

HEART OF NEOLITHIC ORKNEY WORLD HERITAGE SITE

Appendix E

Environmental Report



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Non technical summary

Introduction

The Heart of Neolithic Orkney World Heritage Site (WHS) is a series of discrete, but related, Neolithic monuments which fall into two complexes, 6 km apart. It is an internationally important area and it is essential to manage the WHS to make sure that it can be protected for future generations. The management of the WHS is guided by a management plan. Historic Scotland has reviewed the management plan published in 2001 and has prepared a draft management plan in close consultation with our partners and stakeholders. The draft management plan sets out the overarching vision for the management of the WHS and defines a 30-year vision and aims, along with shorter term (five-year) issues and objectives. The key issues are:

- ∞ protecting the WHS
- ∞ conserving the WHS
- ∞ understanding the values of the WHS
- ∞ accessing the WHS
- ∞ the partners in the WHS
- ∞ the stakeholders in the WHS
- ∞ sustainable management

The draft management plan can be downloaded from the place you obtained this document or is available in hard copy to consult in Orkney (please see section 1.2.1 of the draft Management Plan for details).

Historic Scotland considered that the management plan was likely to have significant environmental effects and we have undertaken a strategic environmental assessment (SEA) of the plan, in line with the requirements of the Environmental Assessment (Scotland) Act 2005. The purpose of SEA is to make sure that information on the environmental effects of a plan or programme is gathered and made available to plan-makers and decision takers as the plan is prepared and implemented. Its overall aim is to help promote sustainable development by making sure that environmental issues are considered as plans are being prepared.

This Environmental Report:

- ∞ describes the legislation and policy content of the management plan
- ∞ describes the environmental baseline of the WHS and its surroundings
- ∞ explains how the environmental assessment was carried out, and which parts of the draft management plan were assessed
- ∞ sets out the findings of the environmental assessment
- ∞ proposes measures to help mitigate the potentially negative environmental effects of the plan
- ∞ suggests indicators to help monitor the environmental effects of the plan

Context

One of the early stages of the SEA process is to consider the relationship of the plan to other relevant policies, plans, strategies and environmental objectives. This allows key environmental issues to be identified for consideration during the plan preparation process. It is also important to identify both the plans and strategies that will influence the draft

management plan and those that will be influenced by the draft management plan. Annex B sets out the review of the legislation, policies, plans and strategies that are considered to be of most direct relevance to the draft management plan.

To help consider the environmental effects of the draft management plan we gathered information about the environmental baseline of the WHS and its surroundings. This included information on biodiversity, flora, fauna, water, soil, air, landscape, historic environment, climatic factors, human health and population. As well as being important for its cultural heritage, the WHS area is also important for nature conservation and provides habitats that support many plants, animals and birds. Table 2 in the Environmental Report summarises the environmental baseline and more detailed information is included in Annex C.

We consulted SEPA and SNH on our approach to the environmental assessment, and Annex A shows how we have taken their comments into account.

Assessment of the environmental effects of the draft management plan

We used a set of questions, called SEA objectives, to help predict the environmental effects of the draft management plan. These are shown in Table 5. This is a common way of assessing the environmental effects of plans, and helps to make the assessment systematic and consistent.

We found that the draft management plan will have generally positive effects on the historic environment, landscape, access and biodiversity. We also found that there may be some negative environmental effects from some of the projects that may arise from the management plan. These include resolving some of the current management issues, which includes addressing the problem of coastal erosion at Skara Brae, improving the car parking at the Stones of Stenness and addressing the safety issues from the car parking and visitors centre at Tormiston Mill.

The detailed results of the assessment are described in section 4 of the report and Annexes D, E and F.

Mitigation measures

After predicting the environmental effects of the plan, we suggested a number of ways to help avoid or reduce the possible negative effects, as we want to make sure that the management plan has as few negative environmental effects as possible. We have suggested that further environmental assessment will be needed when we know more detail about how the management issues listed above will be resolved.

Section 5 of the report describes the mitigation measures in detail.

Monitoring

We want to make sure that we understand how the management plan is affecting the environment over the next five years and we have suggested ways of monitoring the impacts of the plan in section 5 of the report.

Consultation

This Environmental Report accompanies the draft management plan for a six week period of public consultation from 8 May to 19 June 2008 and we would welcome any comments that you would like to make on either document. We have included a number of questions in the Environmental Report which you may use to help your response. These are also listed in the **Response Form** which we would encourage you to use to structure your response to the draft management plan and Environmental Report. The questions are:

Do you have any comments on the baseline information, or the environmental problems/issues?

Do you have any comments on the approach taken for the environmental assessment?

Do you agree with the results of the environmental assessment? Have we identified the key issues?

Do you have any comments on the environmental mitigation measures, including the schedule of commitments?

Do you have any comments on the proposed additional environmental monitoring indicators?

1 Introduction

Background

- 1.1 The Heart of Neolithic Orkney was inscribed as a World Heritage Site (WHS) in 1999. The site comprises a series of discrete, but related, Neolithic monuments which fall into two complexes, 6 km apart. These are: Maeshowe, Skara Brae, the Stones of Stenness, the Watch Stone, the Barnhouse Stone, and the Ring of Brodgar and thirteen mounds and a stone setting, all of which are Scheduled Monuments. The monuments within the WHS are also all Properties in the Care of Scottish Ministers, managed by Historic Scotland (HS) on their behalf. HS therefore has responsibilities as both the manager of this particular WHS and as the State Party under the terms of the World Heritage Convention 1972.
- 1.2 The United Nations Educational, Scientific and Cultural Organization (UNESCO) requires that appropriate management systems are in place at WHSs. Management plans specify how the outstanding universal value of the Site will be protected and managed for future generations. The draft management plan provides a framework for achieving the protection of the cultural assets of the WHS including their interpretation, promotion and enhancement, and fostering of the local economy.
- 1.3 Best practice is for management plans to be regularly reviewed, monitored and implemented. The initial management plan was published in 2001 and covers the period 1999 to 2006. HS have reviewed the management plan in close consultation with our partners¹ and stakeholders², and have now prepared a draft management plan for public consultation.
- 1.4 Table 1 sets out the key facts about the draft management plan.

Table 1: Key facts

Responsible Authority	Historic Scotland
Title of plan	Heart of Neolithic Orkney World Heritage Site Management Plan
Period covered by the plan	Five years
What promoted the plan	UNESCO Operational Guidelines for the Implementation of the World Heritage Convention (2008) states that effective management of WHSs involves a cycle of long-term and day-to-day actions to protect, conserve and present the inscribed property. This review of the management plan forms part of this cycle.

¹ Historic Scotland, Orkney Islands Council, Scottish Natural Heritage and the Royal Society for the Protection of Birds.

² A wide range of individuals, organisations and groups have an interest in how the WHS is managed. These can be broadly grouped under the headings community, tourism, business and agriculture, heritage and environment, and access and education.

Plan area	Heart of Neolithic Orkney World Heritage Site and proposed local buffer zones (see maps in Figures A.1, A.3 and A.4)
Purpose of plan	To specify how the outstanding universal value of the WHS will be protected and managed for future generations. The plan is intended to balance the needs of conservation, access, the interests of the local community and sustainable economic development.
Contact point for queries on the plan	Sabina Strachan Heart of Neolithic Orkney WHS Co-ordinator Historic Scotland Longmore House Edinburgh EH9 1SH 0131 668 8934
Contact point for queries on the SEA	Jennifer Craig Senior SEA Officer Historic Scotland Longmore House Edinburgh EH9 1SH 0131 668 8832

Content of the draft management plan

- 1.5 The draft management plan must follow the current UNESCO Operational Guidelines for the implementation of the World Heritage Convention. It includes the following sections:
- ∞ The Consultation process
 - ∞ Introduction
 - ∞ The significance of the World Heritage Site
 - ∞ Managing the World Heritage Site
 - ∞ Evaluation of the 2001 Management Plan
 - ∞ The vision for the World Heritage Site and long term aims
 - ∞ Medium term issues & objectives
 - ∞ Implementing the Plan
 - ∞ List of abbreviations
 - ∞ Bibliography
 - ∞ Appendices
- 1.6 The draft management plan sets out the overarching framework for the management of the Site and defines a 30-year vision and aims along with shorter term (five-year) issues and objectives. Many of the objectives relate to awareness-raising and partnership working activities but several will result in changes on the ground. In providing a strategic framework, the draft management plan cannot include detail on how these issues will be/will begin to be resolved nor is the preferred solution always known in the year of review of the plan. In most cases options will be developed as

the management plan is implemented through HS's and other stakeholders' work and the objectives reviewed as part of a cycle of annual monitoring.

SEA process

- 1.7 The requirement for SEA comes from the European Directive 42/2001/EC on the assessment of the effects of certain plans and programmes on the environment (commonly known as the SEA Directive). This is implemented in Scotland through the Environmental Assessment (Scotland) Act 2005.
- 1.8 The purpose of SEA is to ensure that information on the environmental effects of a plan or programme is gathered and made available to plan-makers and decision takers as the plan is prepared and implemented. The overarching aim of SEA is to promote sustainable development.
- 1.9 Under section 5(4) of the Act, plans, programmes and strategies with the potential to have significant environmental effects are to be subject to environmental assessment prior to adoption. HS considered that the management plan has the potential to result in significant environmental effects and submitted a screening report to the Scottish Government's SEA Gateway on 22 February 2008 to seek the views of the Consultation Authorities (SNH and SEPA). Both SNH and SEPA agreed that the management plan is likely to have significant environmental effect, and Historic Scotland determined that an SEA would be undertaken of the plan. The determination notice was published in *The Orcadian* on 24 May 2008.
- 1.10 As part of the next stage in the SEA process, we 'scoped' the environmental assessment and consulted SEPA and SNH on the proposed scope and level of detail of the assessment. Helpful comments were received from both organisations who were generally supportive of our proposed approach. Annex A summarises the comments provided by SNH and SEPA and shows how these have been taken into account in progressing the SEA.
- 1.11 Following on from the scoping stage, we carried out an environmental assessment of the draft plan as it was being developed. This Environmental Report reports the results of the environmental assessment, sets out measures proposed to mitigate the potentially adverse effects of the plan and suggests indicators to monitor the environmental effects of the plan.
- 1.12 This Environmental Report accompanies the draft management plan for a six week period of public consultation from 8 May to 19 June 2008. The **Response Form** that accompanies this report provides details of how to make comments on the Management Plan and the Environmental Report and will help to structure your response.
- 1.13 Once the consultation period is complete, the need for changes to the draft Management Plan will be reviewed. Where significant changes are made which could result in significant environmental effects, an assessment will be undertaken of their impact, and reported in the SEA Post Adoption Statement. This will be published along with the final management plan.

2 Context

Other plans, programmes, strategies and environmental objectives

- 2.1 One of the early stages of the SEA process is to consider the relationship of the plan to other relevant policies, plans, strategies and environmental objectives. This allows key environmental protection objectives to be identified for consideration during the plan preparation process. It is also important to identify both the plans and strategies that will influence the draft management plan and those that will be influenced by the draft management plan. An understanding of the context and the hierarchy that the plan sits within is also useful for giving early thought to mitigation measures and where they may be best implemented.
- 2.2 Annex B sets out the review of the legislation, policies, plans and strategies that are considered to be of most direct relevance to the draft management plan. We have assumed that key environmental protection objectives for each of the environmental parameters identified in schedule 3 of the Act are translated into national policy and strategy and we have not reviewed in detail the environmental protection framework provided by European legislation. Instead, we have tried to focus the review on the key pieces of legislation relevant to the draft management plan and its assessment.
- 2.3 The key environmental protection objectives identified from the review of legislation, policies, plans and strategies are:
- ∞ to protect and where appropriate enhance the historic environment
 - ∞ to halt the loss of biodiversity and continue to reverse previous losses through targeted action for species and habitats
 - ∞ to increase awareness, understanding and enjoyment of the natural and historic environment
 - ∞ to protect the water environment (with a requirement for all inland and coastal waters to reach “good ecological” status by 2014)
 - ∞ to protect and enhance habitats and species
 - ∞ to safeguard landscape
 - ∞ to provide more opportunities for people of all abilities to enjoy access to the countryside, with appropriate signposting, information and facilities
 - ∞ to manage access appropriately to avoid damage to archaeological sites or habitats, and disturbance to wildlife, especially breeding birds, by heavy public use of sensitive areas
 - ∞ to promote sustainable development
 - ∞ to reduce our contribution to climate change and be positioned to respond to the predicted effects of climate change
 - ∞ to ensure that organisations work together and with communities to improve the quality of people’s lives and through more effective delivery of service
 - ∞ to prevent further development which would have a significant probability of being affected by flooding or which would increase the probability of flooding elsewhere

Environmental baseline

- 2.4 In order to establish the environmental effects of the draft management plan it is necessary to understand the environmental baseline of the area that is likely to be affected. Schedule 3 of the Act lists the environmental parameters that should be considered in SEA. To focus the SEA, we have gathered baseline information on the

environmental issues that are likely to be affected by the plan. We have not gathered information on the environmental parameters that we have scoped out of the assessment (Table 3 on page 13 sets out the environmental topics that are scoped in/out of the assessment).

- 2.5 We have not defined a boundary to the study area, however, we have included baseline information on the environmental features within the WHS and its environs. We have not provided baseline information on environmental features that will not be affected by the plan e.g. SACs on Sanday or Faray and Holm of Faray. Table 2 sets out the key baseline information for each environmental topic. A fuller description of the environmental baseline and a list of data sources is provided in Annex C.

Table 2: Key baseline information

Environmental parameter	Key baseline features and information
Biodiversity, flora and fauna	<p>Loch of Stenness Special Area of Conservation – designated for its coastal lagoon habitat (Figure A5)</p> <p>Lochs of Harray and Stenness SSSI – designated on the basis of nationally significant wintering wildfowl populations, and for specific plant and invertebrate species (Figure A5)</p> <p>Stromness Heaths and Coast SSSI – designated for its coastal vegetation communities with associated breeding birds and is also of geological and geomorphological importance (Figure A6)</p> <p>Bay of Skail SSSI – designated as a geological SSSI with internationally important fossils (Figure A6)</p> <p>European Protected Species – otter may use the loch shores</p> <p>RSPB Reserve at Brodgar – supports a wide range of waders and waterbirds and provides habitat for the great yellow bumblebee, a nationally scarce species (Figure A5)</p> <p>Local Biodiversity Action Plan – identifies priority habitats and a number of these are within the environs of the WHS, including road verges, coastal sand dunes, saline lochs and eutrophic standing water</p>
Landscape	<p>National Scenic Areas – Hoy and West Mainland NSA (Figure A3)</p> <p>Landscape character – the dominant character around Skara Brae is the enclosed bay landscape type and the dominant character around the Brodgar – Stenness area is the loch basin type</p>
Historic environment	<p>World Heritage Site – shown in Figures A1, A2</p> <p>Listed Buildings – there are a few listed buildings around Skara Brae, including the A-listed Skail House and these are shown in Figure A6. There are 2 listed buildings in the Brodgar–Stenness area, including the B-listed Tormiston Mill (Figure A7).</p> <p>Scheduled Monuments – each monument within the WHS is scheduled. There are also many other scheduled monuments within the vicinity of the WHS and these are shown on Figures A6 and A7. In</p>

Environmental parameter	Key baseline features and information
	<p>particular, the concentration of monuments around the Brodgar–Stenness part of the WHS is exceptional.</p> <p>Inventory of Gardens and Designed Landscapes – Skail House designed landscape is adjacent to Skara Brae and is shown on Figure A6</p> <p>Conservation Areas – Brodgar Rural Conservation Area (Figure A7)</p> <p>Regionally/locally important archaeological sites and unscheduled archaeology – there are many sites included on the Royal Commission on the Ancient and Historical Monuments of Scotland database in the environs of the WHS (Figures A6 and A7)</p>
Population and human health	<p>General – Orkney Islands has a population of 19,245, 73% are recorded as having ‘good’ general health.</p> <p>Access – in 2007 Skara Brae had 74,000 visitors and Maeshowe had 25,000 visitors. The monuments are managed by HS on behalf of Scottish Ministers. Skara Brae and Maeshowe are ticketed with set opening hours and the other monuments can be visited at any time free of charge. There is public access to the RSPB Reserve at Brodgar at all times.</p> <p>Core paths – Orkney Islands Council are currently preparing a Core Paths Plan to provide local residents and visitors with reasonable access throughout Orkney. The paths will be marked on OS maps.</p>
Soil	<p>Much of the land of the Orkney Islands is fertile agricultural land with predominantly intensive farming methods.</p>
Water	<p>Inland and coastal waters – Stenness catchment is the biggest inland aquatic system in Orkney. There are a number of environmental issues associated with the uses of the Stenness catchment including nutrient enrichment, organic pollution, pesticide discharges and recreational activities.</p> <p>Flooding – Indicative River and Coastal Flood Maps (Scotland) show that sections of the B9055 to both the north and to the south of the Ring of Brodgar are at a medium to high risk of flooding, which would effectively isolate the monument. They show a medium to high risk of fluvial flooding from the Loch of Skail which may affect the Skara Brae visitors centre.</p> <p>Water supply and treatment – is provided by Scottish Water with water treatment plants at Boardhouse and Kirbister Lochs. Water from many rural homes continues to be treated by septic tank and soak away systems.</p>
Climatic factors	<p>Scenarios – climate models predict temperature rises of 4 °C in Scotland by the end of the century, wetter winters, drier summers, increased winter rainfall intensity and decreasing snow cover.</p>

Environmental issues

- 2.6 Skara Brae is located on Skail Bay and the surviving extent of the site is vulnerable to coastal erosion. HS has commissioned several reports on the situation between 1994 and 2007 and one of the specific actions of the 2001 management plan was to monitor, assess and address coastal erosion at Skara Brae. This issue remains a threat to the long-term survival of the site.
- 2.7 Measures have been put in place to reduce visitor wear to the wallheads at Skara Brae and around the Ring of Brodgar and, given visitor numbers, careful management is required to ensure that the WHS is conserved whilst maintaining local biodiversity interests. The Ring of Brodgar is surrounded by the RSPB Brodgar Reserve (a new ecological management plan is expected for the 2008–13 period).
- 2.8 The WHS comprises six physically separate sites and facilitating access between them remains an issue in terms of public transport provision and pedestrian routes. Issues relating to physical access include car parking provision and pedestrian routes between car parks or drop-off points, visitor centres and the monuments. Risk in terms of hazards to staff and visitors are important considerations and specific health and safety risks have been identified and are being mitigated at Maeshowe as visitors and staff require to cross a busy road from the visitor centre and car park at Tormiston Mill.
- 2.9 The WHS sits within an archaeological landscape and in order to improve the public's understanding and enjoyment of it, exploring both tangible and intangible links with other related archaeological sites and the landscape as a whole is an issue.
- 2.10 We have reviewed some of the Environmental Reports prepared for Orkney-wide plans³ to help identify issues for the other environmental parameters. Issues include:
- ∞ loss of biodiversity through loss and fragmentation of habitat
 - ∞ pollution of watercourses
 - ∞ potential for increasing flood events due to global warming
 - ∞ soil erosion
 - ∞ loss of certain features of the Orkney landscape through changes in land cover
 - ∞ use of non-renewable resources, e.g. sand from dune systems

Many of these issues are unlikely to be affected by the draft management plan.

Evolution of the environment without the management plan

- 2.11 If the management plan were not reviewed then the current management plan (2001) would remain in effect. This may result in a lack of coordinated effort in the management of the WHS, with many aims and objectives becoming out of date. This is unlikely to have significant effects on the environmental parameters identified in schedule 3 other than human health and population.

³ Orkney Local Transport Strategy, Orkney Local Biodiversity Action Plan, Orkney Core Paths Plan

Question 14

Do you have any comments on the baseline information, or the environmental problems/issues?

3 Assessment approach and methods

Scoping the environmental topics to be included in the assessment

- 3.1 A key part of the SEA process is scoping, where the environmental parameters (from schedule 3 of the Act) that are likely to be significantly affected by the plan are identified. This can lead to some environmental topics being “scoped out” of the assessment and helps to focus the SEA on the key environmental issues. A scoping report was prepared in March 2008 which set out the proposed scope and level of detail of the assessment and comments were sought from SNH and SEPA.
- 3.2 The scoping report included an initial assessment to identify the environmental parameters that were likely to be affected by the draft management plan. Both SNH and SEPA provided comments on the scope of the assessment and we have revised Table 3 from the scoping report to take these into account. Essentially, we have added flooding as an issue to be considered in the assessment and added the coastal defences at Skara Brae to the biodiversity section of the table (Annex A describes this in more detail).
- 3.3 Table 3 sets out the scope of the assessment with reference to the environmental topics included in Schedule 3 of the Act. Justification is provided for those environmental topics that are scoped out of the assessment.

Table 3: Scoping in/out

Environmental parameter	Scoped in / out	Potential issues arising from the draft management plan and justification for scoping in/out
Biodiversity, Flora, Fauna	In	The sensitive location of the WHS means that some of the objectives to be included in the plan may lead to adverse effects on biodiversity, flora and fauna e.g. coastal defences at Skara Brae, archaeological investigations, car parking arrangements.
Population and Human Health	In	The geographical area of the WHS is relatively small, as is the local population. The need to cross the road to access Maeshowe from the coach/car park was identified as a potential hazard in the 2001 management plan. A revised management regime has been introduced to alleviate the problem. This will be evaluated and reviewed during the lifetime of the revised management plan.
Soil	In	We have scoped soil into the assessment as a precautionary measure as archaeological investigations may affect soil, but we do not think that this will be significant.

Environmental parameter	Scoped in / out	Potential issues arising from the draft management plan and justification for scoping in/out
Water	In	Effects on saline and freshwater quality, in particular the Lochs of Stenness and Harray e.g. from archaeological investigations. Effects on coastal waters at Skail Bay e.g. from coastal defences. Coastal and fluvial flooding - any new developments that are proposed to resolve the issues identified in the draft management plan (e.g. car parks, visitor facilities, works on coastal defences) should not be located in areas at risk of flooding, and should not exacerbate flooding elsewhere.
	Out	We have not identified any interactions between the draft management plan and groundwater quality. None of the objectives will involve water abstraction or activities that may alter the groundwater table or discharge contaminants to it.
Air	Out	Local air quality is very good as there are few industrial processes and road traffic volumes are low in Orkney. We have not identified any interactions between the draft management plan and local air quality.
Climatic Factors	Out	We do not consider that the draft management plan will have a significant effect on climate change in terms of emission of greenhouse gases. The plan is unlikely to affect the mode of transport chosen by visitors to come to Orkney (i.e. aeroplane versus ferry), however it may be able to influence the form of transport used to visit the sites (e.g. through controlled ticketing, parking arrangements and footpaths). We do not consider that this will have a significant effect on climate change. HS manages the WHS as a visitor attraction and the staffed sites are members of the Green Tourism Business Scheme (GTBS). The GTBS assesses businesses against a set of criteria, covering a range of areas, including energy and water efficiency, waste management and biodiversity.
	In	The predicted effects of climate change may have implications for the management of the WHS, particularly sea level rise, increased storminess and flooding. Some of the draft management plan's objectives may be developed to respond to the predicted effects of climate change and we will consider this aspect of climatic factors.
Material Assets	Out	We do not consider that the draft management plan will have a significant effect on material assets (waste, transport infrastructure, minerals, energy etc). The GTBS should pick up site specific issues for waste and energy management, information on public transport

Environmental parameter	Scoped in / out	Potential issues arising from the draft management plan and justification for scoping in/out
		etc. Sustainable access will be considered within the population and human health topic.
Cultural Heritage	In	This is the key issue to be considered by the plan, which will have significant positive effects on the historic environment.
Landscape	In	The limited geographic extent and scope of the draft management plan suggests that it is unlikely have significant adverse effects on landscape, however the WHS is an integral component of the landscape so from a precautionary perspective we have scoped landscape in to the assessment.

Scoping the parts of the draft management plan to be included in the assessment

3.4 As well as identifying the environmental topics that we considered were likely to be affected by the plan, the scoping report also described the proposed scope of the assessment in terms of the elements of the draft management plan that would be assessed. At that time, we considered that the environmental assessment would most likely be focussed on the vision, aims, issues and objectives, and this approach has not changed. Table 4 identifies the parts of the draft management plan that have been assessed in the SEA.

Table 4: Sections of the draft management plan that have been assessed

Section of the draft management plan	Is this assessed?
The Consultation process	No, this section provides information on the consultation process and how to provide comments on the draft management plan and ER
Introduction	No, this section provides an introduction to the aims and need for a management plan
The significance of the World Heritage Site	No, this section describes the Outstanding Universal Value and other values of the WHS
Managing the World Heritage Site	No, this section sets out the roles of the UK Government, the Scottish Government, the partners and the stakeholders. It also outlines the statutory, policy and guidance context of the WHS and its management.
Evaluation of the 2001 Management Plan	No, this section provides an evaluation of the aims and actions included in the 2001 management plan
The vision for the World Heritage Site and long term aims	Yes, the assessment of the vision and long term aims is described in paragraphs 4.4 to 4.7 and Annex D
Medium term issues & objectives	Yes, the assessment of the medium term issues and objectives is described in paragraphs 4.8 to 4.9, Table 6 and Annexes E and F. The 46 objectives have been sifted to focus the assessment on the objectives that are likely to have significant environmental effects

Implementing the Plan	No, this section sets out the methods for implementing the plan
List of abbreviations	No
Bibliography	No
Appendices	No

Scoping the level of detail of the assessment

- 3.5 At the scoping stage we suggested that the environmental assessment would be undertaken at a level of detail that was appropriate to the draft management plan. For example, the detailed aspects of the plan (i.e. objectives) would be assessed in a greater level of detail than the overarching vision. This is the approach that we have taken.
- 3.6 In reaching a view on the level of detail of assessment it is necessary to understand the place of the draft management plan in the overall hierarchy of management and project planning for the WHS. The draft management plan sets the overarching framework for the management of the site and define a 30-year vision and aims along with shorter term (five-year) issues and objectives. As discussed in paragraph 1.6 above, the objectives include reviewing ways to address coastal erosion at Skara Brae and reviewing the car parking difficulties at the Stones of Stenness. Options and/or solutions to resolve these issues will be developed as the management plan is implemented through HS's and other stakeholders' work and the objectives will be reviewed as part of a cycle of annual monitoring. Some of these projects may require Environmental Impact Assessment (EIA), however most will not fall within the thresholds set by the EIA legislation⁴. One of our key aims in undertaking the SEA at this level is to capture the potential for adverse environmental effect and provide a framework for these issues to be taken into account at project level i.e. as options are being developed to resolve the issues. At the scoping stage we explained that we would provide a schedule of commitments in the ER and in the SEA Post Adoption Statement identifying the potential environmental effects that will require further consideration as the management plan is implemented. This is one of the key ways of mitigating potentially adverse environmental effects and is included in section 5 of this report.

How was the draft management plan assessed?

- 3.7 As noted above, the following elements of the draft management plan were identified for inclusion in the assessment:
- ∞ vision
 - ∞ long-term aims
 - ∞ medium-term objectives
- 3.8 At the scoping stage we developed an assessment framework to provide a consistent way of assessing each element of the draft management plan. In line with common practice, SEA objectives were developed for each of the environmental parameters scoped in to the assessment. More detailed assessment criteria were also developed to support the SEA objectives and to help consider the environmental effects of the more detailed components of the draft management plan (i.e.

⁴ Environmental Impact Assessment (Scotland) Regulations 1999

objectives). The SEA objectives and criteria have been amended slightly to take into account the comments made at the scoping stage and are set out in Table 5.

Table 5: SEA objectives and criteria

Environmental parameter	SEA objective Will the management plan...?	SEA criteria How will the management plan affect...?
Biodiversity, Flora, Fauna	∞ Maintain, protect and enhance biodiversity (species, habitats, ecosystems)	∞ Loch of Stenness SAC ∞ Lochs of Harray and Stenness SSSI ∞ Stromness Heaths and Coast SSSI ∞ Bay of Skail SSSI ∞ Protected species ∞ Wider biodiversity, including the Brodgar Reserve
Population and Human Health	∞ Ensure safe and responsible access to the WHS ∞ Promote enjoyment, understanding of, and access to, the natural and cultural heritage	∞ Access to the WHS ∞ Access to the nature conservation areas within and in the environs of the WHS
Soil	∞ Protect soil quality and function	No detailed assessment criteria are proposed for this topic
Cultural Heritage	∞ Protect and where appropriate enhance the historic environment	∞ Historic environment features and their settings
Landscape	∞ Protect and enhance areas of landscape value	∞ Hoy and West Mainland NSA ∞ Wider landscape character
Water	∞ Protect and enhance the water environment	∞ Water quality in the environs of the WHS i.e. lochs of Stenness and Harray and associated watercourses ∞ Coastal waters at Bay of Skail ∞ Fluvial and coastal flooding
Climatic factors	∞ Contribute to effective adaptation to the predicted effects of climate change	No detailed assessment criteria are proposed for this topic

3.9 The assessment of impact was undertaken using a simple scoring system:

- + positive effect
- negative effect
- +/- positive and/or negative effect
- ? uncertain effect
- 0 neutral effect

- 3.10 This framework was used to assess the draft plan's vision and long-term aims, and the results of the assessment are described in section 4.
- 3.11 At the scoping stage we explained that we would undertake a two stage approach to the assessment of the draft objectives, as we considered that a number of the objectives may not have any direct or indirect environmental effects and we wanted to focus the assessment on the objectives that were likely to have significant environmental effects. First, we carried out a screening exercise on the objectives included in the draft management plan to sift the objectives into those that are unlikely to have significant environmental effects and those that are likely to have significant environmental effects. We did this by reviewing each of the draft objectives against the environmental topics scoped in to the assessment, with reference to the environmental baseline and problems, and judging whether or not the objectives were likely to have significant environmental implications.
- 3.12 Annex E documents this stage of the assessment, and each of the 46 objectives included in the draft plan were reviewed. 24 of the 46 objectives were not considered likely to have significant environmental effects and were not assessed further. These objectives were largely related to awareness raising, partnership working, website development, etc. and have no direct or indirect physical impact. A number of these 24 objectives will have positive effects on the historic environment, which is to be expected from a plan of this nature, however it was not considered necessary to assess these further than simply identifying the positive relationship.
- 3.13 22 objectives were assessed in more detail as part of the second stage of the assessment. The assessment framework in Table 5 was used to assess these objectives and the results are described in section 4.

Question 15

Do you have any comments on the approach taken for the environmental assessment?

4 Assessment of the draft management plan

Alternatives

- 4.1 At the scoping stage we noted that we would assess the environmental effects of the alternatives that were considered during the plan preparation process. For example, alternative wording for the vision, aims and issues, or more detailed alternatives for the objectives that are taken forward into the finalised management plan. The draft management plan has been prepared in consultation with the Partners and the vision, aims, issues and objectives have been refined through this process, with input from the public. The SEA team were advised of all revisions made to each element of the plan throughout its preparation. Given the overarching purpose of the management plan, we have not documented the assessment of each revision to the vision, aims, issues and objectives as it was not considered that this would add any value to the assessment.

- 4.2 We have not assessed strategic alternatives i.e. the 'no plan' option or strategic options for the overall direction of the plan, as these are largely prescribed by the UNESCO guidance and are not considered to be reasonable alternatives.
- 4.3 As explained, the objectives included in the draft management plan provide a strategic framework to resolve a number of issues, and options will be developed over the lifetime of the plan. Alternatives will be considered as part of this process.

Vision and long-term aims

- 4.4 The vision for the WHS is intended to provide a strategic view over 30 years and is set out in section 6 of the draft plan. The draft vision is:

The Heart of Neolithic Orkney World Heritage Site and its Setting will be protected, conserved, enhanced and enjoyed in such a way as to support its universal recognition as an outstanding testimony to the cultural achievements of the Neolithic peoples of northern Europe.

- 4.5 The draft vision was assessed against the SEA objectives and the assessment table is shown in Annex D. We found that the vision has a generally positive relationship with the historic environment, landscape and access topics, and will have no effect on the other environmental topics. No recommendations were made to improve the vision.
- 4.6 The long term aims flow from the vision and in turn inform the priorities for the medium term (5 years). The long terms aims for the WHS 2008–2038 are set out in section 6 of the management plan.
- 4.7 The long term aims were assessed against the SEA objectives and the assessment tables are shown in Annex D. We found that the aims had generally positive relationships with the historic environment, access and landscape topics, and largely no effect on the other environmental topics. No negative issues were identified. We made the following recommendations as a result of the assessment:
- ∞ Clarify that 'environment' and 'sustainable management' includes consideration of soil, water and climatic factors
 - ∞ Consider whether the protection of the WHS in the long term is likely to be affected by climate change, and whether an aim should be added related to this issue
 - ∞ Consider adding an aim that incorporates wider environmental issues into the management of the WHS, along the same lines as the aim included within the 'protecting and conserving' aim

These recommendations will be considered by HS in finalising the management plan and the SEA Post Adoption Statement will explain whether or not they have been taken forward into the management plan.

Objectives

- 4.8 As explained in paragraphs 3.10 to 3.12, the 46 objectives included in the draft plan were screened to focus the assessment on those that were likely to have significant environmental effects. Annex E documents this process.

4.9 22 objectives were assessed in more detail using the SEA objectives and the SEA criteria and Annex F sets out the results of this assessment. We have summarised the key impacts for each of the environmental topics scoped in to the assessment in Table 6. As explained, the assessment has been undertaken at a level of detail that is appropriate to the information included in the draft management plan. A number of the objectives have been developed to ensure that particular issues are resolved during the lifetime of the plan, and detailed proposals will come forward as the plan is implemented. We have tried to identify the generic environmental impacts associated with these objectives and expect that more detailed environmental assessment will be incorporated into the development of project options.

Table 6: Summary of the results of the assessment of the draft objectives

Environmental topic	Key impacts
Biodiversity, Flora, Fauna	<ul style="list-style-type: none"> ∞ Development of any new visitor facilities may adversely affect the areas designated for nature conservation and wider biodiversity. At this stage it is by no means certain that any new facilities will be required, however we have taken a precautionary approach. New visitor facilities could be required as a result of: <ul style="list-style-type: none"> - reviewing the WHS boundary - reviewing all forms of public access to the WHS - extending the core path network - reviewing the car parking at Stones of Stenness - investigating possibilities for public access at the Ring of Bookan ∞ Proposals will be developed to address the coastal erosion problems at Skara Brae and any coastal defences are likely to have adverse effects on biodiversity, particularly in terms of affecting natural process, affecting geological features and geomorphology and affecting coastal and landward habitats and the species that they support. ∞ There may be conflicts between the management of archaeological sites and biodiversity ∞ Archaeological research may cause damage to habitats or disturb wildlife ∞ Positive effects were identified for a number of the objectives that incorporate natural heritage issues (education, monitoring visitor erosion)
Population and Human Health	<ul style="list-style-type: none"> ∞ Many of the objectives were found to have positive effects on population and human health in terms of providing access to the WHS (natural and cultural elements of the area)
Soil	<ul style="list-style-type: none"> ∞ Development of any new visitor facilities may adversely affect soil quality and function and result in soil sealing. At this stage it is by no means certain that any new facilities will be required, however

Environmental topic	Key impacts
	<p>we have taken a precautionary approach. New visitor facilities could be required as a result of:</p> <ul style="list-style-type: none"> - reviewing the WHS boundary - reviewing all forms of public access to the WHS - extending the core path network - reviewing the car parking at Stones of Stenness - investigating possibilities for public access at the Ring of Bookan <p>∞ Archaeological investigation may have localised effects on soil quality and function</p> <p>∞ Proposals will be developed to address the coastal erosion problems at Skara Brae and any coastal defences may adversely affect soil quality and function depending upon the nature of the proposed works</p>
Cultural Heritage	<p>∞ Most of the objectives were found to have positive effects on the historic environment</p> <p>∞ Development of any new visitor facilities may adversely affect the site and setting of historic environment features. At this stage it is by no means certain that any new facilities will be required, however we have taken a precautionary approach. New visitor facilities could be required as a result of:</p> <ul style="list-style-type: none"> - reviewing the WHS boundary - reviewing all forms of public access to the WHS - extending the core path network - reviewing the car parking at Stones of Stenness - investigating possibilities for public access at the Ring of Bookan <p>∞ Archaeological investigation can be destructive to the resource itself</p>
Landscape	<p>∞ A number of the objectives were found to have positive effects on landscape in terms of the archaeological elements of landscape</p> <p>∞ Development of any new visitor facilities may adversely affect landscape character. At this stage it is by no means certain that any new facilities will be required, however we have taken a precautionary approach. New visitor facilities could be required as a result of:</p> <ul style="list-style-type: none"> - reviewing the WHS boundary - reviewing all forms of public access to the WHS - extending the core path network - reviewing the car parking at Stones of Stenness - investigating possibilities for public access at the Ring of Bookan <p>∞ Proposals will be developed to address the coastal erosion</p>

Environmental topic	Key impacts
	problems at Skara Brae and any coastal defences may adversely affect landscape character depending upon the scale and design of the proposed works
Water	<p>∞ Development of any new visitor facilities may adversely affect water quality and may have implications for flooding. At this stage it is by no means certain that any new facilities will be required, however we have taken a precautionary approach. New visitor facilities could be required as a result of:</p> <ul style="list-style-type: none"> - reviewing the WHS boundary - reviewing all forms of public access to the WHS - extending the core path network - reviewing the car parking at Stones of Stenness - investigating possibilities for public access at the Ring of Bookan <p>∞ Proposals will be developed to address the coastal erosion problems at Skara Brae and any coastal defences may adversely affect water quality and coastal waters. Flood risk is also relevant.</p>
Climatic factors	<p>∞ Climatic factors were considered in terms of the implications that climate change will have for the management of the WHS, rather than the contribution of the management activities to climate change. We found that none of the objectives specifically considered the long-term effects of climate change on the management of the WHS. This is particularly relevant to the coastal erosion issue at Skara Brae.</p>

Question 16

Do you agree with the results of the environmental assessment? Have we identified the key issues?

5 Mitigation and monitoring

5.1 In strategic environmental assessment, mitigation can be achieved in a number of different ways. Mitigation can involve making changes to the plan itself e.g. amending aims or objectives, mitigation can also involve adding environmental aims or objectives to the plan to strengthen the inclusion of environmental issues and mitigation can also include proposing more detailed measures that should be considered as the plan is implemented. Each of these three approaches has been used in this SEA.

5.2 We have made a few recommendations to improve the clarity and coverage of the draft aims and the objectives. This was described at paragraph 4.6 for the draft aims and is included in the detailed assessment tables for the draft objectives (Annex F). We have added an objective to the draft management plan to ensure that the environmental assessment is integrated into the regular review of the management plan and the SEA process does not end with the publication of the management plan. We have also developed a number of more detailed mitigation measures that aim to ensure that the findings of this environmental assessment are followed through into the design and development of management activities and projects. As noted in paragraph 3.6. we see this as one of the key purposes of undertaking an SEA at this level of plan making. The proposed mitigation measures are included in Table 7 as a list of commitments. It is important to note that a number of the projects that may flow from the management plan are not the sole responsibility of HS and will be taken forward by the Partners. The measures included in Table 7 are proposed at this stage and will be finalised following comments made during the public consultation. A final list will be included in the SEA Post Adoption Statement.

Table 7: Schedule of commitments

Commitment	Relevant environmental topic
Develop proposals to alter the WHS boundary in consultation with partners and undertake a public consultation exercise	biodiversity, flora, fauna, population and human health, cultural heritage, landscape
Manage visitor numbers to avoid exacerbating problems at sensitive sites	biodiversity, flora, fauna, population and human health, cultural heritage, landscape, soil
Consider the implications of the predicted effects of climate change for the management of the WHS	cultural heritage, climatic factors
Integrate environmental assessment into the development of options for any new visitor facilities and car parks	biodiversity, flora, fauna, population and human health, cultural heritage, landscape, soil, water, flooding
Include section on environmental risk in the Risk Strategy	biodiversity, flora, fauna, population and human health, cultural heritage, landscape, soil, water, flooding
Undertake EIA for proposals to address coastal erosion at Skara Brae and seek early involvement of the partners and SEPA	biodiversity, flora, fauna, population and human health, cultural heritage, landscape, soil, water, flooding
Include natural heritage interests in Conservation Strategies	biodiversity, flora, fauna, cultural heritage, soil
Consider sustainability issues when addressing carrying capacity problems	biodiversity, flora, fauna, population and human health, cultural heritage, landscape, soil, water, flooding
Proposals for archaeological research to consider possible environmental effects of the proposed work	biodiversity, flora, fauna, cultural heritage, soil
Grant funding from HS to include environmental condition	biodiversity, flora, fauna, cultural heritage, soil
Include sustainability questions in the programme of visitor studies	biodiversity, flora, fauna, population and human health, cultural heritage, landscape, soil, water, flooding, climatic

	factors
Include wider environmental issues in the Interpretation Plan	biodiversity, flora, fauna, cultural heritage
Integrate sustainability principles into the review of public access to the WHS	biodiversity, flora, fauna, population and human health, cultural heritage, landscape, soil, water, flooding, climatic factors

5.3 Each of the objectives included in the draft management plan has an associated indicator to measure progress and target. An annual monitoring report will be prepared to describe the progress made towards meeting the objectives. A number of these indicators are also relevant to monitoring the environmental effects of the plan and these are listed below:

- ∞ effects of visitor erosion managed
- ∞ biodiversity maintained or improved
- ∞ condition of monuments maintained or improved
- ∞ principle of minimal intervention applied to archaeological investigations
- ∞ increased use of sustainable forms of transport, sustainable sources used wherever possible, running of sites carried out in a sustainable manner

5.4 We also intend to report on the delivery of the schedule of commitments, and propose the following indicators:

- ∞ environmental assessment undertaken during the development of options to address coastal erosion at Skara Brae
- ∞ environmental assessment undertaken for all new developments, including revised car parking arrangements

Question 17

Do you have any comments on the environmental mitigation measures, including the schedule of commitments?

Question 18

Do you have any comments on the proposed additional environmental monitoring indicators?

6 Next steps

6.1 The public consultation period on the draft management plan and environmental report ends on 19 June 2008. A final version of the management plan will be prepared following the consultation period to take into account comments made. All changes will be screened to consider if they raise significant environmental issues that have not already been considered in the environmental assessment.

6.2 We are required by the SEA Act to demonstrate how we have taken the ER (and all the comments expressed on it) into account in the adopted management plan. This will be explained in the SEA Post Adoption Statement which will be published along with the final version of the management plan.

- 6.3 The SEA Post Adoption Statement will also include a final version of the schedule of commitments and monitoring indicators to take into accounts comments made on this report.