SCOTTISH NATURAL HERITAGE

COMMISSIONED REPORT

Landscape Studies of The Heart of Neolithic Orkney World Heritage Site

Report No. F00LA01A

For further information on this report please contact:

Laura Campbell
Scottish Natural Heritage
17 Rubislaw Terrace
Aberdeen AB10 1XE
Tel: 01224 642863

or

Gail Churchill
Scottish Natural Heritage
54–56 Junction Road
Kirkwall KW15 1AW
Tel: 01856 875302

This report should be quoted as:

David Tyldesley and Associates (2001). Landscape Studies of the Heart of Neolithic Orkney World Heritage Site. Scottish Natural Heritage Commissioned Report No. F00LA01A

SCOTTISH NATURAL HERITAGE

COMMISSIONED REPORT

Summary

Landscape Studies of the Heart of Neolithic Orkney World Heritage Site

Report No. F00LA01A

Background

A new World Heritage Site (WHS) known as the "Heart of Neolithic Orkney" was designated in 2000, covering several internationally important sites in west Mainland and overlapping with the National Scenic Area (NSA). Considerable development pressure exists, particularly for housing, and there was concern about the impacts this could have on the new designation. Historic Scotland and SNH jointly funded this landscape capacity study to analyse the situation and provide guidance.

Aquaculture (fin-fish and shellfish farms) has developed in Orkney since the late 1970s. The landscape and visual impacts of these developments on the seascapes and landscapes of the county can be significant. This part of the study was commissioned to link in with a proposed Orkney Islands Council fish farming framework plan and Scotland-wide guidance being prepared by SNH.

Main Findings

Landscape Studies of the Heart of Neolithic Orkney World Heritage Site (F00LA01A)

- The report defined three settings around the WHS: the immediate, intermediate and wider areas within which development is likely to affect the designation. This was done for both of the two separate areas of the WHS (Skara Brae, and the Ring of Brodgar area).
- For the intermediate area and for each of 6 settlement clusters previously identified as being important, the capacity to accommodate certain types of built development (houses and domestic-scale wind turbines) was analysed. This showed that the whole of the intermediate settings was extremely sensitive to development and should be subject to the most rigorous assessment of its effects on the landscape which provides the setting for the WHS.
- General and detailed guidance was produced to help new development achieve a good "landscape fit" – particularly difficult in the Orkney landscape.
- The report also examined the relationship between the two processes of landscape character assessment and historic landuse assessment.

SUMMARY PRODUCED BY CONSULTANT

Background

The "Heart of Neolithic Orkney" is a UNESCO World Heritage Site (WHS). Located on West Mainland, it includes Skara Brae, Maes Howe, the Stones of Stenness and the Ring of Brogar, together with adjacent standing stones and burial mounds. The WHS lies in a large, open loch basin which is one of the most

sensitive landscapes in Scotland, being located in a National Scenic Area and forming the setting for this internationally important series of outstanding monuments. There has been considerable development pressure in Orkney in recent years, particularly for housing. Pressure may also increase in the area of the WHS for wind turbine generators and tourism related proposals such as improving roads and visitor facilities. The impacts of new development could be considerable.

SNH has developed techniques for Landscape Character Assessment (LCA), including two previous studies in this part of Orkney. Historic Scotland and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) have undertaken a series of Historic Landuse Assessments (HLA), including one for Mainland Orkney. As part of the wider management of the WHS, SNH and Historic Scotland are interested in studying how the two processes of LCA and HLA may be complementary.

SNH and Historic Scotland, therefore commissioned this project to:

a) define the setting of the WHS;
b) provide guidance on if, how and where new development can best be accommodated assessing both landscape and visual aspects;
c) test how LCA and HLA techniques and outputs compare and whether it is possible to merge or integrate both types of assessment, to mutual advantage.

Main Findings

- The project is innovative because it further develops and adapts capacity evaluation techniques for built development in sensitive rural locations; and it is the first to assess the possible integration of Landscape Character Assessment and Historic Landuse Assessment.
- The project tested and developed a variety of techniques and defined, described and mapped the immediate, intermediate and wider settings of the WHS.
- The assessments concluded that large scale built development in the setting of the WHS is inappropriate.
- The project assessed the capacity of six locations identified in the draft Orkney development plan to accommodate small scale built development.
- All of the landscape character types in the wider setting of the WHS were assessed for their capacity to accommodate small and larger scale wind turbine generators.
- The report also provides detailed guidance on the location and design of built development and wind turbine generators to help reduce their effects on the landscape and visual amenity. The assessment assumes that all these mitigation measures will be adopted in any particular proposal.
- Although there are important differences between LCA and HLA, in terms of their purpose, methods and products, they also share some common characteristics and in places fit together well, depending on the type of landscape.
- There would be advantages in integrating HLA as a step in building up the LCA.

If it continues to be developed, HLA could play a more influential role both in the LCA process and in informing landuse and management decisions.

For further information on this project contact:
Laura Campbell, SNH Aberdeen Office. Tel: 01224 642863 or
Gail Churchill, SNH Kirkwall Office. Tel: 01856 875302

For further information on the SNH Research & Technical Support Programme contact:
The Co-ordination Group, Advisory Services, 2 Anderson Place, Edinburgh. Tel: 0131 446 2400

Contents

Tables in the Appendices

Plans

Photographs

The following photographs are at the end of the report:

1. Background to the Study

Orkney has a distinctive landscape with a long history of settlement and agriculture. The islands are known, *inter alia*, for their outstanding archaeological heritage, distinctive landscapes, and ecological value illustrated by the following examples.

Parts of the islands of Mainland and Hoy, extending to about 15,000 hectares, are designated as a National Scenic Area (see Plan 1). On Mainland alone there are 14 nationally important Sites of Special Scientific Interest (SSSI) covering 7,461.5 hectares, of which 4,573.4 hectares lie in two classified Special Protection Areas (internationally important areas for birds), 1,547 hectares lie in two potential Special Protection Areas and over 790 hectares lie in a candidate Special Area of Conservation (internationally important area for habitats). In addition, there are over 100 other sites designated for their local nature conservation value extending to almost 4,000 hectares.

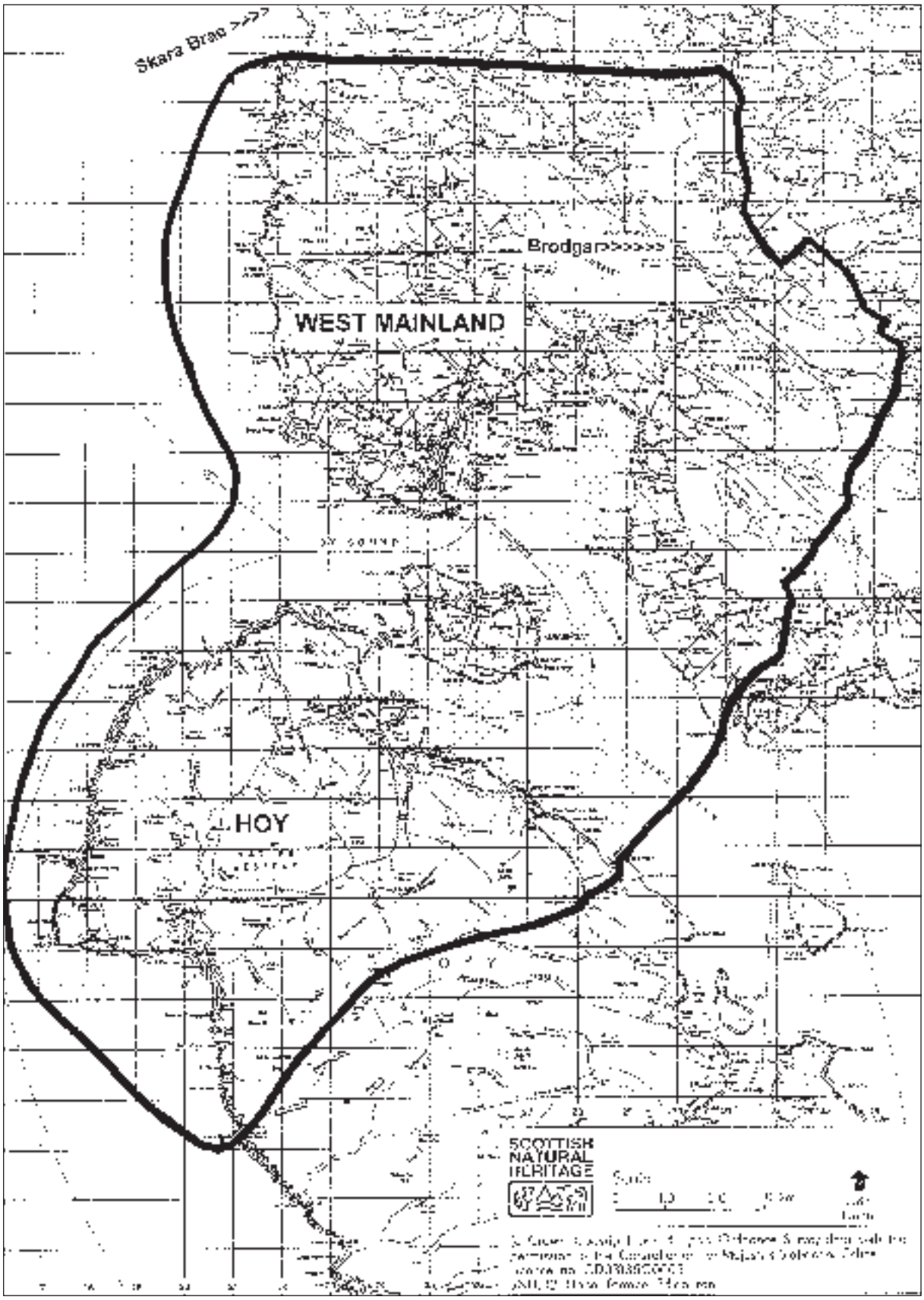
The Orkney islands have over 300 Scheduled Ancient Monuments representing one of the most important concentrations in North-West Europe of prehistoric sites, over a particularly long period. There are also over 350 'A' and 'B' Listed Buildings, and groups of Listed Buildings, of national importance, of which 25 are Grade 'A'. The "*Heart of Neolithic Orkney*" is a World Heritage Site inscribed by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) on the World Heritage List, in 1999. Located on West Mainland, it includes Skara Brae, Maes Howe, the Stones of Stenness and adjacent standing stones and the Ring of Brogar together with adjacent standing stones and burial mounds. The areas defined by the Brodgar Rural Conservation Area, the Loch of Harray SSSI, Loch of Stenness SSSI and the scheduled area at Skara Brae define the inner buffer zones for these sites (see Plan 2). The WHS is one of only 630 in the world and recognises that:

"The monuments of Orkney, dating back to 3,000–2,000 BC, are outstanding testimony to the cultural achievements of the Neolithic peoples of Northern Europe" (1).

There has been considerable development pressure in Orkney in recent years, particularly for housing. This tends to be concentrated in Mainland, around the main towns of Kirkwall and Stromness, larger villages (such as Finstown and St. Mary's) and in the countryside within commuting distance of Kirkwall and Stromness. The lack of housing land availability around Kirkwall has increased pressure for rural housing over the last ten years. There has also been an increasing number of proposals for improving roads and visitor facilities.

The impacts of new development can be considerable in the open landscape of Orkney. The landscape character and visual amenity of the islands can be easily affected by inappropriate development. Orkney Islands Council is considering policies to try to limit these impacts, for example by identifying housing clusters outwith Stromness and Kirkwall in which rural housing should be concentrated (2). The Council is also considering a policy of dispersed wind generation in Orkney, in which single, probably smaller-scale turbines associated with housing are likely to be preferred to windfarms. Three large experimental turbines have been erected on Burgar Hill by Evie in west Mainland.

Plan 1 The Hoy and West Mainland NSA



2. Aims of the Study

A study looking at housing and wind turbine development around five of the main settlements of Mainland (Kirkwall, Stromness, Finstown, St. Mary's and Stenness) has recently been completed for Scottish Natural Heritage (SNH) (3). The current project continues this research, looking at different geographical areas and types of development.

The Brief summarised the aims of the Study as follows: to provide guidance on if, how and where specified types of new development can best be accommodated in defined areas of Orkney, assessing both landscape and visual aspects.

The study area is the setting of the World Heritage Site.

Development includes new rural buildings and associated, occasional domestic-scale wind turbines; larger scale wind turbines/wind farms and improvements to infrastructure and visitor facilities.

The study defines the landscape character of the study area and describes and classifies the associated landscape units. This work builds on the existing 1:50,000 *Orkney Landscape Character Assessment* (LCA) (4) and the *Landscape Capacity Study of Mainland Orkney* (3).

The aim is to assess the sensitivity to change of each identified landscape character unit, and the landscape and visual capacity of each area to accommodate development in terms of:-

(i) those areas where new development would conflict with landscape character and could not be mitigated;
(ii) those areas which could accommodate small amounts of development;
(iii) those areas which could accommodate larger amounts of development.

A further aim is to identify appropriate mitigation measures, such as design guidance and detailed siting requirements, for the areas able to accept further development.

Historic Scotland and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) have recently undertaken a series of *Historic Landuse Assessments*, including one for Mainland Orkney (5). As part of the wider management of the World Heritage Site, SNH and Historic Scotland are interested in studying how the two processes of Landscape Character Assessment (undertaken by SNH) and Historic Landuse Assessment may be complementary. They are interested in testing how their techniques and outputs compare and whether it is possible to merge or integrate both types of assessment, to mutual advantage.

A significant part of the project, therefore is experimental for two reasons:

a) the project further develops and adapts capacity evaluation techniques for built development in sensitive rural locations; and
b) the project is the first to assess the possible integration of Landscape Character Assessment and Historic Landuse Assessment.

All of this work will be used to inform SNH and Historic Scotland responses to development plan proposals and individual planning applications. It may also contribute towards the management plan for the World Heritage Site.

Landscape character and visual amenity are only two of many material considerations in the preparation of a development plan and consideration of any planning applications. It is emphasised that this report only addresses the capacity of the landscape and visual issues and does so in isolation of all other planning considerations. On its own, therefore, this report cannot be taken as justification for permitting or refusing any particular proposal. Rather, it seeks to inform and influence the planning process to improve understanding of and to ensure that due weight is attached to landscape and visual issues.

Appendix A describes the method developed and adopted for the assessment of capacity for built development in the setting of the World Heritage Site.

3. Defining the Setting of the Heart of Neolithic Orkney World Heritage Site

The Task and Approach

The project brief requires the setting of the World Heritage Site (WHS) to be defined:

a) to identify the area within which development is likely to have an impact on the WHS;
b) to provide a context for the capacity assessment of changes associated with the WHS; and
c) to enable the settlement clusters to be identified which would be the subject of capacity assessment.

The method of defining the setting has been informed by the consultant's previous experience, eg in defining the setting of St. Andrews (6); discussions with the project's Steering Group; experiments and field trials of various techniques and a meeting with Historic Scotland and Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS).

The Context

At present the inner and outer buffer zones around the four principal elements of the WHS (Skara Brae, Ring of Brogar, Stones of Stenness and Maes Howe) are defined on the basis of pre-existing designations. These are:

Inner Buffer Zones

Brodgar Rural Conservation Area and the Lochs of Harray and Stenness Sites of Special Scientific Interest (parts) and for Skara Brae, the area of the scheduled monument.

Outer Buffer Zones

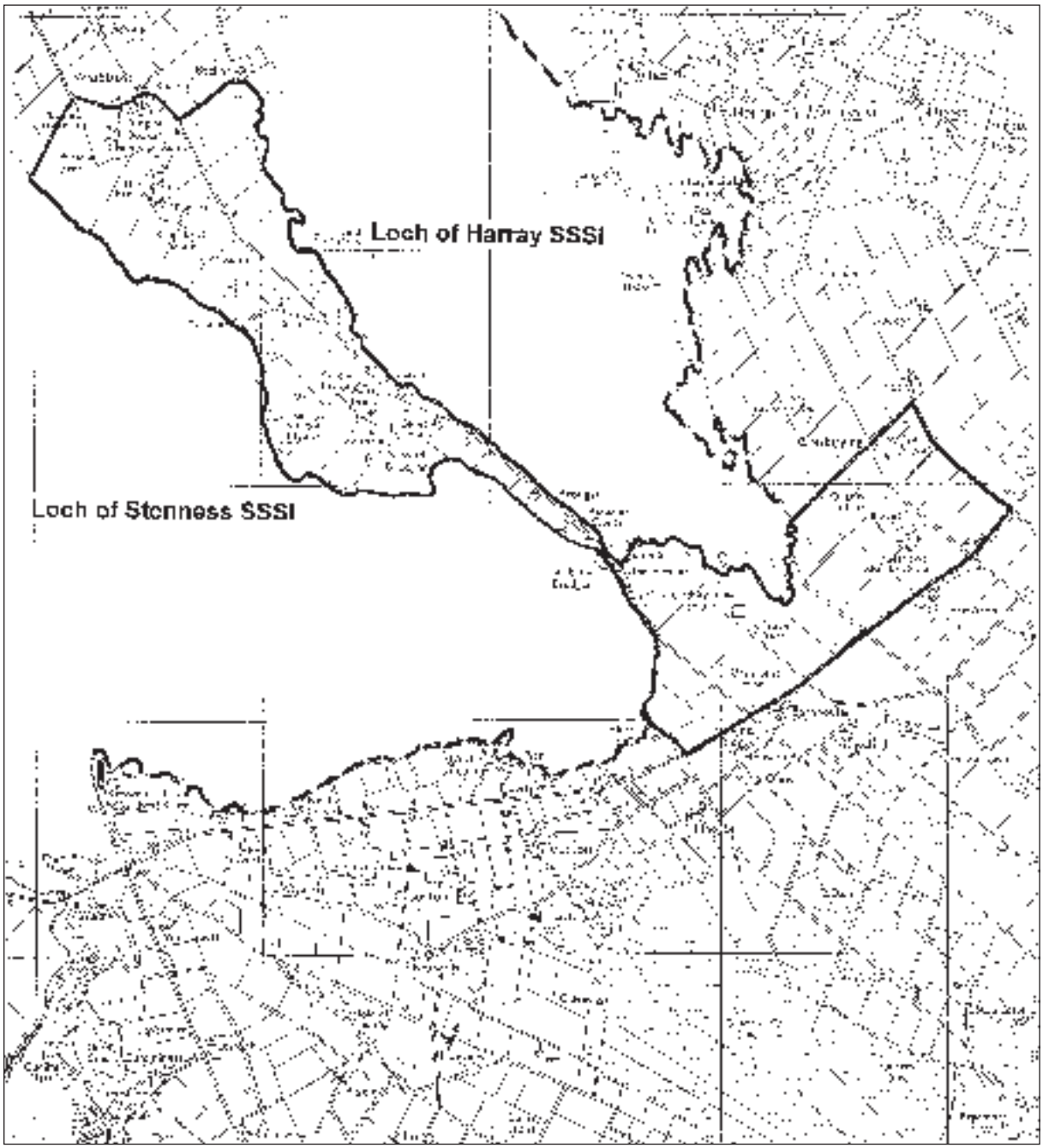
The Hoy and West Mainland National Scenic Area (NSA) and for Skara Brae the curtilage of Skaill House Category A Listed Building.

(See Plan 2.)

Problems relating to the use of these designations to define the area that requires appropriate protection and management include those listed below:

a) The NSA (Plan 1) extends to many areas which have no relationship with the WHS;
b) Conversely, the NSA stops 2km south of Skara Brae and does not extend far enough to the north-east to include areas in the immediate vicinity of Maes Howe and forming the setting of the shores of the Loch of Harray;
c) The Brodgar Rural Conservation Area represents the minimum area delineated to include only the principal elements of the WHS at this location and, as a result, some of the principal monuments are on the edge of the designated area and other related monuments are outwith the area;
d) The area of the curtilage of Skaill House, which forms the outer buffer zone at Skara Brae, is ill defined because "curtilage" has no fixed or specific meaning in Scottish law and case-law tends to interpret the area of a curtilage in a limited way; in any event it does not include the surrounding farmland or bay or the wider landscape which is also outwith the NSA;

Plan 2 Inner Buffer Zones of the World Heritage Site at Ring of Brogar, Stones of Stenness and Maes Howe



Lochs of Harray and Stenness Sites of Special Scientific Interest (parts)
Brodgar Rural Conservation Area

e) None of these pre-existing designations were designated with the intention of providing a policy framework for the protection and management of the setting of the WHS. Rather they were defined to meet specific statutory purposes over areas delineated according to specific criteria, or guidelines, unrelated to the WHS;
f) It may be inappropriate to use these designations in decision making to protect the WHS, except in an indirect way. For example, the very strict decision making procedures associated with the international nature conservation designations of the lochs can only be applied to plans and projects likely to have a significant effect on the interests for which the lochs are, or will be, designated as a European or Ramsar Site, not necessarily for their effects on the WHS. If projects would not have an effect on the special scientific interests of the SSSI then the SSSI designation cannot be used to protect the WHS interests in a planning decision.

Types of "Setting"

Previous capacity assessments (eg St. Andrews 1996 (6)) have found that different levels of "setting" can be defined, according to the purpose of the assessment, the scale of working and the criteria used. This is clearly the case in respect of the WHS too.

For example, very small scale changes, such as a poorly designed path or sign, could markedly affect the immediate area of the WHS elements and the intimate experience of their ambience. At the opposite end of the scale, even at a distance of some 10km, or more, a large scale wind turbine generator, on a hill ridge of the loch basin, could significantly affect the character of the wider setting or approaches to the WHS. Similarly, at a wider scale, some individual changes may not in themselves be particularly noticeable or significant but, in combination, they may have a cumulative effect on the setting or perceptions of the WHS.

For practical purposes, the very close or "immediate" setting of the elements of the WHS tend to be tightly controlled and managed because of their scheduling and management by Historic Scotland. From a policy view point it is the "wider" setting that needs to be defined. Because different types and scale of development have differing effects at various distances from the point of observation, or experience, it is necessary to define more than one "wider" setting, for example, perhaps an "intermediate" setting and a "wider" setting may be useful.

Thus, three types of setting relevant to the WHS can be defined and they are summarised in Figure 1.

Figure 1 The Three Types of Setting for the WHS

Setting	Relevance to the WHS
Immediate	Very small scale changes, such as a poorly designed fence, path or sign, loud or repetitive noise, pungent smells or visually intrusive features such as advertising could markedly affect the intimate experience, ambience and enjoyment of the WHS monuments.
Intermediate	Individual new buildings of any size; structures, roads or other features, or alterations to them; other visible changes which are about the same scale as a human figure (or larger); or intensity of movement or activity, could be clearly seen, or may be heard, or the cumulative effects of smaller changes, in the setting and/or approaches could affect the character and peoples' perception and enjoyment of the WHS.
Wider	Large scale built developments; massive, high or conspicuous structures; very loud or far carrying sounds (such as lower level aircraft flights or the drone of distant traffic), or other types of major change; or the cumulative effects of smaller changes, in the wider setting and/or approaches could affect the character, image and peoples' perception and enjoyment of the WHS.

Alternative Techniques for Delineating Settings

There are a number of techniques that could be used to delineate the settings. For example, it could be based purely on what can be seen from specific viewpoints, such as the monuments themselves, these areas are called "***visual envelopes***" and may be defined in Orkney by ridges, hills and buildings.

A second approach may be to divide visual envelopes into zones in which ever smaller degrees of change become increasingly significant the closer it occurs to the sensitive feature. These are called ***Zones of Visual Influence*** (ZVIs). Thus, by way of example, one might have:

a) an ***immediate ZVI***, where very small scale change was very noticeable, perhaps up to about 0.5km, depending on the context; beyond which there could be
b) an ***intermediate ZVI*** where, say, human scale changes could be noticeable, perhaps up to 3 or 4km, depending on the context; and beyond which there could be
c) a ***wider ZVI*** where only larger scale changes would be noticeable, such as a large wind turbine generator, perhaps up to about 15km.

It is emphasised that these are only illustrative examples but they are adopted for the purposes of explaining the method of defining the settings below.

A third approach could be based entirely on landscape character assessment. This is a well established technique for describing, classifying and analysing landscape by its character or distinctiveness. It can identify areas of common landscape character types called ***landscape character units***. The units in which the various elements of the WHS are located (for example inland Loch Basin) could be used to define their settings because the setting would then have a broadly homogenous character directly related to the monuments' locale.

A fourth approach would be to utilise the RCAHMS/Historic Scotland technique of Historic Landuse Assessment. This identifies and classifies all areas into one of 44 current ***historic land use types***

(eg 18th–19th Century Rectilinear Fields or Managed Moorland). It also identifies relict land use types (eg prehistoric ritual and funerary sites). This technique is based on interpretation of features indicating historic land use, which in turn have an influence on landscape character. Thus, they can have an obvious relationship with the landscape setting of historical and archaeological monuments.

For the whole of West Mainland both a landscape character assessment (LCA), at 1/50,000 (4) and part 1/25,000 scale (3), and a historic landuse assessment (HLA) at 1/25,000 scale (5), was already available to the study. A visual envelope analysis and preliminary assessment of potential ZVIs was undertaken in June 2000, so all four techniques have been considered and tried, separately and in various combinations.

Findings

The immediate settings

The immediate setting of the elements of the WHS are the scheduled areas and their immediate surroundings (their immediate ZVIs) including all areas which visitors have access to, such as car and coach parking places, approach footpaths, visitor centres, viewpoints and information/interpretation facilities. These can be readily identified but this project has not attempted to map the areas as they are subject to change, as facilities and access arrangements change. The immediate setting should be regarded as a flexible and changing area. In the context of this study it is the intermediate and wider settings that need greater attention.

The intermediate settings

Defining the intermediate setting proved to be very complex and none of the approaches, on their own, provided an entirely satisfactory basis.

It was clear that at least two intermediate settings needed to be defined, because Skara Brae was located some 6.5km north of the other main elements of the WHS and there was no intervisibility between Skara Brae and any other principal WHS feature. Skara Brae is located in the relatively visually confined Bay of Skaill. The other WHS monuments are located in the much more open landscapes of the Loch Basin. Consequently, it was recognised that the definition of the intermediate setting of the two parts may require a different methodological approach. Indeed this proved to be the case, with the definition of the intermediate setting at Skara Brae being relatively straightforward compared to the complexities involved at the other monuments.

The Brodgar part of the WHS contains several principal elements to the WHS, whereas Skara Brae is only a single element in its area. Thus, when considering the visual envelopes or intermediate ZVIs it is evident that Skara Brae will have only one but, in the Brodgar part, each monument will have a different visual envelope or intermediate ZVI. To have several intermediate settings would be confusing and unhelpful, in practice and policy terms. In order to achieve a single intermediate setting for the Brodgar part of the WHS the various areas may need to be merged. How this merging might be achieved was untested as it had not previously been necessary in other studies.

Defining the intermediate setting of Skara Brae was relatively straightforward. The monument lies close to Skaill House, in the Enclosed Bay landscape type of the Bay of Skaill (see Plan 3). The Bay is tightly enclosed by surrounding low hills, the ridgelines of which are almost continuous around the bay. Despite being

relatively low there are very few views, from within the bay, over these ridges, to more distant hills. Furthermore, the enclosing ridges are conveniently located at a distance that is suitable for the definition of an intermediate ZVI (human scale change, see paragraph under heading "Alternative Techniques for Delineating Settings", varying between about 1 and 3km.

The visual confinement of the bay, by these low hills, is a major contributor to the classification of the Enclosed Bay landscape character type because it tends to define both the extent of the maritime influences and the enclosed nature of the landscape. The hills also define the extent of the Loch Basin landscape character type around the Loch of Skaill and the Coastal Basin landscape character type at Quoyloo. There is, therefore, a close correlation between the landscape character types and the intermediate ZVI of Skara Brae. Together they enable the intermediate setting to be defined in a rational and straightforward way because they are highly coincident. The intermediate setting at Skara Brae is the enclosed space of the bay and basins but defining the intermediate setting was assisted by the high level of identity and integrity which the bay and basins have in respect of landscape character.

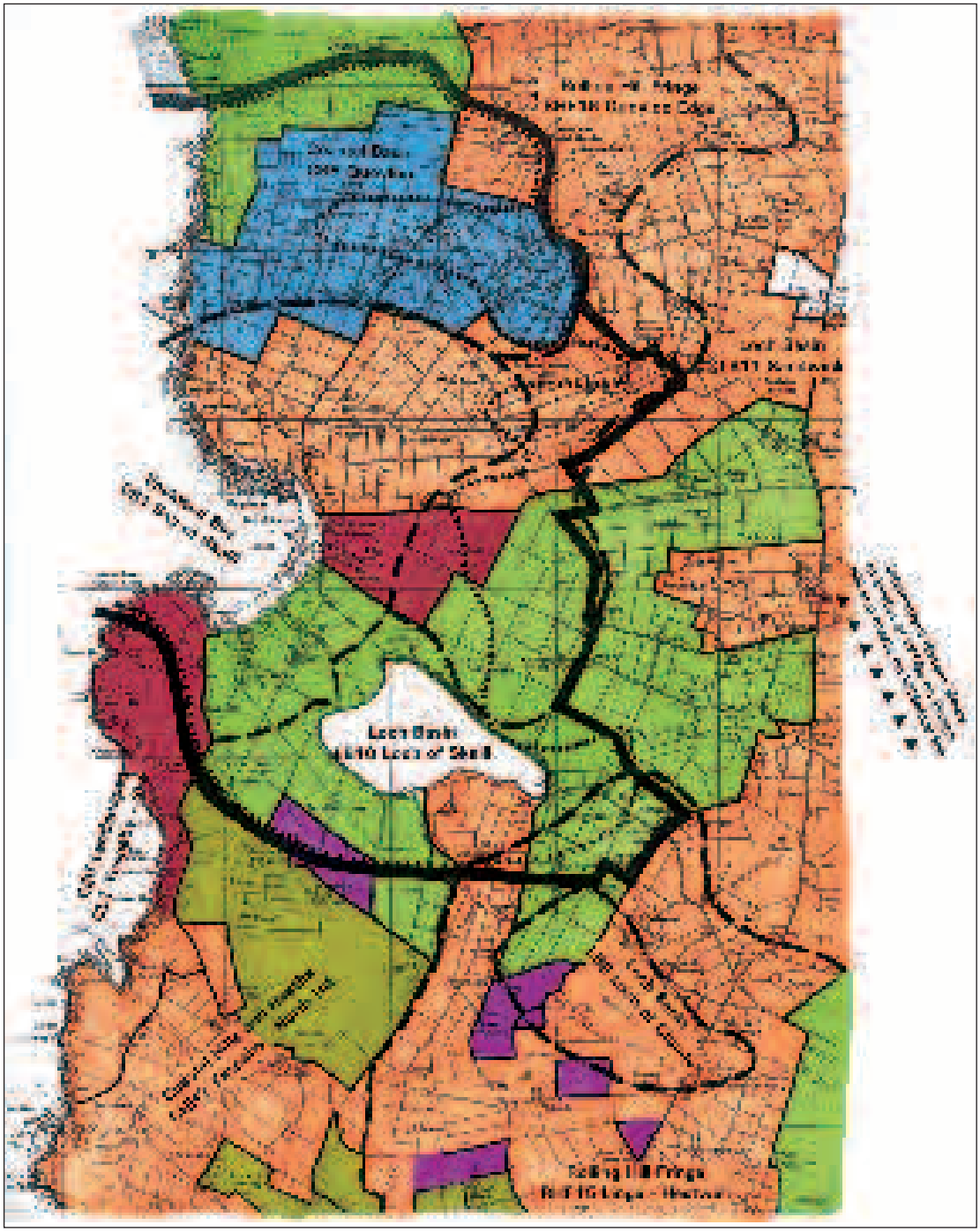
The intermediate setting of Skara Brae is shown on Plan 3 by a wide, bold line and the intermediate ZVI of Skara Brae is shown as a dotted line. Plan 3 also shows the boundaries of the landscape character types in the vicinity which helped to refine the delineation of the boundary. Although there is also some noticeable correlation between the intermediate setting and the boundaries of the historic landuse types, in some places, this tends to be coincidental and did not play a significant role in defining the intermediate setting.

In the open landscapes at Brodgar both the intermediate and wider ZVIs were mapped. The wider ZVI and wider setting are discussed in the following paragraphs.

Each of the principal monuments in this part of the WHS has its own intermediate ZVI. In order to consider whether, or how, the intermediate setting of this group of monuments may be derived from intermediate ZVIs, it was necessary to amalgamate the complex series of individual ZVIs. Plan 4 shows just four of the intermediate ZVIs relating to Maes Howe (continuous line), Stones of Stenness (broken dashed line) and Ring of Brogar (dotted line) with a north-west extension relating to Ring of Bookan (broken and dotted line). The Ring of Bookan was used because it is a significant monument at the extreme north end of the Brodgar Rural Conservation Area/Inner Buffer Zone.

A rational method of integrating these many zones was needed. One approach would be to take the outer line in every case, thus being sure to embrace every part of every monument's intermediate ZVI. This worked quite well but produced an extraordinarily amorphous shape with very few physical boundaries which could be recognised on the ground (see Plans 4 and 5). Ground recognition is considered to be important in the open landscapes of the basin as it gives greater certainty about where the setting is considered to be and where specific policies, in the future, may or may not apply. This is less important in the more distinctly defined intermediate setting of Skara Brae though the boundary there was drawn along physical features where practical (see Plan 3).

Plan 3 Intermediate Setting Part of Heart of Neolithic Orkney World Heritage Site – Skara Brae



Key for Plan 3

Overall Intermediate Setting

Intermediate ZVI of Skara Brae and Skaill House

Boundary of Landscape Character Types

Historic Landuse Type

1. 18th–19thC Rectiliear Fields
2. Post World War II Prairie
3. Post World War II Intake
5. Rough Pasture
31. 18th–19thC Planned Fields
40. 18th–19thC Smallholdings

A useful adaptation of this approach was to continue outwards from the visual boundaries until strong physical boundaries were encountered eg a road or track of long standing, or stone dyke. At the same time as this process was under way, the LCA and HLA plans were considered. Wherever possible, a physical boundary was selected that represented a boundary between LCA or HLA types. In some places the boundaries between different landscape character types and different historic land uses were virtually co-incident so these formed obvious choice boundaries.

Plan 4 shows the individual intermediate ZVIs of the four monuments and Plan 5 shows their amalgamated outer boundary and the final boundary of the intermediate setting, following physical features for the most part.

The wider setting

The wider setting is relatively easy to define in the case of the WHS. It is defined by a combination of visual envelope and wider ZVIs which are closely related to the Landscape Character Types because all rely on landform to define their extent. Essentially, the wider setting is the Loch Basin and its fringing slopes of Rolling Hill Fringes up to the Moorland Hills (see Plan 7). The edges are the lines of ridges along the Moorland Hills that define the outer rim of the basin.

There is a single wider setting for the whole of the WHS because, as indicated in the paragraph under heading "The Intermediate Settings", although there are very few views from within the bay at Skara Brae, over the low ridges which form the boundary of the intermediate setting, there are some views to more distant hills. Indeed, even from parts of the scheduled area, the turning blades of the wind turbines on Burgar Hill and the masts on Wideford Hill are visible.

All elements of the WHS, except Skara Brae, lie within the Loch Basin Landscape Character Type of the Lochs of Harray and Stenness. Skara Brae lies on the edge of the Bay of Skaill, a coastal area rather than a lowland loch basin. However, topographically, the Enclosed Bay of the Bay of Skaill is an extension, seaward, of the lowland Loch Basin. It is classified as an Enclosed Bay in the Landscape Character Assessment because it is dominated by maritime influences. Although the Bay of Skaill has a classic horse-shoe shape, defined by low ridges, this enclosure recedes at the Loch of Skaill and the bay flows into the Loch Basin around the junctions of the B9055/B9056/B9057 (see Plan 3). Thus, the natural basin of the Lochs of Harray and Stenness topographically contains all elements of the WHS.

The size of the Loch Basin is also important because, in effect, the visual envelope of the basin is largely coincident with the wider ZVI. In this case, it happens that the ridges defining the edges of the basin (which mark the maximum distance that can be seen from ground level in the basin) are approximately 2–12km away from the various elements of the WHS. The basin is approximately 11–12km wide at its widest point east-west and about 14–16km wide at its widest point north-south. Generally speaking, it is unlikely that even the largest structures likely to be built in the Orkney landscape, in the foreseeable future, would be visually or audibly significant, in the context of the WHS, at distances of more than about 15km.

In terms of cumulative effects on the approaches, West Mainland is only about 20km east-west and about 25km north-south. The Loch Basin, and surrounding slopes and ridges which define the Basin, therefore occupy a very large proportion of West Mainland. It is unlikely that developments outwith the basin would create significant cumulative effects on the approaches to the WHS that were not apparent within the basin.

However, there is one important exception to this discussion. The mountain skyline of north Hoy, from the Cuilags (433m AOD) over Ward Hill (479m AOD) to the Knap of Trowieglen (399m AOD) (see Plan 6) is exceptionally sensitive in terms of the winter solstice and Maes Howe, when the setting sun can light the inner chamber as it dips down behind these mountains. The mountain ridges and peaks are less than 13km from Maes Howe. Any structure or change which disrupted this natural skyline and the silhouette of the Hoy mountains, when viewed from Maes Howe, would have a profoundly serious effect on the WHS.

The wider setting must include the mountain skyline of Hoy but need not include intervening land outwith the Loch Basin as changes there would not affect the WHS.

Thus, with the exception of the mountain skyline of Hoy, in considering all of the likely effects of change on the WHS, the loch basin including its surrounding slopes and ridges provides a rational and convenient definition of the wider setting.

The wider setting is shown on Plan 7 by a bold broken line and the Landscape Character Units for the whole of the wider setting are shown on the same plan. In order to reproduce this plan at a useful scale, however, the area is not extended to cover the Hoy mountains which are referred to in the note annotated to the plan in the south-west corner. This also helps to emphasise that, although the mountain ridges of Hoy are critical to the WHS, the intervening land including much of the Bay of Ireland and the whole of Graemsay and Clestrain and Burra Sounds are not, and do not form part of the wider setting.

Conclusions

The intermediate and wider settings have been informed and influenced by all four possible techniques. The wider setting is largely determined by the visual envelope of the basin and the wider ZVIs of the monuments, with the boundaries of landscape character units and historic landuse types playing only a minor role in drawing the final boundaries. For the intermediate setting, greatest emphasis was first placed on the intermediate ZVIs but LCA and HLA unit boundaries played a much more important role in defining the setting, especially where they were coincident with strong physical features on the ground. Together this approach and the amalgamation of techniques produces integrated, rational and meaningful boundaries for the different settings of the WHS, as shown in Plans 3, 5, 6 and 7.

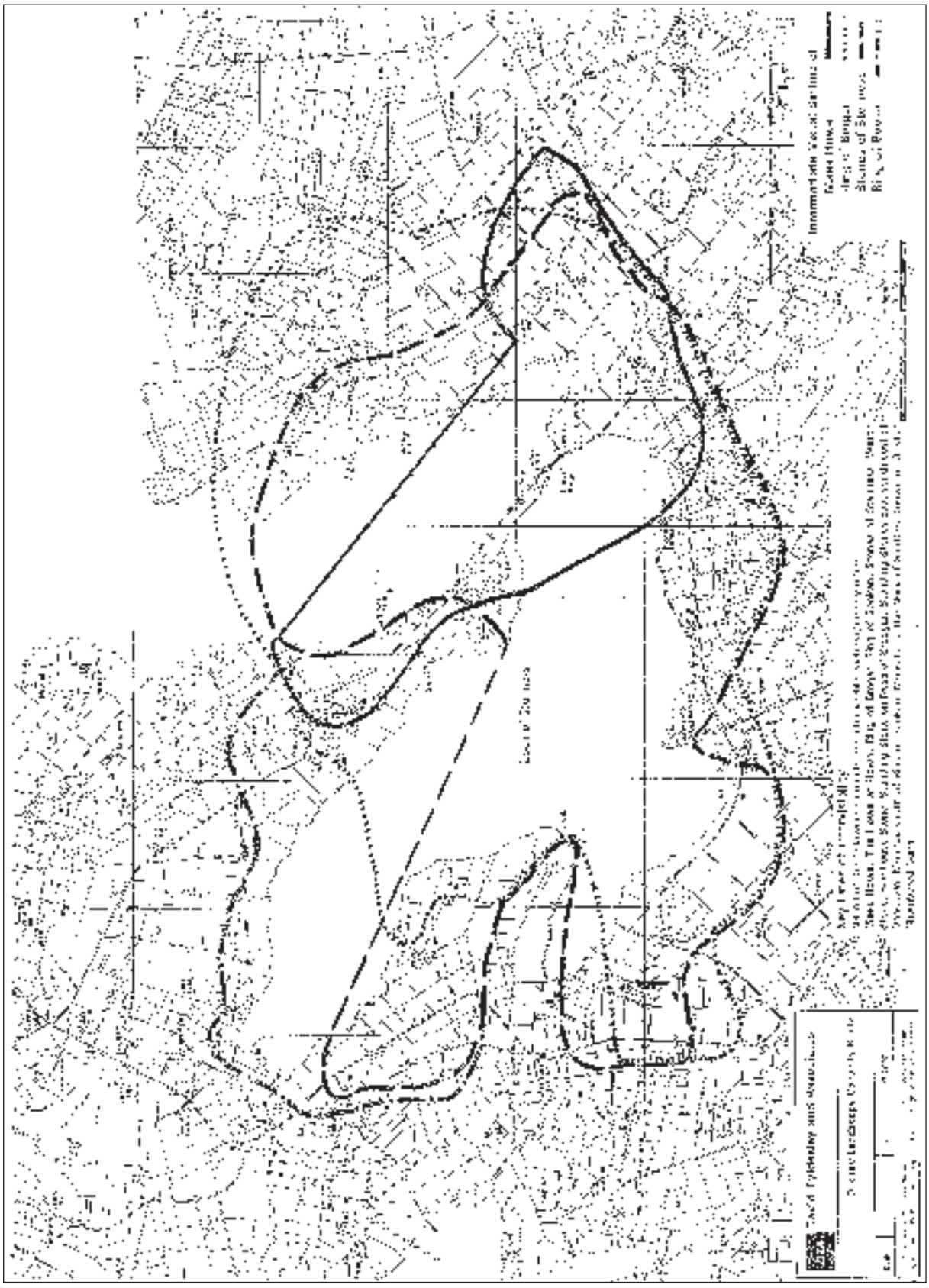
Figure 2 summarises the definition of the settings.

Figure 2 Description and Definition of the Settings of the WHS

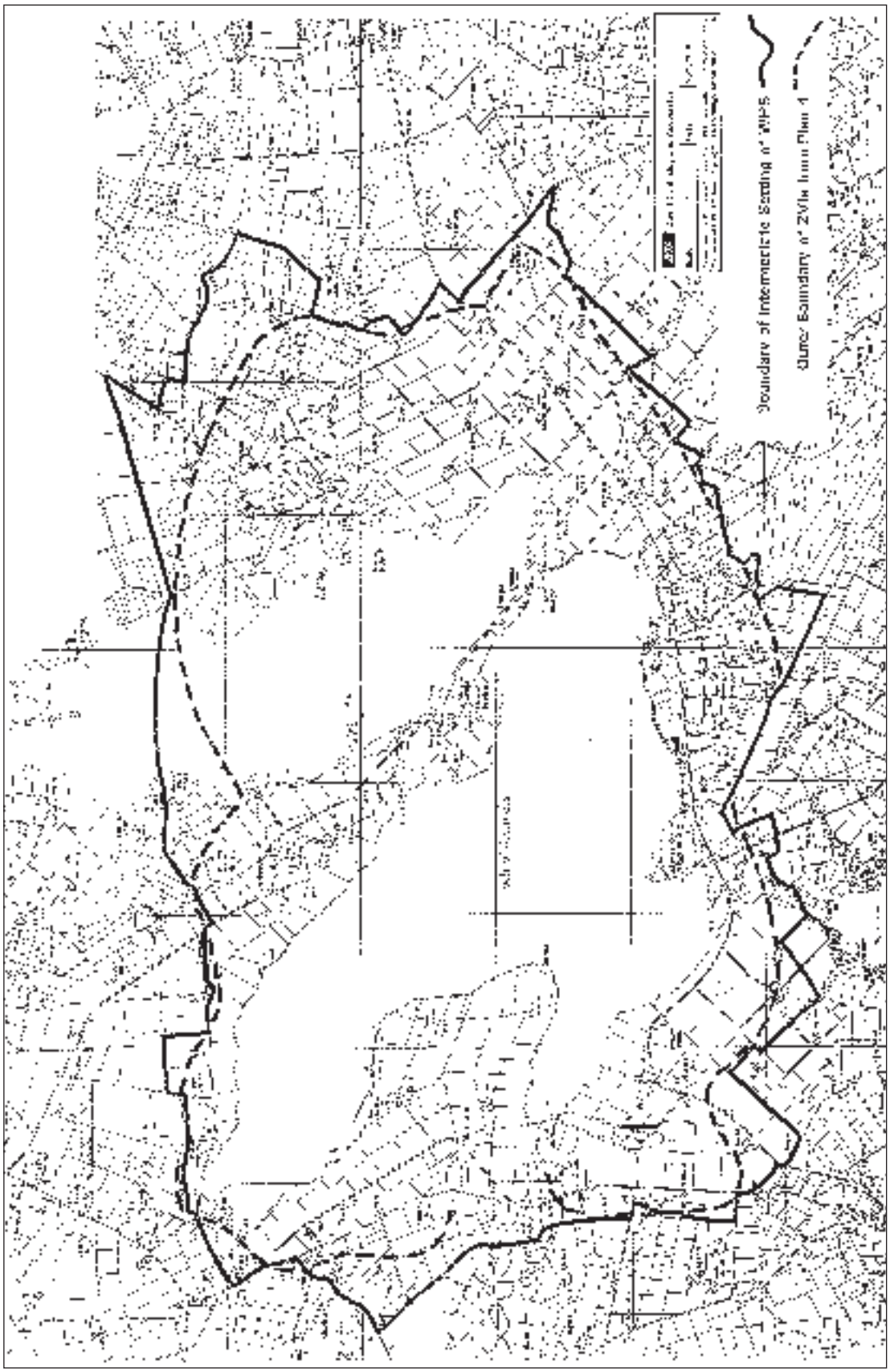
Setting	General Description	Defined By
Immediate	The scheduled areas and their immediate surroundings including all areas which visitors have access to, such as car and coach parking places, approach footpaths, visitor centres, viewpoints and information/interpretation facilities.	Defined predominantly by immediate ZVIs where very small scale change is very noticeable, perhaps up to about 0.5km, depending on the context. LCA and HLA unit boundaries play no part in defining the immediate setting but may be coincident with the boundary of the setting because they happen to follow the same physical feature or change in land use or land cover.
Intermediate	Areas of very variable size and shape, perhaps up to 3 or 4km, depending on the context, in which any individual new buildings, structures, roads or other human scale or larger changes could affect the WHS.	Defined mainly by an amalgamation of intermediate ZVIs but the boundaries of both LCA and HLA units are utilised where possible and where they coincide with strong physical boundaries.
Wider	A large, irregular area of about 11km by 15km with sinuous boundaries flowing along the skylines of the ridges which form the rim of the loch basin, where only larger scale changes would be noticeable.	Defined predominantly by the visual envelope and wider ZVI of the monuments which are broadly coincident. There is a close association with the Loch Basin, Rolling Hill Fringe and Moorland Hills LCA landscape types because they reflect the topographical form of the basin, however, the LCA and HLA unit boundaries were not generally used in defining the boundaries of the wider setting.

Photograph 1 Detail of the immediate setting of Skara Brae with one of the remarkable dwellings precariously located on the eroding shoreline of Skaill Bay which forms part of the intermediate setting of the WHS.

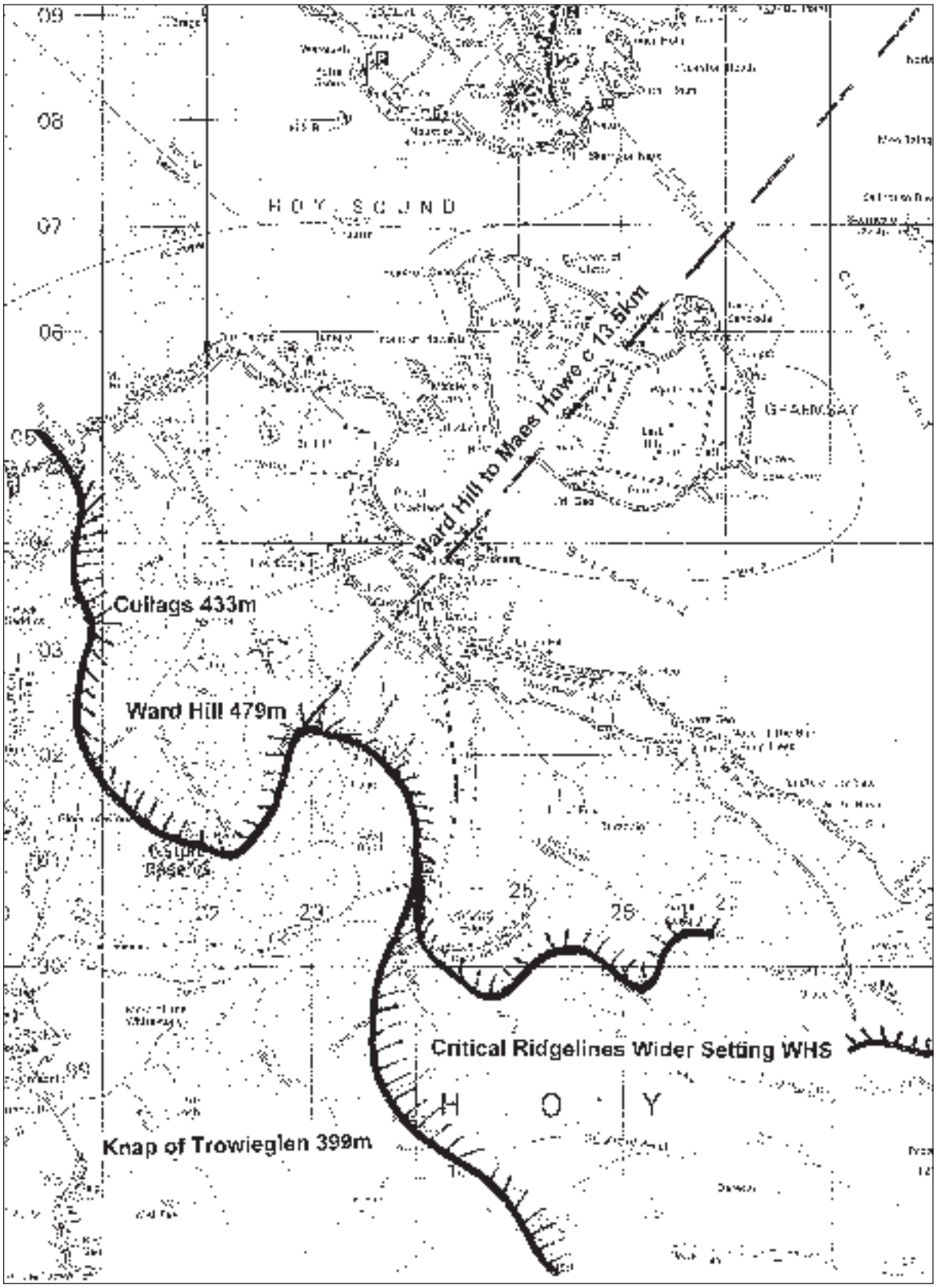
Plan 4 Brodgar/Maes Howe



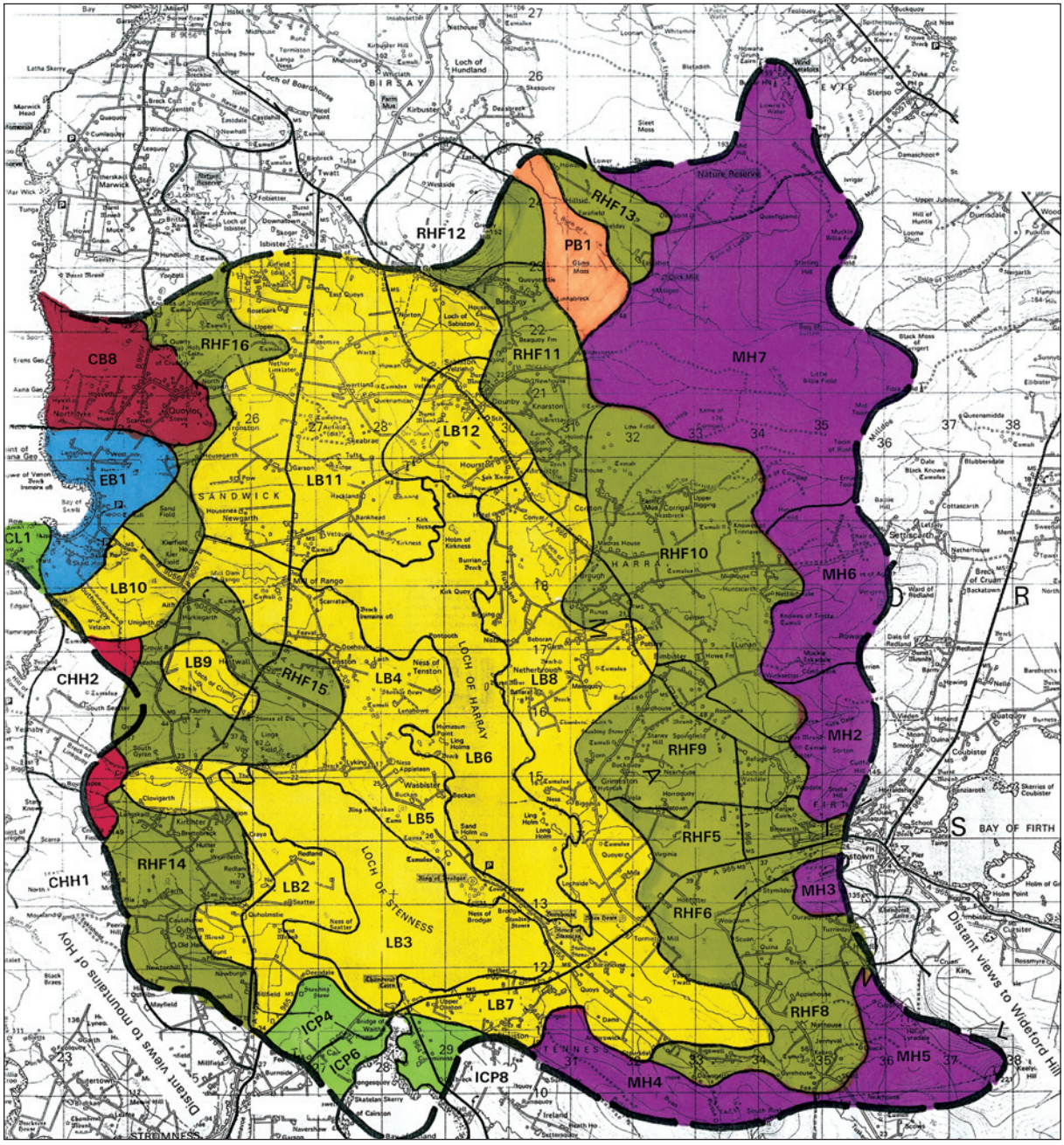
Plan 5 WHS Brodgar/Maes Howe



Plan 6 Key Ridges of the Hoy Mountains forming part of the edge of the Wider Setting of the WHS



Plan 7 Wider Setting World Heritage Site Landscape Character Types



Key for Plan 7

Wider Setting of whole WHS

Ref	Landscape Character Type
CL	Cliffs
CHH	Coastal Hills and Heaths
CB	Coastal Basin
ICP	Inclined Coastal Pastures
EB	Enclosed Bay

Ref	Landscape Character Type
LB	Loch Basin
PB	Peatland Basin
RHF	Rolling Hill Fringe
MH	Moorland Hills

Landscape Character Type	**Landscape Character Sub-Units**
Moorland Hills	MH2 Cuffie Hill MH3 Heddle MH4 Pullan MH5 Keelylang MH6 Rowamo MH7 Mid Hill – Mid Tooin
Rolling Hill Fringe	RHF5 Binscarth RHF6 Stennadale RHF8 Bigswell RHF9 Wasdale RHF10 Corrigall RHF11 Dounby East RHF12 Greeny Hill RHF13 Hillside RHF14 Quholm to Kirbister RHF15 Linga – Hestwall RHF16 Quoyloo Edge
Peatland Basins	PB1 Glims Moss
Loch Basins	LB2 Loch of Stenness West LB3 Loch of Stenness LB4 Tenston LB5 Wasbister/Brodgar Peninsula LB6 Loch of Harray LB7 Loch of Stenness South LB8 Loch of Harray East LB9 Loch of Clumly LB10 Loch of Skaill LB11 Sandwick LB12 Dounby West
Cliff Landscapes	CL1 Yesnaby – Skail
Coastal Hills and Heaths	CHH1 Brunt Hill CHH2 Yesnaby – North Hill
Coastal Basin	CB8 Quoyloo
Enclosed Bay Landscapes	EB1 Bay of Skaill
Inclined Coastal Pastures	ICP4 Upper Cairston ICP6 Upper Garson ICP8 Bay of Ireland East

4. Landscape Classification

Introduction

The process of Landscape Character Assessment provides a better understanding of the landscape resource to enable better landscape planning, conservation, restoration, management and enhancement. It is based on the principle that all landscapes have a range of features and characteristics which not only give them their appearance, but also contribute to their wider character, for example, through historical, artistic or cultural associations. In combination, these features and characteristics provide landscapes with their "character" or distinctiveness – their sense of place. Modern landscape planning does not seek to preserve the existing landscape "*in aspic*", but to manage change in a way which conserves, and where necessary enhances or restores, the distinctiveness of landscapes.

The whole assessment process is undertaken by qualified and experienced landscape architects. It includes: detailed desk studies; fieldwork; classifying landscape character into distinct landscape character types and describing them; considering pressures for change in the landscape; assessing the capacity of the landscape to accommodate those changes; and making recommendations, in the form of guidelines, for managing the changes.

Thus, an analysis of geology, soils, topography, hydrology, land cover, land use, landscape features and characteristics and the experience of the landscape and its associations enables landscapes to be classified into a series of distinctive landscape character types. These may occur once or in more than one location in any study area.

The National and Regional Landscape Context

In 1999, SNH completed a national programme of Landscape Character Assessment. The *Orkney Landscape Character Assessment* (4) was a contributory part of that programme. The programme classified the whole of Scotland into a series of landscape character types which represent areas with the same or similar combinations of landscape characteristics and features. A landscape character type may occur uniquely or in several different parts of a region or the country. These different areas of landscape types are called landscape character units and they have been mapped across the whole of Scotland. It is, therefore, possible to set the landscapes of the WHS setting into their regional and national context. Table 1 illustrates the national and local landscape character types in which the WHS setting lies. These are illustrated on Plan 7.

Not all parts of each landscape character type are homogenous. There are subtle variations in the combinations and extent of the main characteristic features which make each specific part slightly different to others and gives everywhere its sense of place and identity. Thus, whilst each landscape character type may have a number of geographic units, these in turn may be sub-divided into landscape character "sub-units". The more detailed the assessment the more landscape types and the more units and sub-units of each type will be identified. The landscape character types which occur in the WHS setting are described in Section 5. This more detailed classification and sub-division of units enables a better assessment of the capacity of the study areas to accommodate changes.

This detailed landscape classification and description draws upon and is consistent with that of the *Orkney Landscape Character Assessment* of 1998 (4) and the landscape classification in *Landscape Capacity Study*

Mainland Orkney, 2000 (3). All Assessments need to be designed and adapted, within the framework of a common, overall methodology, to suit the scale and purposes of any given project. The 1/50,000 assessment of 1998 serves the purpose well in terms of its role in the national programme and its assessment of the whole of the Orkney Islands for a wide range of purposes. Like the 2000 project, this project is a much more detailed and specific one, concentrating on relatively small areas, so it required a more detailed classification and description than the 1998 assessment.

Nine of the 23 regional landscape character types recorded in the 1998 Orkney Islands LCA (4) occur in the setting of the WHS. They and their respective sub-units are shown on Plan 7 and listed in Table 1.

Table 1 Derivation of Landscape Character Types in the WHS Wider Setting

National Context	Regional Character Types	Landscape Character Units/Sub Units
Uplands of the Highlands and Islands: Smooth Moorlands of the Islands	Moorland Hills	MH2 Cuffie Hill MH3 Heddle MH4 Pullan, MH5 Keelylang, MH6 Rowamo, MH7 Mid hill-Mid Tooin
Moorland Transitional Landscapes of the Islands	Rolling Hill Fringe	RHF5 Binscarth, RHF6 Stennadale, RHF8 Bigswell, RHF9 Wasdale, RHF10 Corrigall, RHF11 Dounby East, RHF12 Greeny Hill, RHF13 Hillside, RHF14 Quholm to Kirbister, RHF15 Linga-Hestwall, RHF16 Quoyloo Edge
Peatland Landscapes of the Highlands and Islands	Peatland Basins	PB1 Glims Moss
Highland and Island Glens/Basins: Island Glens/Basins with Lochs	Loch Basins	LB2 Loch of Stenness West, LB3 Loch of Stenness, LB4 Tenston, LB5 Wasbister/Brodgar Peninsula. LB6 Loch of Harray, LB7 Loch of Stenness South, LB8 Loch of Harray East, LB9 Loch of Clumly, LB10 Loch of Skaill, LB11 Sandwick, LB12 Dounby West
Highland and Island Rocky Coastal Landscapes	Cliff Landscapes	CL1 Yesnaby-Skail
Low Coastal Hills of the Islands	Coastal Hills and Heaths	CHH1 Brunt Hill CHH2 Yesnaby-North Hill
Island Low or Flat Coastal Landscapes	Coastal Basin	CB8 Quoyloo
	Enclosed Bay Landscapes	EB1 Bay of Skail
	Inclined Coastal Pastures	ICP4 Upper Cairston, ICP6 Upper Garson, ICP8 Bay of Ireland East

5. Landscape Description

Introduction

The general descriptions which follow relate to the main landscape character types in the WHS wider setting and are drawn from the *Orkney Landscape Character Assessment*, 1998 (4), modified for the purposes of this project. Plans 6–8 show the boundaries of the main landscape character types and the sub-units of each type. These descriptions form an essential pre-requisite to the understanding of landscape character and thus the assessment of the capacity of the landscapes to absorb various types of change.

Cliff Landscapes

On the western edge of the Bay of Skaill, close to Skara Brae, lies the northern edge of the Yesnaby to Skaill Cliff Landscapes unit. This is typical of the red cliffs of the West Mainland coast. They rise sheer from the sea to about 60m AOD and have distinctive bedding planes, lines and faults with many stacks, arches and caves. Even in a light wind and low swell the waves attack the cliffs with great force, crashing heavily in a cauldron of whitewater and sending spume and spray up and often over the cliff top limiting vegetation growth for some distance landward. One of the island's most dramatic landscapes, the cliffs are a wild, natural, exposed, uninhabited, large scale landscape dominated by the vast expanse of the sea and the vertical face of the rocks, with the sound of sea birds occasionally rising above the constant noise of the pounding waves and incessant wind.

Coastal Hills and Heaths

The Coastal Hills and Heaths landscape is found mainly around the coast of West Mainland where grassland hills create an irregular rim to the island, reaching heights of up to 150m. Typically, these hills meet the sea at dramatic cliffs (see above). The land cover is predominantly improved or rough grassland with maritime heath in the areas most exposed to the sea. Much of this landscape once was common rough grazing and as such, lacked extensive field boundaries. Historically there were pockets of small enclosures but these were not sustained and only remnants remain. There are, however, a few surviving large scale field and property boundaries which are characteristic features.

The landscape has a sporadic history of settlement and marginal agriculture with a few steadings prominent on lower slopes. The occasional ruined crofts are features of the higher areas. Everywhere there are remnants of old, small once-drained fields that could not be sustained in cultivation or grazing and which have reverted to rough grassland and wetlands. The grass cover allows the outline of underlying strata to be seen in certain areas and small rock outcrops (sometimes called 'hamars') are noticeable features in the generally smooth but strong relief, which includes some subtle topographical features of terraces and low crags. On the lower slopes the remnants of old hill dykes are discernable as small, linear ridges. The hills are grazed by cattle and sheep which tend to be very conspicuous.

The height of the hills makes them important visual barriers controlling views out to sea. Under low sun or in silhouette, topographic features are highlighted. Hilltop cairns from the Bronze Age are particularly noticeable in these conditions. Skylines and ridges are therefore very sensitive in views.

The landscape type occurs in two sub-units at Brunt Hill, to the north and west of Stromness and further northwards beyond Yesnaby to the Loch of Skaill bay.

Coastal Basin

The Coastal Basins landscape type extends inland from the coast and is cradled by higher ground to form a basin open to the sea. The smooth landform slopes gradually down to sea level or low cliffs. This landscape is generally very productive and well farmed as pasture and some arable fields. The exception is the lowest ground which frequently contains wetland or small lochs. Ouse water bodies are also characteristic of the basin landscape's coastal edge. This landscape is settled and typically contains large estate farms with characteristic steading buildings and rectilinear field wall patterns. Views out to sea and access to beaches are attractive aspects of these landscapes, which have influenced settlement and development in the past.

This landscape occurs extensively north of Finstown and on the East Mainland but only one unit occurs in the wider setting of the WHS, at Quoyloo, north of Skara Brae. Here a small terrace on the slope above the Enclosed Bay landscape of the Bay of Skaill has all the characteristics of Coastal Basin, despite its elevation above the bay and flatter less-basin like shape. It is defined by the higher land of Vestra Fiold and contains the settlement of Quoyloo/Scarwell with a dense field pattern of dark green pastures bounded by drystane dykes. Again, typically of the Coastal Basin landscape type, steadings occur on hill and mound tops or on ridgelines, making them conspicuous over long distances, for example from Skara Brae.

Inclined Coastal Pastures

This landscape type is found in coastal areas, where pastures slope gently down to the sea, and includes bay coastlines which lack the topographic enclosure of the Enclosed Bay landscapes. Heights range from 10–50m AOD. Vegetation is predominantly improved grassland, often with rectilinear field patterns with a strong orientation down to the coast. Occasionally these are walled. This landscape frequently contains resettled crofts which are strung out along the coastal strip. These generally have smaller scale, less regular field patterns than the main estate farms, which are recognisable by their more rigid large-scale geometry. Elsewhere there are occasional large houses and farms, some with a modest framework of trees.

This landscape, being both accessible to the sea and suitable for cultivation, has a rich archaeological resource. The coastal edge typically contains prehistoric sites; brochs are significant features, as are the remains of coastal defences from the Second World War. Roads run noticeably parallel to the coast providing access to the coastal edge and the moors above. The orientation of the land to the sea is a particularly significant feature of this landscape, as the fields appear to drop away and merge with the sea. Views out to sea and to other islands are, therefore, extensive, but views inland are more restricted by topography.

Three sub-units of this landscape type occur in the wider setting of the WHS, at Cairston and Garson to the east of Stromness, and around the Bay of Ireland, to the south of Stenness.

Enclosed Bay Landscape

This landscape type is particularly important to the WHS because it contains Skara Brae and the seaward setting of Skaill House. It is typical of Orkney coasts where softer rocks have created sandy bays. Small in scale, and closely confined, the Bay of Skaill is defined at its outer limit by high cliffs and within the bay by ridges and hills. It is rounded and smooth in a regular horse-shoe-shape – the classic sandy bay with white shell sand, some shingle and rock platforms running out to skerries.

The sheltered, enclosed, quite intimate, small scale, low-lying landscape cradled by low green slopes and overlooked by steadings and cottages on the higher ground above, is dominated by Skaill House and the home steading. However, closer to the shore, the character is more maritime and provides the unique and distinctive setting of Skara Brae, with its calm stillness and deep sense of history and place in juxtaposition with the activities on the sea and the beach and the ceaseless lapping of waves in the bay.

Loch Basins

Forming the extensive, low lying basin of the Lochs of Harray and Stenness, this "drowned" landscape forms a large part of the wider and all of the intermediate setting of the Brodgar part of the WHS. It is, therefore, of crucial importance to the setting and the experience of the monuments.

Eleven sub-units have been identified in the wider setting, including one detached basin in the Rolling Hill Fringe around the Loch of Clumly. The Loch of Skaill sub unit is also particularly important. Despite its distance and virtual severance from the basin around the Lochs of Stenness and Harray, it forms an important part of the setting of Skara Brae and Skaill House and links the bay with the larger loch basin to give continuity to the character of the wider setting.

The landform is quite flat but does include subtle, flowing slopes away from the lochs and the more pronounced slopes of the Wasbister – Brodgar peninsula. To the north of the Loch of Harray the topography is more varied and includes land formerly occupied by airfields. The lochs have gently sloping, shallow banks so buildings tend to be a few metres above loch-shore level. The fields of improved pasture and some arable are generally small with a complex, sometimes geometric pattern radiating from the loch and frequently interspersed with pockets of wetlands, heathery knolls, burns and smaller lochs or lochans. The main lochs are at sea level and their shorelines have consistent water levels, many indentations, small holms and frequent promontories and peninsulas, but marginal vegetation varies and is often absent.

The basin contains the exceptional assemblage of ancient archaeological features with numerous cairns and standing stones, several stone circles, mounds, tumuli, brochs, burial chambers and chambered cairns, imparting a profound cultural heritage of a prehistoric ritual and settled landscape which is complemented by a diverse range of habitats and abundant wildlife. Long views within and across the basin are dominated by the lochs and the surrounding, quite dense, settlement of steadings, small villages, single dwellings and occasional hotels and other businesses lining the network of many minor roads and usually set back from the loch edge. Views of and between the many prehistoric sites and features are of considerable importance throughout the basin.

Peatland Basin

This landscape type typically occurs in low lying topographic basins, associated with the coast and inland water bodies. The land is typically very flat and around 10 or 20m. However, the only unit of the landscape type to occur in the WHS wider setting is Glims Moss. Lying between Greeny Hill and Skeldale Hill on the Durka Dale Burn and Burn of Hillside, this peatland is untypical in that it lies at about 40–50m AOD, is relatively narrow and inaccessible. The B9057 passes to the east and probably the moss extended to the east of the road. Now the landscape type is confined to a smaller area overlooked by Beaqouy to the south and Hillside to the north.

Land cover is dominated by peatland and wet grassland vegetation which is not enclosed and is largely ungrazed. The mosses have both nature conservation interest and archaeological potential.

Rolling Hill Fringe

This is a transitional landscape which forms the rolling lower fringe of hill areas and the upper border to low lying loch landscapes or coastal pastures. It is this relationship to both low lying and hill land which gives the rolling hill fringe much of its character. Heights vary between 20m and 150m. The topography is predominantly rolling, (associated with the extensive deposits of boulder clay), although there are steeper slopes in places.

The vegetation in lower areas is predominantly improved pastures, enclosed by fences and some stone walls. Fields vary in size and orientation but are generally small to medium, and grazing animals are common. On higher ground, the green improved pastures give way to unenclosed brown moorland. This often creates an interesting feature where the contrast in colours clearly highlight those moorland areas which have been improved for pasture.

On lower lying areas the land has a well settled agricultural appearance with good access via the road network. Settlement becomes more sparse in higher parts, and is generally of scattered farm steadings. A network of minor roads and tracks often traverses the higher parts of the hill fringe. Archaeological interest is found in the tumuli, burnt mounds and brochs.

The landscape type occurs all around the Loch Basin, forming a very important context and backdrop to the WHS monuments and a very substantial, and visually prominent, proportion of the wider setting. The hill fringes link the coastal hills with the lochs to the west and the high moorlands with the lochs to the east. Boundaries tend to have transitions to Loch Basin and Moorland Hills and Coastal Hills and Heaths, rather than sharp distinctions, in many places.

There are many subtle variations related to settlement patterns, field patterns and enclosure, topography, road pattern and the history of settlement. For the scale of this study, 12 sub units have been identified along the edges of the Loch Basin

Moorland Hills

This landscape type generally forms the gently undulating or rolling hills of the highest land, up to 225m AOD at Wideford Hill but only about 100m AOD south of Finstown and Stenness. Wideford Hill, about 10km from Maes Howe, with its clutter of masts, forms a distant visible feature in the wider setting. So too do the large wind turbine generators on Burgar Hill (about 13.5km from Skara Brae) which are at least as noticeable as the masts on Wideford Hill.

Land cover is dominated by unenclosed, peaty grass or heather moorland with occasional stone boundary dykes. The hills are littered with prehistoric features including some ancient field systems and skyline barrows. Generally the moorland hills are devoid of present day settlement but, where agriculture has long been abandoned, they can sweep low down to the edge of steadings and dwellings on the hill fringes. Peat cutting is evident but not conspicuous on these open, windswept, exposed, elevated landscapes which have the most extensive, panoramic views in the Orkney islands, across Mainland to the sea and other islands. The landscape type forms the eastern and much of the southern rim of the wider setting of the WHS.

6. Working with the Historic Landuse Assessment

Introduction

The Historic Landuse Assessment (HLA) Pilot Project was established in October 1996 by Historic Scotland and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). It is a partnership venture which aims to explore the viability of creating a method of assessing historic landuse patterns in Scotland. HLA is built on the platform of the RCAHMS Geographical Information System (GIS).

The origins of HLA lie in Landscape Character Assessment (LCA), which has generated a new and more informed approach to landscape issues. However, an assessment of LCA by cultural heritage managers indicates that the scale of resolution at which they are undertaken does not enable historical and archaeological information to be used to its full potential. This historical dimension is important as an aid to our understanding of the processes behind the formation of the current landscape.

Whilst the HLA method is in part inspired by the Historic Landscape Character Assessment of Cornwall (7) the methods have been extensively adapted for the Scottish context and to integrate the outputs into the RCAHMS GIS.

The main value of HLA lies in its potential to enable the input of built heritage interests into the management of landscape change, although the technique has been found to have several other potential uses. It should be stressed that, in the context of the management of the landscape, it is not the intention to suggest that broad areas of the landscape should be fossilised in their current form because of their historic interest. Rather, the approach aims to map historic landuse influences in order to provide a body of information that will allow priorities to be drawn within wider landscape management which gives proper weight to the historic dimension of the landscape and generally informs decision making by land managers. HLA can produce multiple maps based on different sets of criteria. The full value of the approach can most easily be appreciated through the use of the GIS system. In addition, HLA will have the greatest potential when a full national coverage has been built up.

The mapping process involves the systematic assessment of topographic OS maps, archaeological and historical data in the National Monuments Record of Scotland, the Land Cover of Scotland 1988 (MLURI, 1993), and vertical aerial photographs. The assessment is intended to be a broad-brush exercise, but retaining the topographic detail that would allow the historic landuse to be characterised. The smallest scale of topographic data which included field boundaries was the OS 1:25,000 Pathfinder maps. This is adopted as the scale of capture.

However, any feature which is less than one hectare in extent is too small to map at 1:25,000 scale. This means that many individual archaeological sites, including linear sites such as Roman roads, do not show up on the maps that are produced. Groups of structures have been included, with a yardstick, for example, of at least five sheilings or three hut-circles per hectare.

The current landscape is characterised using the OS map as a base. The main sources of Relict Landuse Types is the National Monuments Record, and the aerial photographs. The information from these sources is collated and mapped by the application of a simple but clearly defined series of historical Landuse Types. For ease of use, two main categories of Landuse Type have been defined:

Current Landuse Types – reflecting historic landuse types in current use, which may include types that are in origin several hundred years old, and

Relict Landuse Types – reflecting historic landuse types that have been abandoned, but which still leave some trace in the landscape.

A list of 44 Current Types and 37 Relict Types (of which 12 have Current equivalents) is used. Each type has a reference number that is used to tag the land area on the map and if an area includes relict types a composite number is created. Each Landuse Type is mapped by eye on a tracing-paper overlay of the 1:25,000 map. The HLA map is designed so that every part has a Current Landuse Type, but only where there are visible or mappable relics of past landuse is a relict area created. Along with the map a database is also used, compiled in Microsoft Access, of all the single and multiple types that occur.

At the time of this project the 44 current landuse types had also been amalgamated into 12 summary types as shown in Table 2. Subsequent to the project the names of the 12 summary types have been changed and their component types reallocated.

Validation by fieldwork can be part of the methodology and helps to verify both the area boundaries and the landuse types. However, this has not yet been undertaken in Orkney and did not form part of this project brief.

Interpretation of the HLA data has already indicated useful results, for example, in analysing the survival of monuments in different landuse types. However, as explained in Section 1, part of the object of this project is to use the HLA and LCA together to see how they compare and contrast and how they may be further integrated.

To do this all of the original historic landuse types and areas in the setting of the WHS were mapped on to a 1:25,000 OS base from the original tracing paper overlays of the HLA. The HLA area units were mapped both in their original 44 types and the 12 summary types. The information held on the Access database and the complete schedules and maps at 1:10,000 of the Sites and Monuments Record were used. The HLA was plotted on to new 1:25,000 map bases before the LCA information was available and by different staff. Thus, the mapping of the LCA units was not influenced by a prior knowledge of the HLA units.

Upon completion of the LCA mapping the LCA units were overlaid on to the HLA units. The distribution, boundaries and types of the respective units were compared.

Within the wider setting of the whole WHS there are:

a) 9 Landscape Character Types in 16 Landscape Character Units which are subdivided into 41 sub-units (see Plan 7);
b) 8 of the 44 Current Historic Landuse Types in a large number of units (over 100 units).

Table 3 summarises the coincidence of the units.

Table 2 Historic Landuse Types

Summary Type	Current Landuse Type
1. Medieval Urban Core	8. Medieval Burgh
2. Extractive Industries	25. Mining Area 26. Landfill 27. Quarry 28. Opencast 29. Commercial Peat Extraction 30. Traditional Peat Extraction 34. Restored Agricultural Land 36. 17th–19thC Industrial Planned Village
3. Water Bodies	22. Reservoir
4. Post World War II Improvement	2. Post World War II Prairie Fields 3. Post World War II New Intake 4. Post World War II Unenclosed Improved Pasture 33. Modern Industrial Scale Farm Buildings
5. Improvement Period Fields	1. 18th–19thC Rectilinear Fields 31. 18th–19thC Planned Fields 39. 18th–19thC Allotments 43. Reverse – S shaped Field Systems 44. 18th Century Fields
6. Rural settlement: Smallholdings and Crofts	6. Crofting Township 10. 17th–19thC Agricultural Planned Village 40. 18th–19thC Smallholdings 41. Post World War II Smallholdings
7. Rough Pasture	5. Rough Pasture 13. Managed Moorland 37. Drained Rough Pasture 38. Drained Managed Moorland 42. Deer Lawn
8. Policies and Parkland	18. 18th–19thC Policies and Parkland
9. Commercial Forestry	12. Commercial Forestry
10. Managed Woodland	19. Managed Woodland
11. Built-up Areas	7. Urban Area 9. Monastery 11. Industrial and Commercial Area 20. Airfield 21. Military Camp 23. Motorway 24. Railway 32. Cemetery
12. Recreation Areas	14. Golf Links 15. Ski Areas 16. Country park 17. Monument in Care (?) 35. Recreation Area

Table 3 Incidence of Landscape Character and Historic Landuse Types WHS Wider Setting

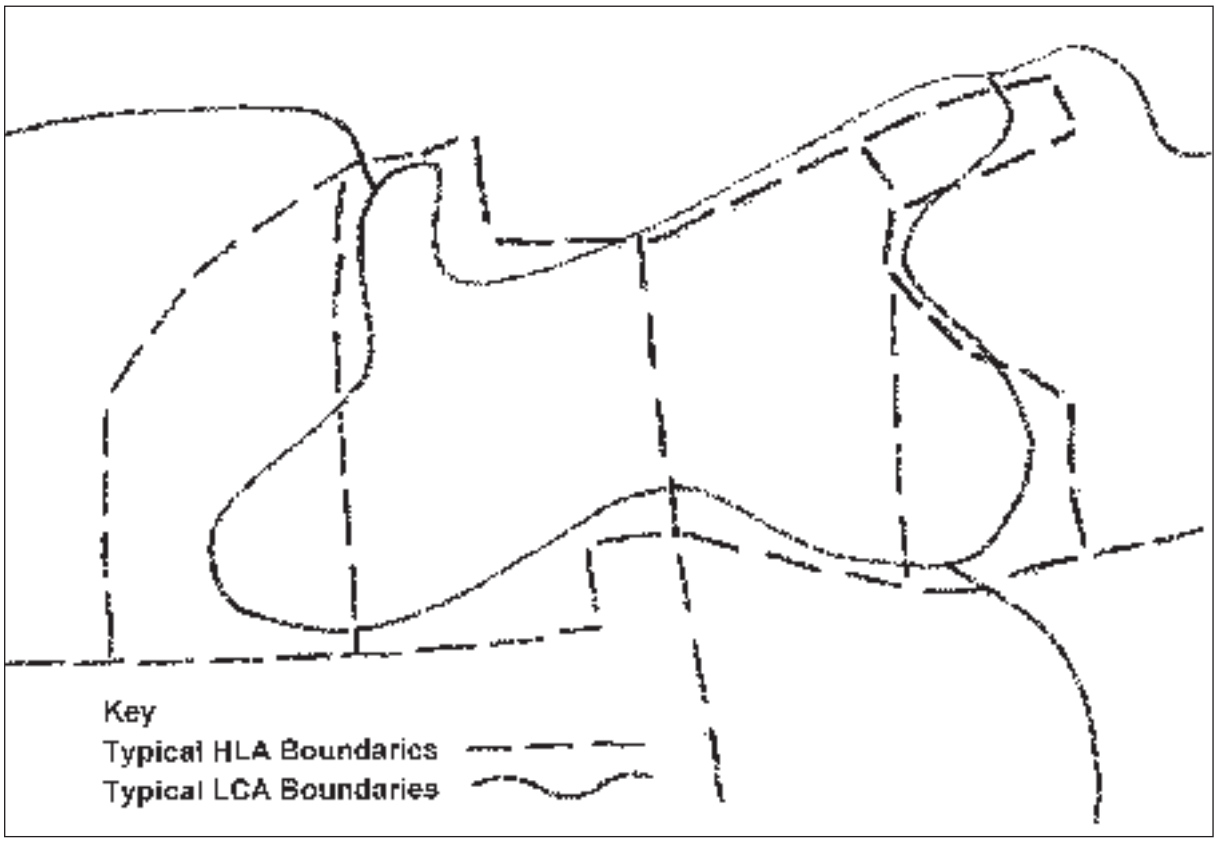
Landscape Character Type	Historic Landuse Types Occurring in the LCT	Summary HLA Type
Cliff	1. 18th–19thC Rectilinear Fields 5. Rough Pasture	5 7
Coastal Hills and Heaths	1. 18th–19thC Rectilinear Fields 3. Post World War II Intake 5. Rough Pasture	5 4 7
Coastal Basin	40. 18th–19thC Smallholdings	6
Inclined Coastal Pastures	1. 18th–19thC Rectilinear Fields 2. Post World War II Prairie Fields	5 4
Enclosed Bay	1. 18th–19thC Rectilinear Fields 5. Rough Pasture 31. 18th–19thC Planned Fields	5 7 5
Loch Basin	1. 18th–19thC Rectilinear Fields 2. Post World War II Prairie Fields 3. Post World War II New Intake 5. Rough Pasture 20. Airfield 31. 18th–19thC Planned Fields 40. 18th–19thC Smallholdings	5 4 4 7 11 5 6
Peatland Basin	5. Rough Pasture	7
Rolling Hill Fringe	1. 18th–19thC Rectilinear Fields 2. Post World War II Prairie Fields 3. Post World War II New Intake 5. Rough Pasture 13. Managed Moorland	5 4 4 7 7
Moorland Hills	5. Rough Pasture 13. Managed Moorland	7 7

It should be borne in mind that there are many important differences between HLA and LCA. For example:

a) HLA – maps the impact of people and their activities upon the land surface. This methodology exclusively identifies the anthropogenic and historical elements of the landscape;
b) LCA – is specifically designed to assess a very wide range of factors all of which contribute to landscape character, including physical and non physical visible aspects and associations.

HLA is a relatively accurate and precise mapping at 1/10,000 or 1/25,000 scale following field and land use boundaries and usually with sharp distinctions between the units. By contrast, LCA is usually undertaken at 1/50,000 scale (though in this project it was applied at 1/25,000 scale for greater detail and consistency with the HLA). It tends to produce more amorphously shaped units with flowing and curving boundaries often representing a transition between one type and another, not a sharp distinction. Thus, the units of the two assessments have different shapes and areas, even where they may be representing very similar characteristics.

Figure 3 Diagrammatic Illustration of LCA and HLA Boundaries



In making comparisons between the products of the two assessments, therefore, allowance needs to be made for these different approaches and an overview taken rather than an attempt at an over-precise measurement.

Generally, the best fit between units of respective assessments tends to occur where the LCA is largely determined by land cover, land use and physical features such as field boundaries and non-physical aspects such as pattern and line. Thus, for example, there could be a close relationship between, say HLA 1 Rectilinear fields, and certain "lowland" LCTs which are determined by a regular, geometric pattern of fields with rectilinear boundaries. Similarly, HLA 13, Managed Moorland may often be closely associated with Moorland Hills LCTs.

Where there tends to be least relationship is in LCTs that are dominated by non land use related components. Thus, areas characteristic of coasts or landforms may demonstrate very little relationship with HLA units. In this project the Cliff, Coastal Hills and Heaths, Enclosed Bay, Rolling Hill Fringe and, to a lesser extent, Loch Basin had the least relationship with the HLA units.

The strongest relationships in this project were demonstrated by:

a) Coastal Basin and 18th–19th Smallholdings in an almost perfect boundary match at Quoyloo;
b) Peatland Basin and Rough Pasture; and
c) Moorland Hills – dominated by Managed Moorland but with some Rough Pasture;

d) Inclined Coastal Pastures dominated by 18th–19th Rectilinear Fields with occasional pockets of Post WWII Prairie Fields.

Plan 8 illustrates the HLA units for most of the Wider Setting of the WHS, these can be compared with the LCA units on Plan 7.

Questions Raised and Conclusions

What does the comparison tell us?

Nothing very surprising once you have understood both assessments. It does tend to show that both assessments are quite robust and their outcomes dependable (within known limitations), because when the 2 assessments are assessing the same, or very similar, things they produce the same, or very similar, outputs. When the LCA begins to be strongly influenced by non physical components of the landscape it departs from the HLA. That too is not surprising and somewhat reassuring. Overall, the LCA undoubtedly involves more subjective judgements (both in quantity and degree) than HLA.

Is the comparison useful?

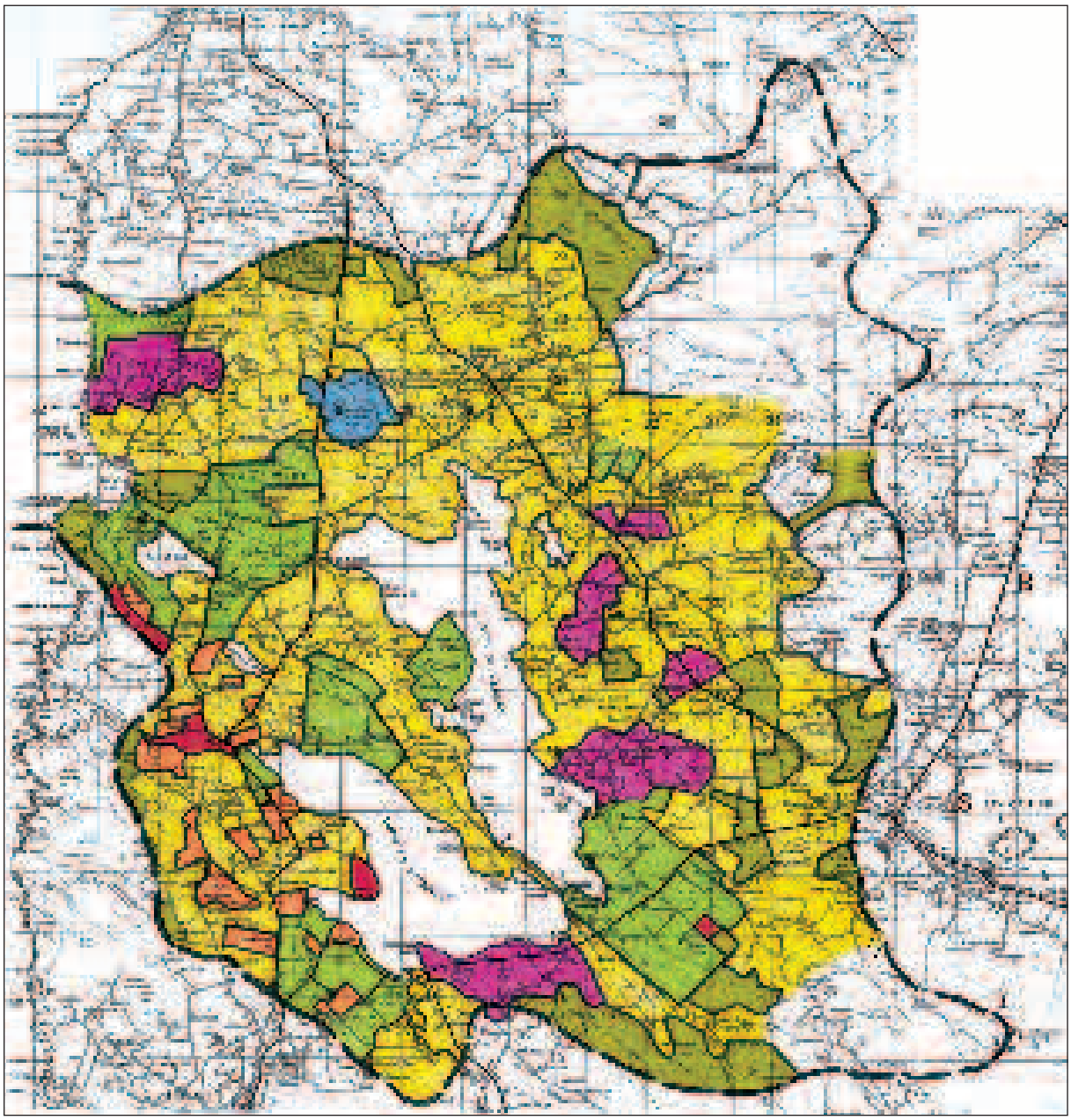
Yes, undoubtedly. The HLA considerably improves the landscape architect's understanding of the landscape. The LCA provides interesting background information which helps to interpret the HLA. However, our conclusions, so far, are that, whilst both professions may find each other's assessments interesting, HLA is more useful to landscape architects than LCA is useful to historian/archaeologists.

The LCA has a very wide range of applications, by a wide range of people, and offers much more practical guidance to decision makers (eg planning authorities, countryside managers and those making decisions in respect of forestry and agricultural management and grants etc). HLA probably has less direct application in its present form. We found it needs expert interpretation, whereas the LCA tends to be more user-friendly to non landscape experts. The kind of expert interpretation that HLA needs includes assessment of the historical significance of the historic landuse types and ways in which land use and management decisions may affect their historical integrity and significance. This is because HLA simply provides the information as to the nature and distribution of the historic landuse types without going on to provide guidance as to the significance of the effects of change in the ways that LCA does.

Put more simply, an archaeologist with an interest in landscape issues and history can interpret and use LCA outputs (SNH style) without too much difficulty. However, even landscape architects with a deep interest in the history of the landscape find the outputs of the HLA, in its present form, less useable. Again, this is probably due more to the fact that the HLA does not provide guidance (as opposed to analysis) "on a plate" like the LCA does.

There seems to be no reason why HLA cannot be developed to provide the kind of interpretation/guidance that would make it useable for a wider application by non-experts. It could contain indications of which trends or anticipated changes, for example, in agriculture or moorland management, may affect the historical significance, character or integrity of the different historic landuse types in different areas. If there are ways of managing these changes that would mitigate the effects, these too could be explained in the HLA. These are the kinds of guidance which are found, in varying degrees of detail, in all the LCAs.

Plan 8 Part of Wider Setting of Heart of Neolithic Orkney World Heritage Site Historic Landuse Types



Key for Plan 8

Wider Setting of whole WHS

Historic Landuse Type

1. 18th–19thC Rectilinear Fields
2. Post World War II Prairie
3. Post World War II Intake
5. Rough Pasture

Historic Landuse Type

13. Managed Moorland
20. Airfield
31. 18th–19thC Planned Fields
40. 18th–19thC Smallholdings

Should HLA be integrated into LCA or vice versa?
Not necessarily because both have useful roles to play as independent products. However, we see considerable benefit in integrating HLA into LCA. We feel that LCA would be much improved in its reflection of the history of the landscape and the effects and results of human activity if it was a specific step in LCA methodology. The overlays that are produced in the HLA (and related analysis and interpretation) would inform the classification of landscape character types and possibly influence the definition of landscape character units (admittedly more in some areas than others). In this way it may further influence not only the identification of trends and other changes in the landscape but also the guidelines as to how to manage change in a sustainable way.

The reverse is most unlikely to be true. HLA is actually quite a specific interpretation of (relatively speaking) a narrower range of information. It is intended to map, classify, describe and analyse one aspect of the landscape (two if you count current and relict landuse types). If you feed in landscape character information you would cloud the landuse analysis and lose the value of the HLA. What would a HLA become if you start to introduce the range of factors which influence LCA?

If there had been no LCA would HLA have been a useful tool for landscape planning on its own?
Yes, it would tell landscape planners and managers a great deal about the landscape resource that they otherwise would not have known. This is because no LCA means no systematic understanding would have been gained of the historical or time-depth dimensions of current landscape. However, we feel that most landscape planners/managers would need help to use the HLA if they had no experience of generating either kind of assessment. So the fuller answer is "yes it would have been a useful tool, so long as there was someone to help interpret the HLA and make sure the landscape planning or management decision was based on a proper understanding of the HLA". This point cross references with the discussion in the paragraph above which explains how HLA could be extended to include more guidance "on a plate".

If there had been no HLA would LCA have been a useful tool for understanding historic dimensions in rural planning?
A very cautious "probably better than nothing". This needs to be caveated by three important factors:

a) different landscape teams who worked on the SNH programme had very different compositions in terms of their understanding of historical dimensions. Some had recognised landscape historians doing the actual work, some had access to archaeological advice, some had a well informed interest (but no training or academic background in historical landscape issues), some had none of these;
b) The Brief for LCAs increased the emphasis on historical dimensions as the programme progressed but the increased input was variable;
c) The timescales and budgets available to the landscape teams on the programme were restricted (ie very competitive) so even the keenest of teams, from the historical point of view, could do little more than provide an overview of historical change and a quick analysis of the SMR. No one would ever pretend that any of the LCAs included a serious and systematic assessment of historic landuse.

Could either HLA or LCA be adapted to achieve a better fit and or a more useful relationship?
We would expect both to continue to evolve their respective methodologies, whether or not there is any attempt to merge. There will probably be those who see value in keeping the HLA process independent, because they may see the HLA as a more academic exercise, which should not be vulnerable to interpretation

by non-experts and should not lose its integrity and independence by being subsumed into a wider LCA. We see merit in that, if the process can be programmed to include field validation in all cases and a fuller range of outputs is provided so that non-experts can begin to use the outputs (wisely and properly). This would involve developing guidelines for managing changes that may affect the historic environment (most kinds of change) as already discussed. The biggest problem that we anticipate is that change can invalidate/outdate the HLA much more quickly than it would LCA (eg loss of relict landuses or changes from one landuse to another, or loss of diversity and variety).

LCA is being developed in many ways and quite quickly, eg to produce more specialist guidelines or to assess landscape capacity etc. Less is being done, in Scotland, to modify the basic LCA classification, analysis and guidance methods. The reasons are that:

a) we are still trying to get to grips with the huge resource of the existing LCA data;
b) the programme is complete and unlikely to need re-doing in the immediate future;
c) no resources could be made available for a new LCA programme because it would not be seen as necessary at present; and
d) the method has proved to be quite robust for the further and detailed work so the briefs for that work repeat the briefs of the original programme to ensure consistency.

Consequently, the opportunities to introduce an adaptation to the LCA method will be quite limited at present. However, if an opportunity arose we would strongly recommend that a trial is undertaken to test an adaptation of the LCA method to incorporate HLA.

If there is a choice of location for such a trial it would be ideal to select an area with a spectrum of landscape types, including both relatively modern, enclosed, lowland landscapes where field pattern and other cultural dimensions may predominate and unenclosed uplands where landuse is more consistent over larger areas and landform is the dominant landscape characteristic.

Although we go on to suggest scope for change in other aspects of HLA, we do not consider it necessary to fundamentally change the HLA method or outputs in terms of merging with other data to generate more informed landscape character classification. We see it as an additional overlay at the analysis stage of LCA, when the area is being classified into landscape types and the boundaries of the landscape character units are being delineated. Thus, the HLA overlay would tier with other overlays such as geology, soils, landcover, habitat types etc.

At the detailed level, the difference between the very sharp, geometric shapes and boundaries of the HLA and the more transitional amorphous ones of the LCA have already been discussed. We do not see any need to change either. The overlaying procedure involves the integration of a divers range of information and geographical units and the HLA units can be used as they are produced. The LCA units will, however, remain as "amorphous" as ever.

How does scale affect the relationship between HLA and LCA?

The integration of HLA into LCA would be useful at all scales. However, there is an interesting dilemma!

a) On the one hand the geographical units "mesh" better at the scale of 1/50,000, when the smaller units of HLA are excluded, as being too small to show. Visually, the best correlation between the two assessments is at the general scale/level, which is a presentational advantage;

b) On the other hand, the information of the HLA is more valuable at the detailed scale/level of 1/25,000 or 1/10,000. The visual match of units is not easy to follow and the lineage on the maps is complex, but the usefulness of what the HLA is telling the LCA is best at this scale. The broader and more general the scale, the less useful is the information of the HLA because it looks increasingly like a land use or land cover map, not a historic landuse map.

Which level of HLA is most useful?

From all of the previous discussion, therefore, it follows that the 44 type level of current landuses and the relict landuse type is the most useful for LCA, particularly at the most practical and useful applications of 1/25,000 or 1/10,000 scale. At the time of the project the summary types merged too many dissimilar types (in landscape terms) together to be useful and meaningful for LCA.

For example, combining everything from urban areas to motorways, railways, airfields and monasteries into "Built up areas" is a combination that most landscape architects would find surprising. The ongoing review of these summary types will produce more relevant summary categories for LCA.

Amalgamation may be useful for more general scales, eg 1/100,00 or at the scale of Natural Heritage Zones or whole regions, or the most general level of amalgamation in LCA (the 52 and 114 Landscape Types in Scotland called Levels 2 and 3 in the national LCA database). If amalgamation is to be used, we recommended, at draft report stage, the re-categorisation of the 44 types into 12 different combinations (possibly less) which better reflect wider landscape character. This work is underway at the time of editing the final report.

7. Landscape Capacity Assessment of the World Heritage Site

Introduction

This section presents the capacity assessment of the six housing clusters in or very close to the intermediate setting of the WHS, identified in the Consultative Draft of the Orkney Development Plan 2000, each in a common format. Reference is made to the relevant plans which illustrate the findings of the assessment.

It should be emphasised that the whole of the intermediate settings of the components of the WHS are extremely sensitive to development and land use and management changes. Every proposal in the intermediate settings should be subject to the most rigorous examination for its effects on all aspects of the WHS and the landscape which provides the unique setting for these internationally important monuments. Larger scale development would be inappropriate in the intermediate settings.

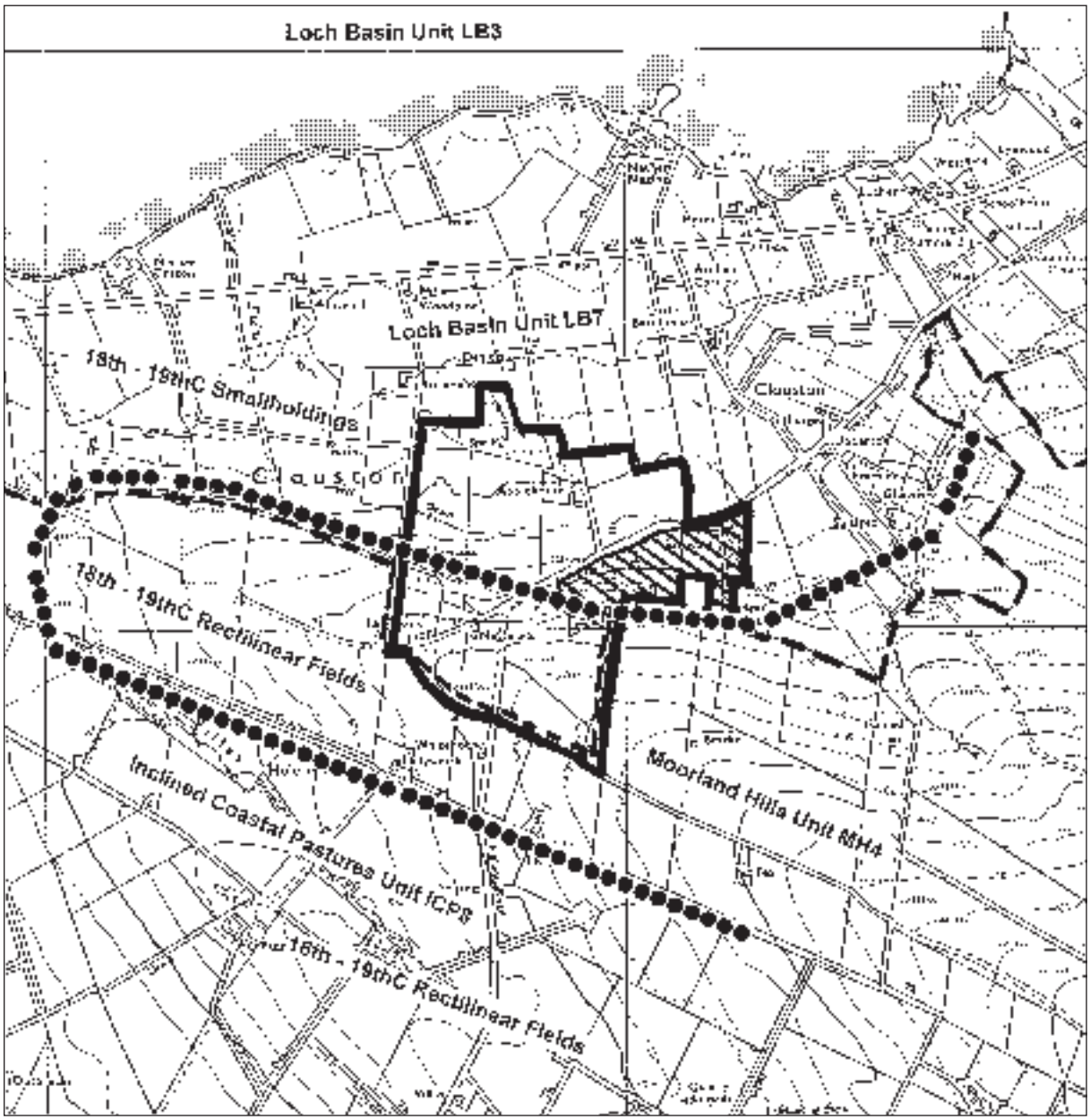
For each proposed housing cluster there is a description of the existing settlement pattern and its relationship with the landscape and its landscape setting referring to the landscape types which have been described in Section 5. Key viewpoints are listed along with the typical or characteristic building forms and materials. These are followed by the criteria which were derived for the assessment as explained in Appendix A. Cross referencing to Sections 4 and 5 and Appendix A is essential to fully appreciate the development and application of the criteria.

The capacity assessment is summarised in table form, as described in Appendix A, with a paragraph of text summarising the main conclusions. For each study area there is a separate assessment for built development and for wind turbine generators. The effects are summarised by the use of symbols in the Tables which indicate whether the effects tend towards the beneficial (✔), the unacceptable (**X**), or largely neutral effects (❍) or whether the effects are uncertain (**?**).

None of the clusters are appropriate for larger scale housing development and no such proposals are contemplated in the development plan. Indeed, large scale development would be contrary to local planning policies and out of place and scale with the rural landscape. Consequently, although the Brief technically referred to larger scale development, the report presents only the assessment of small scale built development as follows:

a) Small scale built development comprising individual or small clusters of dwellings in or on the edge of, or otherwise related to, rural settlements identified in the development plan as clusters capable of accommodating development as defined in the plan's strategy and policies. The housing was assumed to be of the kind normally associated with conventional single or two-storey dwellings;
b) Domestic scale wind turbine generators singly or in twos, generally associated with dwellings, small scale developments or steadings and of about 20kw output;
c) Larger single wind turbine generators of approximately 60–70kw, for example as already located close to Kirkwall Airport and on South Ronaldsay;
d) Other small scale developments related to the tourism potential of the WHS.

Plan 9 Landscape Capacity Assessment – Cluster 1 Appiehouse



Key

Proposed Area of Cluster in Local Plan

Area considered appropriate for small scale development in this assessment

LCA Unit Boundary

HLA Unit Boundary

7.1 Cluster 1 Appiehouse

The proposed Appiehouse cluster forms a relatively large area on the slope south of the Loch of Stenness, at Clouston. Most of the land lies in the Loch Basin landscape character type, unit LB7 Loch of Stenness South. The top of the hill lies on the edge of the Inclined Coastal Pastures unit ICP8 and very close to the Moorland Hills, unit MH4. Indeed, the highest parts of the proposed cluster area exhibit moorland characteristics. Appiehouse is also located entirely within the Hoy and West mainland NSA and on the edge of both the intermediate and the wider setting of the WHS, near Stenness. It is partly in the 18th–19thC Rectilinear Fields and partly in 18th–19thC Smallholdings Historic Landuse types.

Description

Appiehouse lies very close to and overlooks an area of exceptional sensitivity for its internationally important assemblage of archaeological and other historical features. The loch basin has a particularly strong cultural and historical dimension to the experience of the landscape. In the open basin there are long distance views, many embracing several of the major above ground archaeological features between which there is a great deal of inter-visibility. This tends to heighten the sense of historical associations.

The slope forms the backdrop of views from the monuments and the narrow isthmus between the lochs. The upper slopes are elevated and extremely conspicuous from a wide area in the WHS intermediate and wider settings and thus from the NSA, especially at the Lochs and Stromness Sound.

The proposed cluster area comprises a relatively dense scatter of dwellings and old steadings, on the north facing edge of the loch basin in a loosely rectilinear form with a strong orientation northwards over the Lochs of Stenness and Harray. The assemblage includes derelict single storey crofts, modern bungalows, old stone steadings, modern two-storey houses, an agricultural-transport related business, with an industrial style shed, all spaced regularly along the straight roads and amongst fields of improved pasture enclosed with a geometric layout of post and wire fences.

Like Stenness and Clouston, the Appiehouse cluster is part of a disparate assemblage of many different building types. Materials are equally varied ranging from local stone and slate, harling, colourwash, red, brown and grey tiles, concrete, corrugated iron, asbestos sheeting and metal cladding. The more recent, white buildings are the most conspicuous.

Of particular significance to the visual amenity of this landscape is the inter-visibility between the prehistoric ritual and burial sites the location, layout and pattern of which may not yet be fully understood. Consequently, innumerable views in the loch basin will include or cross lines of sight between these features and Appiehouse is clearly viewed with this profoundly important cultural and historical landscape in the foreground or background.

Assessment

Table 4A confirms the high level of visual prominence and sensitivity of these slopes and the extreme conspicuity of buildings in most of the cluster area. It also indicates the high level of sensitivity of the experience of the landscape in such close proximity to the main monuments of the WHS and the important

interrelationships between the monuments and their setting in the basin. The proposed cluster area forms an integral part of the ridge that defines the edge of that setting.

On the other hand, the relatively dense scatter of buildings from Stenness to Clouston is part of the character of the basin, so new infill development may not have an adverse effect on the landscape resource.

The Draft Local Plan acknowledges the visual prominence of the area in sensitive views. It sees the proposed cluster comprising three sections and recognises the danger of new development being on the skyline. The reasons for the definition of the boundaries of the cluster are not apparent in light of these comments.

From a landscape and visual point of view most of the cluster area is inappropriate for new built development owing to serious effects on the NSA and WHS setting, high visual intrusion and adverse effects on settlement pattern. However, one or two new dwellings of appropriate scale, siting and design in the area which is hatched on Plan 9 would not have these adverse effects and would help to provide a better cohesion of the presently unco-ordinated scatter in the eastern part of the cluster area (see Table 4B).

Furthermore, the restoration of the derelict properties would enhance the group and help to meet whatever local needs may exist for new dwellings. However, whilst the Local Plan suggests redevelopment of these properties, from a landscape point of view restoration, closer to the traditional building styles, would be more appropriate and, again, add cohesion and identity to the area which are currently lacking.

Table 4A Capacity Assessment – Cluster 1 Appiehouse Generally

Criterion	Built Development
Landscape resource	❍
Landscape experience	**X**
Other aspects of landscape	**X**
Visual amenity	**X**

Table 4B Capacity Assessment – Cluster 1 Appiehouse Hatched Area Plan 9

Criterion	Built Development
Landscape resource	❍
Landscape experience	❍**?**
Other aspects of landscape	❍**?**
Visual amenity	❍

7.2 Cluster 2 Bimbister

The proposed cluster at Bimbister is located close to the A986 in the Rolling Hill Fringe on the boundary between RHF9 and 10. Immediately to the west lies the edge of the Loch Basin landscape type, unit LB8, Loch of Harray East.

The proposed cluster lies within the wider setting of the WHS but just outwith the boundary of the intermediate setting. There is no immediate intervisibility with the key monuments. The area also lies outwith the NSA and the immediate setting of the Loch of Harray. The proposed cluster lies in the 18th–19thC Smallholdings Historic Landuse Type although the 18th–19thC Rectilinear Field type is present immediately to the north and east.

Description

The area of the proposed cluster is quite large and incorporates only three main building groups based on steadings from Nisthouse to Bewshouse, with large open spaces of hay fields and pasture between.

Assessment

The Draft Local Plan provides for no more than two additional dwellings unless junction improvements and passing places are provided. The plan encourages location of the dwellings in association with the existing steadings but the area of the cluster is extensive and includes large areas of the open fields between.

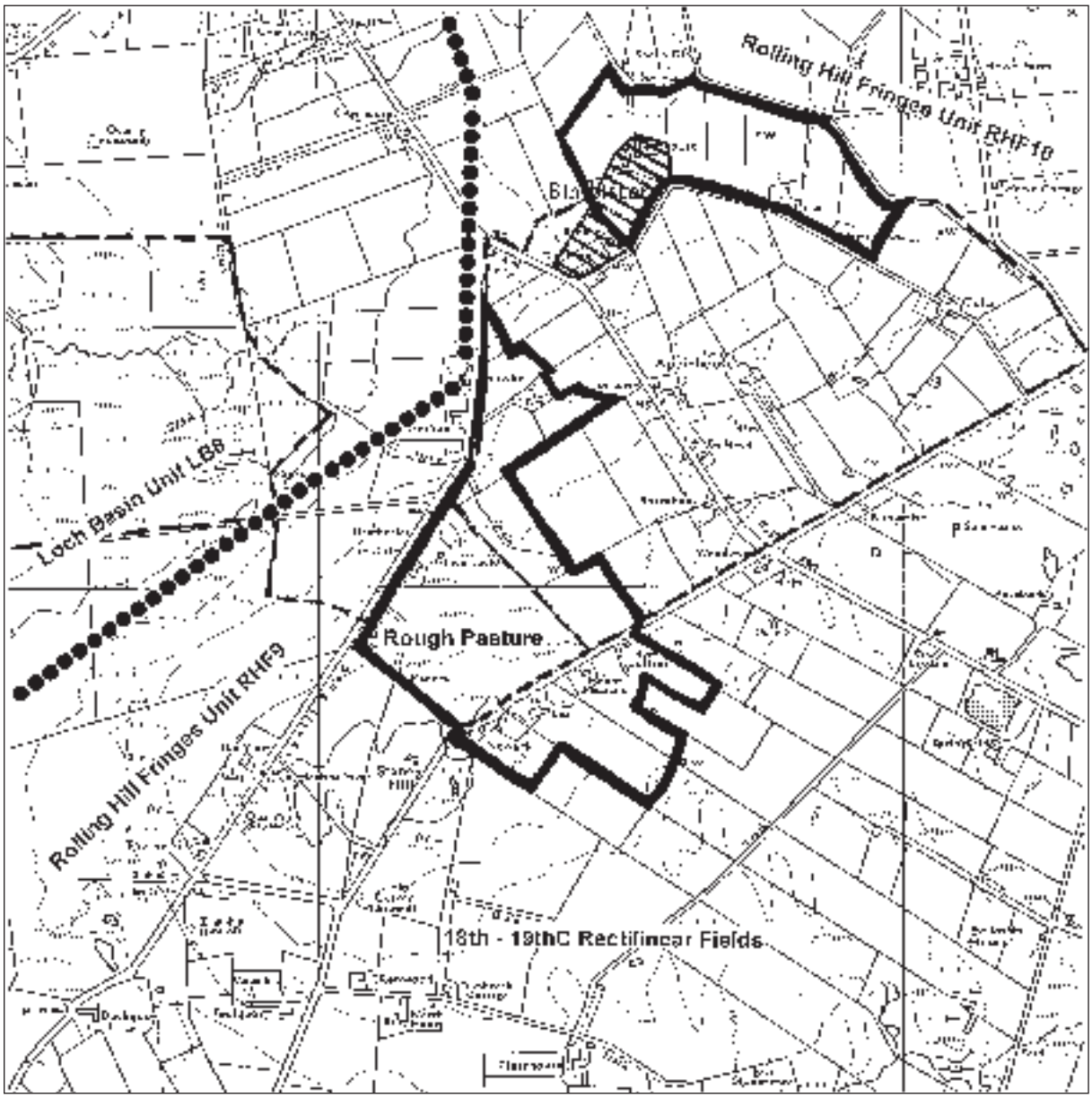
From a landscape and visual point of view, two dwellings, each attached to one of the existing steadings could be accommodated without adverse effects on landscape character or visual amenity. In terms of location, however, the sequence of steadings and intervening spaces is important, so any new dwellings should be attached, or immediately adjacent, to the existing building groups and close to the road, rather than detached and on open spaces out to the rear or side.

Alternatively, two dwellings within the alternative area shown on Plan 10 would reflect the settlement pattern and landscape character more closely and avoid any possible conflict with landscape character that development in the eastern arm of the proposed cluster may raise.

Table 5 Capacity Assessment – Cluster 2 Bimbister

Criterion	Built Development
Landscape resource	**?**
Landscape experience	❍
Other aspects of landscape	❍
Visual amenity	❍

Plan 10 Landscape Capacity Assessment – Cluster 2 Bimbister, Cluster 3 Newark



Key

Proposed Area of Cluster in Local Plan

Alternative Area considered appropriate for small scale development in this assessment

LCA Unit Boundary

HLA Unit Boundary

7.3 Cluster 3 Newark

The proposed cluster at Newark lies immediately south of the proposed cluster at Bimbister, off the A986 about 3km south of Dounby. It lies entirely in the Rolling Hill Fringes landscape character type, unit RHF9. However, the Loch Basin unit LB8 Loch of Harray East is very close to the west. The southern and western part of the proposed cluster lie in the 18th–19thC Smallholdings Historic Landuse Type, the remainder lies in the Rough Pasture Type.

The proposed cluster lies within the wider setting of the WHS but just outwith the boundary of the intermediate setting, there being no immediate intervisibility with the key monuments, except distant views of the Ring of Bookan hill. The area also lies outwith the NSA and the immediate setting of the Loch of Harray.

Description

This cluster area tends to comprise two quite distinct linear ribbons of dwellings along the parallel minor roads. They include a mix of building styles and materials, but traditional grey stones and slates prevail, in both lines, as do single storey, long, low cottages with flush gables which give a unity of character to the settlement pattern.

Between the two lines are small fields of pasture with one arable plot and some rough grazing to the south, towards a prominent standing stone.

Although the proposed cluster area is quite elevated there is no direct intervisibility with the key monuments of the WHS, except occasional distant glimpses of the Ring of Bookan hill. The standing stone to the south of the cluster, however, does have distant intervisibility with all principal monuments in this part of the WHS.

Assessment

The double linear scatter of buildings in this area is capable of accommodating additional, well sited and designed dwellings which contribute to and reinforce the settlement pattern and character.

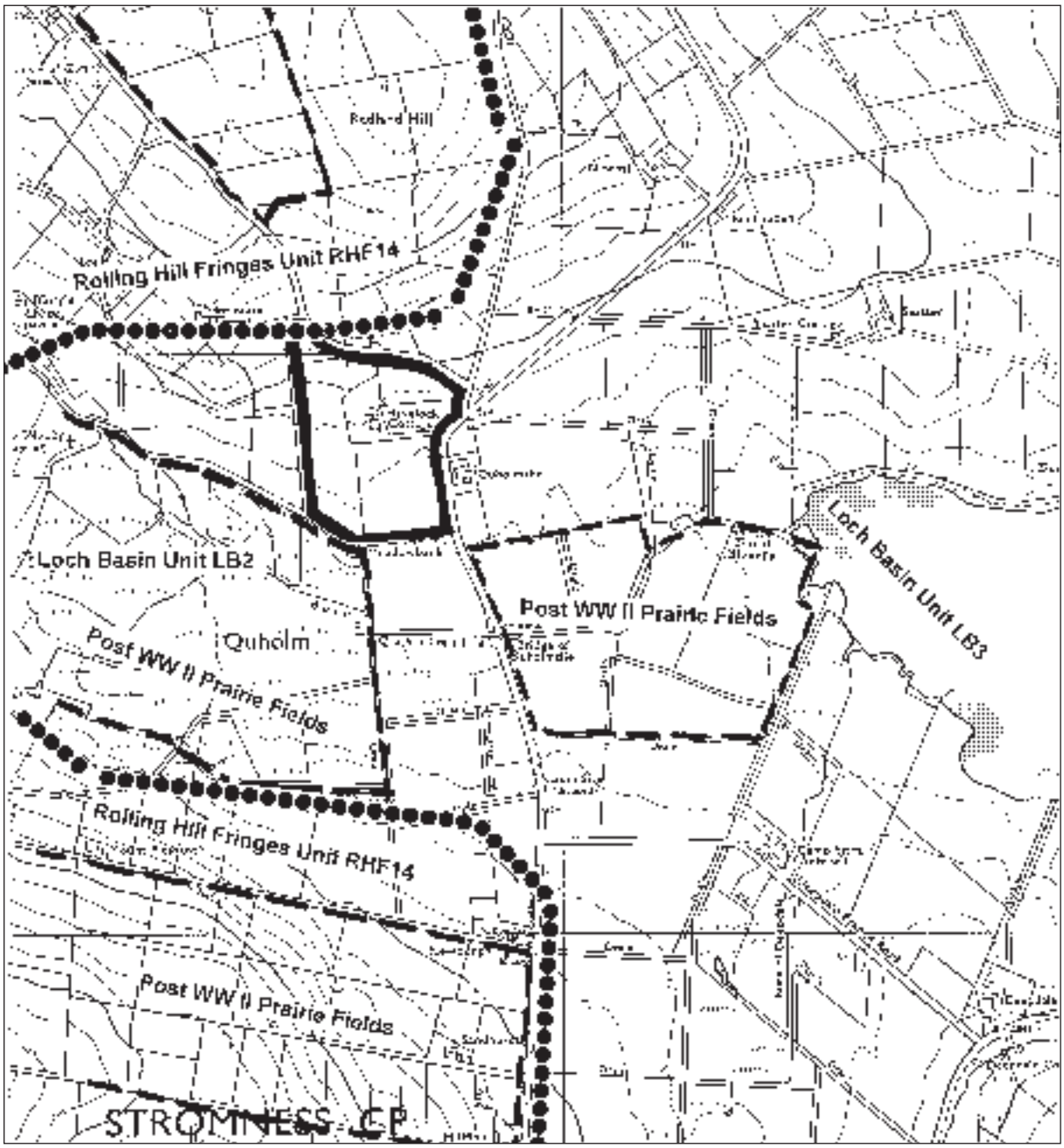
The Draft Local Plan discourages roadside linear development and self build houses. However, from a landscape point of view, reinforcing the linear settlement pattern along the roads would be an appropriate way of adding to the built form of the area. Whether or not dwellings are built by developers or future occupiers, it is more important to ensure the design reflects the long, low shape, modest scale and grey stone and slate materials which are characteristic.

Five, well sited and designed dwellings can be accommodated without adverse effects on the landscape character or visual amenity although the highest points of the cluster area should be avoided.

Table 6 Capacity Assessment – Cluster 5 Newark

Criterion	Built Development
Landscape resource	❍
Landscape experience	❍
Other aspects of landscape	❍
Visual amenity	❍

Plan 11 Landscape Capacity Assessment – Cluster 4 Kirbister Road End



Key

Proposed Area of Cluster in Local Plan

LCA Unit Boundary

HLA Unit Boundary

7.4 Cluster 4 Kirbister Road End

Kirbister Road End is located immediately east of the Loch of Stenness, on the A967, north of Stromness. It lies in the Loch Basin landscape character type, unit LB2, Loch of Stenness West. It also lies in the 18th–19thC Rectilinear Fields Historic Landuse Type. It lies entirely within the Hoy and West Mainland NSA and the wider and the intermediate setting of the WHS.

Description

Kirbister Road End comprises a loose scatter of dwellings and steadings in a very open, pastoral, rural, loch basin, setting. The buildings in the cluster area are highly conspicuous, some being slightly elevated above the level of the road. Three of these elevated dwellings are more recent bungalows, constructed of non-traditional materials. There is also a traditional, stone built two-storey house (Havelock Cottage).

The proposed cluster area also includes Quholmslie Steading and Meadowbank, an older more traditional low stone bungalow. There are two steadings just outwith the area at Newhouse and Quholmslie Bridge which has a recent agricultural shed and hopper.

Grassland prevails in the rectilinear field pattern but there is some arable to the south and parts of the fields south of Meadowbank are reverting to unimproved pasture and wetland.

Assessment

Kirbister Road End is within the wider and the intermediate setting of the WHS. There is direct intervisibility with the Chambered Cairn at Knowe of Onston. The shore of Loch of Stenness is close, about 500m to the east. The area is also in the NSA.

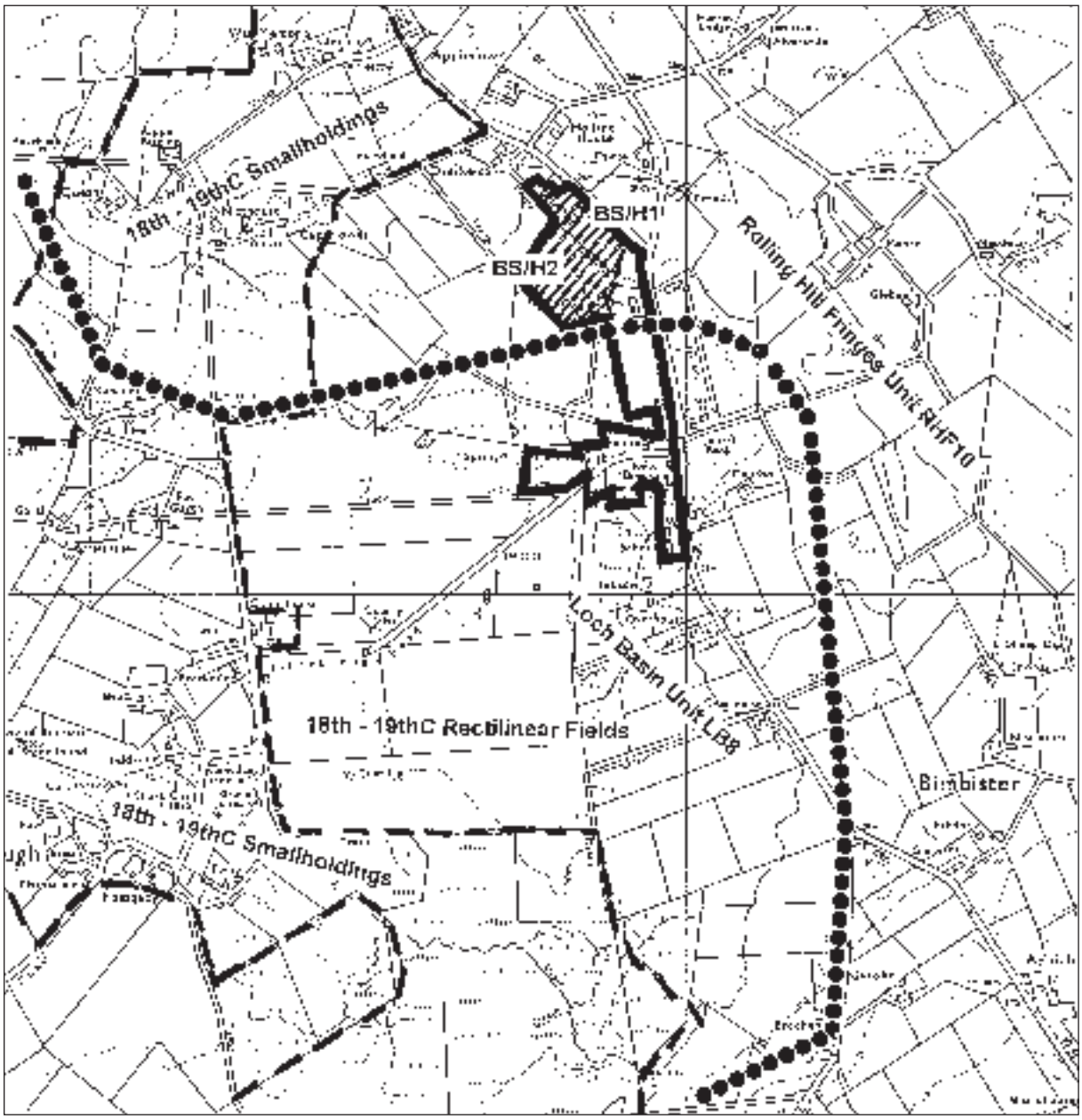
The Draft Local Plan indicates the cluster area shown on Plan 11 has moderate capacity to absorb new development but acknowledges that development would be "highly visible and obtrusive". The Plan considers that the presence of new development in an existing cluster will mitigate this impact. Development is limited to two plots until improvements to the A967 and Quholm Road junction are carried out.

Table 7 confirms the very high level of conspicuity of any new dwellings, which would tend to increase the obtrusiveness of the existing dwellings. There is no settlement pattern into which new development could easily fit. Concentration of the scatter of dwellings in this landscape unit would be inconsistent with landscape character. Road improvements at the junction would tend to suburbanise the character. Further development in this proposed cluster area would be inappropriate in terms of landscape and visual amenity.

Table 7 Capacity Assessment – Cluster 4 Kirbister Road End

Criterion	Built Development
Landscape resource	**X**
Landscape experience	**X**
Other aspects of landscape	❍
Visual amenity	**X**

Plan 12 Landscape Capacity Assessment – Settlement 5 Burnside



Key

Proposed Settlement Boundary in Local Plan

Proposed Housing Allocations in Local Plan HS/B1

LCA Unit Boundary

HLA Unit Boundary

7.5 Settlement 5 Burnside

The settlement at Burnside is located on the A986, Harray Road, about 4km south of Dounby and around the junctions with the C12 Russland Road and the Settiscarth Road. It lies partly in the Loch Basin landscape type, unit LB8 Loch of Harray East, and partly in the Rolling Hill Fringe RHF10. It is also located in the 18th–19thC Rectilinear Fields Historic Landuse Type. The settlement lies within the wider setting of the WHS but just outwith the boundary of the intermediate setting, there being no immediate intervisibility with the key monuments, although there are distant glimpses of the Ring of Brogar from a few places. The area also lies outwith the NSA and the immediate setting of the Loch of Harray.

Description

As the Draft Local Plan describes, Burnside comprises a loose scatter of some 12 houses with facilities including a community centre, playing field, post office, a pottery and telephone box. The community centre is a prominent and quite large building and provides a visual as well as social focus.

The prevailing building materials are grey stone and slate and the settlement has a unity despite its widespread scatter. The old school and former kirk also contribute to the sense of a more cohesive village than most of the groups of buildings strung along the A986.

Assessment

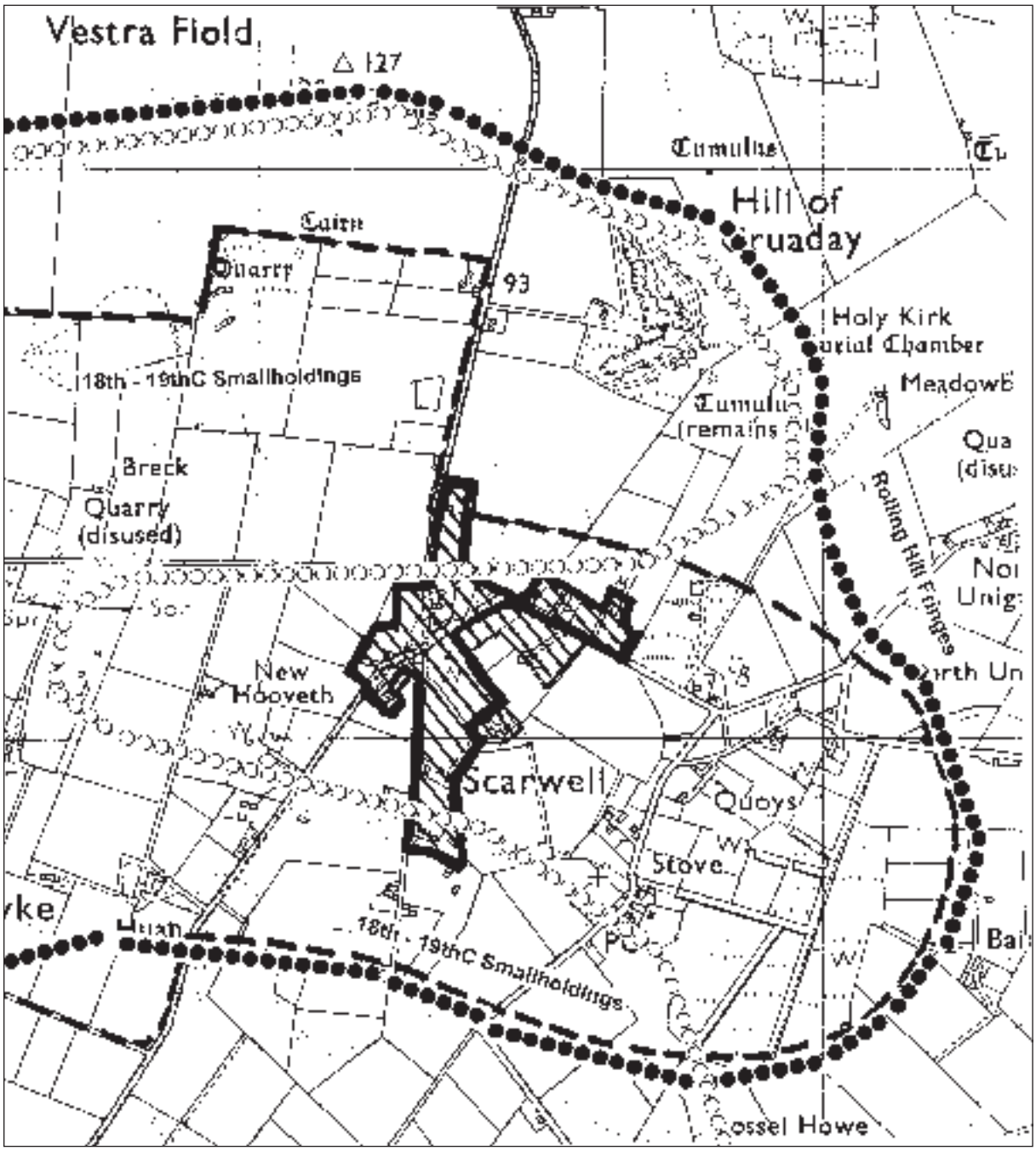
The Ring of Brogar can be seen at a distance of about 4km to the south west from the allocation at BS/H1; but less clearly from BS/H2. If traditional grey stone and grey slate is used then even 2 storey development would have no significant effect on the WHS or its setting. New housing development would tend to reinforce the settlement structure.

However, the design and, particularly, the layout and density of the development needs careful consideration and should reflect the character of rural West Mainland settlements, otherwise new development would diminish or remove the distinctiveness and identity of this settlement. The uncertainties in Table 8 reflect the necessity of these measures if the landscape character and visual amenity are not to be harmed.

Table 8 Capacity Assessment – Settlement 3 Burnside

Criterion	Built Development
Landscape resource	❍
Landscape experience	❍
Other aspects of landscape	❍**?**
Visual amenity	❍**?**

Plan 13 Landscape Capacity Assessment – Settlement 6 Quoyloo



Key

Boundary of Coastal Basin LCT Area Considered Appropriate for Development this Project

Boundary 18th–19thC Smallholdings HLA
Approx Line Skara Brae Visual Envelope
Proposed Settlement Boundary in Local Plan

7.6 Cluster 6 Quoyloo

Quoyloo is located north of Skara Brae, close to the coast and mainly in the Coastal Basin landscape character type. Part lies in the Rolling Hill Fringe (sub-unit RHF16 Quoyloo Edge). Almost the whole settlement is in the Smallholdings HLA unit.

Description

Quoyloo is a small settlement perched on a terrace part way up the slopes overlooking the Enclosed Bay of the Bay of Skaill.

Parts can be seen from Skara Brae and Skaill House but the size and extent of the settlement is not apparent because most of the dwellings are in dips of lower land or on the terrace above and behind the shoulder of the terrace and so obscured from view near the monuments and the beach areas.

The cluster is the densest part of a scatter of houses and services around the B9056 and minor roads crossroads. Here a group of dwellings is dominated by a haulage depot which has buildings and outside storage areas both sides of the main road. The depot spills over into the roadside and the nearby shop and post office has a filling station and telephone box. There tends to be an accumulation of clutter in the centre of the settlement. With the depot, this imparts a more urban and industrialised character to the settlement than otherwise might be the case.

The buildings elsewhere on the terrace and in the dips are a mix of old traditional and modern building styles and materials with little to provide a coherent settlement pattern or structure except the layout and enclosure of the holdings. This is distinctive and has resulted in the definition of a distinctive Historic Landuse Type (Smallholding) and Landscape Character Type (Coastal Basin, though it is less of a basin than a terrace the area does exhibit all the characteristics typically found in the Coastal Basin Landscape Character Type). The small linear and rectangular plots are divided and enclosed by distinctive stone walls which differ in detail of construction height and width from the drystane dykes out on the hills. These contrast with the fences of the landscape around and provide a more intimate, smaller scale, enclosed landscape despite the elevation and proximity of the coast.

Assessment

The allocations generally respect the pattern of holdings and enclosure and comprise infill on quite level land along a minor sub-ridge and plateau, between the dense cluster of dwellings at Daisybank and Fionhaven, and the foot of the Hill of Cruaday and Vestra Fiold, which form the outer rim of the low hills containing the Skara Brae element of the WHS. As will be seen from the visual envelope (ZVI) on Plan 3, the allocation and the crossroads lie in a visual shadow and will not be seen from the monuments owing to the landform and existing buildings.

Furthermore, there may be scope to see further carefully planned and designed infill in the settlement where new dwellings could be associated with some improvement to visual amenity related to the tidying up of the haulage depot. Plan 13 indicates the area allocated as the cluster together with a further hatched area that has potential for a small infill development without adverse, and possibly with beneficial, effects on the landscape and the structure of the village.

Table 9 Capacity Assessment – Cluster 6 Quoyloo

Criterion	Built Development
Landscape resource	✔
Landscape experience	❍
Other aspects of landscape	❍
Visual amenity	✔

7.7 Wind Energy Capacity

As most of the landscape sub-units in the study areas have been subject to some settlement in the past, built forms are a part of the Orkney landscape over extensive areas of the islands. Consequently, the settlement pattern and its relationship with the landscape has been described as an integral part of the landscape classification and description throughout this report. However, with the exception of one or two smaller scale wind turbine generators already referred to, and the larger installations on Burgar Hill, these structures do not generally form a feature of the Orkney landscapes. The assessment is therefore introduced by the following paragraphs, referring to the likely effects of small scale generators which may be constructed for the first time in areas which have none at present.

A single, small scale turbine, or occasional ones, are usually no more than a feature in a landscape unit or sub-unit which would be very unlikely to affect the character of the landscape to such an extent that it would re-define the landscape type into which the unit or sub-unit would be classified. The exceptions may be:

a) where the landscape unit or sub-unit is small and there are so many turbines that their cumulative effect is to change the character, for example, from Coastal Basin with Steadings to Coastal Basin with Steadings and Wind Turbines; or
b) where the unit is so "wild" or natural, with no evident incidence of human activity, where the mere presence, or even the awareness of the presence, of the turbine would change the whole perception, or ambience of the area.

It seems unlikely that a single small scale turbine would be proposed in such a location as described in b) above because there would be no steading, dwelling or business to attach it to; although conceivably it may be intended to power some kind of pump or other infrastructure in a remote area.

The key changes introduced by single, small scale turbines are changes in:

- vertical elements and point features;
- relative heights of features and thus scale;
- pattern (including distribution and frequency if there is more than one turbine);
- shape, line and form (because they are usually different to other features in these respects);
- colour, texture and reflectivity of construction materials;
- movement (because they will often be the only, or one of few, moving features in a landscape and they move (turn) in a way that is different to other movements in a landscape eg traffic on roads, clouds in the sky);
- diversity, for example where one or more turbines may be introduced into a relatively homogenous, uniform and simple landscape;

- sound, particularly where the sound of a turbine may be the only noticeable non-natural, regular, frequent sound.

None of these changes in themselves necessarily detracts from the character or visual amenity of a landscape type. Rather, it depends on the particular characteristics of specific landscape character types and units. Indeed, the changes can introduce new features to a landscape that may add interest and diversity, which are compatible with the character, thus making the addition of one, or a small number of well spaced, turbines a positive benefit. Some parts of the Orkney islands are characterised by regular, but well spaced, patterns of steadings and crofts. Buildings and structures have traditionally contributed to these settled, open landscapes and yet the landscapes remain extremely rural, almost semi-natural, a characteristic of parts of the Highlands and some of the islands.

The very strong historical relationship between settlement, farming and other primary land uses, and the natural and cultural heritage means that structures related to renewable energy and other natural resources, where they are of appropriate scale, location and design, have the potential to contribute positively, to look in keeping with and achieve a good fit in the landscape.

Elsewhere, as indicated above, the introduction of even one small scale turbine could so change the landscape experience and detract from the resource or other features that the character and ambience of the landscape and the identity of the place is seriously damaged or destroyed. Between these two extremes will lie the effects of the majority of potential proposals for small scale turbines in most of the lowland and coastal Orkney landscapes.

This assessment, therefore, seeks to indicate whether the effects tend towards the beneficial (✔), the unacceptable (**X**), or largely neutral effects (❍) or whether the effects are uncertain (**?**). In many cases, the assessment concludes that the effects of one turbine, or a small number of them spaced some distance apart, will be neutral, that is, although they will, self evidently, be seen in the open landscapes of Orkney, they are not significant in terms of damaging the overall character and distinctiveness of the landscape.

However, in the event that several proposals come forward in one area, an indication is given where the cumulative effects of several turbines in a particular landscape sub-unit may require particularly careful consideration. To give a broad indication of this "threshold" which would trigger the more careful assessment of cumulative effects, a scale has been devised based on what appears to be the most relevant indicator in the particular circumstances of this assessment. It is, of course, possible that free standing small scale wind turbine generators may be proposed. However, it is considered that the large majority are likely to be proposed in relation to an existing dwelling, steading, croft, other business or service; that is, in practice only where related to existing or proposed buildings or groups of buildings.

The assessment therefore seeks to indicate, in general terms in Table 10, the proportion of the buildings, or groups of buildings, that may have a small scale turbine attached to them (or very close to them so that the composition of the group is sustained) before the cumulative effects of the turbines are likely to begin to significantly affect the character of the landscape or visual amenity, and therefore require more formal landscape and visual impact assessment.

As this approach would not be relevant or appropriate to larger scale turbines, Table 11 does not include such a cumulative capacity assessment.

Thus, an assessment of 20% means that if, in the future, any landscape sub-unit described in this report had proposals for small scale turbines at more than one in five of the buildings or groups of buildings in the sub-unit then further proposals above this broad threshold should be subject to detailed landscape and visual impact assessment. It should, however, be emphasised that these thresholds are interim thresholds, pending further experience in both landscape capacity assessment and in applying thresholds of this kind in the planning system. The thresholds must be used in conjunction with professional judgement and the size of particular turbines and the context of individual proposals may well mean that, in some circumstances, the thresholds may be too low and in others too high. At this stage they can be no more than a guide to assist the Council, SNH and Historic Scotland and to provide a working tool for practical testing, looking at the cumulative effects of turbines, in accordance with the requirements of the brief.

Table 10 Landscape Capacity Assessment – Small Scale Wind Turbines

Landscape Character Type	Effects on Landscape Resource	Effects on Landscape Experience	Other Effects on Landscape	Visual Effects	Capacity Threshold
Cliffs	X	X	X	X	N/A
Coastal Hills and Heaths	❍	❍	❍	❍	10%
Coastal Basin	❍	X	?	X	N/A
Inclined Coastal Pastures	❍	❍	?	❍	25%*
Enclosed Bay	X	X	X	X	N/A
Loch Basin	X	X	?	X	10%*
Peatland Basin	X	X	X	X	N/A
Rolling Hill Fringe	❍	❍	?	?	10%*
Moorland Hills	❍	X	?	X	N/A

* The capacity threshold indicated applies only outwith the intermediate setting of the WHS. Within the intermediate setting even small scale wind turbines would normally be inappropriate.

Table 11 Landscape Capacity Assessment – Larger Scale Wind Turbines

Landscape Character Type	Effects on Landscape Resource	Effects on Landscape Experience	Other Effects on Landscape	Visual Effects
Cliffs	X	X	X	X
Coastal Hills and Heaths	❍	❍	?	?
Coastal Basin	X	X	X	X
Inclined Coastal Pastures	❍	❍	?	❍
Enclosed Bay	X	X	X	X
Loch Basin	X	X	X	X
Peatland Basin	X	X	X	X
Rolling Hill Fringe	❍	❍	?	X
Moorland Hills	❍	X	?	X

8. Guidelines

8.1 Built Development

Introduction

Earlier sections have demonstrated how most of the Orkney Mainland landscapes are very sensitive to new built development. At the same time, built development has occurred, historically and recently, in most of the lowland landscapes of the island. In many cases the traditional buildings, in historic settlement patterns, are a distinctive feature contributing positively to landscape character.

This section provides guidelines which are intended to help to blend any new development into the landscape – to achieve a good "landscape fit". However, fitting new built development into the Orkney landscape well is more difficult than it is on most of mainland Scotland. It constitutes one of the greatest challenges in the move to more sustainable forms of development that contribute positively to the natural and cultural heritage.

Many conventional and successful measures to improve the landscape fit of new development are not an option in Orkney because of climatic restrictions or because some measures would be inappropriate and incompatible with the distinctive Orkney landscapes and settlement patterns. Opportunities to screen or "hide" development are likely to be very limited and would rely on careful siting in relation to landform or innovative design, for example, of non-conventional sub-ground level or sunken dwellings. In most cases dwellings and wind turbine generators are going to be seen, indeed many are likely to be noticeable or even conspicuous so design becomes of critical importance.

General Recommendations

The form and external building materials of new housing are critical to achieving a good fit with the landscape and settlement pattern. The buildings which consistently achieve the best fit in the landscape are:

a) those of traditional, simple, well proportioned architectural designs of the 18th and 19th centuries, built mainly of local grey stone with slate and flagstone roofs; and
b) traditional dwellings which were not constructed to architectural drawings and specifications but which evolved through a process of continuous adaptation to meet the needs of the occupants and characteristics of the climate, their shape, height, line, form and materials are distinctive, unique to the northern islands and contribute strongly to the landscape character.

An excellent guide to the buildings, architecture and building traditions of Orkney is "*Orkney: an illustrated architectural guide*" by Lesley Burgher (8).

Whilst it is not feasible to build exactly in these ways today, new dwellings should, nevertheless, continue to contribute to the character of the landscape and distinctiveness of Orkney's built heritage. Modern building materials can closely match the traditional stone. Local stone is still quarried. Roof tiles and slates too can closely match the colours and textures of the local vernacular buildings.

The least successful domestic buildings in the Orkney landscape have been those built of standard "kit" construction, and many of the self-built standard bungalows with a mixture of unco-ordinated modern materials which do not reflect local character.

Table 12 General Guidance on fitting New Dwellings into the Orkney Landscape

Issue	General Guidance
Geographic Location	Locate in places which reflect the traditional settlement locations and avoid undue intrusion. Generally avoid shoreline or coastal locations except at traditional linear shoreline villages. The most appropriate locations for new built development in the study area, from a landscape point of view, are indicated on the plans of the housing clusters.
Distribution/pattern	Distribution in patterns that reflect the traditional settlement patterns eg linear, scattered, rectilinear etc as indicated in the guidelines for each cluster.
Design	Design to reflect the traditional scale, shape, form, line, height, mass, proportion, balance, fenestration etc and the composition of the dwelling and ancillary buildings such as garages, huts, stores, and sheds, in accordance with the guidance in the Orkney Islands Council "*Siting and Design of Houses in Orkney's Countryside*" (9). In some areas orientation, for example, to the sea or over glens or lochs can be important.
Materials	Materials considering colour and texture, simplicity, blend and match, and minimising ornamentation in accordance with the guidance in the Orkney Islands Council "*Siting and Design of Houses in Orkney's Countryside*" (9)
Setting	Setting: ensuring the building sits well in the natural landform with minimum alteration to natural ground levels, ensuring the curtilage blends with the surroundings in terms of shape, boundary enclosures, land cover, and hard surfacing, and ensuring that driveways and tracks blend with the natural contours avoiding cut and fill and again having regard to materials, in accordance with the guidance in the Orkney Islands Council "*Siting and Design of Houses in Orkney's Countryside*" (9)

Thus, from a landscape point of view, the five most important measures that can be taken to achieve a good fit for new housing in the Orkney landscape are: location, distribution, design, materials and setting as shown in Table 12.

If these mitigation measures are not adhered to then the assessment of capacity for accommodating new development is invalidated because, as explained above, this is the basis of the capacity assessment in the very sensitive landscapes of Orkney. Compliance with the above principles and the Orkney Islands Council "*Siting and Design of Houses in Orkney's Countryside*" (9) should be regarded as an essential pre-requisite to any new housing outwith the urban areas. Table 13 summarises the content of the Orkney Islands Council guide (9).

Table 13 Outline of the Content of the Orkney Islands Council "Siting and Design of Houses in Orkney's Countryside" 1999

Issue	General Guidance
Location	Siting, slope, clusters, good and poor examples.
Design	Objectives, design evolution, design principles including scale, form and proportion. Good and poor examples.
External finishes and colour	Traditional wall and roof finishes in Orkney, windows and dormers, good and poor examples.
Outbuildings and boundary treatments	Renovation of old outbuildings, design and materials of walls and fences, good and poor examples.
Design summary	Summary of appropriate housing and fresh ideas for rural house design.

In particular, woodland belts need to be used with great caution as a landscaping measure. They will occasionally have an important role to play: for example, where there is existing woodland to extend, or woodland elsewhere in the landscape sub units; or where sheltered glens, dips or hollows provide a suitable microclimate, or where landform allows the trees to contribute to a natural composition of landscape features. Generally though, the perceived need for tree screening is indicative of poor design and location; rather than attempting to screen the buildings from view, serious reconsideration should be given to the siting and design of the buildings.

8.2 Wind Turbine Generators

Fitting wind turbine generators into the landscape well is a complex process that requires, amongst other things, a clear understanding of landscape character a detailed appreciation of the site and of the landscape and visual effects brought about by their construction. A single, small scale turbine, or occasional ones, are usually no more than a feature in a landscape unit or sub-unit which would be very unlikely to affect the character of the landscape to such an extent that it would re-define the landscape type.

None of the study areas are so "wild" or natural, and lacking evident incidence of human activity, that the mere presence, or even the awareness of the presence, of a turbine would change the whole perception, or ambience of the area.

The key changes introduced by single, small scale turbines are changes in:

- vertical elements and point features;
- relative heights of features and thus scale;
- pattern (including distribution and frequency if there is more than one turbine);
- shape, line and form (because they are usually different to other features in these respects);
- colour, texture and reflectivity of construction materials;
- movement (because they will often be the only, or one of few, moving features in a landscape and they move (turn) in a way that is different to other movements in a landscape eg traffic on roads, clouds in the sky);
- diversity, for example where one or more turbines may be introduced into a relatively homogenous, uniform and simple landscape;
- sound, particularly where the sound of a turbine may be the only noticeable non-natural, regular, frequent sound.

None of these changes in itself necessarily detracts from the character or visual amenity of a landscape type. Rather, it depends on the particular characteristics of specific landscape character types and units. Indeed, the changes can introduce new features to a landscape that may add interest and diversity, which are compatible with the character, thus making the addition of one, or a small number of well spaced, turbines a positive benefit. Some parts of the Orkney islands are characterised by regular, but well spaced, patterns of steadings and crofts. Buildings and structures have traditionally contributed to these settled, open landscapes and yet the landscapes remain extremely rural, almost semi-natural, a characteristic of parts of the Highlands and some of the islands.

Orkney has a very strong historical relationship between settlement, farming and other primary land uses, and the natural and cultural heritage. This means that structures related to renewable energy and other

natural resources, where they are of appropriate scale, location and design, have the potential to contribute positively to the landscape. They can look in keeping with and achieve a good fit in the landscape types which have been identified as having the capacity to accommodate small scale wind turbine generators.

However, to achieve this fit, the following general principles, shown in Table 14, should be followed, unless a detailed landscape and visual impact assessment clearly justifies a departure from them. It should also be borne in mind that within the intermediate setting of the WHS even small scale wind turbines would normally be inappropriate.

Table 14 General Guidance on fitting Small Scale Wind Turbines into the Orkney Landscape

Issue	General Guidance
Location, vertical elements and point features, relative heights of features and scale	Each turbine should be located in close association to the steading or building group it is serving, within the building group or very close to it, and the turbine should be well placed in relation to buildings of different heights such that the scale, balance and composition of the group is sustained or enhanced. The turbine should not unduly tower over or dominate the existing buildings and it should appear as part of the group rather than a separate point feature in its own right, detached from the group. Ridge tops, hill summits and prominent skylines should be avoided.
Pattern, shape, line and form	The turbine shape should be simple, elegant, and slim with no more than four blades, preferably three, and smooth, flowing lines and vertical form. The pattern of distribution should follow that of traditional settlement patterns eg linear, rectilinear, scattered etc, hence another reason why each should be located directly in connection with an existing group of buildings.
Construction materials	In most cases turbine structures should be built of or clad with as few different materials as technically possible. The materials should be harmonised with those of the existing buildings and with each other by use of common textures and colours. In some cases it may be desirable to ensure that the lower parts of the structures match those of the adjacent buildings but, where this would look inappropriate, the whole turbine should be of the materials that will normally be most appropriate for the tower, nacelle and blades – usually light grey or off-white colours, with matt finish to minimise reflected light.
Movement and diversity	Turbines will often fit better in a landscape close to a road where movement is already a feature of the landscape, albeit a different kind of movement. Care needs to be taken before introducing more than one or two turbines into a relatively homogenous, uniform and simple landscape composition. (See also the thresholds in Table 10).
Sound	Whilst it is unlikely that sound will be a major consideration other than in respect of the immediate building group, turbines are likely to fit better into sites close to roads or where there are already other regular, unnatural sounds.
Cumulative effects	Guidance on minimum spacing requirements between proposed turbines would not generally be appropriate in the very open, generally low landscapes of Orkney Mainland. The thresholds given in Table 10 should provide an indication of when cumulative effects need to be considered in each landscape sub-unit.

8.3 Other Developments

The capacity assessment used for built development and wind turbines cannot be applied to other developments because there is insufficient information about the nature, scale, location and number of them. Similarly, only general guidance can be offered in respect of other developments, including infrastructure improvements and tourism developments that are not similar to domestic scale built development where the guidelines in 8.1 would apply.

It is emphasised again that the whole of the intermediate settings of the components of the WHS are extremely sensitive to development and land use and management changes.

Every proposal in the intermediate settings should be subject to the most rigorous examination for its effects on all aspects of the WHS and the landscape which provides the unique setting for these internationally important monuments.

Within the intermediate settings only development that is necessary and justifies a location within the intermediate settings of the WHS should be considered appropriate. Equally, only the highest standards of design should be considered appropriate for developments that do justify such a location. The approach that should be adopted is to ask the question "Are the proposed changes good enough to permit or approve in this sensitive area?" rather than "Are they bad enough to refuse?".

The approach should also consider whether the proposed scale or type of change is necessary in the circumstances. Roads, bridges, drains, signs, paths, fences, and other infrastructure should be fit for purpose and good value for money, but should not be over-designed or of excessive specification to meet the need. The approach should be to establish the minimum necessary change to meet a necessary objective.

The following aspects of all proposals should be carefully considered for their suitability in the settings of the monuments:

- The overall nature and character of the development or change;
- The location or siting of the change, especially in relation to the immediate setting of the monuments, the intervisibility between the monuments; existing building groups and the subtle landform;
- The design, including especially the scale, shape, line, form and mass of the development;
- The layout, pattern, distribution and composition of the proposals;
- The materials, colour, texture and reflectivity of the external finishes, with particular emphasis on the use of local materials which are appropriate in the circumstances.

Particular care needs to be taken in respect of the detail of ancillary or associated changes including especially:

- Access, including the location, line, scale, form and materials of new or improved roads;
- Parking areas for coaches and cars including the scale, location, layout, materials, markings and signing;
- Landscaping works, which should be a fundamental and integral part of the design, appropriate in nature and scale to the area and should not comprise trivial, ornamental or other "cosmetic" treatments or attempts at screening proposals made necessary by poor quality design or siting.

- Drainage works including their scale, location and line and the effects of excavation and other construction works, the location nature and potential effects of discharges and temporary or permanent changes to hydrology;
- Other proposed or potential changes to surface vegetation, including changes that may occur as a result of areas becoming unuseable or redundant;
- Fencing, drystane dykes, walls or other forms of enclosure which should reflect the detailed design, materials and construction of locally traditional banks, walls and fences. The area enclosed should be set out in relation to the subtle local landforms; rigid geometric shapes should generally be avoided.

References

Historic Scotland, 2000, *Heart of Neolithic Orkney World Heritage Site Management Plan* Historic Scotland.

Orkney Islands Council, 1999, *The Orkney Development Plan 2000 (Structure and Local Plan)* Consultative Draft, Orkney Islands Council.

David Tyldesley and Associates for SNH, 2000, *Landscape Capacity Study Mainland Orkney*, Scottish Natural Heritage.

Land Use Consultants, 1998, *Orkney Landscape Character Assessment*, Scottish Natural Heritage Review No. 100.

Historic Scotland, Research Report 1999 in association with the Royal Commission on the Historical Monuments of Scotland *Historic Landuse Assessment: development and Potential of a Technique For Assessing Historic Landuse Patterns*.

David Tyldesley and Associates for the Fife Council and SNH, 1995, *St. Andrews Landscape Character Assessment*.

Herring P, 1998, *Cornwall's Historic Landscape: presenting a method of Historic Landscape Character Assessment*, Cornwall Archaeological Unit and English Heritage, Truro.

Burgher L., 1991, *Orkney: an illustrated architectural guide* Rutland Press, Edinburgh.

Orkney Islands Council, May 1999, "*Siting and Design of Houses in Orkney's Countryside*", Department of Development and Planning.

Countryside Commission, 1992, *Landscape Assessment Guidance* (CCP 423).

Countryside Agency and SNH, 1999, *Interim Landscape Character Assessment Guidance*.

Institute of Environmental Assessment and the Landscape Institute, 1995, *Guidelines for Landscape and Visual Impact Assessment*.

For example:

David Tyldesley and Associates for the Stirling Council and SNH, 1999, *Stirling Landscape Character Assessment*.
David Tyldesley and Associates for the Clackmannanshire Council and SNH, 1999, *Settlement Landscape Capacity Study*.
David Tyldesley and Associates for the Argyll and Bute Council, 1999, *A Study to Inform Area Capacity Evaluations in Argyll and Bute*.

Scottish Office, 1996, *National Planning Policy Guideline No. 3, Land for Housing*.

Scottish Office, 1991, *Planning Advice Note No. 36 Siting and Design of New Housing in the Countryside*.
Scottish Office, 1994, *Planning Advice Note No. 44, Fitting New Housing Development into the Countryside*.

Appendix A: Outline Method Built Development Capacity Assessment

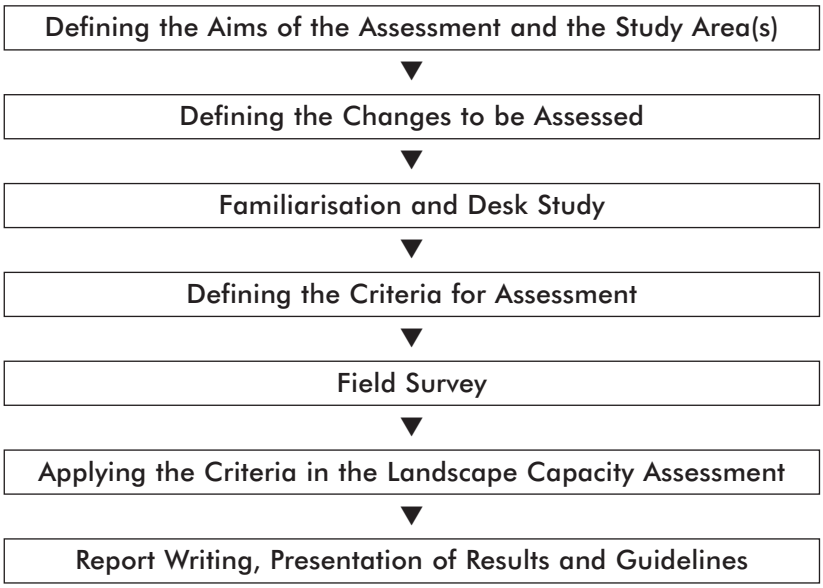
Introduction

The project generally followed the guidance in the Countryside Commission publication "*Landscape Assessment Guidance*" (10) and the more recent guidance which is contained in "*Interim Landscape Character Assessment Guidance*" (11) produced by the Countryside Agency and SNH, including the methods of the landscape capacity studies in Section 8. The study was also consistent with the impact assessment methodology advocated by the Landscape Institute in "*Guidelines for Landscape and Visual Impact Assessment*" (12) and the capacity assessment methods in *Landscape Capacity Study Mainland Orkney*, 2000 (3).

The good practice guidance was extended to include methods developed generally for capacity assessments and specifically for built development and settlement expansion, drawing on the consultants' experience gained in other landscape capacity projects in Scotland (13).

Essentially, capacity evaluation is a systematic and chronological process through the steps shown in Figure A.1. However, it can also be an iterative process and some steps may be repeated in a cycle part way through the method as the criteria are refined and applied.

Figure A.1 Outline of Landscape Capacity Assessment Method



Aims and Study Areas

The aims of the assessment are set out in Section 2 of this Report. The 6 proposed housing clusters in or very close to the intermediate setting of the WHS, to be assessed, are shown on Plans 9–13.

Familiarisation and Desk Study

The study drew upon information in the *Orkney Landscape Character Assessment* of 1998 (4); the *Landscape Capacity Study Mainland Orkney*, 2000 (3); the *Orkney Development Plan 2000 Structure and Local Plan*, Consultative Draft (2); NPPG3 *Land for Housing* (14) and PANs 36 and 44 (15).

All landscape character assessments need to be designed and adapted, within the framework of a common, overall methodology, to suit the scale and purposes of any given project. The 1/50,000 assessment of 1998 (4) serves the purpose well in terms of its role in the national programme and its assessment of the whole of the Orkney Islands for a wide range of purposes. This project is a much more detailed and specific one, concentrating on six small settlements, so it required a more detailed classification and description. The 1/50,000 scale *Orkney Landscape Character Assessment* was found to be too broad for the purposes of this Study. Early familiarisation work broadly verified the landscape classification in that Assessment and began the process of detailing this generally to a scale of 1/25,000 which was adopted as the most appropriate scale for this study. Familiarisation with the study areas was undertaken before the initial project meeting.

Defining the Changes to be Assessed

The changes to be assessed were defined by the Brief and the initial Project meeting as follows:-

a) small scale built development comprising conventional single or two-storey dwellings built individually or in small clusters of up to 4 or 5 dwellings in or on the edge of or otherwise related to the identified settlement clusters in the draft development plan;
b) domestic scale wind turbine generators singly or in twos, generally associated with dwellings, small scale development (eg Schools) or steadings and of about 20kw output;
c) larger single wind turbine generators of approximately 60–70kw, for example as already located close to Kirkwall Airport and on South Ronaldsay;
d) other small scale developments related to the tourism potential of the WHS.

The changes to be assessed include the assumption that any appropriate mitigation measures (such as those recommended in Section 8) would be fully incorporated into any proposals. The report indicates that without such measures the capacity to accommodate the development is very much reduced.

In accordance with the Brief, the capacity assessment focuses on the six housing clusters in or very close to the intermediate setting of the WHS, identified in the Consultative Draft of the Orkney Development Plan 2000. However, it should be emphasised that the whole of the intermediate settings of the components of the WHS are extremely sensitive to development and land use and management changes. Every proposal in the intermediate settings should be subject to the most rigorous examination for its effects on all aspects of the WHS and the landscape which provides the unique setting for these internationally important monuments.

Defining the Criteria for the Assessment

The criteria were derived from those tried and tested in former capacity assessments, modified to take account of the likely nature and scale of the developments and the key landscape characteristics identified in the existing *Orkney Landscape Character Assessment* and preliminary fieldwork at familiarisation stage.

The Landscape Resource: the key physical features and characteristics such as land cover, settlement pattern and other land uses, and point and linear features that combine to give the landscape its physical shape and contribute to its appearance, character and distinctiveness.

Assessing the effects of development on the landscape resource consists of an examination of the key physical features and characteristics of the landscape types and a judgement as to whether development of the kind described could be accommodated, so that the landscape character would be sustained, enhanced or diminished as summarised in Table A.1. Only the important characteristics, such as landform, settlement pattern, key linear and point features and overall land cover are considered because, self evidently, built development or wind turbine generators would be bound to change aspects of the landscape character. Of particular importance in relation to the assessment of built development is the historic settlement pattern and the extent to which this has been sustained or modified. In respect of the assessment of the wind turbine generators a relevant consideration is the presence of other high or vertical structures or point features in the landscape and the way that they contribute to or detract from the character of the landscape.

Throughout the Orkney islands settlements have a particularly strong relationship with their landscape settings. They are much less affected by widespread urban expansion (except at Kirkwall) and the original reason for the settlement's location, and the overall settlement pattern, are much more apparent (and often very distinctive) than in many other parts of Scotland. In addition, there are some settlement patterns in the Orkney islands that are rare elsewhere but very characteristic of the Orkney landscape, eg linear crofting (eg Firth or Evie) and rectilinear steading patterns (eg Holm).

Table A.1 Aspects of the Landscape Resource used in the Capacity Assessment

Land form	Settlement pattern
Land cover/vegetation	Linear physical features
Land use	Point physical features
Judging whether, overall, the changes would be compatible with the existing landscape resource or whether it would be a positive change for the better, eg helping to restore or strengthen the traditional settlement pattern; or a negative change, detracting from the landscape resource; or a neutral effect making neither a positive nor a negative effect on the landscape resource.	

Many settlements have extremely strong relationships with geological, hydrological (river valley, burns, bogs, wells and spring lines) and natural landform features and the coast. Others have strong relationships with land use and historical activity, business and trade, including wartime operations. Compatibility of changes to this overall shape and fit in the landscape is essential if new development is to sustain the appreciation of these distinctive settlement patterns and characteristics.

The Landscape Experience: the characteristics that contribute to the experience of the landscape, things which are seen, or heard, or perceived through other senses but which are not physical properties of the landscape, for example colour, texture, pattern, movement, sound and artistic, historical or cultural associations. Clearly there are overlaps and links with the settlement pattern which itself may be reflecting some of these attributes. Built development and wind turbine generators will affect these aspects of landscape experience but the capacity assessment seeks to identify the most important elements of landscape experience and assess whether changes may enhance or detract from the way in which these elements contribute to landscape character, or have a neutral effect.

Following preliminary work on this and Phase I of the Study, it was determined that the most important elements of the experience of the landscape, in the context of the capacity assessments, are as summarised in Table A.2.

Other Landscape Effects: the effects of development on other important aspects of landscape including those listed as examples in Table A.3.

Self evidently, there are interrelationships between these aspects of landscape character and those of the landscape resource and landscape experience. These all tend to emphasise the integrated nature of landscape elements, the need to take a holistic view of the landscape, and the concept that the character of a landscape is more than the sum of its component parts.

Table A.2 Aspects of the Experience of the Landscape used in the Capacity Assessment

Aspects of Landscape Experience assessed for Built Development	**Aspects of Landscape Experience assessed for Wind Turbine Generators**
Colour	Colour
Diversity	Diversity
Form and Line	Shape, Form and Line
Openness	Movement
Pattern	Pattern
Proximity to the coast/coastal or maritime ambience	Ambience of naturalness, wildness or remoteness from intrusion of man made structures
Scale	Scale
Sound	Sound
Texture	Texture and Reflection
Artistic, Historical and Cultural Associations	Artistic, Historical and Cultural Associations
Effects on Landscape Experience	
Judging whether, overall, the changes would be compatible with the existing landscape experience or whether it would be a positive change for the better, eg increasing diversity where it is a positive contribution to the character of the place; or a negative change, detracting from the landscape experience eg by adding horizontal forms or lines in a predominantly vertical or steeply sloping form; or a neutral effect making neither a positive nor a negative effect on the landscape character.	

Table A.3 Other Aspects of the Landscape and Visual Effects considered in the Capacity Assessment

Other Aspects of Landscape	Visual Effects of Development
Aspects of the landscape character which clearly exhibit historical integrity, continuity over many years or historical associations.	Views and Approaches: The impact on views of and approaches to the settlements from the principal approach roads and ferries, especially where there are distinctive focal points such as a kirk.
Designed landscapes, historic landscapes, mature and distinctive landscapes, which have retained a high level of integrity.	Important Outward Views: The impact of development on views out of the settlement where these are strategically significant and distinctive and an important aspect of settlement character, eg across lochs.
The physical presence of monuments, listed buildings and other above ground historical and archaeological features which contribute to landscape character.	Skylines, Ridges and Hill Tops: The potential effect on distinctive skylines, ridges and hill tops where settlements have strategically a significant and distinctive, recognisable skylines.
Waterfalls, open spaces, popular recreational or tourist venues, coastal or hill routes of acknowledged importance Areas with literary or other artistic associations and other strategically important landscape features and their settings.	Conspicuity: In all cases whether development would be located in a visually conspicuous location. Such as open, flat ground, or on open, high or rising ground, where this is not already a key positive landscape characteristic.

The Visual Effects of Development: such as the obstruction of views (eg by new buildings) or intrusion into views; how conspicuous the development or wind turbine generators may be or whether they would affect important skylines or views, for example, those seen from dwellings, roads, ferries, paths and viewpoints. Some visual effects may be reduced by mitigation measures, however, these may themselves have adverse effects on the landscape or may obstruct important views in the attempt to prevent views of the new development. Visual effects are also listed in Table A.3

It will be apparent that mitigation is a very important element of the assessment because it can substantially reduce or even avoid the adverse effects that development may otherwise have on the landscape resource, landscape experience, other landscape features and visual amenity. Consequently, the assessment under each of these criteria includes the incorporation of mitigation measures that would normally and conventionally be required or offered in respect of development. Thus, the assessment is based on the assumption that all reasonable mitigation measures will be provided. Mitigation is not, therefore, included as a separate criterion but integrated into the four criteria throughout the assessment. Section 8 summarises the main mitigation measures in the form of Guidelines.

A three point scale is used to express the results of the assessment. A three point scale provides a simple expression of the results of applying the criteria and helps to indicate the effects of development on the different aspects assessed. The three point scale is represented by symbols in summary tables which explain the application of the criteria.

A fourth symbol "**?**" may be added to any of the other three, where necessary, to indicate that in the absence of detailed proposals it is uncertain what the effects may be, but they are likely to be as indicated by the symbol to which the "?" is attached. The three point scale and the symbols are shown in Table A.4.

Table A.4 Summary of Landscape Capacity Assessment Criteria

Assessment Criteria	✔	❍	X
Effects of built development or wind turbine generators on the Landscape Resource	Development and/or the turbines could enhance the Resource	Long term, the Resource could be sustained	The Resource would be diminished
Effects of built development or wind turbine generators on the Landscape Experience	Development and/or the turbines could have a positive effect on the experience of the landscape	Overall a neutral effect on the experience of the landscape	Overall a negative effect on the experience of the landscape
The Visual Effects of built development or wind turbine generators	Development and/or the turbines could enhance visual amenity	No significant visual impact even where development may be noticeable	Substantial visual impacts – development would be conspicuous and inappropriate
Effects of built development or wind turbine generators on Other Important Landscape Features	Development and/or the turbines could enhance other important landscape features or their setting	No noticeable effects or no other important landscape features would be likely to be affected	Loss of or substantial impact on the feature or its setting where setting is important
? Denotes uncertain effects			

Field Survey

The fieldwork was undertaken in June–August 2000. The weather was mostly reasonable, with good visibility.

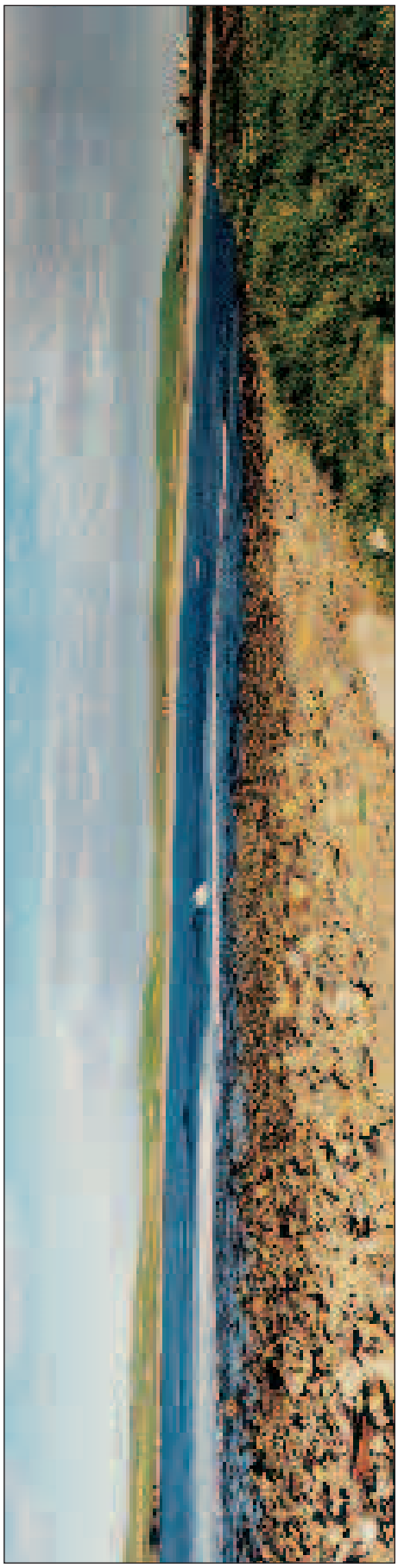
Applying the Criteria in the Landscape Capacity Assessment

This stage involved applying the Criteria in a systematic and impartial judgement. Thus, each housing cluster was assessed against each of the four criteria in respect of built development and small scale wind turbines. The effects of larger scale wind turbines were assessed using the same techniques for each of the landscape types occurring in the wider setting of the WHS.

Report Writing – Presentation of Results and Guidelines

This report presents the results of the capacity evaluation to accommodate built development and wind turbine generators, as defined above, and an explanation of the conclusions. Guidelines are set out in Section 8.

PHOTOGRAPHS



Photograph 2 Skaill Bay showing Skaill House (far right) Skara Brae (to left of Skaill House) and the low hills which form the Enclosed Bay landscape, the ridges of which mark the intermediate ZVI and intermediate setting of Skara Brae. The settlement at Quoyloo is visible on the terrace of the Coastal basin above the kirk by the shore (far left).

Photograph 3 Detail of the immediate setting of Skara Brae which includes Skaill House.

Photograph 4 Maes Howe with the Stones of Stenness and lochs in the middle distance (intermediate setting) and beyond them the ridges of the coastal hills which define the edge of the wider setting of the monument.

Photograph 5 Part of the Ring of Brodgar looking southeast across the Loch Basin, (Loch of Stenness right, Loch of Harray left) to the Moorland Hills above Stenness which form the edge of the wider setting of the WHS.

Photograph 6 Part of the Stones of Stenness with the dramatic skyline of the Hoy Mountains forming a distant and detached edge to the wider setting of the WHS.

Photograph 7 Proposed cluster at Appiehouse.
Showing the stunning views across the World Heritage Site (Stones of Stenness, Ring of Brodgar and Maes Howe), the NSA and the Lochs of Stenness and Harray, one of the most sensitive landscapes in Scotland.

Photograph 8 Setting of the proposed clusters at Bimbister and Newark.
Showing how small groups of buildings nestle in hollows along the minor roads on the edge of the Loch Basin and Rolling Hill Fringes, beneath the Moorland Hills.

Photograph 9 Setting of proposed cluster at Kirbister Road End.
Showing the widely spaced, loose scatter of steadings in an open and very sensitive landscape by Loch of Stenness in the NSA.

Photograph 10 Part of the Quoyloo proposed cluster.
Showing the mixed group of buildings at the crossroads in the centre of the settlement, on the flatter terrace of the Coastal Basin beneath Vestra Field. The Orkney drystane dykes are distinctive linear features.

Photograph 11 Part of the area considered appropriate for built development at Burnside, showing the former kirk and the community centre on level, relatively sheltered land at the edge of the Loch Basin.