| **No of SAMS with management plans** | **R** | **Y** | **Y** | **Y** | **SO5.3i.** |
| **Land cover change** | **R / P** | **Y** | **Y** | **Y** | **RA3.5b** |
| **Planning response to archaeological sites** | **P / R** | **Y** | **Y** | **?** | **RA3.5b** |
| **Boundary lengths changes** | **R / S** | **Y** | **Y** | **?** | **RA3.5b** |

A lack of comprehensive survey and comparative historic survey may limit the potential for current indicators to identify trends. Recent area-wide surveys of heritage (Wessex Archaeology 1996) have not covered areas outside the Heritage Area making spatial comparative surveys of the effectiveness of protection within the Heritage Area difficult. Thus the expansion of existing survey may be an important objective to provide a baseline from which future assessments may be made.

A number of strategy initiatives (other than those of the Strategy for the New Forest) have considered archaeological and heritage indicators within the scope of sustainability criteria.

(DETR, National Park Corporate Financial Plan Indicators, County Structure Plan) and are considering indicators of heritage value. English Heritage is also attempting to establish national scale heritage indicators.

| **Potential indicator**: | **Number / Area of Conservation Areas (RA3.5b)** |
|---|---|
| **Units** | Number or area |
| **Type of indicator** | State |
| **Wider relevance** | National Parks Corporate Financial Indicators, also relevant to the strategic objective SO3.4, Built Environment and Landscape SO3.2. |

**Significance:**
Unlike listed buildings there are no national standards or grades of Conservation Areas and as a result there may be different criteria of classification between designating authorities. The use of the number of designated conservation areas is recommended within National Park grant allocations (Arnold-Forster, 1998) and is suggested to provide a measure of status.

Modifications to the area of designated Conservation Areas may be more likely to change than the number of areas since most of the architecturally important centres are already identified. Thus variation in the extent may be a better indicator of a changing level of site protection.

Measurement may be effectively made utilising geographic information system-based analysis or where changes are notified and co-ordinated centrally. Measurement of the Conservation Areas may be total area and/or area change as a percentage. The frequency of repeat analysis is capable of being conducted annually, although the rate of change may be such as to recommend a longer timeframe (c 5 yrs). The baseline can be set by the published Local Development Plan and the results viewed as changes within the period of plan revisions. If such an inter-plan resurvey is adopted it would be necessary to recognise the non-coincident development of plans between different authorities round the Forest and to ensure that data is updated prior to indicator reporting.

The nature of the recording of revisions may be obtained through overlay of data from different update periods. Such analysis needs to recognise a general rule of the importance of retaining datasets of different generations within the GIS, as part of the archives of baseline data.

**Data availability:**
Data is readily available within the partner organisations of the New Forest Committee. The data is also co-ordinated within the Hampshire CC GIS.

**Organisations involved:**
New Forest District Council, Salisbury District Council, Test Valley Borough Council, Hampshire County Council.

| **Potential indicator**: | **Listed Buildings status on the "at risk list"/Threatened Historic Buildings** |
|---|---|
| **Units** | Number |
| **Type of indicator** | Pressure /State/ Response |
| **Wider relevance** | National Parks Corporate Financial Indicators (RA3.5b)<br>SO3.5i. SO3.2ii. SO3.4. Protection and maintenance RA3.5b. |

**Significance**
Listed buildings are identified under the same legislation as Conservation Areas (Planning (Listed Buildings and Conservation Areas) Act 1990. The sites are graded and monitored. Those buildings that are under threat are registered on an "at risk list". Buildings may be under threat both from neglect and through alteration. The Monuments and Risk (MARs) project estimates 43% of standing building damage is through alteration. For use as an indicator, the

numbers may remain relatively stable but the monitoring report does indicate quality status (good/fair/poor).

Movement onto and off this "at risk" list provides some measure of the current state of the resource and might act as a response indicator. The baseline data against which the measure would be taken could be established from the date of the Strategy for the New Forest (1996) by investigating the annual status reviews. The condition assessment provides a more instructive indicator than number of buildings alone.

**Data availability:**
Data is readily available within the New Forest District Council Threatened Historic Buildings Overall Condition Survey. Date is collated annually within the Overall Condition Survey. Data is not currently collated within Wiltshire.

**Organisations involved:**
New Forest District Council, Salisbury District Council, Test Valley Borough Council

| **Potential indicator**: | **Number of Scheduled Ancient Monuments (SAMs )** |
|---|---|
| **Units** | Number, condition and threat assessment |
| **Type of indicator** | Response |
| **Wider relevance** | National Parks Corporate Financial Indicators (RA3.5b) (SO5.3i) |

**Significance:**
SAMs are legally protected for their national importance under the Ancient Monuments and Archaeological Area Act 1979. The number of SAMs is a recommended Corporate Financial Plan indicator that can be used in grant allocation for National Parks. It provides a simple measure of the state of archaeology, but is criticised as an insensitive measure of heritage value. The number of SAM sites increases as more sites become designated and thus is rather sensitive of the survey and evaluation input. This implies that these sites are more likely to be protected and more likely to survive better, hence a measure of SAMs really needs to be balanced with a more general measure of condition and threat to the overall archaeological resource. Scheduled monuments are also unevenly distributed, both in location and period represented and may be biased towards prehistoric and Romano-British periods within the New Forest. Thus sampled analysis of sites should consider the evenness of site distribution of SAMs in relation to other areas.

The Monuments Protection Programme (MARS 1998) reported increases in numbers of monuments identified within the NFHA. This may be a misleading measure where data collation is taken out of context of the survey. It is most important to consult widely on these issues interpreting the significance of any indicator.

**Data availability:**
Data is readily available via the Sites and Monuments Records maintained by the County Councils for the whole of the New Forest Heritage Area. There is no comprehensive review of the quality and condition of sites.

**Organisations involved:**
Wiltshire County Council, Hampshire County Council

| **Potential indicator**: | **Number of SAMs/Sites with management plans**. |
|---|---|
| **Units** | Number + percentage |
| **Type of indicator** | Response |
| **Wider relevance** | National Parks Corporate Financial Indicators, (RA3.5b) |

**Significance:**
This indicator is related to the development of Forest Design Plans and strategic monitoring by the FC, but applies only within the inclosures at the present time. It is intended that all SAMs on Forestry Commission managed land will have their own management plan by 2000. Half the sites have been completed to date. The performance of the Design Plan in meeting targets is externally monitored. However, the commitment to produce a management plan for all monuments on New Forest Crown land and compliance with the resulting plan would provide a longer-term indicator.

Sites outside the FC management do not have a formal system of management planning, although the system would be readily applied elsewhere. Further evaluation of the scope of recording may be required to extend such a system both to other sites and other categories of risk assessment.

Monitoring of the resulting management plan objectives is undertaken by the Forest Authority. This provides a useful indicator of maintaining the traditional character and conserving and maintaining archaeological features and the landscape settings suggested by the Strategic Objective SO3.5i.

**Data availability:**
Data is readily available within the partner organisations of the New Forest Committee. HCC and Wiltshire Archaeological Trust maintain records of sites. Data is currently restricted to the forest inclosures and would need to be extended to other Heritage Area sites to provide fuller coverage.

**Organisations involved:**
Forestry Commission, Hampshire County Council and Wiltshire Archaeological Trust, New Forest Section, HFCAS,

| **Potential indicator**: | **Land cover change** |
|---|---|
| **Units** | Percentage change in land cover classes, comparative area change based on adjacent areas, change classification and nature of change. |
| **Type of indicator** | Pressure / Response |
| **Wider relevance** | National Parks Corporate Financial Indicators Wider relevance to habitat diversity measures (RA3.5b) |

**Significance:**
Archaeological sites are subject to a wide range of threats. The Monuments at Risk Survey (MARS 1998) undertaken for English Heritage indicates five main hazards to the archaeological resource, with cultivation being the principle cause of piecemeal loss of sites, accounting for nearly 30% of loss by area nationally. There are archaeological implications associated with certain land cover changes (e.g. ploughing on previously uncultivated land) where there is increased likelihood that the archaeological resource is damaged.. Patterns of land use change do not necessarily measure heritage loss, but may act as an indicator of risk and threat posed to archaeological heritage. Changes categorised by land cover type offers a pressure indicator and can be based on remote, wide area survey - aerial photo or satellite image analysis. A sampling-based approach or the analysis of particular directions of change, e.g. heathland to conifers, or pasture to cultivation, could be used as a basis for spatial sampling.

Comparative assessment of landuse change within and outside the Heritage Area boundary, and potentially other administrative boundaries (e.g. Crown land) would provide a response

indicator measuring the success of Heritage Area policy in preserving the traditional character. The indicator relies on availability of land cover datasets that may be costly to procure. More detailed regional analysis would be possible if the Phase 1 habitat survey (HCC) were repeated. The digital format of this datasets greatly assists the capacity for analysis.

Broader national datasets are available within the Land Cover Mapping undertaken by the Institute of Terrestrial Ecology and offers a wider context for the analysis of change and the development of indicators.

**Data availability:**
A baseline dataset is available from HCC aerial photographic survey based land cover assessment, in GIS format. No repeat survey is scheduled, although an interval of 5 -10 years would be appropriate to indicate change. The Land Cover Map 2000 is available at resolutions of $25m^2$ and $1km^2$ and is due for publication in late 2000.

**Organisations involved:**
Hampshire County Council, Institute of Terrestrial Ecology.

| **Potential indicator**: | **Archaeological response to planning applications** |
|---|---|
| **Units** | Number of decisions relating to archaeological issues. |
| **Type of indicator** | Pressure / Response |
| **Wider relevance** | National Parks Corporate Financial Indicators, Planning control indicators for other sectoral interests (RA3.5b) |

**Significance:**
Archaeological reasons for refusal of planning applications are relatively uncommon, and thus may not be recorded as a reason for refusal despite being material considerations. Mitigation and positive management of archaeological sites in response to development pressure may be a more specific measure. The Association of Local Government Archaeological Officers (ALGAO) has text records back to 1993 at HCC of archaeological responses to development plans. Data is collated on a district-wide scale, but it may be possible to distil this for the Heritage Area. Wiltshire County Council maintains digital records for internal use.

Given a strategy promoting the protection of sites of heritage importance within the Heritage Area (SO5.3i) a more powerful measure of response is the comparative analysis of development decisions within and outside the Heritage Area. The measurement may be presented as the total number of sites or the ratio to the total number of planning applications within the area. Analysis of the values would be facilitated through GIS-based data recording permitting varied spatial query.

Despite the relevance of this measure the threat to the archaeological resource and potential are not all created by development pressures. Agricultural change (ploughing of previously unploughed areas) may be a more significant threat that may be missed by the tracking of planning decisions.

**Data availability:**
Data is collated at district level and co-ordinated at county level. Hampshire County Council has also been collating data within the Wiltshire section of the Heritage Area enabling a Heritage–wide assessment.

**Organisations involved:**
New Forest District Council, Salisbury District Council, Test Valley Borough Council, Hampshire County Council

| **Potential indicator**: | **Boundary lengths (hedgerows and banks)** |
|---|---|
| **Units** | Number and lengths |
| **Type of indicator** | State / Response |
| **Wider relevance** | National Parks Corporate Financial Indicators **(**RA3.5b) Indicator has relevance to the conservation status and habitat diversity indicators and landuse change. |

**Significance:**
Similar to the implications of land use modification to boundaries and hedges within a landscape are increasingly seen as a threat to the integrity of the heritage landscape. Monitoring of traditional boundaries (hedgerows, raised banks) may be reflective of the traditional character of an area. Within the Open Forest the changes in boundaries are rare, but within the wider Heritage Area these may be more frequent.

Monitoring of hedgerows and boundary changes is a proxy measure of the Hedgerow Regulations effectiveness in protecting important hedgerows. The background to the Regulations is a historic loss within England of 20% by length of hedgerows (equivalent 9,500km/yr) between 1984 to 1990 as surveyed by the DoE (DETR) Countryside Survey (DoE 1993). The survey methodology does not provide the resolution for assessment within the Heritage Area or variations within it. Despite limitations of this methodology at a more local level the availability of the Phase 1 habitat mapping offers the opportunity for more detailed analysis of land pattern change based on hedgerow length. There is no reliable coverage of historic banks and little recording even within the Crown lands.

The interval between such survey of Phase 1 mapping is uncertain, with no current commitment to either overflight or land cover analysis. Other sources of aerial photographic cover have been flown for the whole country and these would offer alternative sources.

Length of boundaries is a spatially varied measure and thus the detection of change in boundary length would need to be reported against a defined area and reported against a baseline boundary length. Local validation of the data is very likely to be needed, given the remote nature of the survey. Potential measures would be a proportion or ratio of past boundary length and/or condition. The boundary (hedgerow) lengths within the available data are not categorised in terms of the heritage or conservation status or condition of the feature. Additional survey would be required to attribute the boundary lengths to make analysis more effective.

**Data availability:**
Baseline data is available within the survey of land cover undertaken for the Hampshire County Council and covering the New Forest Heritage Area. Data is held in digital format in Geographic Information System. Repeat survey sources are needed to establish change.

**Organisations involved:**
Hampshire County Council and potentially other for ground calibration and condition surveys (e.g. Hampshire Wildlife Trust).

### 4.4.6 Recommendations

Two County Archaeological Offices hold records of archaeological finds and locations within the Heritage Area, although these are acknowledged not to be comprehensive. There is also a strong body of local archaeological experience built up within the New Forest Section, Hampshire Field Club and Archaeological Society members, which could effectively be drawn into the assessment of change and threat to the heritage resource. The increasing emphasis on setting management objectives and actions for archaeological sites (particularly within FE operations) offers the opportunity to extend the monitoring of pressures on sites and responses. There remains a problem in assessing those sites not already under some protective designation

and those sites where records are not co-ordinated. However, these problems familiar in archaeology where new finds, sites and reinterpretation may alter the perception of the significance of areas.

It is recommended that a model for condition assessment of scheduled monuments be devised by those concerned with archaeological monitoring within the Forest, such that this may be applied as a consistent condition survey. The management plans for SAMS within the Crown lands go some way to addressing this, but are restricted to scheduled sites. Issues of standardisation and systematics within such survey will be an important consideration.

Extension of archaeological survey and condition survey to outside the Heritage Area would provide the basis for assessment of effectiveness of strategy adoption within the Heritage Area.

The monitoring and indicator requirements for assessment of land use change further emphasise the advantage of repeat land cover assessment as the basis for a wide range of derived indicators.

### 4.4.7 References

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Pasmore and James, J. (1985) The New Forest and Heywood Sumner. New Forest Section, Hampshire Field Club and Archaeological Society.

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Wessex Archaeology (1996a) The New Forest Archaeological/Historical Landscape Character Assessment. Prepared for the New Forest Committee 4 vols.

Wessex Archaeology (1996b) The New Forest Archaeological/Historical Landscape Character Assessment. The Avon Valley - Ibsley to Burgate: an evaluation of the archaeological/ historical cultural associations in the Avon valley area within the New Forest. Report to the New Forest Committee, 2 vols.

## 4.5 Nature Conservation

**Strategy Objectives**

*S.O: To secure the conservation and enhancement of the New Forest habitats, by working with farmers, landowners and appropriate Government and non-Government organisations. [S03.3i]*

*S.O: To ensure that all sites meeting accepted criteria for international, and national designation are so designated and are protected and managed to conserve or enhance those features which gave rise to their designation. [S03.3ii]*

### 4.5.1 Introduction

A primary aim of the Strategy for the New Forest is: **To promote the conservation of the New Forest through the effective co-ordination of policy and action. [PA1]**

The ecological and biological variation and more broadly its relative state of preservation within the New Forest make the area of particular nature ecological significance for: its freshwater and marine habitats, ancient and ornamental woodlands and open habitats. Such diversity and the extent of the remaining semi-natural habitat within the Forest, together with its traditional management practices, has helped to preserve many nationally and internationally rare and scarce species. Many of these species retain their national strongholds in the New Forest. Forest habitats support significant proportions of many groups of organism occurring within the UK. Tubbs (1986) records that nearly half the species of moths, butterflies and beetles recorded for the UK occur within the Forest and 70% of grasshoppers and crickets occur here. The coastal areas, and particularly the mudflats and marshes of the Solent and inner estuaries, support internationally important wintering waders and waterfowl and important coastal breeding birds.

Much of the New Forest Heritage Area (580km$^2$) is recognised as being of ecological and biological importance, with a high proportion of the Heritage Area covered by nature conservation designations of both terrestrial and coastal sites. The European and national regulatory framework for conservation of protected species and habitats is summarised by Cox 1996[31]. The majority of the land within the Perambulation boundary is protected by Ramsar[32] status and as a Special Protection Area[33] (SPA). Some 287 km$^2$ is candidate Special Area of Conservation (cSAC[34]) comprising six Sites of Special Scientific Interest (SSSIs)[35]. The coastal zone, intertidal and subtidal area of the North Solent Shore is a National Nature Reserve and forms part of the Solent Maritime cSAC. The New Forest Heritage Area includes the New Forest SSSI (the largest single SSSI in southern England), with a further seven SSSIs outside the cSAC area. Numerous (around 250) Sites of Importance to Nature Conservation (SINCs) and Local Nature Reserves (LNR) are also identified within the Heritage Area boundary, identified by the local councils and the Wildlife Trusts.

The habitats and species of the Heritage Area are however under significant pressure from losses, land use changes, from changes in management practices and "natural" changes (e.g. spread of pine, bracken and rhododendron). Promoted by changing agricultural patterns and development policies the introductions of environmental schemes have sought to provide opportunities for more environmentally-aware land management regimes. There has also been significant enhancement of the resource input to nature conservation and positive ecological management within the Heritage Area. The Minister's Mandate (1998), which directs the management of the Crown Lands, has established conservation as the priority objective for Forest management within the Crown lands. Perhaps the most significant recent change has resulted from the New Forest LIFE project, which is seeking to restore or rehabilitate 40km$^2$ of the 287 km$^2$ within the candidate SAC area. This programme is linked closely to the needs of the Biodiversity Action Plan for Hampshire in reviewing the requirements for conservation and enhancement across a wide range of Forest habitats and species recognising the multiple requirements of forest management[36]. Although much of the management activity is focused within the cSAC area there are clear links to the wider Heritage Area where more mobile species do not recognise administrative boundaries.

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[31] *Cox, J. 1996 New Forest Rivers: Report to the Environment Agency from HIWWT Ltd.*
[32] *Ramsar Sites are identified as Wetlands of International Importance (under the Ramsar Convention).*
[33] *Special Protection Areas (SPA) are designated under the EC Birds Directive.*
[34] *Special Areas for Conservation are designated under the EC Habitats Directive -The Habitats Directive – The Conservation (Natural Habitats &c.) Regulations 1994 (SI N.2716).*
[35] *Sanderson, N, (1995) Corine biotopes and the Habitats Directive in Hampshire and the Isle of Wight, Unpublished report to the Hampshire Wildlife Trust.*
[36] *R.J. Putman and Langbein, J. (1999) Deer and their management in the New Forest: A consultation report to the Deputy Surveyor of the New Forest. This is a one of a number of reviews and management directed studies which aim to better understand the management of aspects of the Forest which influence the conservation, forestry and economy of the Forest.*

***Recommended Actions***

*Review present nature conservation information base and extend where necessary, making relevant information available to land managers. [RA3.3a]*
*Identify sites of nature conservation importance, taking steps to designate sites criteria. [RA3.3b]. see also RA3.10a*
*To secure funding and agree programmes for the management and enhancement of New Forest habitats, including implementing subject plans as agreed under the Declaration of Intent [R3,3c] see also RA3.14c*
*Develop a strategy for the restoration and re-creation of heathland In the New Forest [RA3.7a]*
*Work with landowners/ land managers to conserve and extend heathland, reinstating traditional management, where possible. [RA3.7b]*
*Raise awareness of the ecological importance of heathland and encourage local support for its conservation [RA3.7c], see also RA3.2b*
*Identify areas where major infrastructure has a deleterious effect on views across heathland and make information available to policy makers and developers. [RA3.7d], see also RA4.6b*
*To identify areas of important acid grasslands and meadows and work with landowners/land managers to secure their protection. [RA3.9a]*
*Support the designation of the coastline as a Special Protection Area for Birds/ RAMSAR site. [RA3.10a], see also RA3.3b, RA3.3c*
*Identify opportunities for enhancing coastal habitats. [RA3.10b]*
*Encourage the implementation of an integrated Coastal Management Strategy which includes policies to conserve the quiet, open landscape of the coastal fringe. [RA3.10c]*
Survey the extent and quality of the hedgerow resource within the New Forest and identify those in need of enhancement and protection [RA3.11a], see also RA3.2b
*Work with landowners/land managers to secure traditional management of hedgerows, restoring and replanting where appropriate. [RA3,11b]*
*Review present information base, adding to this through a survey of wildlife of enclosed lands, including the identification of wildlife corridors and use this information to create a supportive management regime [RA3.12].*

### 4.5.2 Why monitor?

A range of planning guidance assists the policy development within the Forest. Specific Government guidance on ecology and planning is set out in Planning Policy Guidance Note 9 (PPG9) The decision to give the Heritage Area National Park status for planning purposes extended the Planning Policy Guidance PPG 7 (The Countryside and the Rural Economy) guidance on National Parks to the New Forest. This guidance is reflected in both the District-wide policies and those specific to the Heritage Area within the Local Plans. The announcement in Sept 1999 that the Forest would have full National Park status will further alter the planning position.

Habitat and species selection of the New Forest as a **candidate Special Area of Conservation** requires the development of **a management plan.** The designation requires the protection from deterioration and damage, making repeat assessment of condition (against conservation objectives for the key species, habitats and targets levels) a primary requirement. Monitoring and condition indicators play an essential role in the assessment of the effectiveness of the designation for safeguarding habitats and species. Restoration and enhancement projects being undertaken as part of the New Forest LIFE project and inherent within the biodiversity objectives of agri-environment schemes also require monitoring of the attainment of the targets set[37]. The scope of some of the monitoring requirements associated with habitat and species management plans may be too detailed at a Heritage Area wide level, but offer insights into specific conservation targets[38].

The UK Biodiversity Action Plan and the Biodiversity Action Plan for Hampshire specifically aim to identify approaches to monitoring and target setting for both species and habitats for conservation and enhancement action. It is important that such measures are sensitive to both positive and negative changes in habitats and species. The Hampshire Biodiversity Plan. (HCC 1997) aims to set actions and targets for specific species and habitats. This has identified 776 species of concern and 444 priority species within Hampshire. Numerically these are concentrated on flowering plants (114) and insects (165). Priority species are those that are most in need of positive conservation management and include those species which are of national priority and other species of particular local significance by virtue of local decline, local rarity or particular local threat. Monitoring forms an integral part of assessing the progress in meeting the biodiversity targets.

Headline indicators are currently being consulted on by the DETR (Sustainability Counts 1999). These seek to identify a suite of measures of the health of the human and natural environment. Ecological indicators have been proposed based on national recording programme of wildbirds collated by the British Trust for Ornithology and the RSPB. Populations of 139 common, native wild birds are recorded from surveys and compared against a baseline condition of the populations in 1970 to provide an index of change.

Many of the indicators being proposed for the National Sustainable Agriculture Indicators project [see section 2] may also be seen as measures of the interaction and impacts of agriculture with the natural environment, its habitats and species. Thus monitoring of the natural environment may provide the basis for indicators of species and habitat diversity as well as agriculture pressures and responses.

### 4.5.3 Who is involved?

English Nature, Forestry Commission, District and County Councils, Environment Agency, Wildlife Trusts, RSPB, BTO, Local and National Societies and the National Trust[39], university researchers and individual naturalists,

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*[37] Mitchley, J., Burch, F. and Lawson, C. 1998 Habitat restoration project: development of monitoring guidelines, English Nature Research Reports No. 284*
*[7]. grazing pressure on enclosure ride-sides is being addressed by deer and pony management. Monitoring of the ride-side vegetation and the butterfly populations provide the indicators of effectiveness of the management policies. ınd local recorders include bird, butterfly and deer census groups, fungi*

***Habitat and species strategies***

*S.O To promote the conservation and enhancement of woodland for its historic, landscape, ecological and amenity value [SO3.6i]*

*SO To encourage the sympathetic management of woodland landscapes, increasing the broadleaved component, where appropriate and promoting measures to increase biodiversity. [SO3.6ii]*

*SO To maintain and enhance areas of heathland and extend where appropriate [SO3.7i].*

*SO To conserve and enhance wetland areas of importance to the traditional character of the New Forest [SO3.8i].*

*SO To ensure the sympathetic management of river corridors including the restoration of natural features where appropriate [SO3.8ii].*

*S.O: To conserve New Forest lawns as part of the traditional character of the New Forest, having regard to those lawns identified by English Nature as having a major nature conservation value, and to their value for grazing. [S03.9i].*

*SO To ensure the protection and sympathetic management of species rich meadows on the enclosed lands [SO3.9ii].*

*S.O: To conserve and enhance the coastal and marine habitats of the New Forest and maintain and improve their biological diversity.[S03.10i].*

*S.O: To increase the populations and distributions of uncommon and restricted species for which the New Forest is a stronghold. [S03.12].*

### 4.5.4 Existing Monitoring and Survey Activity

There is a very wide range of habitat and species survey and monitoring undertaken within the Forest reflecting the attraction of the area to ecologists and the specific roles of the management agencies, in particular the FC and EN. The Forest supports nationally important research sites and much of this research has been used to substantiate the selection of Sites of Special Scientific Interest. However, it is not always easy to establish for any particular location or for individual habitats or taxonomic groups what the history of current research and monitoring includes. There is a further differentiation to be made between monitoring activity and species recording, which although they may interrelate must be distinguished by their objectives[40]. Other monitoring survey may have very specific research aims, such as the Denny woodland transect, monitored sporadically over 40 years[41], and still maintained by the Biology Department of the University of Southampton or the research catchment on the Highland Water.

Environmental monitoring within the New Forest is generally not undertaken at the Heritage Area level and whilst considerable attention has been focused on survey within the New Forest perambulation, Crown Lands and Open Forest the wider elements of the Heritage Area are generally less well covered. Monitoring is undertaken both against specific target species and habitat management objectives and more generally for ecological survey of habitat. Areas of the New Forest are included within a number of national sampling programmes, both for terrestrial and coastal survey. The most significant (in scale) monitoring programmes are:

| *Data name* | *Source/s* | *Policy/Legislative Requirement* |
|---|---|---|
| Land cover classification (see section 2) | HCC | Parallels with land cover change based on agricultural statistics |
| Countryside Survey | DETR/ITE | Land cover change monitoring programme |
| Bird surveys | RSPB/BTO | Monitoring programme |
| Habitat Condition Survey an Biological Surveys | EN, FC, NT | cSAC Management Plan monitoring programme. |
| SINCs survey | HCC | Conservation objectives within Structure Plan |
| Hampshire Habitat Survey | HWT | Commissioned by local and county council |

The Royal Society for the Protection of Birds (RSPB) organises and undertakes with others the collection of bird data in the NF that contributes to national survey data. RSPB Surveys are based on stratified random surveys, on which a repeat survey can be based. The sampling area depends on the habitat, and for heathlands is based on a 1km$^2$ sampling size. There are national surveys of particular priority species within the New Forest of Nightjars (RSPB & British Trust of Ornithologists (BTO) 1991/92); Dartford Warbler (EN & RSPB 1994); Woodlark (RSPB, BTO & EN 1997). The data is managed within a database and for the Woodlark record is also within GIS, permitting the spatial distribution to be assessed. Repeat surveys are planned (Nightjars – in 2002, Dartford Warblers in 2004 and Woodlark in 2007). Coastal waterfowl monitoring counts are also undertaken. These figures have been key criteria in the designation of many of the intertidal sites within the Solent, which supports internationally significant proportions of a number waterfowl species.

Tubbs and Tubbs (1994) survey of breeding waders within the Forest (Curlew, Redshank, Lapwing) was based on a stratified sampling regime. The study provides a strong baseline and although there is no current commitment to repeat survey, there may be some potential to link

[40] *for example, Fungi of the New Forest: A Mycota. (Ed. Dickinson, G. and Leonard, A. 1996) represent an important contribution to fungal biodiversity recording but does not easily for the basis for repeat monitoring.*
[41] *Mountford, E.P. 1997 Stand change along the Denny inclosure transect 1956-96.*

this survey to the monitoring of the restoration of mires, being undertaken as part of the LIFE programme.

English Nature already undertakes Condition Assessment of SSSIs generally on an annual basis and reports the results against categories and cause of change to assess whether management practice is effective and whether the habitat is in favourable or unfavourable conservation condition. This survey judges the condition against the categories: destruction, part destroyed, unfavourable declining, unfavourable no change, unfavourable improving and favourable condition. This data is collected nationally and is thus able to provide a comparative monitoring base for England.[42] This data covers the six New Forest SSSIs, but is less effective in indicating changes within a site the size of the New Forest.

Under the New Forest LIFE programme English Nature and the Forestry Commission are developing a Habitat Condition Assessment monitoring methodology which will be used to report on the favourable or unfavourable conservation status of a site. This expands on the condition recording for the DETR applied at the national level for the assessment of SSSI condition. Within the New Forest localised factors and drivers of any condition change are also assessed for specific priority habitats and areas where specific restoration actions are being undertaken. Targets are set for the evaluation of the individual attributes that are being used to indicate the site condition. Baseline evaluation of the habitats and species has been employed to design the co-ordinated monitoring strategy. The methodology conforms to common standards set by the Joint Nature Conservation Committee (JNCC 1997) which assesses the Favourable Conservation Status of habitats and species and reporting will form an annex to the cSAC Management Plan. The cSAC Management Plan sets a monitoring agenda for c 20 years and is linked to a number of other initiatives with similar timescales, in particular to the Forest Design Plans. For the cSAC Management Plan, the New Forest has been divided into 315 Condition Assessment units based upon Forestry Commission management and ownership areas within the cSAC boundary. Currently, there is no sampling or evaluation within the wider Heritage Area (other than within SSSIs); although where habitats and features occur outside the cSAC (e.g. heath and mires at Landford Common, Bisterne Common and Lugden Bottom) these might use the same monitoring formats. Fuller explanation of the methodology is provided by English Nature (EN 1999).

The assessment determines the structure, function and integrity of the site and reflects the existing status, including the historic perspective. The information is collected on two levels. Level 1 monitors broad descriptive features, structure, quantity and quality descriptors of the primary habitats. Level 2 monitors features that comprise the rare species and plant communities. Monitoring is co-ordinated in a central database, English Nature's Site Information System (ENSIS) although not all the records for the modified approach adopted within the New Forest recording templates are reported in the national format. Indicators of both favourable and unfavourable condition are proposed.

Interpretation of the results will need to be cautious as the presence of species may indicate good conditions, but species absence may not necessarily indicate a poor condition within the habitat. The complexity of the New Forest SSSI means that some customisation is required and differing monitoring templates are used for different habitats (e.g. Dartford Warblers require monitoring of dry heathland, gorse). Condition Assessment is planned to be operated on a rolling 6-year cycle, but also to be responsive to adverse condition assessment results that may prompt more frequent sampling. There is a need to link Condition Assessment to other more detailed habitat specific monitoring programmes.

The second strand in the approach being adopted for habitat monitoring is the Validation Monitoring Programme and one-off or periodic species habitat surveys undertaken by the Forestry Commission, English Nature and the Royal Society for the Protection of Birds. These surveys include vegetation mapping and aerial photographs interpretation, repeated every 5 years; fixed point photography; fixed transect and quadrat studies repeated annually. It is important to note that this is a broad-brush scientific monitoring, however it is repeatable and

[42] http://www.english-nature.org.uk/start.htm

by the end of LIFE project there will be a full specification with the planned commitment to continue the programme. Biological recording will be related to Condition Assessment units, and there is an agreement between all organisations for data to be centralised within the HCC ecological database.

English Nature (1994) reviewed existing knowledge of land within the HA (outside the core SSSI) as part of The New Forest Heritage Area Survey which examined 136 meadow sites. This survey is significant in filling gaps in knowledge of the resource within the Heritage Area outside the Crown lands. This survey provides a baseline for continued monitoring, although there is no current commitment to repeating the survey. The sampling interval established within the assessment was to repeat the survey on a five-year cycle, although no repeat survey is currently programmed.

As part of the New Forest LIFE restoration project, there has been specific monitoring of a range of habitats and species. For example, recording of New Forest bogs (mires) has collected a range of parameters (water levels; stratified random samples for vegetation) and certain indicators have been identified for various aspects of the sites. All data collection under the LIFE programme will follow the monitoring protocols set by HCC. HCC will become the biological record centre, compiling information into a central database for LIFE projects.

Wiltshire Wildlife Trust only monitors the SSSI at Landford Bog within the Heritage Area. Data is analysed for the management plan and there is the aim of increasing repeatability and statistical analysis. Monitoring is focused towards the performance of heathers and moor grass. The parameters of measurement are: groundwater, monitored annually since 1993; EN bog vegetation quadrats, monitored every 5 years; NVC Survey of the open site; WWT quadrats for dry-heath restoration, monitored every 1-3 years; annually produced species list and casual recording of fauna; bryophyte monitoring; butterfly and orthoptera recording. This study could act as a pilot for monitoring grazing and heathland species relationships.

The Environment Agency is contributing to the Biodiversity Action Plans for species by monitoring species of concern within the aquatic and floodplain environment including otters, water voles, southern damselfly, and native crayfish. Action Plan targets are established from this recording. In addition, a New Forest Fish Survey was conducted during 1998 that acts as a baseline (with a programmed repeat in 2003). This survey was conducted along with a River Corridor Survey (RCS). Although the river corridor survey provides useful information of the river systems it is poorly adapted survey methodology to repeat survey. Other, more comprehensive freshwater invertebrate and fish survey is being undertaken as part of a research thesis at the University of Southampton (Langford 1999[43]). Species, numbers and habitat location are being recorded. Wider national survey using the River Habitat Survey methodology[44] (RHS) developed by the Environment Agency may provide a better approach to the assessment of the quality of river habitats, and has similarities to the Condition Assessment methods for other habitats. The RHS methodology is part of a national sampled survey and thus provides the basis for national comparisons to be made. Data are identified by grid reference and thus there is the potential to make assessments against a range of boundaries, e.g. within National Parks, within Hampshire etc.

Hampshire County Council undertakes and commissions recording and monitoring of Sites of Importance to Nature Conservation (SINCs). SINCs are non-statutory sites of conservation interest. The last survey was in 1996 with the plan to resurvey in ten years time. This data is managed on Hampshire County Council's GIS. Wiltshire's SINCs are allocated on slightly different selection criteria, although they still represent sites of conservation value. Hampshire County Council have the potential to include the portion of Wiltshire County Council sites within their GIS system to provide an area wide coverage.

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[43] *T.E.Langford is studying the invertebrate and fish populations of the New Forest streams in relation to in-stream habitat feature, debris loadings. In prep. These surveys may form a more comprehensive dataset than the earlier EA data coverage.*

[44] *Environment Agency 1998 River Habitat Quality: the physical character of rivers and streams in the UK and Isle of Man. Environment Agency, SEPA, Environment and heritage Service, NI.*

The Hampshire County Council land cover survey based on aerial photograph interpretation for 1995 covers for the whole of the Heritage Area. This survey is equivalent to a Phase 1 survey (NCC 1990). The broad ranging monitoring potential of this survey method goes a long way in meeting the landscape monitoring objectives of the Strategy for the New Forest. The survey also has wider relevance to habitat change monitoring. The data provides the basis for a wider comparative assessment enabling distinction between the Heritage Areas and areas outside the New Forest. There are concerns over the quality of the discrimination of the habitats (particularly the valley mire and flush communities) within the Open Forest that will need to be addressed before this data can provide a robust monitoring tool. The digital (GIS-based data) is being validated and updated by the Hampshire County Council and the Forestry Commission within the New Forest. Earlier mapping ('Clark and Westerhoff') of the Open Forest covering some 200 $km^2$ is considered to be of higher quality (EN 1989). This data has recently been incorporated into the Forestry Commission and HCC GIS. The ground survey was undertaken at 1:10,560 and provides a more accurate habitat classification than the HCC aerial photographic interpretation, although it is few years older and has smaller area coverage.

At a national level the Land Cover Map 1990 (LCM1990) (Barr et. al. 1993) is relevant at least as a comparator to the HCC Phase 1 survey. This survey was based on field and Landsat Thematic Mapper satellite data analysis and interpretation, and repeats surveys undertaken in 1978 and 1984. A new survey undertaken in 1998-1999 is currently being analysed (LCM2000) and provides a long-term context in which to identify landscape and land cover change relevant to both habitat and landscape measures. The land cover classification codes of the Phase 1 overlap with those of the LCM2000 and comparison of the categories indicates a good correspondence with heathland and grassland features. Data within the LCM1990 is usually presented at $1km^2$ averages but with the raw data available at $25m^2$ interval. Existing reporting of land use change from these statistics between 1978-1984 and 1984-1990 has been presented for Great Britain as a whole. There is further potential to sample the data more closely within the New Forest Heritage Area boundary and within the surrounding areas.

A Hedgerow Survey was co-ordinated by HCC, with a service level agreement from the District Councils, thus giving full NFHA coverage. Hedgerow applications under the Hedgerow Regulations have been monitored since 1997 to assess performance against the legislation. The limitation is that permission for hedgerow removal is not always required if it forms part of development, thus there is the potential to undercount features lost. The land cover mapping also includes some categories of hedgerows, although the classification of ancient hedgerows (under the terms of the Hedgerow Regulations) is currently limited to two Forest parishes.

Of particular significance within ecological recording, monitoring and the reporting of indicators is the analytical capacity represented by establishment of the Hampshire Biological Record as part of the National Biodiversity Network[45]. The Hampshire Biological Record is co-ordinating ecological data including ongoing habitat surveys directed by Hampshire Wildlife Trust and funded by Hampshire County Council, English Nature and the District Councils. The integration of this record with geographic information offers the opportunity for assessment of change in species abundance and distribution. This approach has traditionally been presented as changes in abundance within recording divisions of 1 $km^2$ but may now be related to natural areas or habitat types.

Hampshire Wildlife Trust has undertaken many of the wide-area ecological surveys within the area. The Hampshire Habitat Survey Project managed by the Trust has undertaken consistent survey within the County for a number of habitats. Unfortunately, little such survey has covered the New Forest Heritage Area. However, a number of specific surveys have been undertaken in recent years, e.g. the Field Boundary Conditions survey carried out in 1994 at the request of NFDC. Using LUC landscape units, this is a relatively cheap and effective study and there is the potential for repetition. An Ecological Survey of Lichens provides an extensive study of

[45] *The Biodiversity Network is a national initiative under the UK Biodiversity Action Plan. It aims to co-ordinate access to biological data held within the many recording organisations in the UK The Biological Record in HCC would form part of this Network drawing together the range of information held by other groups within the County*.

individually mapped trees supporting significant populations of lichens which have been mapped in relation to the changing regimes of holly cutting and the proposals for restoration of pollarding. The Lowland Woodland Survey coverage is for all of the area of the cSAC, Crown lands and selected other areas. All data are maintained in digital format.

The National Trust have undertaken biological surveys of heathlands and grazing pressure, bracken monitoring, and keeping account of the number of volunteer days per annum covering land managed by the National Trust. The scope of these surveys is identified below. Biological Survey forms part of a National Survey recording habitat type and notable species. The first survey was carried out in 1991/92, and with an interval of 10 years the next is due in 2001/2. There is full coverage of the National Trust areas within the NFHA, with the data stored in paper and digital format. It is intended that this information will eventually feed into the cSAC/LIFE Condition Assessments.

Heathland and Grazing Pressure Monitoring is a biannual survey conducted by the National Trust most recently completed in 1998. Using quadrats representative of the grazing area, percentage cover and the number of plants are recorded. Monitoring is carried out in the three NT properties at Bramshaw, Hale and Hightown and a long-term monitoring programme is planned. Bracken Monitoring is carried out in connection with the New Forest LIFE project. Fixed-point photography will be used to monitor the rates of bracken growth in relation to different management practices. This survey was started in 1997 and is seasonally fixed for comparative purposes, covering all NT properties in the NFHA. Other repeat photographic monitoring is undertaken of all NT boundaries to monitor any encroachment, although this is carried out on a casual basis. Monitoring of volunteer days for all properties can be reported on annually from 1990. This data is as currently as text records.

### 4.5.5 Indicators

There is a wide range of potential indicators for nature conservation reflecting the wide range of elements that make up the special character of the Forest wildlife and conservation status. In the biological sense indicator species may be used as a way of identifying the community and the quality of a site, but where species are sensitive to changes they may also provide the basis for assessing change in the habitat.

Potential indicators are summarised below.

| Indicator | PSR | Data | Meaningful | Resonance | S.O. |
|---|---|---|---|---|---|
| **Sites under protective designation and/or conservation management** | **S/R** | **Y** | **Y** | **Y** | **SO3.3ii.** |
| **Area of habitats and extent of key habitats under cSAC** | **S / P** | **Y – but requires validation** | **Y** | | **SO3.3i.** |
| **Damage to protected sites** | **P** | **Y – multiple sources require collation** | **Y** | **Y** | **SO3.3i.** |
| **Species and habitats with action plans** | **R** | **Y – requires collation** | **Y** | **Y** | **SO3.3i. SO3.12** |
| **Habitat Condition Survey – Monitoring for the cSAC Management Plan** | **S / R** | **Y – methodology under development, partial coverage.** | **Y** | **Y** | **SO3.3ii. all SO's for conservation** |
| **Area of habitat restored, rehabilitated or recreated** | **R** | **Y/N – no specific recording structure for much of the data** | **Y** | **Y** | **SO3.3i. SO3.8ii SO3.7i.** |
| **Biodiversity - priority species changes** | **P / S** | **Y-** | **Y** | **Y** | **SO3.3ii. SO3.12** |

| **Potential indicator**: | **Sites under protective designation and/or conservation management.** |
|---|---|
| **Units** | Value of management input. Area in hectares or percentage of HA – classified by designation/scheme type and total, alternative measure may be value where aggregated sums may be disclosed. |
| **Type of indicator** | State / Response |
| **Wider relevance** | National Parks Corporate Financial Indicators, landscape and heritage indicators. Cross-references to forestry, landscape and agricultural sustainability. Potential indicator of biodiversity. SO3.3ii. |

**Significance:**
This indicator evaluates the area of land under protective environmental designation or conservation management. Roughly 80% of the Heritage Area has some form of statutory or non-statutory conservation designation. The wide range of protective designations for conservation also extends to heritage and landscape designations. Both statutory and non-statutory designations are relevant and this status might form a suitable dividing criterion for reporting the management. The indicator could be extended to include results of directed management for conservation, landscape, heritage and access (e.g. agri-environment schemes - Countryside Stewardship[46] and Wildlife Enhancement Schemes[47]). Potentially, Forestry Commission administered Woodland Grants might be included, where the conservation management objectives of the Strategy are met. Hampshire County Council also operates a number of grant schemes for selected habitat management and conservation tasks (woodland management, heathland restoration, hedge management and planting, grassland restoration, coastal wetland and pond restoration)[48] within the county. The area currently being targeted by the LIFE programme would also be eligible for assessment. Most of these sites by number are in private ownership, although by area the New Forest SSSI/SAC dominates and therefore it may be appropriate to report the indicators both including and excluding the New Forest SSSI area.

Measurement may effectively be made annually given suitable update of information; utilising geographic information system based analysis. Measurement may be total area and/or area change as a percentage. Comparative assessment with areas outside the NFHA may also provide a suitable measure of response. The frequency of repeat analysis is capable of being conducted annually, although the rate of change may be such as to recommend a longer timeframe (c. 2 yrs).

Careful filtering of the results will be required to prevent the potential of double counting of areas where a site is under a number of different consecutive management schemes or protective designations. Denotifications are also relevant to consider as an alternative or additional measure which could be derived from the same data, and might be categorised on the basis for denotification.

**Data availability:**
Data is readily available within the partner organisations, but is generally co-ordinated within the Hampshire County Council GIS, as areas and site designations and within English Nature's Site Information System (ENSIS). Data would require collating if the methodology were extended to non-statutory sites. Other sources such as MAFF agri-environment (via FRCA) and FC woodland schemes will need to be collated.

**Organisations involved:**
New Forest District Council, Salisbury District Council, Test Valley Borough Council, Hampshire County Council, Forestry Commission, FRCA, English Nature, National Trust, HWT.

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[46] *Countryside Stewardship scheme is operated by MAFF targeting heathland restoration, traditional management of meadows, hedgerow management and river and*
[47] *Wildlife Enhancement Schemes are operated by English Nature to promote management within SSSIs*
[48] *HCC 1998 Countryside Management in Hampshire Sources of Grant Aid – provides advice on HCC and other countryside grant schemes.*

| **Potential indicator**: | **Area of habitats and extent of key habitats under cSAC designation / within the Heritage Area** |
|---|---|
| **Units** | Area and changes in area. |
| **Type of indicator** | State /pressure |
| **Wider relevance** | Relevance to a wide range of potential indicators including landscape structures, pressure and response indicators on habitats or forested landscapes. SO3.3i. |

**Significance:**
The definition of habitats is related to the resolution of the survey, with field based survey able to offer a greater degree of classification confidence at a higher resolution than aerial data interpretation. The derivation of the data source needs to balance coverage with the repeat cycle of costs of data acquisition, taking full account of the multiple uses of a land classification map. Land cover classification from aerial imagery must be accompanied with a degree of field checking to ensure that the extent of error is quantified.

Indicators may be simply the extent of or proportion of classified habitats, however a number of ecologically-meaningful measures may be developed from the basic habitat cover data source using various landscape ecology measure. Landscape metrics are quantitative measures that seek to describe the spatial structure of the landscape and to link these to ecological processes. A wide range of such landscape measures have been designed, often with the objective of enhancing biodiversity through forest design[49], although the association with ecology may not be fully understood. However, many of the fundamental components of these measures have been shown to be linked to species diversity through habitat diversity and habitat availability through patterns of area, edge, shape, connectivity and fragmentation. Through the use of such assessment techniques it is possible to present habitat suitability maps, introducing an element of predictive landscape ecology of particular significance to management[50].

A number of land cover maps offer a range of potential data sources for the indicator including the Clark and Westerhoff maps, Forestry Commission Open Forest and Stock maps and the HCC aerial land cover classification. The various dates and scales provide some challenge in making comparison. The different techniques for capture and the different formats of the data recommend different scales of use, but quality checking is needed to provide confidence in the validity of indicators based on repeat survey.

Comparative values for habitat change may use existing past surveys to analyse change, such as comparison between the Clark and Westerhoff map and the Phase 1 habitat survey, given suitable aggregation of classes. The Countryside Survey 1990 offers the opportunity for wider comparison of habitat areas within the Heritage Area with areas outside and within regional and protected area trends. The measures may be relatively insensitive and require interpretation of the impact and consequences of particular directions of change.

**Data availability:**
Land cover data is available for the whole of the Heritage Area. A number of analytical tools linking to GIS are available to assist with landscape structure and pattern analysis (landscape ecology) calculation. Further assessment is needed in testing analytical approach for their ecological resonance and meaningfulness.

**Organisations involved:**
Hampshire County Council, District Councils, English Nature, Forestry Commission.

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[49] *Haines-Young, R. and Choping, M.1996 Landscape Indices: Implications for Analysis and Design of Forested Landscapes. Report to the Forestry Commission*.

[50] *Gurnell, A. Edwards, P.J. and Hill, C.T. The effects of management on heath and mire hydrology: a framework for a geographic information systems approach. In Haines-Young etal 1993 Landscape Ecology and GIS. Taylor and Francis. This paper examines open forest habitat management and prediction of hydrology within the New Forest.ie using vegetation cover as a surrogate measure for catchment scale hydrological events.*

| **Potential indicator**: | **Damage to protected sites** |
|---|---|
| **Units** | Number classified by nature of damage and location. |
| **Type of indicator** | Pressure |
| **Wider relevance** | Annual reporting by English Nature related to SSSIs.<br>Relates also to the Habitat Condition Assessment and as a comparator for national status. Potential broad indicator of the impact on biodiversity. |

**Significance:**
Whilst the biodiversity of sites cannot be precisely associated with the designation of the sites of conservation interest, the guidelines for the selection of SSSIs integrate a number of criteria which reflect the overall diversity status. In this manner the selection of sites (and in particular SSSIs) are associated with their own indicators of quality. Generally, the recording and monitoring of damage is more readily applied to smaller sites so that the impacts are more closely related to individual site components. The size of the New Forest there may be several separate adverse impacts that degrade the site, but the detail is lost in summing for the whole area. It may be more appropriate in such locations to summarise the impacts on a classification of the impact character.

Whilst not applied in quite the same manner for non-SSSI sites there is still the opportunity to use the same methodologies for other conservation sites, including international and local sites.

**Data availability:**
Historic and annual update surveys available from English Nature (SSSI and other EN designated sites). No consistent coverage is available for other conservation sites (e.g. SINC's etc). Currently data are not widely available and comparability is questionable due to varied definitions of what constitutes damage.

**Organisations involved:**
English Nature, RSPB, BTO and others

| **Potential indicator**: | **Species and habitats with action plans** |
|---|---|
| **Units** | Percentage of those species / habitats identified as threatened and with action plans. |
| **Type of indicator** | Response |
| **Wider relevance** | UK Biodiversity Action Plan and Hampshire Biodiversity Action Plan monitoring.<br>Biodiversity Challenge |

**Significance**:
The Biodiversity Challenge (Biodiversity Challenge 1995) consortium of conservation organisations identified indicators for habitats and species based on: setting target levels, the extent to which these are covered by action plans, the extent to which these plans have been implemented and the percentage of the targets within the plan that have been met. Within Hampshire 40 species were identified by the Biodiversity Challenge. The same approach is achievable within the context of a larger number of habitats and species within the Hampshire Biodiversity Action Plan.

A significant number of habitats and species have national and local status identified as national priorities and Biodiversity Challenge Species. A series of criteria have been developed by the Hampshire Biodiversity Partnership to select priority species[51] within Hampshire. These priorities are identified from a wider range of priorities set at national level. Of 37 UK habitat types 18 habitats are of particular conservation concern in Hampshire and 3 habitats are of local concern. In Hampshire of the 776 species of concern 444 are of priority status. These

[51] *Hampshire Biodiversity Partnership 1998 Biodiversity Action Plan for Hampshire Volume One.*

priority species are those which require conservation action and thus are the first targets for action plans. Species within the New Forest include the slender cottongrass *Eriophorum gracile* (a nationally rare species), the southern damselfly *Coenagrion mercuiale (*which has declined within the New Forest) and the Hampshire purslane *Ludwigia palustris (*which has a significant proportion of the GB population in the New Forest).

Most species are considered to be covered by wider habitat action plans either prepared at local or national level. In some instances particular species will require their own action plans by virtue of specific habitat needs or particular threats to the populations. The number of habitats and species with action plans provides a measure of the effectiveness and scale of response to the concern for the New Forest biodiversity.

**Data availability:**
Data is generally widely available for some habitats and some species. Data is available within the Biological Record Centre of HCC and the Hampshire Biodiversity Partnership.

**Organisations involved:**
English Nature, Hampshire County Council, Wiltshire County Council, Wildlife Trust, RSPB/BTO, and local ecologists. Hampshire Biodiversity Partnership.

| **Potential indicator**: | **Habitat Condition Survey** |
|---|---|
| **Units** | Condition statement – favourable and classes of less favourable and unfavourable status, part |
| **Type of indicator** | Pressure / Response |
| **Wider relevance** | Monitoring and indicators for the cSAC Management Plan. SO3.6i.-ii., SO3.7i., SO3.8i.-ii. Relates closely to national monitoring and indicator targets for DETR. |

**Significance:**
Habitat condition monitoring offers the opportunity to develop a consistent and tested indicator of the status of the surveyed areas. The sampling approach to be undertaken permits the coverage of a variety of habitats and the survey technique does not always require extensive ecological expertise. The methodology could be further developed to extend outside the area of the SAC boundary but would require further assessment of the features to be monitored, the criteria and target levels which define favourable condition. The approach could be extended to include different habitats including agricultural areas, but would require evaluation of the features to be monitored, the conservation objectives and the values that determine the site condition.

Reporting is being collated by English Nature in digital database format and would allow reporting and analysis of appropriate measures of the conditions within specific habitats or specific monitoring units. Although EN assesses the data using ENSIS, extension to wider areas which have no specific designation and for which English Nature has no management concern may introduce the requirements for evaluation outside ENSIS.

The Habitat Condition Survey seeks to assess and report on the status of sites and by setting values which initiate concern, through setting trigger levels or presence and absence criteria. The establishment of criteria and levels will require further evaluation at local level and it is possible that the actual attributes monitored may change. There is some potential for overlap between Condition Assessment and measures of damage to other protected sites.

**Data availability:**
Little data is currently available although there is commitment to a first survey in 1999, which would form the baseline for future comparison. Subsequent to the LIFE programme English Nature aim to undertake the repeat assessment on a six-year time cycle.

**Organisations involved:**
English Nature, Forestry Commission and others land managers within the New Forest.

| **Potential indicator**: | **Area of habitat restored, rehabilitated or recreated.** |
|---|---|
| **Units** | Area of work, value of works and percentage against programmed annual targets and classified by the habitats restored. |
| **Type of indicator** | Response |
| **Wider relevance** | Most of the Strategic Objectives within the Strategy for the New Forest emphasise enhancement of the features that provide the status to the Forest**.** Has clear links to financial indicators**.** SO3.3i., RA 3.7a SO3.8ii. |

**Significance:**

Within the plans for various aspect of New Forest management are proposals for restoration, rehabilitation or re-creation of areas which have become degraded or have lost much of their intrinsic ecological value. Such initiatives are already underway for New Forest mires, and Mediterranean ponds, and proposals have been made for restoration of sections of channelised rivers and coastal habitats. The Forestry Commission Stewardship statement[52] records that 22 ha of rhododendron have been cleared, 66 ha of exotic trees felled, 356 ha of bracken and 692 ha of pine seedlings cleared. Monitoring of these schemes would provide a response indicator of positive land management for ecological enhancement. Such approaches have been taken within the scope of the environmental management under the New Forest LIFE project[53]. Target areas for the restoration projects under LIFE cover over 10% (3,125 ha) of the area of the cSAC to which the management applies (2,8715 ha). Further proposals have been put forward for sections of river channel restoration or rehabilitation in those Forest rivers that have been channelised in the past. Similar initiatives have been undertaken outside the Heritage Area

These measures meet specific Recommended Action RA37i within the Strategy for the New Forest to restore heathland, and to restore river channels [SO3.8ii], but may extend to the wider Strategic Objective SO3.3i, to enhance New Forest habitats. Specific management for habitat restoration appears within the Forest Design Plans discussed under Forestry, but has parallels with the biodiversity initiatives. Generally Open Forest management tasks, many of which have ecological and grazing objectives, are also recorded on an annual basis and may be appropriate tasks to add to the evaluation. The Forestry Commission collate management records and hold past management records for swiping, pine clearance, heather/gorse burn and cutting. These data are organised within the GIS-based Heathland Management System. Evaluation outside the Crown lands is more problematic although the Environment Agency undertakes some watercourse restoration and recording.

Conservation targets for land management tasks within the Crown lands may also be monitored against expenditure and percentage completion against target actions. For example, in the LIFE programme it is possible to provide an indicator based on the costs of programmed rhododendron removal, post-treatment and to provide a performance indicator as the percentage of the target area completed.

**Data availability:**
Data are available from within the agencies responsible for restoration undertaken under the auspices of the LIFE project, although there is currently no co-ordinated recording other than of financial information. The Forestry Commission plans to add the recording of the areas of LIFE management programmes to the Heathland Management System database and GIS, which will provide a more readily accessible dataset. Little other restoration or rehabilitation has been undertaken outside this programme, however wider restoration within the Heritage Area has been proposed and central co-ordination of the recording should be encouraged.

[52] *Forestry Commission 1999 Forestry Commission Stewardship Report for the Crown lands of the New Forest 1998-1999*
[53] *New Forest Life Partnership 1997 New Forest LIFE Project*

**Organisations involved:**
Forestry Commission, English Nature, Environment Agency.

| **Potential indicator**: | **Biodiversity priority species changes** |
|---|---|
| **Units** | Populations, density etc (either represented at the 10km square basis or Heritage Area wide basis). |
| **Type of indicator** | Pressure / State |
| **Wider relevance** | Associated with Hampshire Biodiversity Action Plan and the Southeast Regional Biodiversity Audit, UK Biodiversity Programme[54]. The Local Biodiversity Action Plans also provide input to the Local Agenda 21 initiatives within the Councils. Biodiversity measures have further wide-ranging input to other plans, local plans, LEAPS, transport and New Forest Management Plans. Also associated with the cSAC management plan for priority species. |

**Significance:**
The Hampshire Biodiversity Action Plan identifies 196 national priority species within Hampshire. The basis for these priorities is set out in the Hampshire Biodiversity Action Plan 1997. Species monitoring will be co-ordinated by the Hampshire County Council within the Hampshire Biological Record. Reporting and presentation of these figures will be possible by site-based query from this database/GIS system.

The full nature of the recording and the repeatability of the measures has not been established for all species and relies on the formulation of the species action plans. The concept is similar to indicator species identified by Tubbs (1986) as those being sensitive of the condition of the Forest habitats. Of the birds identified as priority species a number are currently monitored by RSPB, but the monitoring of the other groups, reptiles and insects is not undertaken consistently. The species which form the selection criteria within the cSAC designation are also identified within the BAP, in particular the Southern damselfly, Early gentian and the stag beetle.

Indicator species need not be restricted to the BAP species if the species chosen are sensitive to habitat changes, although scarcer species tend to be more readily identifiable as being sensitive to changes. Moore (1962) proposed ten species (as five pairs) as indicators of lowland heathland condition within Dorset (e.g. Dartford Warbler and Stonechat, *Erica ciliaris* and *Erica tetralix*). The species pairs reflected the survival within heathland habitats and the losses based on changes in landuse, e.g. agricultural conversion, afforestation and clear-felling. Similar approaches might be applied within the New Forest heathlands, but selecting species pairs more characteristic of the area. Webb (1994) considered other species that might be reflective of change in heathlands, which although within Dorset may be relevant to the New Forest heathlands.

Whilst monitoring individual 'indicator' species and using them as measures of the overall health of the Forest may be criticised as ignoring the complexities of ecological associations, with careful interpretation they offer a pragmatic trigger for further survey. These concerns suggest that such indicators should not be used in isolation, but in tandem with monitoring of the factors that either promote or disturb the populations. This approach is complementary to the Condition Assessment recording. Heavy reliance on indicator species also runs the risk of promoting narrow management activities focused on these species, rather than taking a more integrated view of community / habitat management.

[54] *HMSO 1994 Biodiversity: the UK Action Plan*.

**Data availability:**
Data on species in Hampshire is held within the HCC biological records centre. There is the potential to record and compare between periods using historic archives, and to examine the potential changes in distribution and abundance.

**Organisations involved**:
Hampshire Biodiversity Partnership, HCC

### 4.5.6 Recommendations

A wide range of potential environmental indicators exist and ecological data is collected widely across the New Forest, although there is a definite concentration within the Crown lands since most of the monitoring is conducted by the Forestry Commission or by the English Nature within the SSSI. Monitoring activity is being expanded to encompass the requirements of habitat and species monitoring for the cSAC. All the above potential indicators are seen as achievable in data collation and evaluation terms, being part of existing programmes, although extension and co-ordination of same aspects of the data is necessary. Close liaison should be maintained with Hampshire County Council as a Biological Record Centre. Reporting for the Heritage Area would promote the incorporation of Wiltshire records within the GIS and database systems in Hampshire.

It is recommended that the Country Agencies and the Forestry Commission review their various previous surveys and recommendations for repeat survey. For example, the objective of the Meadows monitoring against the 1994 baseline is overdue to provide assessment of change. Monitoring would benefit from an established repeat cycle for such survey, making best use of existing baselines rather than necessarily creating new baselines with no commitment to long term survey. Rationalisation of these approaches should be undertaken in the light of the emerging Biodiversity Action Plans for habitats and species to effectively target realistic and resourced monitoring activity. New commitment to repeating and reporting on the results is needed, but might effectively form part of the BAP and the Habitat Condition Assessments.

A wide range of potential indicators has been identified and many can be provided as suites of indicators from relatively few datasets. The opportunity for semi-automated calculation using database and GIS query may enhance the availability of information and co-ordination of the information within the Biodiversity Network would provide an appropriate archive mechanism. However, further work is needed to refine indicators of biodiversity and ecological processes. The EU-funded Hampshire County Council biodiversity indicator programme aims to develop these aspects. Liaison and consideration of the outputs from this project is recommended.

Further assessment of analytical approaches to handling land cover data (landscape ecology) is recommended to provide input to a wide range of ecologically-meaningful indicators for the Forest. The use of this data is discussed in more detail under the landscape section. These methods offer great potential for the description of ecologically important parameters, landscape and forest design responses. Associated with this development must be an assessment of the quality of the existing data for the New Forest.

The Habitat Condition Assessment methodology appears to offer a co-ordinated and cost-effective structure to indicators of the SAC habitats and species. Extension of the Habitat Condition Assessment methods to areas and habitats outside the Crown lands would provide an integrated methodology for the whole of the Heritage Area, although specific baseline data and habitat evaluation of the areas may be needed to establish the features to be monitored. Further investigation of this approach is recommended together with mechanisms to integrate the data with that to be held in English Nature's Site Information System (ENSIS) or an equivalent local recording system that accommodated the Forest-specific records.

It is recommended that the assessment of damaging operations currently undertaken for SSSIs be extended by the local councils to the areas of non-statutory designations which they have identified, and in particular to SINCs. This would provide information for a wider area of the Heritage Area. Data should be sent to HCC for collation and entry into their GIS/database. Further extension of the recording of the Condition Survey could be extended also to non-

statutory sites. There are parallels with the Condition Assessment and co-ordination of the survey approaches might be possible although precise details may vary.

It is recommended that the recording of SINCs be enhanced to bring those sites within Wiltshire, within the Heritage Area into the Hampshire County Council GIS system, thereby facilitating reporting at an area-wide basis. Further co-ordination of linear habitat monitoring would be valuable in providing area-wide attributed data on features like rides, banks, field boundaries and hedgerows. Existing survey work within SINCs has no standard methodology and no agreed repeat cycle that may act as a barrier to the effective use of the records as indicators.

It is recommended that the NFDC undertake further survey employing the same methodologies as in the Hampshire Habitat surveys conducted by the Hampshire Wildlife Trust for areas outside the Crown lands. The lack of such sources at present limits the ability to make habitat comparison on a wide area basis.

Interpretation and explanation of patterns within indicators may rely on the research understanding of the likely directions of change. There is currently a lack of recording of research activity that may assist in this process. It is recommended that those bodies that licence research and monitoring within the Forest be encouraged to co-ordinate a register of activity on an annual basis. Such a scheme might also ensure that copies of the reports and survey results be a condition of the permissions to carry out monitoring and survey. Many of these projects have potential to feed into monitoring programmes to help establish target levels for use with indicators and assist in interpreting the implications of indicators. Whilst this may be at least "semi-enforceable" within the SSSI it is also to be encouraged within the wider Heritage Area. Co-ordination of the records might be suitably organised by the New Forest Committee and the lodging of the records and reports might appropriately be co-ordinated by the Ninth Centenary Trust.

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**Strategic Objective**
*To enhance or create new landscapes to reflect the traditional character of the New Forest. [S03.2i]*

*To ensure that those features which reflect 'local distinctiveness' are retained. [S03.2ii]*

*To protect the landscape from inappropriate or intrusive development. [S03.2iii], see also RA4.6a-c*

*To ensure that the cumulative effect of minor changes in the landscape brought about by our modern lifestyle do not prejudice the traditional character of the New Forest landscape. [S03.2iv], see also RA3.4a]*

**Recommended Action**
*Identify opportunities to enhance/create landscapes to reflect the traditional character of the New Forest.[RA3.2a]*

*Review existing work on the identification of the traditional character of the New Forest landscape and work with the local community to identify distinctive and traditional elements which they value and use this to inform policy makers. [RA3.2b], see also RA3.4a*

## 4.6 Landscape

### 4.6.1 Introduction

Landscape is an integral part of the special character of the New Forest and has been widely described at national[55], county[56] and local[57] levels that have sought to identify the unified areas of countryside character. The factors that make up landscape character have been in part analysed in the production of the Countryside Commission's Landscape Character Areas that divides Hampshire into 10 Character Areas. However, this only provides a crude division when viewed at the more local level. Regional studies have generated alternative classifications of character areas and 20 Landscape Types are identified for Hampshire (HCC 1993). These differences reflect the emphasis on specific local factors and resolution of the data. It is interesting to note that the early work of Green (1940) based on land use regions is almost identical to the division generated by the Character programme showing some coherence in identifying regions. These classifications become fundamental to the description of the value and the capacity for monitoring and in indicating landscape change. Inevitably, there is a large element of subjectivity in the assessment of landscape, despite various standardised methodologies for survey[58].

The Countryside Commission assessment of the New Forest (CC 1986) provides an overview of the historical, literary and artistic landscape and the forces that generate change in the landscape. This has been followed by survey and evaluation by Land Use Consultants (LUC 1991) defining four broad characteristics that distinguish the Forest: wooded character, heathlands, ancient character of the agricultural areas (ancient enclosed and settled areas) and the influence of commoning. Within these groups LUC have identified 10 landscape types that are reported in more detail within LUC 1991 and are mapped within the Strategy for the New Forest 1996. The traditional character is interpreted as extending beyond the perambulation with strong visual, historical and socio-economic continuity across the wider Heritage Area. These elements have helped define the Heritage Area boundary and reflect both the earlier boundaries of unenclosed wood and heathland and the extent of the area with Rights of Common on the Forest and adjacent Commons.

Increasingly, the historic landscape is being seen as a specific element in the overall landscape character analysis[59]. This reflects the historic landuse, historic administrative divisions (e.g. structure and district plan areas) and overlain on the physical divisions (geology, topography and hydrology). In the case of the New Forest the administrative division as a Royal Forest, with traditional management practices and controls is of particular relevance. Equally, new emphasis is being placed on townscapes, the greenways within these urban areas and quiet roads[60].

The New Forest Heritage Area has no complete statutory landscape designation, although its southern fringe forms part of the South Hampshire Area of Outstanding Natural Beauty. The Countryside Agency has long recognised the New Forest as meeting the landscape quality of a National Park The adoption of the planning principles of National Parks since 1994 goes some way to providing a measure of landscape protection. Conservation Areas also contribute to the protection of the built environment and architectural landscape. The more recent

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[55] *Landscape Character Assessment (1996) The Character of England: Landscape wildlife and natural features Countryside Commission and English Nature.*
[56] *Numerous surveys at Hampshire wide area including: Hampshire Landscape Types Hampshire County Council, Green 1940 based on land-use regions, MAFF 1964 based on land evaluation maps and an unattributed architectural regionalisation of the county. (see Birch 1981Changing Views of the Countryside In: Dimensions of change in a growth area, Ed Mason, C.M. and Witherick, M.E.). Countryside Commission 1986 The New Forest landscape. CCP 220.*
[57] *Distinctive Landscape Types have been described for the New Forest Heritage Area*
[58] *Countryside Commission (1993) Landscape Assessment Guidance (CCP423) the Environment Agency also operates a standard landscape methodology for riverscapes based on macro and micro landscape surveys classifications.*
[59] *Wessex Archaeology (1996) The New Forest Archaeological/Historical Landscape Character Assessment. Prepared for the New Forest Committee. The current Landscape Study being undertaken by ERM for the NFDC will also look at Historic Landscape.*
[60] *Countryside Agency has two demonstration projects, the greenways and the quiet roads initiatives that seek to enhance opportunities for quiet enjoyment of the countryside.*

announcement of the moves towards designation of the New Forest as a National Park identifies the unique landscape characteristics of the Forest. This introduces the task of identifying a boundary that encompasses the character of the special area and introduces a new boundary for presentation and monitoring tasks.

### 4.6.2 Why monitor?

Monitoring landscape implies undertaking repeat survey that identifies changes to the traditional character of the area. The review of the New Forest Heritage Area boundary (LUC 1991) was based on two attributes of 'traditional character', essential grazing land and the best of the landscape around the Forest's perambulation. However, it is apparent that developments and land management changes within the Heritage Area and areas adjacent have consequences for the character and landscape of the New Forest (Pasmore. 1987). The lack of specific landscape designation may have contributed to the lack of previous monitoring of landscape.

Landscape and design planning within the New Forest is controlled by Policy NF-E4 (New Forest District Council Plan) which development that would adversely affect the landscape character and DW-E27 provides policies within historic landscapes. These policies are guided by PPG7 (The Countryside) and within historic landscapes by PPG 15 (Planning and the Historic Environment).

The role of landscape character and landscape assessment in planning control is also changing. New planning policy is being established following the formation of the Countryside Agency (AP 99/3) in April 1999. As one of six aims the new Agency will "*downplay 'drawing lines on maps', which tend to protect some areas but make others vulnerable, in favour of a criteria-based approach*". Such a criteria-based assessment may offer a more quantitative approach to monitoring, although no specific criteria have yet been defined. These approaches are seen as offering greater scope for setting sustainable development targets to deliver "no net loss" and net gain of high quality landscape.

At a national level the Countryside Agency has developed a methodology based on multi-criteria assessment of landscape elements to define coherent zones of the English countryside. Despite the level of sophistication of the approach adopted the Landscape Character mapping does not in itself provide the basis for monitoring, although it may provide the framework for comparison of different areas. The Environment Agency has established standard approaches to the survey and evaluation of landscape (and waterscapes) and public perception studies[61], providing the potential for both comparative analysis and repeat survey.

The Ministerial Mandate upon the Forestry Commission defines the general policy for the management of the New Forest Crown lands - to conserve the Forest's traditional character. A new Mandate was issued in July 1999 which will form the basis of a new management plan. In order to assess whether the objectives are being achieved it is both necessary to define what is meant by the traditional character, what factors go to make up this traditional character and how they are changing. Alternative approaches would be to consider (e.g. what is happening within the Forest that may be adversely affecting the landscape character, through land use change or through development proposals).

Landscape quality is also a key objective in the development of Forest Design Plans, complementing conservation and biodiversity objectives of forest management. Assessing performance in achieving Design Plans is a responsibility of the Forest Authority. Key issues in achieving sustainable forestry (HMSO 1994) relate to habitat and landscape structure (fragmentation of broadleaved woodlands, loss of connectivity of landscape features etc). The approaches to setting targets and monitoring the Design Plan strategies need to integrate conservation objectives and to be sensitive to changes.

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[61] *WRc 1996 Development and Testing of General Quality Assessment Schemes: Aesthetic Quality in Rivers, Canals, Estuaries and Coastal Waters Project Record 469/20/HO.*

### 4.6.3 Who is involved?

New Forest District Council, Test Valley Borough Council, Salisbury District Council, Hampshire County Council, Wiltshire County Council, Countryside Agency. At a county level the Hampshire Local Government Landscape Group, as a consortium of members of the above local government groups, provide a focus for review.

At national level a range of organisations are commissioning and undertaking monitoring of relevance to landscape, in particular DETR commissions countryside surveys from NERC ITE and IFE. Other non-statutory interests include the Council for the Protection of Rural England (CPRE) and the Council for National Parks.

The Countryside Agency provides advice to Government on countryside, National Parks and landscape issues. It also grant-aids landscape initiatives and surveys. The Countryside Commission (1998), in considering the New Forest as equivalent in status to a National Park and in need of a statutory designation, has provided advice on the options for statutory protection and management. The recent move towards National Park status may alter some of these roles or add new responsibilities and in particular it strengthens the Countryside Agencies involvement.

### 4.6.4 Existing Monitoring and Survey Activity

There is little monitoring of landscape being undertaken as repeatable surveys of the landscape character elements within the Heritage Area. This perhaps reflects the difficulties in nominating measurable elements of the "traditional character". This echoes a general lack of monitoring of landscape nationally, although there may be surrogate measures that relate to landscape, such as land use and agricultural change. The measures of landscape change are not well refined and the classification of status or favourable condition is even more subjective, although the Countryside Survey 2000 and the Land Cover Map of Great Britain offer potential approaches. Aesthetic measures of the environment are possible, although the techniques are currently being developed and the repeatability and sensitivity is being tested[62].

The monitoring of landscape change (as opposed to land cover change) is perhaps less well advanced than the methods for indicating landscape quality parameters. The inherent complexity in objectively describing and classifying the nature of change has meant that the many surveys of landscape, at least in Hampshire, have not generated specific change assessments or trends. Monitoring land cover, hedge and boundary changes go some way to determining the change in landscape, and is reflected in the nature conservation and agricultural change monitoring. More often the national landscape surveys, such as the Countryside Commission's Landscape Character agglomerative assessment provide only a crude division of the landscape when considered at the local level, which is likely to prove insensitive to repeat methodologies.

At a national level the Land Cover Mapping and Countryside Survey (ITE 1986) also offers the opportunity to analyse change in the Heritage Area in relation to other areas of the English countryside and other areas with special protection. These surveys have been jointly funded by DETR and NERC. Data is available for selected areas as samples at $1km^2$ and used to assess the changes in land stock, recording countryside features, land cover, soil types and to record the length of field boundaries. Comparable data is available for 1990, 1984 and 1978 and a repeat survey has been conducted in 1998 with the results being presented in 2000.

Also undertaken at the national level has been the assessment of agricultural landscapes (CC 1998), using 1 km square sample areas to assess change. Survey has been undertaken in 1972, 1983 and 1994, charting the changes in farmland trees, riparian zones, woodland, hedgerows, field size, ponds cover, access. Although the surveys only covered selected areas of the UK, (and where the Heritage Area was not included) the methodology, reporting and the scale of the repeat survey is of interest as a potential application within the Heritage Area.

[62] *Environment Agency Aesthetics of the environment.*

More detailed characterisation of the Forest landscape within the Inclosures was undertaken by the members of the New Forest Association and Hampshire Field Club in the 1970's (Lavender, Pasmore and Stagg 1970). The development of the Forest Design Plans are now repeating landscape assessment within the timber inclosures, although with differing approaches, but with a repeat cycle and performance monitoring against set targets. If landscape is defined as the mixture of land cover, land use and land character there are a number of datasets that may provide a baseline for these differing components. However, the data tend to focus on the land cover and with a strong emphasis on vegetation.

The Hampshire County Council Land Use Survey was undertaken from aerial photographic survey flown in 1996-97. This survey identified 81 land use types for the whole of Hampshire. The survey extended to cover the full Heritage Area. Data is held digitally by Hampshire County Council on GIS. In addition structural landscape features were mapped including the extent of hedgerow and the length of hedgerow in need of attention to restore its integrity. This dataset is referred to elsewhere within this report, specifically in sections on conservation, heritage and agriculture, illustrating the multi-functional value of this data. This is the only recent classified dataset to cover the whole of the Heritage Area. It may be relevant to make comparisons beyond the Heritage Area especially as landscape cannot be wholly divorced from its surroundings.

Concerns over the quality of the classification of certain cover types suggest caution in use of the Phase 1 habitat survey and the need for ground-truthing. In particular, within the Forest key habitats (wet heathland, mire areas, semi improved grasslands) appear to be confused and misclassified. Whilst these problems become critical for ecological monitoring and target setting they may be less crucial to use of the data within structural landscape assessment. However, grassland and semi-natural grasslands are particularly difficult to distinguish from aerial coverage, and these communities may form a key traditional element in the agricultural areas of the New Forest Heritage Area. Despite limitations the survey goes a long way to meeting the landscape monitoring objectives of the Strategy for the New Forest.

The Countryside Commission have developed the Tranquil Areas methodology at national and local level (Ash Consulting 1997) and the New Forest Committee have further developed the concept to a Remote Areas classification for the Heritage Area. This system is discussed in more detail within the Section 4.7 although its role in monitoring and indicators may equally be seen as defining particular landscape issues, and with further potential to accommodate additional datasets. The Tranquil Areas Study is essentially a multi-criteria assessment of factors that are interpreted as providing an index of tranquillity and remoteness for humans and as part of the "experience" of the New Forest are seen as landscape aesthetic measures. Similar approaches might be applied to 'ecological tranquillity' and may be relevant to other aspects of nature conservation management, but are not inherent in the existing analysis. Multiple categories of variously weighted data provide the basis for the resulting classification of values of tranquillity. The definition of the break points between the existing categories is unclear and hence limits the repeatability of the subjective class boundaries, weightings and rankings employed. The range of data integrated within the evaluation may also induce limitations. For example, it has been suggested by the NFDC that noise and light pollution data should be integrated within the assessment. These issues indicate that further work is needed in this area and that the implementation of the pattern is a vital component of its use as an indicator.

These limitations do not devalue the technique, which appears to offer a wide indicator and decision-support framework with the potential to address many of the Strategic Objectives. Lack of evaluation of the results of the buffer overlays, and the subjective adjustment for specific situations that break the rule base, by "grading up" selected zones makes this technique difficult to repeat. For example, the selective addition of topography and recreational feature's impact on tranquillity is described as "occasional interpretation" (Ash Consulting 1997). Many of the limitations of the technique could be avoided through integration within a GIS, with repeatability and optimisation of the weightings and rankings of data tested and with the re-evaluation of class boundaries. Ultimately indices such as tranquillity and remoteness rely on the interpretation and meaningfulness of the outcome, but is able to present a picture of change.

Whilst not specifically to do with monitoring, significant assessments of landscape in Hampshire and the New Forest have been commissioned, which help to determine the nature of the traditional character. Hampshire County Council has completed a countywide historic landscape assessment (Jan 1999). This survey establishes a classification of shape and boundary features, with data held within the GIS in digital format. The New Forest District Council has recently commissioned a baseline assessment of landscape character. Areas outside the NFDC boundary have been incorporated within the study to enable a full view of the Heritage Area to be taken. This survey is adopting Countryside Agency methodology and incorporating assessment of historic landscape elements. It is intended that the data generated from this programme will also be available in digital format. The aim of the programme is largely categorisation of the landscape elements with locally sampled detail of type plots. The survey results are to be available later in 1999.

### 4.6.5 Indicators

The challenge in measuring subjective elements such as "traditional character" and "aesthetic appeal" has prompted a strong focus on indicators of landscape quality through landscape evaluation questionnaires. There are considerable difficulties in making such assessments repeatable and landscape structure measures appear to offer a more effective basis for monitoring.

Indicators and the development of composite indices is a fundamental aspect of the development of sustainable forestry and the development of Forest Design Plans. Simple indicators, such as area, have been used to establish targets and headline indicators for woodland in the UK Of particular concern in landscape change and ecological terms are the implications of fragmentation, connectivity with other woodland blocks and adjacent habitats. Measurement and monitoring of such changes offer potentially sensitive indicators for forests landscape changes and in developing restoration designs [63]. Similar indices may be applied to non-forested landscapes.

| Indicator | PSR | Data | Meaningful | Resonance | S.O. |
|---|---|---|---|---|---|
| **Area with Design Plans** | **S / R** | **Y** | **Y** | **?** | **SO3.2i., SO3.14ii.** |
| **Planning decisions related to landscape** | **R** | **Partial coverage** | **?** | **Y** | **SO3.2ii., SO3.2iv.** |
| **Length of landscape linear features (hedges, boundaries)** | **S** | **Y** | **Y** | **Y** | **SO3.2ii.** |
| **Landscape metrics** | **P S R** | **Y , but could be enhanced** | **Y** | **?** | **SO3.2iv** |

| **Potential indicator**: | **Area with Design Plans and compliance with design plans** |
|---|---|
| **Units** | Area |
| **Type of indicator** | Response |
| **Wider relevance** | Forestry landscape design and in particular Forest Design Plans see also Forestry and Economy section.<br>SO3.2i., SO3.14ii. RA3.6d. (See also Forestry Section) |

**Significance:**

This suggested indicator is also identified within the scope of the Forestry and woodland management indicators, such that both aspects may be covered by separate measures of the same activity within the Forest**.** Of particular relevance within the New Forest inclosures is the role of forestry on landscape and environment. At national level the Forestry Commission has

[63] *Kirby. K.J. and Rush, A. (1994) Sustainable forestry and nature conservation: slow steps in the right direction. English Nature Research Report No 122, Haines-Young, R. and Chopping, M. 1996 Landscape Indices: Implications for the Analysis and Design of Forested Landscapes*

recognised the importance of good design principles within its planting and felling regimes and is increasingly incorporating models of landscape design within the longer term planning process[64]. Design Plans represent the development of a strategic framework balancing conservation; other forest uses with production management.

Forest design within the New Forest must also reflect the Minister's Mandate that now prioritises non-commercial landscape and conservation objectives. Forest Design Plans (Bell 1998)[65] set the agenda for management over a twenty to fifty year period and thus offer a longer term perspective than other forms of development planning within the Heritage Area. The target set by the Forest Enterprise is to have Forest Design Plans in place for all FE managed inclosures by summer 2001. Thus the Design Plans may provide short-lived indicators although the compliance with the plan's objectives and targets may provide a longer-term indicator.

There is no current incentive to develop design strategies outside the Crown lands and specifically outside the inclosures. Strategic objectives and local plan policies provide a framework for development control but currently no overall landscape vision. A landscape target is perhaps better achieved within the forested landscape by virtue of the management responsibilities, but may be achievable more widely by applying remote area concepts.

**Data availability:**
Much of the data from which to develop indices is already available within design plans and within the FE stock map digital GIS. Outside the Crown lands no specific data exists for design plans, although the NFDC landscape assessment provides the basis for future landscape planning and the Phase 1 survey offers opportunities to act as a baseline source.

**Organisations involved:**
Forestry Commission, Forestry Authority, New Forest District Council, Salisbury District Council.

| **Potential indicator:** | **Planning decisions related to landscape** |
|---|---|
| **Units** | Numbers (by selected geographic area and NFHA) |
| **Type of indicator** | Pressure / Response |
| **Wider relevance** | Planning indicators for Local Plan policy effectiveness (NF-E4),<br>SO3.2ii., SO3.2iv. |

**Significance:**
Planning decisions provide a potentially powerful response indicator for the effectiveness of local planning policy in maintaining and enhancing landscape character. Policy monitoring has potentially three approaches: in assessing the planning refusals on the basis of landscape, defining actions to conserve and protect landscape features and those actions that encourage landscape improvements. The level of significance of the relationship between planning control and landscape may limit the usefulness of this measure. It is recognised that a single development has the potential to damage some elements of the landscape and enhance others so care over double counting is necessary, although it may be justified in some circumstances, such as where mitigation measures and planning gain form part of the submitted proposals.

Hampshire County Council is collating planning applications within the whole Heritage Area (including those of Wiltshire County Council). Digital monitoring from 1993 offers the opportunity to chart trends for both rural and urban applications. The move towards GIS-based data will allow more specific geographical searches to be made and localised influences on landscape through development control to be assessed.

[64] *Forestry Commission 1992 Lowland Landscape Design Guidelines, Forestry Commission 1994 Forest Landscape Design Guidelines (2nd edition)*
[65] *Bell, S. 1998 Forest Design Planning: A guide to Good Practice Forestry Authority, Forestry Commission.- a forestry practice guide, which promotes the balanced use of the environment in planning for woods and forests that are reaching felling age, permitting incorporation of environmental and landscape benefits.*

The attributes particularly relevant to landscape collected within development control records include land use change and development. The reasons for refusal are also recorded. The potential exists to make fuller use of recording application decisions where landscape was either a reason for refusal or made part of the conditions (as an indicator of positive landscape planning control). There are some limitations to the level of significance and completeness of these measures. For example, developments associated with agricultural exemptions, woodland clearance (often for recreational horse keeping) may have adverse affects on the landscape character, but would be "missed" by the assessment of change from planning applications. Limitations are that 'minor' applications are not currently analysed although it is considered that numerous small changes may accumulate to affect the traditional character.

**Data availability:**
Data is available within the HCC as digital files and as paper copy. Original data are derived from local authorities, with the potential to extract additional data. Data are available from 1993 with around 746 applications decided between 1993-97.

**Organisations involved:**
HCC, and local authorities

| **Potential indicator**: | **Length of linear landscape features (hedges, boundaries)** |
|---|---|
| **Units** | Length (km) and edge density (linear landscape feature per ha). Values calculated against local average or against historic baseline. |
| **Type of indicator** | Pressure / Response |
| **Wider relevance** | S7 indicators for land cover and landscape within the DETR Indicators for sustainable development.SO3.2ii. |

**Significance:**
Linear features in the landscape are especially important in the context of the agricultural areas, as they may reflect the traditional character of agriculture and land holding patterns. Changes to agriculture, with shifts from woodland and farming to recreational horse-keeping may adversely affect landscape character both within the Perambulation of the New Forest and within the Heritage Area as a whole. The field and boundary pattern varies round the Forest, and not all areas have small closely divided field systems with well-maintained hedges and banks. Thus the assessment of change must acknowledge the past density of the network and its past history to set such measures in context.

This indicator would principally relate to the Heritage Area outside the Crown lands and adjacent commons where fields are divided. Within the Crown lands linear features include historic banks, although no complete mapping exists for these features. For example, the field, track and road pattern in areas such as Sway or Poulner, (with a dense field pattern) is very distinct from that around Bransgore (with more open and larger field pattern). These local distinctions are hard to generalise quantitatively, although they have been described within the New Forest Heritage Area Boundary assessment (LUC 1991). An approach to this may be complementary to that used for recreational impact assessment using a 1 $km^2$ density measure with comparative measures against historic baselines. The strength of Strategy effectiveness may be best measured by extending the comparison to outside the Heritage Area.

Nationally, the trends in hedgerow length and condition are shown by the Countryside Survey 1984, 1990 and 1993. These comparisons show losses of hedges, planting new hedges, unmanaged hedges and restoration of hedges. Loss of hedges have declined between the two periods, but remained at 18,000 km /yr. for the period 1990-1993 with a more significant loss of hedges due to neglect than to removal within the latter period.

**Data availability:**
The Countryside Surveys of 1984 and 1990 estimated the length of hedgerows based on field survey. A further survey of hedgerows was undertaken in 1993. Data is derived from survey of 384, 508 and 108 $km^2$ plots round the UK for the different time periods, respectively. Whilst this offers a useful comparative base it offers no specific insight within the New Forest and adjacent areas. (Barr et. al. 1991, Barr et. al. 1993). Land linear features within the HCC Phase 1 survey provide suitable data sources.

**Organisations involved:**
HCC

| **Potential indicator**: | **Landscape metrics** |
|---|---|
| **Units** | Various – depending on the indicator metric |
| **Type of indicator** | State / Pressure / Response<br>depending on the index used and the objective. |
| **Wider relevance** | Links closely to the landscape ecology measures being used in Forest management and forest design plans, although not yet widely adopted the techniques are extensively piloted.<br>The approach offers a predictive landscape design tool, SO3.2iv. |

**Significance:**
The character of the New Forest landscape may be interpreted as comprising the structure and association of landscape features. These features describe the pattern within land cover, such as area, edge, shape and diversity and the area measures may include total area, patch number and patch density. These mosaics of cover types and land uses provide a basis for describing landscape in a semi-quantitative way. They also offer the opportunity to correlate landscape features and assemblages with factors that are meaningful in assessing habitat potential (landscape ecology). Shape indices may be generated from a range of other measures to provide dimensionless descriptions of shape e.g. the ratio of area to edge length. The meaningfulness of these indices as measures for the Strategic Objectives requires interpretation and further evaluation.

The introduction of landscape metrics or indices is possible given the range of datasets now available for the Heritage Area, and principally using land cover maps. The technical capacity within the New Forest Committee members to analyse these data is limited principally to Hampshire County Council and the Forest Commission. Software tools are increasingly available to allow automation of the calculation of these measures from standardised datasets.

These metrics are used to show aspects of pattern in the landscape and are generally more sensitive to small-scale changes than land use maps alone or maps of land cover change. Care is needed in using and interpreting these measures, as the results are very dependent on data resolution and the class divisions used in the cover maps. The approach is also sensitive to the chosen area and 'edge effects' may influence the margins of the classification.

The Forestry Authority is investigating landscape metrics within its assessment of performance and the establishment of semi-automated processing of data on land cover and landscape. The techniques are widely appreciated within landscape ecology but as yet little used in the UK at a practical level. The impetus for such indicators may be promoted by the landscape assessment of "The landscape value of farm woodlands[66]" which assessed the validity of the forest and woodland landscape design criteria in the lowland landscape design guidelines (FC 1998). Whilst these measures may be useful they require interpretation and careful consideration of the data quality (resolution, consistency across the whole forest). The methods also require careful

[66] *Forestry Commission 1998 The landscape value of farm woodlands. Information Note S. Bell. The report indicates key landscape elements based on preference assessment of landscape structural characteristics eg edge structure, shape as well as management procedures (stocking and felling designs).*

evaluation of target levels, as the more abstract nature of the measure will allow multiple scenarios.

Further refinement, testing and evaluation of these indices is needed in complex landscapes. The value of such indices in illustrating the performance against Strategic Objectives comes in assessing the present landscape structure and scale of change against targets for enhancement or the impact of intrusive development. The techniques also provide a mechanism for quantifying future conditions based on modelling of design plans.

**Data availability:**
The raw datasets are available although their validation is now progressing. The capacity to undertake the analysis is available locally within the Hampshire County Council. Repeat cycles would rely on consistent datasets.

**Organisations involved:**
HCC, NFDC, TVBC, SDC, CA**,** FC.

### 4.6.6 Recommendations

It is recommended that the Forestry Commission and HCC collaborate in developing the best achievable dataset for land cover mapping by co-ordinating and evaluating the best of the various existing land cover classifications.

The results of the stock map revisions and the national woodland inventory offer potential to update the existing systems to provide a fully validated map for the woodland areas. Further validation is needed of other habitats (e.g. ponds). These data will feed into a number of monitoring requirements and offers the scope for using landscape metrics as measures of landscape response to management actions. It is recommended that the multiple functionality within the land cover datasets be recognised within the cost benefit appraisal for repeat survey. As a minimum commissioning or acquiring the aerial photographs becomes the fundamental requirement in permitting subsequent analysis of many aspects of the Heritage Area monitoring and indicators programme. Other national aerial photographic coverage is available and may provide a suitable source of information (e.g. UK Perspectives and the Millennium Maps products).

It is recommended that further work be undertaken on the use of the land cover maps to generate sensitive and interpretable indices of landscape change. It is recognised that the landscape specialists and ecologists will need to interpret the results of such analysis to ensure meaningful and relevant measures.

It is recommended that further investigation of the Tranquil Areas and Remote Area methodology be undertaken before more use is made of the existing boundaries within landscape assessments. The current Tranquil Areas map raises problems of interpretation, although the overall approach appears to offer considerable and varied potential beyond the production of a single map. In combination with other information, as employed within the Remote Areas maps, the interpretation difficulties may be multiplied. Repeatability of the approach would be greatly enhanced by the use of GIS and the development of standard analytical procedures. It is stressed that there is no single classification of tranquillity, as illustrated by the original classification that only represented the summertime average condition and the development of a wider appreciation of the conditions will be appropriate.

It is recommend that the landscape assessment currently being undertaken by the NFDC be checked for repeatability and for the scope for delivering indicators of landscape change from existing data sources.

Remote sensing (RS) may provide a sensitive measure of change and allows wide area assessment. The use of RS techniques offers short repeat timescales and seasonal coverage, although rapid changes may be uncommon so close resurvey timescales may be insensitive. Remote sensing also allows semi-automated analysis and is already being undertaken within the

Land Cover Map 2000 being developed by the Institute of Terrestrial Ecology. Further investigation of these sources and the role of remote sensing within the Heritage Area monitoring should be investigated once these data are available (Nov 2000). The approaches are not well understood outside the research community and the costs are considered to be great, although image processing is becoming an effective and relatively cost-efficient desktop capability. Recent remote sensed (CASI)[67] survey of some of the Solent intertidal marshes within the Heritage Area are being specifically assessed for repeatability as a tool for monitoring change in areas otherwise difficult to survey.

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[67] *CASI - Compact Aerial Scanning Imager is a airborne remote sensing system that digitally records the surface in a number of wavelengths at a particular pixel (picture element) resolution. The survey has recently been flown by the Environment Agency on behalf of English Nature as an input to cSAC monitoring approaches*.

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**Strategic Objectives**

*S.O: To ensure that the seasonal and spatial distribution of recreation does not compromise the traditional character of the New Forest. [S05.8i]*

*S.O: To ensure that the management of active recreation is conducted in a way which avoids damage to landscape and habitat, and does not adversely affect the practise of Commoning or quiet enjoyment of the countryside. [S05.8ii]*

*S.O: To oppose the major expansion of recreational attractions capable of generating large increases in traffic in the Forest. [S05.8iii]*

*S.O: To ensure that villages favoured by visitors offer a high quality recreational experience. [S05.8iv]*

*SO: To ensure that optimum use should be made of the potential recreational sites beyond the New Forest to help reduce visitor pressure within it [SO5.8v]*

*SO To sustain and enhance the sense of remoteness created by the landscape of the New Forest [SO5.8vi].*

*S.O: To extend and enhance the local recreation network including public open space and rights of way . [S05.8vii]*

***Recommended Action***

*Investigate and progress new opportunities for passive recreation in the enclosed lands at the outer edges of the New Forest. [RA5.8a]*

*Identify indicators to evaluate the affect of recreational pressure on the traditional character of the New Forest, including busy and quiet seasons. [RA5.8b]*

*Keep under review options for managing the number and distribution of visitors to the area. [RA5.8c]*

*Review recreation activities in the light of the Sport and Recreation Study. Damaging activities should be managed to reduce their impact to acceptable levels. [RA5.8d]*

*Seek to improve recreational opportunities in the New Forest villages favoured by visitors. [RA5.8e] in the New Forest and take appropriate steps to protect them. [RAS.8f]*

*Investigate with adjoining Local Authorities, provision for recreation capable of reducing pressure on the New Forest. [RA5.8g]*

## 4.7 Recreation, Tourism and Access

### 4.7.1 Introduction

One of the four principal aims of the Strategy for the New Forest is:
**"To ensure the use of the New Forest for tourism and recreation does not prejudice the quality of its traditional character or the pursuit of quiet enjoyment**".

The policy and contextual background to recreation and tourism is well explored within the Strategy for the New Forest (1996) and within the Sport and Recreation Study (1996).

Recreation and tourism have somewhat separate strategic objectives although the main impetus for monitoring within the Strategy is to ensure leisure and recreation activity within the Forest may continue in a manner that does not further erode the character of the New Forest whilst contributing to social and economic well-being. This also sets the agenda for the development of indicators with an emphasis on the assessment of impact of recreation, access and tourism, rather than merely monitoring the level of activity, which is the target of more economic measures. [see Recommended Action RA5.8b]. In this respect there is also a strong association between transport and access, and recreation and tourism.

The New Forest is identified as an area of quiet, countryside-related uses (NFDC 1995) but even existing levels of use are perceived as intruding on the environment within such a sensitive area (Forestry Commission 1995). However, the extents of perceived and actual recreation and tourism impacts within the Heritage Area vary. Monitoring has dual roles in directing management through the identification of impacts and in providing the information from which to assess action and strategy effectiveness.

The Tourism in the New Forest 1991-92 (ECOTEC 1992) survey estimated a visitor population of 7 million visits per year. More recently the Portsmouth University Sport and Recreation study[68] indicates a local use figure of 18 million annual day visits suggesting that the New Forest is more intensively visited than five of the National Parks (Countryside Commission, 1993). These figures attest to the difficulty and risk of misinterpreting impact on the basis of visitor numbers alone. This example illustrates that the actual numbers may provide little confidence as an indicator of pressure on the traditional character, at least in isolation. It is perhaps the extent of accessibility and the impact on the "wilderness quality", tranquillity and the extent of erosion that illustrates more effectively the impact on the Forest. However, the character and extent of such impact has not proved easy to measure objectively, quantitatively and repeatably and difficult to establish a causal relationship.

There is a distinction to be made between land inside and beyond the New Forest Perambulation. Almost complete open access exists within the Crown Lands and National Trust Commons by virtue of ownership, whilst there is more restricted access along rights of way within private enclosed farmlands of the Heritage Area. Proposed rights of access to open land are unlikely to greatly change the area of access land within the New Forest Heritage Area, since most of the heathland is already accessible. The attraction of the New Forest and its accessibility is thus not evenly distributed and hence the vulnerability of the Forest to impact would also appear to be concentrated within the bounds of the Perambulation. Vulnerability, taken together with the varied sensitivity of the habitats, soil types and the nature of tranquillity[69] may help to identify the areas at special risk from impact and hence help to guide sustainable management to meet the Strategic Objectives.

### 4.7.2 Why monitor?

Strategic Objectives [SO5.8I, SO5.8ii and SO4.5i.] stress the need for sustainability of recreation, access and tourism, reflecting concern for the impact on the traditional character of the Forest. There is also a concern for the sustainable management of recreation and tourism as

[68] *University of Portsmouth 1996 Sport and Recreation Study Report to the New Forest Committee*
[69] *Ash 1997 Tranquillity areas study New Forest Committee*

***TOURISM***
**Strategic Objectives**

*S.O: To foster the concept that the New Forest is a special place devoted to conservation and quiet enjoyment. [S04.5i]*

*S.O: To ensure that tourism remains an important but not dominant component of the New Forest economy and makes a positive contribution to the conservation of the New Forest. [S04.5ii]*

*S.O: To ensure that the marketing and management of tourism reflects the objectives of the strategy for recreation. [S04.5iii]*

***Recommended Action.***
*Identify good practice in sustainable tourism and foster partnership in its development, through liaison with commercial interests and the local community. [RA4.5a]*

*Undertake environmental studies of major campsite and self-catering accommodation provision within the New Forest. [RA4.5b]*

*Ensure that a New Forest Tourism and Visitor Strategy is prepared, within the framework of A Strategy for the New Forest. [RA4.5c]*

**Related Strategy Objectives:**

*S.O: To ensure that optimum use should be made of the potential of recreational sites beyond the New Forest to help to reduce visitor pressure within it. [S05.8v]*

*S.O: To sustain and enhance the sense of remoteness created by the landscape of the New Forest. [S05.8vi]*

a contribution to the local economy. Of particular concern is the extent of perceived damage to the Open Forest, particularly from recreational horse-riding and cyclists eroding Forest tracks[70], altering the landscape through associated buildings, as well as its impact on the "back-up" grazing land available to commoners through the effect of inflated grazing rates. Further key issues relate to intensely used "honey-pot" sites where there is concern about erosion and disturbance of ground-nesting birds.

The NFDC Local Plan sets out a range of policies for recreational development access and tourism development planning and control within the New Forest (NFDC Local Plan Deposit 1995) and is guided by the Government guidance PPG17 Sport and Recreation (which is currently under review) and PPG21(Tourism). Building on the earlier tourism and recreation policies in the New Forest 2000: A strategy for the New Forest District (NFDC 1990) the NFDC have led the development of "Our Future Together - New Forest Tourism and Visitor Management Strategy"[71]. This strategy includes the three objectives of specific relevance to monitoring and indicators:

- to maintain the annual collection of information for the Councils tourism and visitor research programme,
- to devise a comprehensive destination research programme including appropriate data collection and
- to establish a comprehensive annual programme of environmental research and assessment of visitor and recreation activities.

Our Future Together also introduces the concept of environmental carrying capacity applied to tourism, but which may equally well apply more broadly to the sustainable development of recreation and access. This introduces the requirement for monitoring, indicators and setting of target levels in order to assess at what stage the capacity is exceeded. It may be argued that the trigger levels (the point at which action is taken) should be set well below the capacity both as a precautionary principle and to minimise environmental stress. The question remains what measure can we use of capacity and how can we reliably measure it?

Forests and woodlands provide an important regional recreational resource, with the majority of the area of the Crown Lands with freedom to roam, and access available to a number of the surrounding woodlands within the Heritage Area. The Forestry Commission has produced a series of guidance notes relevant to the recreational use of forests[72], [73] and has recently published "The UK Forestry Standard: The Government's Approach to Sustainable Forestry" (Forest Authority 1998) which identifies the multiple use benefits of forest and sustainability. Forest Enterprise has established a Framework for Recreation based on the Minister's Mandate on management of the Crown Lands, which emphasises monitoring of progress against objectives.

The extent of concern of the pressure of recreation on the qualities of the New Forest have promoted changes in the access and facilities available, with rationalisation of car parks and camping and further review of sites to balance conservation demands with recreation[74]. The effectiveness of these decisions in meeting their objectives also requires monitoring.

Further emphasis on recreational and access monitoring is provided by a number of national scale initiatives such as the Open Access proposals, the Government's plans to introduce a new statutory right of recreational access to the open countryside[75]. The extension of the protection of the area as a National Park may introduce monitoring for NP funding models and to assess whether the Forest would attract more visitors given the change in status and name. The

[70] *Forestry Commission (1992) Riding in the New Forest: Consultation Draft Report 1992*
[71] *NFDC 1998 Our Future Together – New Forest Tourism and Visitor Management Study*
[72] *Forestry Commission 1994 Our Forests the Way Ahead*
[73] *Forestry Commission (1992) Forest Recreation Guidelines*
[74] *Cox and Rose 1996 Preliminary assessment of proposed changes in camping and car parking provisions in the forest. Report to Hampshire Wildlife Trust.*
[75] *DETR 1999 Access to the Countryside in England and Wales : The Government's Framework for Action, March 1999.*

existing status of the New Forest Heritage Areas as being equivalent in planning terms to a National Park has already promoted the inclusion of the Forest within the Funding Needs Study[76] for protected areas undertaken on behalf of the Countryside Commission which seeks financial indicators.

### 4.7.3 Who is involved?

The bodies with sport and recreation strategy roles within the New Forest are summarised in the Sport and Recreation Study (1996) and the Strategy for the New Forest.

The New Forest Committee Countryside Management Sub-Group (now incorporating the Sport and Recreation Sub-Committee) was established after the publication of the Sport and Recreation Study to take forward recommended actions from the study, including suggested monitoring. A number of earlier recommendations for monitoring were made within the Ecotec 1991 survey, although these were largely inventories (accommodation occupancy survey; surveys at tourist information centres, visits to attractions and periodic surveys of visitors numbers).

Within the Heritage Area (excluding the Crown lands) recreation and tourism is largely managed by the Leisure and Tourism Department of the New Forest District Council. Only 2% of Test Valley Borough Council and a small portion of Salisbury District Council lies within the Heritage Area and consequently form a small part of their focus for recreation and visitor management.

Within the Crown lands the Forestry Commission has a major regulatory, commercial and promotional role in recreational, access and tourist management through provision and management of 10 camping sites, toilet blocks, 141 car parks and an extensive recreational and access track network and signage. The Forestry Commission provides cycling routes and recreational facilities, and permits and licences various groups and specialist recreation activities. This work is assisted by the deployment of recreational and educational rangers. The Forestry Commission also promotes access to woodlands through operation of the Woodland Grant Scheme in areas outside the Crown Lands. Various other organisations have additional powers to promote recreational access through the take-up of agri-environment schemes where payments may be made towards securing access[77], for example within Countryside Stewardship Schemes.

The Environment Agency's duties for navigation and recreation under the Environment Act 1995 provide a general duty to promote the recreational use of water and land throughout England and Wales[78]. The Agency licences fishing and has interests in the restoration of water bodies within the Forest. The Local Environment Agency Plan[79] for the New Forest has set out the concerns over recreational pressure on biodiversity and stream bank erosion. The level of management input from the Agency within the Forest has been limited, although they have recently become a member of the New Forest Committee.

The Countryside Agency also promotes access opportunities and provides guidance to Government on access to the countryside[80]. The Agency is also examining the improvement of rights of way and the management of access information[81] through the development of a National Rights of Way Database and a National Access Register. The County Councils, as the highway authorities, maintain the record of legally-defined Public Rights of Way with a number of local organisations undertaking condition surveys and monitoring of access and local path

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[76] *ERM 1998 Protected Areas Funding Study Report to the Countryside Commission*
[77] *Department of the Environment, Transport and the Regions Access To The Open Countryside In England And Wales*
[78] *Department of the Environment, Transport and the Regions Code of Practice on Conservation, Access and Recreation Consultation Draft sets out guidance to water and sewerage undertakers and the Environment Agency ('the relevant bodies') on matters which they should consider when carrying out their duties in respect of conservation, access and recreation.*
[79] *Environment Agency 1998 New Forest Consultation Report April 1998*
[80] *Countryside Commission (1991) Tourism in National Parks: A Guide to Good Practice. The Countryside Agency was formed from the merger of the Countryside Commission and the Rural Development Commission and is currently developing strategy and guidance on access to open land, whilst retaining it work on countryside recreation.*
[81] *Countryside Commission (1999) Rights of Way in the 21st Century: conclusions and recommendations. CCP 550.*

networks. Highway authorities have set national targets for compliance with the Rights of Way Act 1990.

### 4.7.4 Existing Monitoring and Survey Activity

Existing monitoring and survey of recreation, access and tourism relates principally to the intensity of use and the number of visits. More limited and qualitative assessment of the impact of recreation has been undertaken within the scope of small-scale research studies and the sampled approaches within the Sport and Recreation Study (1998). Principally, local authorities and the Forestry Commission also maintain recording of the infrastructure of recreation.

Recreational impact is notoriously difficult to measure in an objective manner, (as found within the Sport and Recreation Study) with a sufficiently extensive cover to provide an overview of the impacts and a baseline for further assessment. There is a great difficulty in establishing a causal link between specific activity and damage, although intuitively the evidence may appear unequivocal. Separating the individual elements of combined activity and damage, in multiple use areas (e.g. stock, public access management, vehicles etc) remains a problem both for survey and management.

There have been a number of experimental studies for limited areas and recreational types (principally recreational horse riding) on the erosion of Forest tracks. Numerous other small-scale impact studies of recreational horse-riding[82], camping[83], walking, orienteering, cycling, coastal recreation have been undertaken within the Forest which provide valuable background to the issue, but that do not provide the baseline from which to monitor or develop indicators. Leppard (1996) investigated the location of car park based pressure on differing habitat types adjacent to the sites. The repeatability of this survey is limited due to lack of recording of the methodology, although the extension of the approach may provide valuable information.

Visitor counts are made for the whole of the Test Valley, with a new survey currently planned by the Southern Tourist Board. It is suggested that data may be extracted at parish-level from these records. Little survey is undertaken in the Wiltshire portion of the Heritage Area. However, it is generally considered that this section of the Forest receives predominantly local visitors.

A New Forest Occupancy Survey is undertaken monthly, contributing to the production of an annual report was undertaken by the Southern Tourist Board's Research Dept on behalf of the NFDC and New Forest Tourism. 1997 is the eighth consecutive year that an annual occupancy survey has been undertaken, providing the strong basis for trend assessment. Since 1992, the Southern Tourist Board has carried out the survey, continuing research carried out by ECOTEC in 1991 (Ecotec 1992). The New Forest Occupancy Survey's objectives are to:

- identify the level and pattern of demand for all types of accommodation through the year, thus enabling those engaged in promoting tourism to target more effectively periods of low demand.
- identify year on year trends in the pattern of demand.
- establish estimates of total staying visitor numbers in the New Forest District.
- provide information that may influence future planning and marketing policies in the New Forest.
- provide operators with an insight into current trends in the tourism industry and to enable local, regional and national comparisons with individual performances.

115 operators are currently involved in the Occupancy Survey and the final report is available in both digital and text format. NFDC stores this data in digital format and it would be available for monitoring and indicator development.

[82] *Royal Agricultural College 1994 Recreational use of horses in the New Forest Heritage Area.*
[83] *Forestry Commission 1995 New Forest Campsite Review,*

The Countryside Commission has undertaken the Visitors to National Parks Survey (CC1998), known as the All Parks Survey (1994). This survey has included the Broads and the New Forest and is the first co-ordinated survey of visitors to each of the twelve Parks and provides a useful comparison between National Parks and other protected areas. The survey sought to identify visitor origins and profiles, the nature of recreational visits, visitor activities and their distribution, visitor perceptions and expenditure which provides a baseline for further studies and assessment of trends. Miller Associates (1996) undertook a Visitor Survey amongst people who use the New Forest for recreational/leisure purposes to explore their attitudes to transportation in the Forest. This survey has not been repeated.

The New Forest LA21 Tourism Kit has also been recently promoted by Leisure Services at the NFDC. It seeks to provide a simple mechanism to allow the industry to help deliver the themes of the New Forest tourism and visitor management strategy; "Out Future Together". It is currently in a pilot phase but aims to be launched in 2000. Within this scheme there will be annual monitoring returns, which will help to establish a comprehensive destination research, and management system that will help to monitor sustainable tourism development throughout the area. Also in the pipeline is a Portsmouth and Bournemouth University Study into a Destination Research Model for the New Forest.

The survey of site-specific environmental impact within the Sport and Recreation Study 1996 sought to identify an objective and repeatable, sampled methodology for measuring impact. This study is the most comprehensive assessment of sport and recreation to date within the Heritage Area. The aims of the investigation acknowledged the lack of objective and numeric assessment of adverse impact and also the lack of knowledge of the scale of activities. The study has provided the basis for demand trend assessment, and the Environmental Impact Assessment included provides an inventory of the issues at selected sites. The data collected within the scope of this programme includes:

- Facility Survey
- Local Towns Survey
- Recreational Site Survey
- Parish Council Survey
- User Group Survey
- Site–based Environmental Impact Assessment.

Of these measures the EIA is most relevant to testing the recreational Strategic Objectives of the Strategy. The repeatability and objectiveness of the measures is however questionable, but this reflects the complexity of monitoring erosional and disturbance pressure. The site selection is limited to high intensity sites and may miss wider impacts within the Forest. Specific, specialist surveys may offer more robust and repeatable measures of impacts. A more analytical approach to some of this impact monitoring may be appropriate which attempts to assess sensitivity of different areas. For example the point measurements of soil susceptibility are unrepeatable from this survey. The associated datasets of soil types, soil moisture, slope and vegetation cover are all available within the existing data records available at least for the Crown lands, where the issue is perhaps more pertinent. The Sport and Recreation study has not gone as far as making this association and there may be potential to extend the survey and develop more repeatable methodologies for future monitoring programmes.

Further work is currently in progress by the Forestry Commission to provide recreational monitoring, based on a Geographic Information System. This will record the management tasks, recreational assets, levels of activities related to recreation and access within the Crown lands and provide an inventory of the recreational and access assets. Of particular relevance within the monitoring of the Strategy for the New Forest is the mapping of the track network within the Open Forest. This includes official, managed and 'unofficial' tracks and provides the basis for recording attributes of the tracks, bridges and gates and fencelines etc. Such data-rich approaches draw together and validate existing dispersed information making it more accessible and more easily analysed. The limitations of this approach appears to be the extent of the coverage within the Crown lands (although there is partial coverage of some data themes to cover the Heritage Area) and the lack of an effective baseline.

The assessment and monitoring of recreation and visitor pressure on the New Forest has also included work undertaken by Colin Tubbs on the populations of ground nesting birds. Although a limited survey and not a specific monitoring commitment this survey does suggest an indicator measurement for recreational pressure. The survey of wildbirds within the Forest is discussed further in Section 4.5 (Nature Conservation).

Information on the location and condition of Public Rights of Way (PROWs), Roads Used and Public Paths (RUPPS) and Byways Open to All Traffic (BOATS) is maintained by the Hampshire County Council based on a Geographic Information System. This records history, description, and issues associated with the routes. This is currently held in an Access database. HCC are currently at consultation working towards the production of a new definitive base mapping updating text and map records dating from 1964. Existing recording enables the query of the length of signposted public rights of way; forming part of the recording of compliance with the 1990 Rights of Way Act. Cycle routes are also recorded within the GIS although the data is old and does not record the routes established by the Forestry Commission on Crown lands.

The Ramblers Association and the Parish Paths Maintenance Programme also undertake recording of access. Local footpath societies also undertake monitoring. For example, the Ringwood and Fordingbridge Footpath Society collects and maintains records of unsatisfactory footpaths in their area. These records comprise a 'Walk Leaders Report' that are produced on a weekly basis. A 'Formal Survey' covers 10 parishes and 490 definitive paths, a third of which are surveyed in detail each year. One year in four the worst paths are resurveyed to check whether problems have been rectified. HCC in partnership with NFDC and the CC is extending the 'Parish Path Partnership' scheme to include further areas within the New Forest. The scheme provides parishes and other local communities with the opportunity to record, maintain and promote Rights of Way and other routes within their locality.

Wiltshire County Council also maintains the statutory Rights of Way maps on an Arc/Info GIS system collected at a scale of 1:25,000 in the early 1980's. Validation of the data produced new baseline maps in 1984 that are being updated to match the Ordnance Survey. WCC PRoW data also includes a 'definitive statement' detailing where the path goes and estimated lengths and widths. This data is stored in a database although currently not linked to a GIS. Again there is a record of Legal Events that are updated onto the GIS maps. The Parish Paths Maintenance Programme prepares statistics such as percentage of paths easy to use by members of the public and the percentage of paths that have had work carried out although this may have little relevance to the NFHA.

### 4.7.5 Indicators

A number of indicators are proposed that seek to identify the trends relevant to the Strategic Objectives. Thus the regular monitoring of numbers of visitors and occupancy surveys, whilst of importance for other aspects of Forest management do not appear to specifically address the Strategy for the New Forest Objectives. The collation of visitor numbers provides an uncertain basis for assessment of pressure, given the widely varying figures quoted, and hence visitor levels may be insensitive measures. However, their use within the National Parks strengthens the value for comparative purposes.

Other indicator initiatives offer a different perspective to the Strategy for the New Forest's message of sustainable tourism and recreation. The National Park Corporate Financial Plan Indicators for Recreation Management include: number of visitor days annually, total area of land (ha) open to public access (Indicator 3e), area (ha) subject to access agreement (Indicator 3f). These measures may be more inventorial and related to financial planning rather than to specific assessment of recreational impact.

| Indicator | PSR | Data | Meaningful | Resonant | S.O. |
|---|---|---|---|---|---|
| **Visitor numbers** | **S** | **Y** | **N** | **Y** | **SO5.8ii.** |
| **Erosional impact path network** | **P** | **In preparation** | **Y** | **Y** | **SO5.8i. SO5.8ii** |
| **Tranquillity assessment** | **P / R** | **N/Y need update and validation** | **? depends on classifications** | **?** | **SO5.8i. SO5.8vi** |
| **Repeat photographic indicators** | **P / S** | **N** | **Y** | **?** | **SO5.8i.** |
| **Bird species at risk** | **P** | **Y** | **Y** | **?** | **SO5.8i.** |
| **Recreational management activity** | **R** | **Y – for selected areas and managers** | **Y** | **?** | **SO5.8ii SO5.8vi** |
| **Total length of rights of way / access** | **R / S** | **Y** | **Y** | **Y** | **SO5.8vii** |
| **Area of land open to public access** | **R / S** | **Partially** | **Y** | **Y** | **SO5.8vii** |

| **Potential indicator**: | **Visitor numbers** |
|---|---|
| **Units** | Number of visitors to the New Forest Heritage Area, various measures are possible, day visits, local visitors and staying visitors |
| **Type of indicator** | State |
| **Wider relevance** | Wider relevance within the comparison with National Park indicators that use visitor numbers as part of the financial plan indicators (number of visitor days annually). |

**Significance**

Measures of the number of visitor days has been suggested as a measure of pressure on the Forest, including the assumption that visitor numbers could be used as the basis for assessing pressure in the Sport and Recreation Study (1998). Visitor numbers are generally counted by classes of visitor and holiday days: Visitor day – single visit from home Holiday day – a day spent in the area from holiday accommodation inside or outside the area.

Whilst these measures may have relevance in assessing the level of facilities and potentially on the traffic measures they have been found to be rather insensitive in assessing impacts on the quality and health of areas. The presence of large numbers of people alone is often not the determining factor as to whether there is any adverse impact. Rather the concentration and activities in sensitive areas may be more significant.

It would be possible to extend the scope of recording of visitor numbers to sensitive locations through targeted surveys and focused by site sensitivity maps (such as those promoted by the Remote Areas concept). However, no such surveys have been undertaken within the New Forest and logistically may be difficult to achieve.

Whilst there is a strong sense in which visitor numbers are thought to provide a basis for assessing trends within the "capacity" and pressure on the Forest. Capacity is a variable and ill-defined quantity and it is apparent from the past surveys that it is even difficult to establish any confidence in quantitative estimates of visitor numbers. Further use as indicators would require the development of validation measures and standardised procedures to identify trends and to assess the relationship with the pressures on the Forest and spatial variation associated with more sensitive areas. The development of the remote areas measures may help to design more meaningful survey procedures.

**Data availability:**

The New Forest has formed part of the All Parks Survey (1994) conducted for the Countryside Commission (now the Countryside Agency). Miller Associates (1996) have conducted further surveys in relation to transport issues. Earlier surveys were undertaken by ECOTEC (1992). It appears that none of these studies attempted to repeat the methodology or sampling locations of

the previous surveys thus limiting the comparative potential of these data which are treated as one-off surveys.

**Organisations involved:**
NFDC, Forestry Commission, Hampshire County Council. Countryside Agency.

| **Potential indicator**: | **Erosional impact - Extent of path network** |
|---|---|
| **Units** | Lengths of classified paths, path density |
| **Type of indicator** | Pressure |
| **Wider relevance** | The path network is of relevance to the access, although the changes tend to be sporadic the prospect of management of recreational pressure though the closure of paths would also require monitoring of effectiveness. Datasets from which to establish this network are potential multi-use conservation indicators. SO5.8i., SO5.8ii. |

**Significance:**
Research studies have investigated a range measure of the impact of recreation of the fabric of the New Forest, principally within the Open Forest. Studies by Mayne (1976) on unenclosed Forest indicated the widespread impacts of recreational horse riding, particularly related to licensed stables, based on evidence of the extension of path networks. The availability of historic aerial photographic datasets creates the potential for establishing the erosion trends over longer periods, since at least 1967. Data for the New Forest Crown lands has been collected under the Forestry Commission GIS programme from the 1995 digital orthophotos. Addition of further attributes, such as path width, parallel tracking and gully-depth would form a valuable analytical dataset. Correlation with other physical characteristics, such as soil type, slope and initial vegetation cover may provide insights into the susceptibility to poaching and gullying. Earlier work by Paul White[84] (Forestry Commission 1992) for the Forestry Commission illustrated the effectiveness of this technique with a time sequence of track proliferation at Hampton Ridge and the production of a track density map for the Crown lands. Comparison of recent aerial photograph assessment with this survey would appear to offer an indicator of change, based on the calculation of the change in density.

The local variation of these changes suggests the need for analysis and reporting of the data and would require assessment of the lengths against specific areas of the Forest and against an established baseline period. Associating the monitoring data with locations of recreational facilities, especially riding stables and car park locations may be used to interpret the indicators.

**Data availability:**
Historic aerial photographic datasets are available for the whole of the Forest from a number of periods, Hampshire County Council has coverage at c. decadal intervals from 1967. Partial coverage is available from 1982, 1960, 1959, 1946 and 1940. Early surveys are available from the Royal Commission for Historic Monuments of England. Other aerial surveys are available for 1986 as part of remote-sensing assessments of Forest canopy structure research. These later surveys may be of particular value as they include seasonal surveys from April, July and September. There is no current commitment to repeat aerial surveys, although nation-wide coverage has been taken at 1:25000 scale.

**Organisations involved:**
NFDC, Forestry Commission, Hampshire County Council.

[84] *Forestry Commission (1992) Horse riding in the New Forest Consultation Draft Report.*

| **Potential indicator**: | **Tranquillity and Remote Area assessment** |
|---|---|
| **Units** | Area of tranquillity classes, area sampled on various Forest boundaries. |
| **Type of indicator** | Pressure / Response |
| **Wider relevance** | The tranquillity has wide applicability in Forest management and especially within the association with the Heritage Area and the Perambulation, based on the level of resolution of the assessment. Further development of this type of index has great potential to feed into strategic recreation, landscape and forestry planning. This has wider relevance in landscape assessment terms. SO5.8i., SO5.8vi. |

**Significance:**
Tranquillity classification of the Heritage Area has been undertaken at national level by the Countryside Commission and at a Heritage Area level by the New Forest Committee[85]. These surveys mapped at 1:250,000 and 1:50,000 respectively. The resulting maps identified classes based on a multi-criteria assessment of buffers around factors that are considered to impact on the rural character of an area, such as the distance from a road network classification, urban areas, car park "honey-pot" sites and industrial activity.

The definition of "Remote Areas" is a response to Recommended Action 5.8F within the Strategy for the New Forest. The remote areas classifications extends the tranquillity map approach by addition of datasets derived by reclassification of the land cover data into habitat sensitivity and species sensitivity maps. Although such a sensitivity map may be criticised on the basis of a lack of objectivity, this is a standard approach to sensitivity mapping relying on weighting and ranking judged on expert opinion. In many senses it is equivalent to the multi-criteria approach adopted by the Countryside Commission in developing the landscape character map of England.

The objectives of the remote area approach are to assess the relationship between quiet areas and vulnerable and threatened habitats and species. Many of the specific pressures on this remoteness are thought to derive from the recreational and tourist pressures, although again the causal link is hard to establish.

The nature of the datasets and the analytical procedures create the potential for many other scenarios to be tested, against perceptions of "remoteness" on the ground and to enable the index to reflect different elements of the input variables. Hence it may be possible to emphasise the noise intrusion aspects of the input data by providing these with increased weighting within the analysis. Given robust and quality assured datasets this approach provides a powerful approach to examining a wide range of issue and pressures affecting the traditional character of the Forest. It also provides (with more testing of scenarios) a sensitive area-based measure of change.

Having the same methodology applied for the local area in more detail provides a useful baseline for national comparison. A full listing and tranquillity algorithm occurs within the Ash report, thus enabling the GIS-based automation of this procedure with the "raw" data inputs to tranquillity allowing further refinement of the class boundaries.

**Data availability:**
The datasets are generally available and in digital GIS formats, although there are some concerns over the quality of some of the base datasets, in particular the existing vegetation mapping for parts of the Open Forest. The existing "remote area" classification is available in digital format although requires more accountable procedures for development of the mapping. Alternative sources (or update of vegetation maps) are currently being produced and data

[85] *Ash Consulting (1996) Tranquil Area: The New Forest Heritage Area: A report to the Countryside Commission. Similar integration of datasets have been tested within pilot GIS projects within the lake District National Park (Fishwick, A. and Clayson, J, 1995. Lake District National Park Authority: GIS Development Project. Countryside Commission.*

validation work on the existing vegetation maps is being conducted by the Forestry Commission within the Crown lands.

**Organisations involved:**
New Forest Committee, Hampshire County Council, Forestry Commission.

| **Potential indicator**: | **Repeat photographic indicators** |
|---|---|
| **Units** | Photographic |
| **Type of indicator** | Pressure and State |
| **Wider relevance** | The repeat photographic assessment of impact is specific to a site and time and thus may not provide a wider applicable measure of other influences on the Forest.<br>SO5.8i. |

**Significance:**
A key feature of an indicator is the simplification and communication of trends in the features being measured. Quantitative measures and summary statistics are usually used and graphical representation of change may provide a powerful presentation of trends. A sequence of fixed-point photographs may provide a more graphic example of the erosional and recreational impacts. Despite problems of standardisation, based on seasonality and antecedent conditions, the use of comparative photos offers significant advantage over many other measures as it integrates a variety of influences. Photographs are increasingly being used as measures of perceived changes and character and may be sufficiently self-evident to direct action[86].

Standard approaches should be adopted with photo scales, location and directional bearing, date and time recording should be attributes of the photos. Repeated fixed-location oblique photos have similar potential to using repeat assessment from aerial photographs.

A remaining problem is the lack of a directly quantifiable outcome from which to provoke remedial action, and there is a risk that action is only taken after significant and unequivocal damage has occurred. Thus there is a need to establish criteria for their assessment and the scale of change that promotes management in order to provide an effective indicator.

**Data availability:**
Data is not currently collected in any systematic way, although repeat photographic surveys are part of a range of monitoring commitments for other aspects of Forest management, in particular forming part of the New Forest LIFE project recording.

**Organisations involved:**
Forestry Commission, NFDC, SDC.

| **Potential indicator**: | **Bird species at risk** |
|---|---|
| **Units** | Number of breeding pairs |
| **Type of indicator** | Pressure |
| **Wider relevance** | Indicator is of wider relevance to the nature conservation valuation of the Forest.SO5.8i. |

**Significance:**
Following from Colin Tubbs' (Tubbs 1994) assessment of breeding birds numbers the assessment of ground nesting birds provide a potential indicator of pressures on environmental values. The measures of these indicators should follow existing survey methodologies used by the RSPB whose surveys include woodlark, nightjars and waders.

[86] *NRA 1996 Development and Testing of General Quality Assessment Schemes: Aesthetic quality in rivers, canals, estuaries and coastal waters WRc plc Project Record 469/20/HO Middlesex University developed ratings and weighting for water quality aesthetic classification.*

The association between the species and the perceived pressure is not established and longer term surveys are required to establish relationships between pressures and performance. Perhaps ideally the relationship with visitor pressure and breeding pairs would be established more explicitly. However, the existing surveys of visitor numbers provides a weak measure, given the time of year of these surveys and the lack of correspondence with the actual areas of breeding birds. The breeding pairs rather reflect a potential range of influences and provide a surrogate measure that needs careful interpretation and a long-term perspective.

**Data availability:**
Surveys are available for certain species within the New Forest perambulation but not more widely within the New Forest Heritage Area. Extension to other species and wider locations would be possible, but would require significant resources and closer association between the threats and the pressures.

**Organisations involved:**
RSPB, English Nature, BTO and other local bird recorder organisations (e.g. Hampshire Ornithological Trust).

| **Potential indicator**: | **Recreational management activity** |
|---|---|
| **Units** | Expenditure, expenditure per square km, per capita . |
| **Type of indicator** | Response |
| **Wider relevance** | Relevant to the financial planning for the Heritage Area, and although not a National Park Corporate Financial Plan Indicator this might form an appropriate special area specific measure.<br>SO5.8ii., SO5.8vi. |

**Significance:**
The costs of management of the recreational activity within the Heritage area by official agencies and public bodies is an achievable monitoring objective given the relatively few bodies involved. Although this might ignore the level of investment from private concerns, which may be significant within the Heritage Area, most of the management directed to remedying past damage and impact is undertaken by the Forestry Commission and other public bodies. Such activities include tasks under the New Forest LIFE programme, and the management activities on National Trust estate. Extension of recording beyond the LIFE programme is not ensured.

Per capita expenditure may be a more resonant statistic than just expenditure, given the localised use of the Forest. The All Parks Survey (1994) data on number of day visits and the commercial value of recreation in the New Forest may also provide useful denominator. Spatial summary of expenditure may also be illustrative of the variation in intensity of management across the area.

**Data availability:**
Data is currently available for the Forestry Commission management activities and specific management tasks under the LIFE programme. Other financial commitments to this type of management would need specific collation from the contributing bodies. More specific recording is currently being co-ordinated within a FC GIS application, with the potential to report a range of measures.

**Organisations involved:**
NFC Countryside Management Sub-committee, NFDC, SDC, TVBC, Forestry Commission, English Nature, National Trust, voluntary management groups, (e.g. British Trust for Conservation Volunteers, Hampshire Trust for Conservation Volunteers.).

| **Potential indicator**: | **Total length of public rights of way (km)** |
|---|---|
| **Units** | Length of rights of way and access by category (PROW, BOATS, RRUP, permissive paths etc) and length subject to management, length with ease of access to the public. |
| **Type of indicator** | State / Response |
| **Wider relevance** | Financial indicators.<br>Relates strongly to recreational pressure indicators on expansion of track networks. SO5.8vii. |

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**Significance:**
These indicators are derived from a single monitoring dataset, but categorised and statistically summarised into a suite of indicators on the associated attributes within the dataset. The total length of access routes within the Forest provides an assessment of the extent to which the statutory and permissive paths contribute to the overall recreational network. The presence of the largely open access land within the Crown Lands means that the path network is not maintained on the definitive maps (held by the local authorities). The recording and management system being developed by the Forestry Commission should allow integration of the "unofficial" path network for analytical purposes with the GIS and database-based PROW maps. The delivery of all these indicators relies on a consistent recording of the attributes, which requires reviewing within and between the datasets.

The existing distribution and density of the public access is uneven and may suggest localised reporting of statistics of changes to the pattern. Opportunities exist to extend the recording to include cycle tracks on Crown land (as recommended by the Countryside Commission)[87]. Inclusion of cycle routes within the definitive rights of way maps would provide the impetus for recording, although the monitoring and reporting could be undertaken without additional legislation. Cycle track routes are recorded and mapped by the Forestry Commission within Crown land but are not recorded uniformly elsewhere within the Heritage Area. Given the present concerns over the impact of off-route cycling the potential for further research on the erosional impact of cycling is needed within the Forest. Cycle tracks may be altered from time to time due to forestry operations and strategic planning.

**Data availability:**
Public Right of Way records are available from the County Councils, and for non-statutory paths from the Forestry Commission. A full Heritage Area network dataset would require integration of the two systems, for which there are no current plans, although GIS-based data handling should make this technically more straightforward.

**Organisations involved:**
Hampshire and Wiltshire County Councils, Forestry Commission, NFC Countryside Committee.

| **Potential indicator**: | **Area of land open to public access** |
|---|---|
| **Units** | Area ($km^2$) classed by rights of access, categorised by landscape types (heath, woodland, waterside, coast etc) |
| **Type of indicator** | State / Response |
| **Wider relevance** | SO5.8vii , Financial indicators<br>Potentially of value in meeting Open Access Land recording under proposed new legislation. |

**Significance:**
The Crown Lands are predominantly an open access area and thus would dominate the measurement of open access land. Other areas under National Trust land and other privately

[87] *Countryside Commission 1999 Rights of Way in the 21st Century Recommendation 20 "The Government should propose legislation to add designated tracks to the definitive map as a new category of right of way"*

and Local Authority owned commons also contribute extensive open access area. The extent of these areas changes little and thus is a rather insensitive indicator of the Strategic Objectives, although access agreements within countryside management and woodland grant schemes indicate the potential for changes in the extent of public access land or permissive rights.

The Government commitment to broadening access to other areas of the open countryside[88] provides the potential for a significant increase in open land access. Although the current legislative proposals would restrict this to heath and common land within the New Forest Heritage Area, there is also current consideration of inclusion of woodland, waterways and coastlines within the open access areas that would also offer significant increase in the New Forest open access resource.

**Data availability:**
Data are available for the whole of the Heritage Area, but require collation. Common Land Registration maps are available in digital formats, although the quality of the data capture is questioned and is likely to require data capture for the two counties.

**Organisations involved:**
District Councils and County Councils, Forestry Commission, Farm and Rural Conservation Agency.

### 4.7.6 Recommendations

The assessment of impacts on the Forest from tourism, recreation and access are still not well served by existing monitoring programmes. Indicators of pressure from recreation and tourism on the environment provide a real challenge to generate meaningful and management-directing measures. The inventorial surveys of numbers of visitors, whilst offering comparison with other sites and particularly with National Parks is less relevant in developing indicators to measure the effectiveness in meeting the strategic objectives of the Strategy for the New Forest.

The lack of a measure that effectively represents the scale of recreational activity that may affect other aspects of the Forest is a critical issue in developing monitoring programmes and indicators of impacts. Visitor numbers are generally seen as an associated dataset, however their use is at best of uncertain value in normalising area impacts as rarely is the timing, frequency and location of such surveys sufficient to establish relationships with patterns of disturbance. Whilst the visitor numbers may be useful in planning terms they appear less viable for monitoring and indicators.

It is recommended that repeat photographs from fixed locations be undertaken on at least a biannual basis for selected locations. Selection may be on the basis of "honey-pot" and on more objective sampling frameworks. Further assessment of the measure of pressure evident within the photographs is possible on a site-by-site basis using techniques similar to the EIA generated by the Sport and Recreation Study (University of Portsmouth 1996). Perhaps the most useful measure in this respect is the percentage of bare ground as this is less sensitive to seasonal conditions that affect the other measures used within the existing EIA survey.

It is recommended that the Tranquillity and Remote Areas survey and analytical methodology be repeated using more objective techniques, particularly within the definition of the tranquillity element and with effective validation of land cover maps of the Heritage Area. The use of the Heritage Area boundary as the edge of the assessment introduces its own edge effects to the assessment and it would also be appropriate to extend the coverage outside the Heritage Area to minimise these effects. Such extension could also offer spatial comparison of the effectiveness of policy response in maintaining and enhancing those areas within the Heritage Area. The use of GIS and the access to the datasets within the Forestry Commission in Lyndhurst and Hampshire County Council promotes the effective monitoring, recording and exchange of information. It also offers the opportunity to repeat analysis, as more accurate data

[88] *DETR 1999 Access to the Countryside in England and Wales : The Government's Framework for Action, March 1999.*

become available. Any repeat analysis would rely on a number of other monitoring programmes, such as land cover, road usage figures, and thus provides strong endorsement for these other monitoring initiatives and wherever possible these should extend to the whole Heritage Area.

It is recommended that the assessment of impact using indicators of ground nesting birds be assessed further and that the priority species be targeted in liaison with RSPB, English Nature and the Forestry Commission. The nature of this indicator requires commitment to long term monitoring and extended research into the correlation of disturbance and breeding success and the isolation of other influences on the populations. Setting long-term monitoring and indicator goals with a more research-oriented assessment should form part of the monitoring and indicator objectives of the Strategy.

It is recommended that the results of the Forestry Commission recreation data management and monitoring system be appraised as the basis for recording and reporting the impact of recreation and access pressure on the New Forest. Further discussions with the Forestry Commission to seek to extend the scope of this recording to areas outside the Crown Lands may provide valuable context for the monitoring and indicators for pressures, particularly within the edge of the Open Forest. It is generally at these sites that linear access broadens to wide-area access. It is recognised that the data recording requirements within the Crown lands differ from those of defined statutory rights of way, although the prospect of wider access to open countryside may recommend further evaluation of the monitoring methods.

It is recommended that a historic baseline of the path network be developed from archive aerial photographic coverage (with reference to the Forestry Commission 1992) to provide the basis for Forest-wide comparison of the extension of the path network within the Open Forest. This survey might effectively be undertaken as part of a research programme. Alternative approaches may be to select areas of the Forest where changes have been noted or to use a sampling framework. A number of attempts to derive such statistics have not resulted in a methodology or dataset with which to readily compare modern surveys. Commitment to repeat monitoring would provide suitable pressure indicators for recreational/erosional impact. Datasets may need validation since not all path extension may be related to recreational pressure, with some extension due to vehicle use or stock. There remains a difficulty in establishing the pressures in woodland and forested areas.

It is recommended that the concepts of carrying capacity be evaluated further and referenced to the monitoring programmes use of such concepts create the need to set targets and trigger levels within environmental planning and sustainable development. Given the uncertainty in the definition of carrying capacities (environmental, visitor and community) a precautionary approach may be the appropriate response, where trigger levels induce more detailed survey to reduce the uncertainty. It will still be relevant to set action levels below the level at which the special character may be damaged as a precautionary action.

### 4.7.7 References

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## 4.8 Traffic and Transport

**Strategic Objectives**

*Ensure that the impact of traffic in the New Forest does not adversely affect its traditional character, while respecting the needs of the Local community. [S05.19i]*

*Reduce the level and impact of through traffic on the New Forest. [S05.19ii]*

*To ensure that the minor road system does not adversely affect the traditional character of the New Forest and provides maximum safety for stock animals and humans. [S05.19iii]*

*To ensure that car parking policies support the Strategy for the New Forest. [S05.19iv]*

*To increase opportunities to make trips by public transport which would otherwise be made by car. [S05.19v]*

*Promote cycling as an alternative means of travel. [S05.19vi]*

### 4.8.1 Introduction

Planning for traffic and car parking in the New Forest shows a history of concern for the environmental impact, erosion of the traditional character of the area and impact on stock. Introduction of car free areas within the Forest in the 1970's was a response to unconstrained vehicle access across crown land (Conservation of the New Forest 1970). More recent measures, such as the 40mph zone and, the Highways Strategy (HCC1989) are reported to have reduced stock-related accidents by up to one third. Such association between transport initiatives and accidents offers a potential measure of the effectiveness of the Strategy.

Following the production of the Strategy for the New Forest (1996) and the New Forest Local Development Plan a Transportation Strategy was produced for the New Forest by HCC in partnership with the NFDC and the NFC (The New Forest Transport Strategy 1998). This strategy plan emphasises traffic and access as major issues within the maintenance of the New Forest character, and sets targets and monitoring up to the year 2011. It recognises that transport must also meet the needs of the population that live and work in the Forest, which has a sparse rural public transport network, yet still seek to deliver UK sustainability targets for transport and associated impacts on air quality and health.

Approaches to transport planning are changing, with promotion of integrated transportation policy frameworks and the production of Local Transport Plans as the basis for the replacement of existing transport policies and programme funding approaches. These changes should allow a longer term approach to traffic and transport management for the New Forest.

Traffic and roads have a significant impact on the landscape appreciation of the Forest through noise and light pollution levels (NFDC 1999[89]). The significant influence of roads is reflected in the weighting applied to this measure within the development of the Tranquillity mapping. Despite concerns over the application of the technique the remote areas concept is being used within the New Forest Transport Strategy (and the County Structure Plan review) to help plan access which will reduce negative impacts (e.g. noise and visual impacts of roads) on the remote qualities of the Forest. Light pollution has yet to be effectively incorporated within such assessments and reflects the multi-criteria potential of the technique.

Cycling is being widely promoted both nationally by the National Cycling Strategy and locally within the NF Transport Strategy (1998). The New Forest Cycle Plan promotes cycles as an alternative and sustainable means of travel. Promotion of cycle travel has largely been targeted at increased tourist and off-road cycling with rather more limited community access (e.g. the cross-Forest route and the inclosure cycle track network). However, the increase in cycle access to the Forest introduces its own environmental impact that may form part of the requirements for monitoring and indicators (although principally measured as a recreational impact, Section 4.7).

### 4.8.2 Why monitor?

At national level the Government's White Paper, 'A New Deal for Transport: Better for Everyone' and Planning Policy Guidance (PPG13) and Regional Planning Guidance (RPG9), promotes the development of integrated transport systems and greater co-ordination between land use and transport planning. The Government's response to climatic change commitments to reduce greenhouse gas emission further stresses the need for integrated planning. Integrated planning acknowledges the linkages between transport and economy, road traffic and environmental quality and health, and the impacts of road building on the natural environment through fragmentation and habitat loss. Within the recent review of the effectiveness of PPG13 Transport (1999) the role of monitoring in the development of transport plans was stressed, particularly in monitoring the impact of specific development and the co-ordination of data.

[89] *New Forest Landscape Survey 1999*

***Recommended Action***

*To develop and secure the implementation of an Integrated Transportation Strategy. [RA5.19a]*

*Encourage the Department of Transport to reduce the impact of the A31 and A36 upon the New Forest. [RA5.19b]*

*Influence policy and proposals which affect the wider regional management of traffic. [RA5.19c]*

*To ensure the provision of sensitive engineering, lighting and signing standards for the New Forest. [RA5.19d]*

*Animal accidents to be kept under review and work continued to reduce animal accidents, e.g. campaigns, particularly aimed at local residents.[RAS.19e]*

*Examine and implement measures to improve safety in Forest villages. [RA5.19f]*

*Investigate limiting the use of the minor road system and possible closure of non-essential links. [RA5.19g]*

*Develop a strategy for car parking which links in with policies for recreation /tourism and transportation. [RA5 19h]*

*Examine potential of park and ride and innovative traffic management schemes. [RA5.19i]*

*Review outstanding recommendations of the report 'Public Transport Access into the New Forest'. [RA5.19j]*

*Increase awareness of and improve public transport in the New Forest. [RA5.19k]*

*Examine opportunities to create innovative public transport schemes on experimental basis, including the provision of schemes from Dorset and Wiltshire.[ RA5.191]*

*Provide for the needs of cyclists on New Forest roads, where appropriate. [RA5.19m]*

Numerous regional policy documents influence the transport and highways strategy within the Forest but to be more fully integrated such policies must also take account of adjacent strategies (e.g. Southampton Area Transport Strategy 1996). Within the Forest the Highways Authorities (the county councils) County Structure Plans set the overall strategy and HCC have established a Highways Strategy for the New Forest (1989). The New Forest Transport Strategy supercedes the Highway Strategy. New Forest Transport Strategy and the Local Plans further establishes a series of policies related to road, footpaths and cycle routes improvements and traffic management.

Following from the White Paper a cascade of plans is suggested within a national framework. This includes Regional Planning and Transport Strategies, with a five-yearly cycle of Local Integrated Transport Plans. There are current proposals to make these integrated transport plans statutory and link them to the statutory targets and reporting requirements of the Road Traffic Reduction Act 1997 and Road Traffic Reduction (National Targets) Act 1998. This obliges local traffic authorities to undertake a review of existing and forecast levels of traffic on *local roads* in their area and to prepare a report with targets for reducing either existing levels of traffic on local roads, or to reducing their rate of growth. It is intended that Local Transport Plans will shift the emphasis to public transport, walking and cycling.

The development of integrated transport policies also forms a key principle within the UK Sustainable Development Strategy (DETR 1994), Sustainable Distribution (DETR 1999) and in road transport energy use - DETR Energy Efficiency Best Practice Programme (DETR 1998).

The DETR has also introduced a “National Cycling Strategy” (Sept 1996) with an overall target to increase cycle use (doubling cycle use by 2002 and doubling again by 2011) and to fit cycling into the overall strategy for sustainable and integrated transport. These mechanisms aim to deliver sustainable access, integrate with other modes of transport, improve safety, provide cycle-friendly infrastructure, improve parking, reduce theft, shift travel incentives and raise awareness. Indicators have been identified to enable monitoring and reporting of progress of these policies.

### 4.8.3 Who is involved?

HCC and WCC as the Highways Authorities, District Councils. Forestry Commission as managers of the track and path network through much of the Crown Lands.

### 4.8.4 Existing Monitoring and Survey Activity

Various national monitoring of transport and passenger usage statistics are collated by the DETR[90] under the National Traffic Census. Many of these statistics are relevant in setting the context for the local trends, for example, statistics available nationally show declines in use of buses by 56% from 1970 figures, and six-fold reductions in cycle miles per year from peak figures in 1952. The statistics are generally produced on a sampled basis and provide no direct sub-division suitable to identify local conditions for the New Forest.

National Traffic Census is based on traffic counts taken on every link (a link is a section between consecutive junctions with other major roads) of major roads, i.e. covering both trunk and principal roads. Census started in 1979 and since 1993 is conducted once every three years. Complete coverage of the minor road network is not attempted with a random sample of 1500 sites selected each year. ‘The counts cover the 12 hours from 7am to 7pm on weekdays in "neutral months" (April, May, June, September and October) and give eleven vehicle types (cars and taxis, two-wheeled motor vehicles, buses and coaches, light vans, six categories of goods vehicle and pedal cycles).

[90] *Department of the Environment Transport and the Regions, Transport Strategy and Analysis Directorate Manual raffic surveys provides an estimate of annual vehicle kilometres on principal roads in each local authority area.*

These counts are converted into estimates of annual average daily flows (AADFs) using expansion factors calculated at national level from 200 continuous automatic traffic counters on a representative sample of sites within England. There are separate factors for each vehicle type within each road type. Where the count took place prior to the year of the estimate, the AADF for the previous year is multiplied by a factor to allow for traffic growth'. *Ref: Department of the Environment, Transport and the Regions Road Traffic Reduction Act 1997 Draft guidance to local traffic authorities*

Within the New Forest Transport Strategy 1998, specific targets have been set for the period to 2011. It is acknowledged that these targets require monitoring if performance is to be established. The range of targets suggests a significant effort allocated to monitoring, including detailed public and private traffic surveys, road accident monitoring for humans and animals, cycle traffic surveys, air quality (particulates, CO2 and oxides of nitrogen) monitoring. Many of these monitoring activities are already undertaken on a regular, but also on a more limited basis for main roads within the National Traffic Census. Further requirements for monitoring minor roads are placed on local authorities under the Road Traffic Reduction Act to provide reports of vehicle kilometres. Any additional survey requirements are to be consistent with national census classes of vehicle types, road types.

Hampshire CC has produced a framework for assessment of its own transport strategies. This identifies the proportion of usage against strategy objectives and targets. HCC transport surveys (TRANSPOL) include a suite of monitoring of changing vehicle use patterns, divided by mode of transport, "modal split". These include automatic, continuous monitoring traffic flow counters and temporary counters, with data available since 1993. Within the New Forest there are two frameworks for monitoring, based on a corridor and cordons (defined areas) for detailed usage patterns that monitor entry points into an area. This inner cordon is operated for Lyndhurst area. The repeat sampling interval is every 2 years and data is held digitally with full coverage of the Heritage Area being undertaken by Hampshire County Council. These measures are also supplemented by manual counts and include counts of the vehicle occupancy levels for comparison with public transport usage figures. Cyclist usage is also included in the manual and automatic counts.

Usage figures by local public transport on bus and rail are included in HCC reports with data supplied by rail surveys and local bus companies. The overall picture of transport modal divisions is built from combining these sources of information.

Associated with the recording of transport usage is the Census and employment data that is used to interpret the longer term monitoring of car ownership, journey to work and modal choice of transport.

Local Authority monitoring of particular site policies (Site Policy Monitoring Schedule) charts the planning response to specific schemes. Information relating to each policy is recorded. Planning application decisions are also relevant to transport monitoring and are recorded by District Council and Hampshire County Council collates the information for the whole of he Heritage Area.

### 4.8.5 Indicators

The UK Indicators for Sustainability (DETR 1996) suggests that transport use may be measured by car use and total passenger travel. The UK Sustainable Development Strategy 1994 has set indicators for sustainable development including four for transport use, car use and total passenger travel, short journeys, real changes in the cost of transport, and freight traffic. In addition the impacts of vehicle emissions on air quality provide a suite of indicators on concentrations of pollution. The DETR is consulting on the "Development of an Overall Indicator of Air Pollution Concentrations". This indicator principally targets the emissions from exhausts as an aggregate of five pollutants which have demonstrable health effects and which are included in the DETR Air Pollution Public Information System. This aggregate measure is seen as a potential headline indicator within the Government's Sustainability Counts report (DETR 1999).

The charting of planning policy decisions in development control and policy decision tracking offers a system of monitoring the effectiveness of a number of the Strategy objectives. Existing transport indicators developed by HCC are available within the Heritage Area but do not specifically target the area as a reporting zone. These indicators include average traffic flows, public transport patronage and modal splits of usage.

| Indicator | PSR | Data | Meaningful | Resonance | S.O. |
|---|---|---|---|---|---|
| **Traffic statistics** | **S** | **Y** | **Y** | **Y** | **SO5.19ii.** |
| **Cycle usage** | **S** | **Y** | **Y** | **Y** | **SO5.19vi.** |
| **Car park usage within the Heritage Area** | **P / S** | **Partial coverage** | **?** | **Y** | **SO5.19iv** |
| **Accidents and deaths involving animals** | **P** | **Y** | **Y** | **Y** | **SO 5.19iii.** |
| **Remote and Tranquil Areas** | **P / R** | **Y ?** | **Y** | **Y?** | **SO 5.19iii.** |

| **Potential indicator**: | **Traffic statistics** |
|---|---|
| **Units** | Numbers and proportion by modal classes |
| **Type of indicator** | State |
| **Wider relevance** | DETR National Traffic Census statistics, RA5.19a, RA5.19b, RA5.19c. Such measures would be essential to the delivery of RA5.19g. SO5.19ii. |

**Significance:**
Journey statistics by type of transport provide some indicator of the state and pressure on the Heritage Area. Key indicators have been proposed including car use and total passenger travel. Figures are represented as per head of population for car, rail and other transport.

The sampling sites for the New Forest include an outer area and a cordon around Lyndhurst, reflecting the interest in congestion centred round the roads feeding Lyndhurst.

Existing data collected by the Highways Authorities records the modal uses, the proportion of traffic using differing forms of transport. The County Council collects many of the National Traffic Census data, although this survey is increasingly being awarded competitively. The DETR surveys enables a national and regional comparison to be made.

**Data availability:**
Data available within the Hampshire County Council, in digital format. National statistics are available from the Statistics Directorate, DETR.

**Organisations involved:**
Hampshire County Council.

| **Potential indicator**: | **Cycle usage** |
|---|---|
| **Units** | Number (on and off-road) |
| **Type of indicator** | State |
| **Wider relevance** | Relevance to statistics of growth in off-road cycling in general and on-road strategies to increase cycle trips under the national Cycle Strategy. SO1.19i. and SO5.19vi. RA5.19m |

**Significance:**
Use of off-road cycling is suggested to have grown significantly within the Forest, although numbers are not known. Growth in cycle hire is symptomatic of this interest. Whilst off-road

usage is guided by Forestry Commission planned routes and restricted largely to the Crown lands there is considerable use of the Open Forest outside these routes, resulting in concern for erosion. Off-track use is probably the main cause for concern where cyclists extend onto open heath from tracks within the enclosures. Such use is widespread as evident from the tyre tracks across sites like Matley Holms.

Local on-road use is monitored by manual and automated counts, but generally does not cover the minor roads, although this data may be enhanced through monitoring for Road Traffic Reduction Act 1997 indicators and as part of the Local Transport Plan.

Alternative measures of the growth of recreational holiday and leisure day visitors access to the forest using cycles may come from the cycle hire companies. However, the Sport and Recreation Study (1996) suggests that local cyclists and mountain bikers make up the greater proportion of participants. Numbers alone provide a relatively poor indicator of the influence of the past changes in the Heritage Area, but this may be seen as the baseline against which future studies would be undertaken.

More specific data appears to be required to monitor the volume of cycling associated with the promotion of off-road tracks within the Forest, although some off-road cycle counts are already made. Monitoring at car parks would provide some measure of usage, but a co-ordinated, repeatable survey structure is needed to provide the firm basis for indicators and assessing trends. Although numbers of users does not explicitly indicate environmental pressure when tied to recreational track monitoring it may provide the basis for correlation.

**Data availability:**
Data is not generally available for the whole Forest, although some permanent and temporary monitoring is undertaken at a limited number of locations. Some HCC manual traffic surveys include cyclists and the Sport and Recreation Study Recreation Site Survey provided some measure of the visitors cycling within the Forest from Local Town and Recreational Site Survey.

**Organisations involved:**
HCC, District Councils, Cycle hire companies, Cycling clubs.

| **Potential indicator**: | **Car park usage within the Heritage Area** |
|---|---|
| **Units** | Numbers (classified within the perambulation) |
| **Type of indicator** | State / Pressure |
| **Wider relevance** | RA5.19h, RA5.19I SO5.19iv there is a strong overlap with indicators of recreational use within the core Forest. |

**Significance:**
Car park usage within the recreational car parks, crown lands and towns and villages of the Heritage Area may provide some measure of the traffic using the roads of the New Forest and of the pressures on the area. Larger car parks within the Forest, such as Lyndhurst may weaken the value of such a measure. It is apparent from the Sport and Recreation study that the majority (96%) of both local and visitors reach the Forest by car, based at counts within selected car park locations. A number of Forest car parks within the summer have seasonal Forest Rangers who might effectively act as a means of enhancing the monitoring.

In addition, the introduction of car parking charges (for non-District users) within the NFDC car parks offers the opportunity to more closely monitor the car park usage by external visitors in the villages and local towns of the New Forest. However, the staged removal of these changes makes such data unlikely to provide the basis for longer term monitoring and indicators. No analysis of this potential data source is currently recorded. Lack of recording of car park usage in the Crown lands and the use of NFDC resident permits further reduces the viability of this measure in the longer term.

**Data availability:**
Data is generally not available over wide areas of the Forest and is not recorded for the core of the Forest outside the towns and villages.

**Organisations involved:**
Forestry Commission, NFDC, SDC and TVBC.

| **Potential indicator**: | **Accidents and deaths involving animals** |
|---|---|
| **Units** | Numbers classified by deaths and injury and by type (deer, cattle, ponies) |
| **Type of indicator** | Pressure |
| **Wider relevance** | SO 5.19iii. and Recommended Action RA5.19e Relevance to commoning activity. |

**Significance:**
Recording of accidents and deaths to deer and stock shows the level of pressure on the Forest on unfenced roads from traffic injuries and kills. These particularly affect deer and ponies, with fewer cattle involved in incidents. The incidents involve both kill and injury.

The implementation of the 40 mph limit (between 1990 and 1992) by the New Forest Highway strategy is attributed as having reduced the incident numbers by a third, although the figures do not necessarily bear this out on a rather varied annual picture. The figures need to be considered carefully with regard to the traffic volume on the New Forest roads and the levels of stock on the New Forest, turn out locations before clear conclusions can be drawn over the success of these transport policies. A long-term perspective is required when looking at these indicators as a measure of policy success. Numbers of injuries and deaths do not include the figures outside the Perambulation, where stock is generally fenced from roads.

Earlier actions may also be relevant to the numbers killed, with the perambulation fencing from 1963 the two main roads (A31 and A35) fenced in 1964 and 1967 and the A337 fenced between 1973-75. The figures are available from 1956 for stock kills and have been divided since 1985 into injured, killed stock and deer kills.

**Data availability:**
Statistics are collated annually by the Verderers whose officers, the Agisters, attend most of the accidents including stock and deer within the Forest Perambulation. Recording is still informal. Within the wider Heritage Area the police will record accidents where reported.

**Organisations involved:**
Verderers, Police. Forestry Commission, Hampshire County Council Highways Safety Group.

| **Potential indicator**: | **Remote and Tranquil Areas assessment** |
|---|---|
| **Units** | Pattern of remote and tranquil areas |
| **Type of indicator** | Pressure and Response |
| **Wider relevance** | SO 5.19iii. |

**Significance:**
Development of both the Tranquil Areas and the Remote Areas maps relies heavily on the classification of roads based on the perceived impact on the Forest character, through noise and visual intrusion. As stated before the development of the buffers around the roads in the present analysis is rather subjective and unrepeatable, based on judgements and local adjustments.

The significance lies in the extent to which the character of the Forest is affected by the presence of through and minor roads. The tranquil areas map uses a weighting within the analysis which declines away from the road and which may be affected by the topography and

land cover. This may be an acceptable first attempt at defining the influence, although the scale of the analysis did not allow for all the minor roads and forest tracks to be effectively considered. Fuller GIS-based analysis would provide a more repeatable measure where the significance of the minor roads can be more fully integrated within the analysis and terrain affects can be incorporated in a less subjective and hence more repeatable manner. The measure may act as a response indicator is road closures and restrictions are applied when the analysis can be repeated to explore the effect on the tranquillity maps and ultimately the remote areas assessment.

**Data availability:**
Tranquil areas maps are available but should be based on a more robust dataset and integrated within the GIS so that a repeat analysis can be undertaken. Further assessment of the scale of the effects is needed in order to set realistic buffers around different classes of roads.

**Organisations involved:**
New Forest Committee, Forestry Commission, Hampshire County Council.

### 4.8.6 Recommendations

Despite the co-ordinated recording of national and local statistics on road usage the use of minor roads needs further assessment and recording to provide a fuller picture of traffic pressures. It is recommended that the NFDC and the HCC continue to undertake road traffic assessment on both main roads and extend the surveys to minor roads, where resources allow. It is recommended that these figures be as supplementary to the surveys required by the Road Traffic Reduction Act and the monitoring required of the New Forest Transport Strategy targets.

It is recommended that a survey methodology be developed for monitoring the use of off-road cyclist and mountain bikers within the Forest, or at least within the Perambulation where the effects are seen as being most significant. Such survey might take the form of annual repeated recording from main entrance car parks associated with the Forestry Commission promoted cycle routes, or by use of automated counters. Survey might identify whether bikes are brought into the Forest by car. Such monitoring should be tied to the recreational impact assessment, and be used as the basis for ensuring that the promotion of cycling [SO5.19vi] does not compromise other Forest strategies. Monitoring of the availability of cycle hire within the planning applications should be able to identify trends in this market sector.

It is recommended that the Forestry Commission assess the practicality of summer rangers recording usage of car parks or other measures for recording the usage of the cycle network.

It is recommended that the numbers of animal injury and kill statistics continue to be collated within the Heritage Area. The annual variability of these data suggests that they are rather insensitive indicators of the success of road use reduction or calming measures. However, trends in the numbers and severity of incidents may provide a valuable longer-term perspective.

Tranquil areas and remote areas approaches appear to offer a wide range of potential indicators and inputs to strategy development. However, further work has been identified in order to make the approach more repeatable and more transparent. The use as an indicator may fulfil roles within recreation and traffic assessment of levels of disturbance. It is recommended that both aspects be explored within further development of the technique.

### 4.8.7 References

DETR (1997) Road Traffic Reduction Act 1997 Draft guidance to local traffic authorities

DETR (1998) Development of an Overall Indicator of Air Pollution Concentrations 1998

DETR (1998) Development of Aggregated UK Indicators of Air Quality, The Stationery Office.

DETR (1998) Energy Efficiency: Best Practice Programme.

DETR (1999) Sustainability counts. Consultation Paper.

DETR (1999) Sustainable Distribution

Government White Paper A New Deal for Transport: Better for Everyone.

Forestry Commission (1994) A Framework for Recreation

New Forest Committee (1996) A Strategy for the New Forest. Full Working Document.

New Forest District Council Tourism and Visitor Management Strategy

PPG13 Transport DETR

Regional Planning Guidance 9

Hampshire County Council (1996) New Forest Transportation Proposals, 1997/98.

Hampshire County Council & New Forest District Council (1998) The New Forest Transport Strategy.

# *PART 3:*

# *TOWARDS A MONITORING STRATEGY FOR THE NEW FOREST*

## 5.0 THE BASIS FOR A MONITORING STRATEGY

### 5.1 Background

The co-ordination of monitoring and the development and reporting of indicators for the *Strategy for the New Forest* introduces a number of operational and practical management issues such as:

- Who should co-ordinate the implementation of the monitoring?
- How often should indicator reporting take place?
- Who should undertake or commission the analysis of the indicators?
- How will be the monitoring and indicator information be published and queried?
- Who will assess performance against targets?

Monitoring is currently undertaken by a large number of organisations, each with their own timescales and recording/reporting structures. However, there appears to be great potential for the co-ordination of reporting for the Heritage Area on behalf of all interested parties. The organisations responsible for data collection (generally already members of the NFC) are the appropriate bodies to maintain and update their own data, and effective co-ordination could take place without a centralised data archive if properly organised. However, there is some need for an improved commitment to repeat survey, notably with the land cover and land use mapping.

Although a central database for the New Forest is not essential provided that full use is made of data networking, there is already some centralisation of data sets. Multiple use is also made of single data sets. In particular, Hampshire County Council co-ordinates planning information for the County and for areas of Wiltshire within the Heritage Area, both for planning applications and for some aspects of conservation information. The best use should be made of those organisations within the NFC that already integrate these data, as they are generally also the bodies with the best data processing capacity.

### 5.2 The monitoring schedule

The repeat cycle of indicator reporting relies on the frequency of monitoring from which the indicators are derived. This varies between organisations, topics and data sets. Many long-term monitoring programmes, such as the Habitat Condition Survey, have a 5 or 6 year repeat cycle. Others offer the opportunity to report annually, such as expenditure on a financial year basis for management actions. Some topics, such as visitor numbers, may usefully be represented on a monthly or even finer resolution. Strategic objectives may be established against quantitative targets, which themselves require periodic performance monitoring For example transport policies seek to double the use of cycles by the year 2001. If the target established by the policy is met, there is in principle no further need to extend the monitoring beyond the state of compliance with the target levels. In practice this approach is rarely applied, however, as continued monitoring may act as a baseline for future modification of the targets.

The *Strategy for the New Forest* has been developed with a rolling five-year framework of work programmes. A number of other plans relevant within the member bodies of the NFC have revision cycles on different timeframes. Thus there is typically a mismatch between agency strategies within the New Forest. Importantly, the *Strategy for the New Forest* has sought to draw together into an agreed, but non-statutory strategy the range of policies within the wide range of separate and statutory documents, and goes some way to integrating the varied review timescales. The proposed National Park status of the New Forest may further

promote further co-ordination of these component plans. It is acknowledged that the overall performance of the *Strategy for the New Forest* needs to be represented sufficiently regularly to enable constructive use of feedback. The *Strategy for the New Forest* was produced in 1996 and thus is formally due for review within 2001. Given the current timescales and the development and testing required of the proposed indicators, it is proposed that the first comprehensive monitoring report should be produced to coincide with this review.

Full repeat survey across all the selected priority indicators for the New Forest may be a goal that is best achievable on a 5-year cycle. This is fully justified when the cost and time-demand of the survey is high, or the rate of change of the variable is very slow. However, such a repeat survey cycle would coincide with the review schedule of the *Strategy for the New Forest* itself, and thus would not meet the objective of reporting on progress through the life of the strategy. Thus it seems essential that at least some elements of the *Strategy for the New Forest* should be reported annually as a "State of the Forest" Report. The distinction between the repeat survey schedule and the indicator publication schedule is important. Publication may be annual, but some indicators will only be updated on a more periodic basis.

Analysis of the monitoring data from which indicators are developed would initially be undertaken by the data collection organisation or the body that already collates these data. In some instances the development of indicators over the Heritage Area integrates a number of data sets from different data owners. In a few cases the recommended indicators have no current "owner". In these instances (e.g. landscape metrics, erosional impacts or recreation), it will be appropriate to agree an organisation to take responsibility for the analysis or to commission it. Any specialised analytical requirements of the indicator (e.g. GIS analysis) may help to decide such allocation of responsibility, since currently only a few of the member organisations of the NFC have the technical capacity for GIS and database analysis.

Publication of the integrated set of "State of the Forest" indicators should be regarded as a separate responsibility from the collection of single indicators. Such publication should always be accompanied by a definitive description of data characteristics and quality (metadata) so as to ensure appropriate interpretation. Co-ordination and management of the reporting of indicators is already undertaken to a limited extent within the New Forest Committee Annual Report, which identifies the annual actions of the member organisations against the Strategic Objectives. Extension of this reporting to encompass agreed indicators would appear to offer a model for annual reporting and publication. This approach would rely on contributions of data, skill and resource from the member organisations and some other external organisations.

Development of a monitoring and indicators strategy is not a static issue. Changes of local or national need, or of the policies derived from the *Strategy for the New Forest*, will require ongoing evolution of monitoring. Despite the desire to maintain a monitoring standard for long-term comparative purposes, it will still be important to adapt the procedures to accept new technologies and measurement techniques, and to incorporate improved understanding of the relationships between indicators and triggers of environmental change. Opportunities for remote-sensing contributions, GIS analytical procedures, development of indices and setting of target and trigger levels may also be expected to change the specific requirements.

Table 5.1 below sets out a summary of the initial short-list of indicators proposed. The full list of 44 indicators provides a degree of comprehensive coverage, but is too detailed to meet the need for a small number of key indicators discussed in Section 1.6 above. The table indicates the availability of information, the status of the indicator in terms of the pressure-state-response model, and the organisations principally involved. It also identifies the key Strategic Options within the *Strategy for the New Forest* that each indicator seeks to address. The organisation of the table reflects the structure of Part 2 of this Report, and the individual monitoring and measures are described in more detail within the theme-based reviews in Section 4.2.

## 5.3 A strategic framework for monitoring

The monitoring strategy comprises a select list of indicators observed and published on an agreed schedule, and assessed formally by bodies responsible for planning and management of

the New Forest or any of its constituent parts or sectors. Figure 5.1 suggests a notional framework for delivery of the indicators for the Heritage Area.

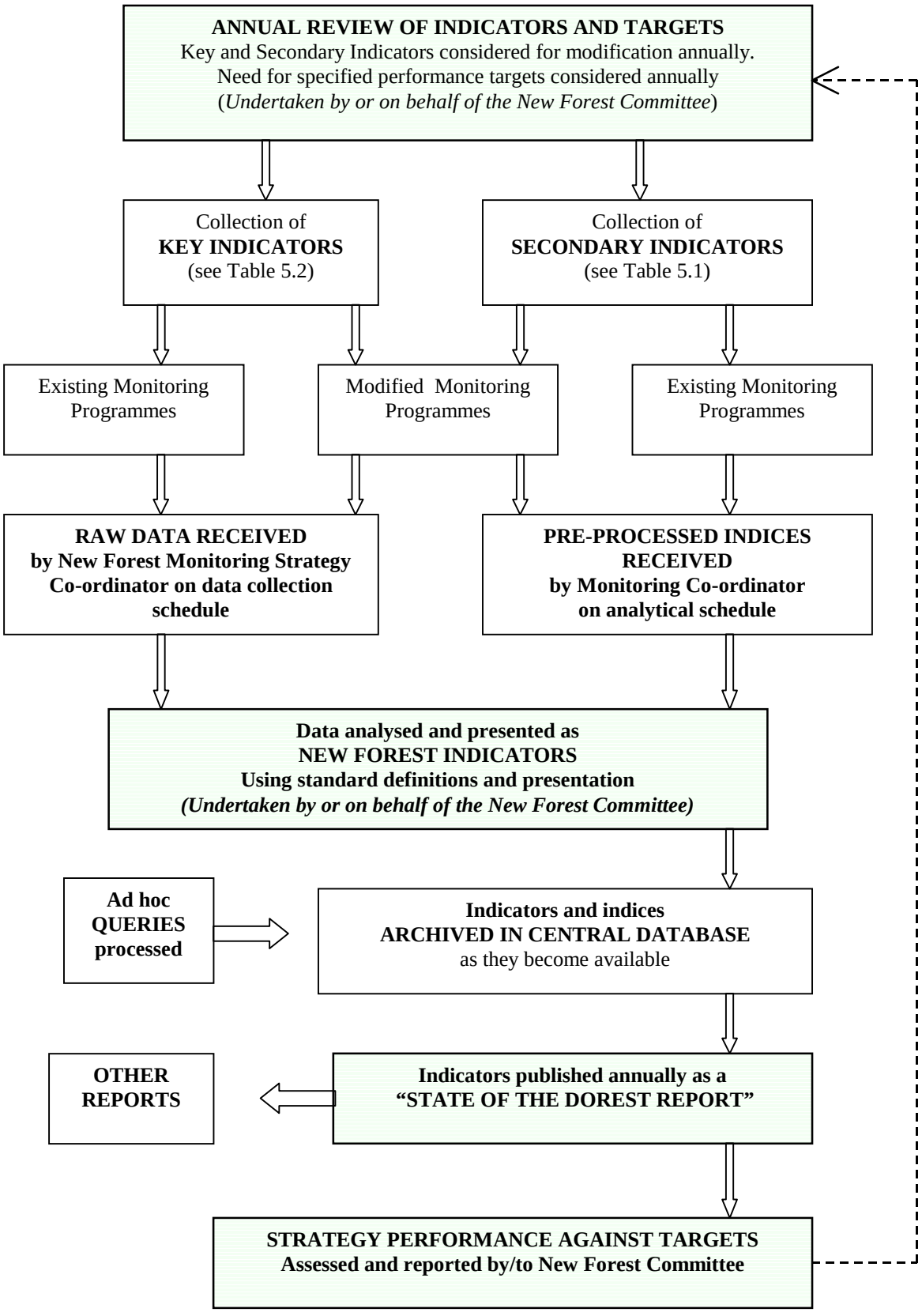
The framework suggests that an annual review by the NFC should determine whether modifications to the monitoring strategy are required. The selected indices will be monitored for the most part through existing programmes, though some modification or additions could be considered. Raw data from monitoring should be passed to a designated New Forest Monitoring Co-ordinator (possibly within NFDC) as soon as they are available, and ideally should not be held pending the normal publication cycle of the data-collecting organisation. Processed indices, however, may have to wait for analytical work by the data "owner". All indicators and indices should be archived in a central New Forest Monitoring Database, though it will generally not be necessary to archive the raw data centrally. An annual Report on the State of the Forest could be presented to, and subsequently published by, the New Forest Committee. Following publication, the indices would be available for *ad hoc* internal or external queries. As well as reporting the results of the monitoring, the NFC should formally review their implications as indicators of the success of the planning and management strategies in place. The conclusions of this review, particularly any recommended response options, should also be reported. Finally, the annual review of performance may identify changes to the monitoring programme that should subsequently be built into the following annual review of indicators and targets.

## 5.4 Identifying priority indicators

Clearly, an important foundation of the monitoring programme will be the selection of relevant indicators. A short-list of the most appropriate indicators has been presented (as Table 5.1) as a basis for designating the broad background coverage of Secondary New Forest Indicators that would be measured and reported periodically (but possibly not annually). In addition, it has been suggested that a headline list of Key New Forest Indicators should be selected and implemented as the basis of the annual monitoring process (Section 1.7). The Key Indicators will need to reflect closely the main themes pertaining to landscape and conservation that have already been identified for priority treatment. They need to be small in number, and therefore will not claim to provide a comprehensive reflection of the health of the New Forest. This is an essential trade-off between creating a strategy that is manageable and cost-effective, while avoiding under-representing aspects of critical management and planning relevance.

These proposals suggest a total of 13 Key Indicators of which 10 are chosen from the full list of 44 Secondary Indicators. Since there is no objective basis for the suggestion that 13 indicators should be designated as "keys", it may be that the NFC would wish to designate rather more or less – though to move much beyond a range of 10-15 indicators may be inappropriate for a priority set. The indicators proposed in Table 5.2 have been chosen to represent a list that is a compromise between comprehensive and focused. It is stressed that the intention remains for professional monitoring of a full range of indicators (such as that proposed in Table 5.1), of which a subset would be regarded as headlines or priorities at any one time. This provides the NFC with significant flexibility, since indicators can move between the Key (5.2) and Secondary (5.1) lists to reflect prevailing issues without damaging the long-term continuity of data collection which is the basis of effective monitoring.

Figure 5.1 A Monitoring Strategy for the New For



**Summary of Potential Indicators**

| No | Themed Indicators | P | S | R | Availability of data to build indicators | | | | | | Organisation Involvement | Strategic Objective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1) Currently Collected | 2) Full NFHA Coverage | 3) Digital Format | 4) Repeat Cycle <5yrs | 5) Easily Accessible | 6) Requires collating | | |
| | **AGRICULTURE AND COMMONING** | | | | | | | | | | | |
| 1 | Land tenure (proportion of tenanted land) | ✔ | ✔ | | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | MAFF, FRCA | SO3.2 |
| 2 | Proportion of farm types within the HA | | ✔ | | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | FRCA, MAFF | SO3.2 SO3.4 |
| 3 | Holding size by area | | ✔ | | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | FRCA, MAFF | SO4.2 SO3.2 |
| 4 | Take up of agri-environment schemes, | | | ✔ | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | FRCA, FA, MAFF | SO4.2 |
| 5 | Number of practising commoners | | ✔ | | ✔ | ✔ | N | 10 yrly | ✔ | ✔ | Verderers, MAFF | SO4.1 |
| 6 | Numbers of stock depastured | ✔ | ✔ | | ✔ | ✔ | N | Annual | ✔ | ✔ | Verderers | SO4.1 |
| 7 | Animal welfare | ✔ | | ✔ | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | Verderers / HCC | SO4.1 |
| 8 | Percentage of farms with whole farm management plans | | ✔ | ✔ | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | FRCA | SO4.2 |
| 9 | Planning changes to agricultural land | ✔ | | ✔ | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | District Councils / HCC | SO4.2 |
| | **FORESTRY AND ECONOMY** | | | | | | | | | | | |
| 10 | Extent of broadleaved woodland | | ✔ | ✔ | ✔ | ✔ | ✔ | 10yr | ✔ | N | FA | SO3.6ii. |
| 11 | Landscape indices | | ✔ | ✔ | ✔ | ✔ | ✔ | N | ✔ | ✔ | FC | SO3.6i. |
| 12 | Area /number of Forest Design Plans | | | ✔ | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | FA | SO3.6i./SO3.6ii. |
| 13 | Take-up of woodland management schemes | | | ✔ | ✔ | ✔ | ✔ | Annual | ✔ | N | FA, DCs | SO4.3 |
| 14 | Expenditure on recreational facilities/management | | | ✔ | ✔ | N | ✔ | Annual | ✔ | ✔ | FC, others | SO4.3 |
| 15 | Development control index | ✔ | | ✔ | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | HCC lead, District Councils | SO 4.4 |
| | **HERITAGE AND ARCHAEOLOGY** | | | | | | | | | | | |
| 16 | Number / area of conservation area | | ✔ | | ✔ | ✔ | ✔ | N | ✔ | ✔ | HCC / NFDC / SDC / TVBC | SO3.4 SO3.2 |
| 17 | Listed buildings “at risk list”/threatened historic buildings | ✔ | ✔ | ✔ | ✔ | ✔ | N | Annual | ✔ | ✔ | HCC / NFDC / SDC / TVBC | RA3.5b |
| 18 | Number of Scheduled Ancient Monuments (SAMs) | | ✔ | | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | HCC WCC | SO5.3i. |
| 19 | Number of SAMs/ sites with management plans | | ✔ | | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | HCC WCC | SO5.3i. |
| 20 | Land cover changes | | ✔ | ✔ | N | ✔ | ✔ | N | ✔ | ✔ | HCC | RA3.5b |
| 21 | Archaeological response to planning applications | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | N | ✔ | ✔ | HCC | RA3.5b |
| 22 | Boundary lengths | | ✔ | ✔ | ✔ | ✔ | ✔ | N | ✔ | N | HCC | RA3.5b |
| | **NATURE CONSERVATION** | | | | | | | | | | | |
| 23 | Sites under protective designation/management | | ✔ | ✔ | ✔ | ✔ | ✔ | N | ✔ | N | FC / EN / MAFF | SO3.3ii. |
| 24 | Area of habitats, key habitats under c SAC | ✔ | ✔ | | ✔ | ✔ | ✔ | N | ✔ | ✔ | EN | SO3.3i. |
| 25 | Damage to protected sites | ✔ | | | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | RSPB / BTO | SO3.3i. |
| 26 | Species and habitats with action plans | | | ✔ | ✔ | ✔ | ✔ | N | ? | ✔ | EN, BN, RSPB, HBC, HWT | SO3.3i. SO3.12 |
| 27 | Habitat condition survey | ✔ | ✔ | | ✔ | ✔ | ✔ | 6 yearly | ✔ | ✔ | EN, FE | SO3.3ii. |

| No | Themed Indicators | P | S | R | Availability of data to build indicators | | | | | | Organisation Involvement | Strategic Objective |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1) Currently Collected | 2) Full NFHA Coverage | 3) Digital Format | 4) Repeat Cycle <5yrs | 5) Easily Accessible | 6) Requires collating | | |
| 28 | Area of habitat restored or rehabilitated | | | ✔ | ✔ | ✔ | ✔ | N | ? | ✔ | FE, HWT, | SO3.3I SO3.8ii SO3.7i. |
| 29 | Changes in biodiversity priority species | ✔ | ✔ | | ✔ | ✔ | ✔ | N | ? | ✔ | EN, HWT | SO3.3ii. SO3.7I |
| | **LANDSCAPE** | | | | | | | | | | | |
| 30 | Area with design Plans | | ✔ | ✔ | ✔ | N | ✔ | 5 yearly | ✔ | N | NFDC / HCC | SO3.2i. SO3.14ii. |
| 31 | Planning decisions relating to landscape | ✔ | | ✔ | ✔ | ✔ | ✔ | Annual | ✔ | ✔ | HCC | SO3.2ii. SO3.2iv. |
| 32 | Length of landscape features | | ✔ | | ✔ | ✔ | ✔ | N | ✔ | ✔ | HCC | SO3.2ii. |
| 33 | Landscape metrics | ✔ | ✔ | ✔ | N | ✔ | ✔ | N | N | ✔ | HCC? FA? | SO3.2iv. |
| | **RECREATION, TOURISM AND ACCESS** | | | | | | | | | | | |
| 34 | Erosional impact – path network | ✔ | | | N | ✔ | N | N | N | ✔ | FE, | SO5.8i. SO5.8ii. |
| 35 | Tranquillity / remote areas assessment | ✔ | | ✔ | ✔ | ✔ | ✔ | N | ✔ | N | NFC, HCC | SO5.8i. SO5.8vi. |
| 36 | Repeat photograph indicators | ✔ | ✔ | | ✔ | N | ✔ | N | ✔ | ✔ | FE | SO5.8i. |
| 37 | Bird species at risk | ✔ | | | ✔ | ✔ | ✔ | 5 yearly | ✔ | ✔ | RSPB, BTO, EN, FE | SO5.8i. |
| 38 | Recreational management activity | | | ✔ | ? | N | N | N | N | ✔ | FE, NFDC, SDC, TVBC | SO5.8ii. SO 5.8vi. |
| 39 | Total area of land open to public access | | ✔ | ✔ | ✔ | ✔ | +/- | N | ✔ | ✔ | FE, NFDC, SDC, TVBC | SO5.8vii |
| 40 | Total length of PRoW + FE access routes | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | Annual | ✔ | N | NFDC, SDC, TVBC, FE | SO5.8vii |
| | **TRANSPORT** | | | | | | | | | | | |
| 41 | Traffic statistics | ✔ | ✔ | | ✔ | ✔ | ✔ | ? | ✔ | ✔ | HCC, DoT | SO5.19ii. |
| 42 | Cycle usage | ✔ | | ✔ | ✔ | S | ✔ | Annual | ✔ | N | HCC, FE | SO5.19vi. |
| 43 | Use of car parks | ✔ | | | N | N | N | N | N | ✔ | FE, NFDC, SDC, TVBC | SO5.19iv. |
| 44 | Animal accident and road kill | ✔ | | ✔ | ✔ | N | N | Annual | ✔ | ✔ | Verderers, HCC, Police | SO5.19iii. |

**CFP** - Corporate Financial Plan
**EA** - Environment Agency
**EN** English Nature
**FRCA** Farming and Rural Conservation Agency
**FWAG** Forest and Wildlife Advisory Group
**HCC** Hampshire County Council
**HWT** - Hampshire Wildlife Trust
**LNR** - Local Nature Reserve
**NFC** - New Forest Committee
**NFDC** - New Forest District Council
**NFHA** - New Forest Heritage Area
**NFU** - National Farmers Union
**NNR** - National Nature Reserve
**PRoW** - Public Right of Way
**RSPB** - Royal Society for the Protection of Birds
**SAC** - Special Area of Conservation
**SAM** - Scheduled Ancient Monument
**SDC** - Salisbury District Council
**SINC** - Site of Importance for Nature Conservation
**SSSI** - Site of Special Scientific Interest
**TVBC** - Test Valley Borough Council
**WCC** - Wiltshire County Council
**WWT** - Wiltshire Wildlife Trust

**P** - Pressure
**S** - State
**R** - Response

The summary of the availability of data from which to build indicators is divided into six classes of information. Currently collected assesses whether the data is part of an existing monitoring cycle or for which there is a baseline data source. Full NFHA cover assesses whether the data covers the Heritage Area, Digital format assesses whether the data are in a database or GIS format. Repeat cycle assesses whether there is a current period (e.g. 5 yearly) for repeat surveys, (N) implies that there is no scheduled resurvey. Ease of accessibility indicates whether the data are readily available, in terms of obtaining the data. Requires collating indicates whether the data need bringing together (✔) or whether there is a further task in collating the data (N).

| New Forest Monitoring Sector | Recommended Key Indicators | Component data | Organisation responsible for monitoring |
|---|---|---|---|
| **For Agriculture and Commoning**<br><br>*Commoning seems to be the key element* | The number of practicing commoners (Item 6 on Table 5.1) is the best single existing indicator | Census of Commoners<br><br>*Geographical distribution could be added* | Census originated by Ivey (1991), maintained by the Verderers |
| | Number of stock depastured would be a highly significant additional indicator | Number of stock<br>Location of holding | *Would require a new census* |
| **For Forestry and Economy** | The Forest Landscape Indices (Item 10 on Table 5.1) | Based on land cover maps, but analysed to indicate ecological state and pressure. A well-designed and recently-implemented view of the state and potential of forestry land. | Forest Authority<br>Forest Research<br>*May need customising and standardising for NF Monitoring purposes* |
| | A development control index | A measure of number/type of planning applications received and/or granted | NFDC |
| **For Heritage and Archaeology** | The choice is more conjectural, but land cover change (Item 18 on Table 5.1) may be the most appropriate. | % change in land cover type: *ideally classified as an index of type of change or potential change.* Represents a pressure on heritage sites | HCC baseline data from air survey. ITE also involved. *Would require periodic repeat surveys.* |
| **For Nature Conservation**<br>*The importance of this is so great that three potential Key Indicators are suggested:* | Damage to protected sites (Item 24 on Table 5.1), and | Number of sites classified by nature of damage. A pressure indicator. | English Nature, RSPB, BTO etc. *Annual reporting relating to SSSIs.* |
| | Habitat condition surveys (Item 26 on Table 5.1) | Classification of favourable, less favourable and unfavourable status of habitat. | English Nature, Forestry Commission and others. *A proposed survey which could repeat on a 6-year cycle.* |
| | Changes in priority biodiversity species (Item 28 on Table 5.1) | Priority indicator species notably related to Hampshire Biodiversity Action Plan | HCC, Hampshire Biodiversity Partnership. *Survey and repeat cycle uncertain, but high potential for monitoring* |
| **For Landscape**<br>*Difficult to capture in a single measure, hence the recommendation to develop indices* | Landscape metrics (Item 32 on Table 5.1) are recommended. | Indices of landscape are required, perhaps derived from existing data sets. | Possibly HCC, Forestry Commission, NFDC. *Forestry Commission has initiated work, but further development is required* |
| **For Recreation, Tourism and Access**<br>*In this context these may be regarded as threats to landscape and nature conservation. The potential importance as a pressure indicator justifies three proposals.* | Tranquillity and remote area assessment (Item 34 on Table 5.1), | Subjective rating of areas on remoteness and lack of disturbance | New Forest Committee, Forestry Commission, HCC. *Needs a formal survey structure with repeat cycle.* |
| | Erosional impact - path networks (Item 33, Table 5.1) | Lengths of classified paths; path density and characteristics. Could be derived from existing air photos. | NFDC, Forestry Commission, HCC. *Needs a formal survey structure with repeat cycle.* |
| | A measure of Visitor numbers | Possibly a measure of visitor days, analysed to represent pressure. Data availability and quality are problematic. | NFDC, Forestry Commission, HCC, Countryside Agency *(may require a customised survey or index)* |
| **For Transport** | A selected indicator of Traffic statistics (Item 41 on Table 5.1) appears most useful | Road traffic statistics | HCC, DETR |

*The table comprises indicators recommended for priority status for the initiation of a New Forest Monitoring Strategy. The status of individual indicators may vary between Key and Secondary in the medium term. Contributory data sets overlap significantly in some cases, but the derived indices and their application are specific to the indicator concerned (see text).*

Table 5.2: Suggested Key Indicators for the New Forest

It is fundamental to the lists of key and secondary indicators that some of their contributory data overlap significantly. This is particularly the case with land cover maps, which contribute to several of the proposed indicators. The overlap is justified on the grounds that the analyses undertaken as a basis for applying the information is specific to each indicator. For example, land cover may yield a classification of land suggestive of changes that pose a threat to heritage, or can be separately analysed to provide Forest landscape indices or even landscape metrics. The input is common, but the outputs are diverse. It is also apparent that most of the proposed indicators are extremely complex, and their relationship to the state of the New Forest may require ongoing research. The aim of the indicators is to provide an early warning of changes and challenges rather than a detailed diagnosis of their cause.

## 5.5 Conclusion

On the basis of the forgoing discussion, a provisional Monitoring Strategy for the New Forest has been suggested (Figure 5.1). This is based on 13 Key Indicators (Table 5.2) selected from a total of 44 Secondary Indicators (Table 5.1). It has further been recommended that, regardless of the repeat survey schedule for the chosen indicators, the results should be compiled, reported, assessed and published on an annual basis by the New Forest Committee. Although no central database is required for raw data, a central archive of the annual indicators is recommended, to be managed by a designated New Forest Monitoring Co-ordinator.

The proposed monitoring strategy offers the flexibility to move individual indicators between key and secondary status without disrupting the continuity of data collection. It does reflect the need to use existing data where possible, but also acknowledges that significant additions or modifications to current monitoring will be required. This is particularly the case where baseline data may exist, but without a clear commitment to regular repeat survey. The New Forest Committee may wish to discuss the extent to which members would be prepared to modify and extend their data collection programmes, rather than just making existing information available. The cost and effort will not be inconsiderable, but the potential value to be gained from undertaking and acting upon a regular review of the state of the New Forest is enormous.

## Abbreviations

| | |
|---|---|
| BTO | British Trust for Ornithology |
| CC | Countryside Commission |
| CA | Countryside Agency – established April 1999 succeeding the Countryside Commission ‘s role. |
| DETR | Department of Environment, Transport and the Regions |
| DoE | Department of the Environment – (predecessor to the DETR) |
| DoT | Department of Transport |
| EA | Environment Agency |
| EN | English Nature |
| FC | Forestry Commission |
| FRCA | Farming and Rural Conservation Agency |
| HWT | Hampshire Wildlife Trust |
| JNCC | Joint Nature Conservation Committee |
| MAFF | Ministry of Agriculture Fisheries and Food |
| NFDC | New Forest District Council |
| NFC | New Forest Committee |
| OECD | Organisation for Economic Co-operation and Development |
| RSPB | Royal Society for the Protection of Birds |
| WWT | Wiltshire Wildlife Trust |