THE STATES OF JERSEY PLANNING AND ENVIRONMENT DEPARTMENT

VEGETATION CONDITION ASSESSMENT LES BLANCHES BANQUES 2014

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This report has been undertaken in accordance with PAA policies and procedures on quality assurance.	

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1. INTRODUCTION

1.1 This report has been produced by Penny Anderson Associates Ltd (PAA) on behalf of The States of Jersey, Planning and Environment Department. It presents the findings of a vegetation condition assessment carried out on the Les Blanches Banques Dunes, Jersey, in July 2014, and is intended to replicate and build on the work undertaken by the consultancy in 2005.

1.2 The condition assessment has been conducted at the same time as a re-survey of the vegetation of the dunes. This vegetation survey is reported separately and discusses the changes in the habitat types since 2005, as well as describing additional areas of habitat which are now included within the Site of Special Interest (SSI) boundary.

1.3 Les Blanches Banques Dunes are designated as an SSI on account of their important sand dune vegetation, the largest and richest site of its kind on the Island. In addition, as the most extensive area of calcareous soils, the dunes support good populations of many species on the Island that are not found, or are in smaller populations, elsewhere.

1.4 As part of the continuous process of reviewing and monitoring to ensure that biological SSIs retain the nature conservation features for which they were originally selected, regular reassessments of the habitats are required.

1.5 In 2013, The States of Jersey, Planning and Environment Department commissioned a series of contracts which reviewed Habitat Condition Monitoring Objectives (HMO) for a number of habitats in Jersey (PAA 2013a) and which also specifically created a set of HMOs for Les Blanches Banques as well as other habitats (PAA 2013b).

1.6 The current survey and report used the updated and adapted versions of the HMOs produced by the 2013 work and re-surveyed the habitats on Les Blanches Banques Dunes. The objectives of the survey have been to test and, where necessary, modify the details of the HMOs, as they had been prepared without field checking, as well as to conduct a full condition assessment to provide a baseline for future assessments and to compare, as far as possible, with an assessment carried out in 2005 by PAA (PAA 2006).

1.7 The following report sets out first the application of the HMOs to Les Blanches Banques (Chapter 2), and then presents the results of the field assessment with suggestions on what could be altered to make the HMO and recording forms more applicable to the site (Chapter 3). The results of the analysis of the habitat changes are presented in Chapter 4, with the detailed changes gleaned from the quadrat data in Chapter 5. The conclusions of the assessment are presented in the last chapter (6).

2. THE APPLICATION OF THE HABITAT CONDITION MONITORING OBJECTIVES TO LES BLANCHES BANQUES

The Habitats and Area for Assessment

2.1 The 2013 Habitat Condition Monitoring Objectives report (PAA 2013b) described in detail the rationale behind the selection of the habitat types which are of key importance on the dunes. It also concluded that, by monitoring the key habitats, a condition assessment for the whole dunes could be derived. Maintaining the area of the habitats, the occurrence of special species and the overall diversity of the dunes are the overall objectives.

2.2 The key habitats are:

- the yellow dunes – all forms of marram (*Ammophila arenaria*) dominant or co-dominant vegetation where it is growing vigorously (30cm plus) and appears to be in good health;
- the grey dunes - all dune grassland vegetation types combining the species-rich, burnet rose (*Rosa pimpinellifolia*) and rank grassland vegetation types, plus any bare sand that is partly vegetated with these communities;
- gorse (*Ulex europaeus*) dominated scrub / mixed scrub;
- woodland – defined as a canopy that the surveyor can walk beneath;
- dune heathland – any patches where bell heather (*Erica cinerea*) or heather (*Calluna vulgaris*) is abundant;
- bare sand – to show where blowouts are developing or being re-vegetated.

2.3 The survey area in 2014 was the whole of the SSI (Figure 1), including extensions to the area included in the 2005 assessment. The units used in the current assessment are:

- Dune Plain - which covers the flatter area at the western side of the dunes (included in 2005);
- High Dunes - including all the grey and yellow dunes that spread eastwards and south to the foothills of the granite cliffs (included in 2005);
- The Southern Area - which lies south of the granite escarpment which separates the area from the dune plain and contains mostly grey dunes (closer to the sea) and scrub on the steeper slopes and in the valley leading eastwards up towards the La Moye Golf Course (included in 2005);
- The Escarpment - identified but not formally included in the 2005 assessment. It consists mostly of heath, scrub and bracken (*Pteridium aquilinum*) with some sandy heath and grey dune grassland. It has been extended in 2014 to include an area of similar habitat in the ownership of the La Moye Golf Club and within the SSI boundary;

- Frontal Dunes - an additional area in the 2014 assessment not previously surveyed in detail, comprising a strip of dunes west of the main dune system separated by the coast road from the main dune block reaching to the sea wall; and

- Bosdet - an area of dune grassland (including acid grassland), scrub and woodland at the north-eastern end of the main dune area. Again this has not previously been surveyed in detail but is included within the SSI boundary.

Whole Site Objectives

2.4 There are a number of features that need to be monitored for the whole site to ensure the dunes as a whole are meeting their conservation objectives. These are:

- no net decrease in the extent of the dune system designated as SSI – measured using aerial photographs and on site knowledge/survey;

- the zonation from the sea wall to the edges of the site inland should include:

  - yellow dunes, particularly near the coast and on the high dunes inland;

  - grey dunes with different vegetation types, as listed above, on them;

  - inland dune heathland;

  - scrub, mostly on north-facing slopes, but also in small patches scattered throughout the dunes;

  - small areas of woodland, as shown on the map of the dune vegetation;

  - the small area of purple moor-grass (*Molinia caerulea)*; and

  - bracken on the slopes onto the granite cliffs.

2.5 There should be no extensive damage from non-natural events, such as wildfire, vehicle movements or trampling, that alter the vegetation or the balance between the different vegetation types significantly:

- the area of diverse vegetation on the grey dunes should be stable or increasing;

- the area of rank grassland should be stable or declining; and

- the area of scrub and woodland should not increase at the expense of the grey or yellow dunes.

2.6 Most of these criteria can only be assessed by re-mapping the dune vegetation in the same way that it has previously been surveyed. The mapping was undertaken at the same time as the condition assessment of the dunes and is reported in more detail in a separate report (PAA 2015a). The detailed nature of the habitat mapping has allowed in depth analysis of the

changing habitats on the site. However, a simplified vegetation classification involving the grouping of plant communities[1] within the dune grassland and open dunes systems has been used to allow the condition assessments to be undertaken.

The Habitat Diversity

2.7 As well as the assessment of the whole site and the vegetation mapping to show changes in cover of the different communities, the richness and diversity of these communities and any damaging features has been monitored.

2.8 The 2005 survey used a 'W walk' across the unit areas to assess the features in the fairly simple condition assessment forms developed by JNCC (2004) and adapted for use by PAA for Les Blanches Banques (PAA 2006). In addition, quadrats were taken in three habitat types - yellow dunes, grey dune and heathland - when present in the unit. The locations of these quadrats were marked on aerial photographs and provide detailed site specific species information which has been collected again in 2014.

The HMOs Used in the Field Survey of 2014

2.9 The HMOs produced in the 2013 report for Les Blanches Banques (PAA 2013b) were used for the 2014 condition assessment. PAA prepared monitoring forms from the HMOs for use in the field.

2.10 The woodland and scrub HMOs and monitoring forms were provided by The States of Jersey Planning and Environmental Department and reviewed by PAA in July 2013 (PAA 2013a). The comments made in that report have been included in most of the HMO forms which had already been trialled in Jersey. Since they had been developed for woodland and scrub elsewhere on the island, some small further modifications were included to account for the conditions on Les Blanches Banques.

2.11 The survey was therefore acting as a trial for the HMO criteria set for the site and a field trial for the monitoring forms.

2.12 The HMO used for the different habitats are found in Appendix 1 along with the relevant field recording sheet used during the 2014 survey. The rationale for the HMOs is set out below.

The Dune Grassland Habitats

The Yellow Dunes HMO

2.13 The objective of maintaining the area of yellow dune vegetation (marram dominated vegetation) can only be gauged through the vegetation mapping. As the patches change from one assessment to the next, there will be a need to review where they appear. The goal is that no more species-rich grassland (species rich grey dune vegetation) is lost than develops elsewhere on the dunes. Therefore the marram dominated vegetation can increase but not at the expense of the species rich vegetation.

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[1] *PAA developed a plant community classification for the habitats found on the dunes in 1984 which is unique to the Jersey dunes. This is described in detail in PAA 2014a and Appendix 2 of this report.*

2.14 The limit of 90% (to be tested) of patches to be in good quality is based on the view that most will achieve this standard. There are not many negative factors affecting this vegetation type. The criteria for each patch are based on the growth form of marram and the expectation that it should be flowering strongly as a good indicator of sand accretion.

2.15 The 30-40% bare sand condition also needs to be tested and may need to be broader to accommodate more or less bare sand. Large areas of bare sand tend to be mapped separately, so the scale is in relation to individual marram clumps.

2.16 The characteristic species listed on the monitoring forms are those that were recorded in this vegetation type in 2005 and are still expected to be present. However, they were selected from a total species list without sufficient information on the relative distribution across the dunes, and without the advantage of information on the frontal dunes not previously surveyed so may need to be reconsidered after the survey.

2.17 The negative features are generally the same for all the HMOs for the dune habitats and include limits on the scrub, tree, bracken, bramble (*Rubus fruticosa*), common nettle (*Urtica dioica*) and ragwort (*Senecio jacobaea*) cover, trampling and disturbance, and in addition over or under grazing.

The Grey Dunes HMO

2.18 Like the yellow dunes, the extent of the grey dunes can only be gauged through the vegetation mapping and use of aerial photographs over time. A high 90% (to be tested) lower limit for quality is adopted as this is a Priority Habitat[2]. The HMO effectively combines the burnet rose, species-rich and rank grassland communities (plant communities J, B and E respectively) though asks for different numbers of the more common associates for each type. The burnet rose and species-rich grasslands can be equally rich – it is the rank grassland that tends to be more homogenous.

2.19 The assessment asks for location and abundance (or a spike/plant count) of the species of local distinctiveness. The following table (Table 1 – page 6) lists the species of note that would need to be identified and located. It consists primarily of Red Data Book (RDB) plants, plus those in the Jersey Biological Action Plan (BAP), that occur on the dunes. The list represents all the species likely to be found, but this was written without knowing whether their often localised distribution could translate into effective condition assessment. If they are too rare, or not identifiable at the time of survey (some are very early flowering), they would not be good features to use to make judgements on condition.

2.20 The location of the populations should be marked on the aerial photographs or GPS used to provide baseline information where they are found. There are additional species that are important within the Jersey context, either being protected or rare, such as green-winged orchid (*Orchis morio*), sea stock (*Matthiola sinuata)*, early purple orchid (*Orchis mascula*), autumn lady's tresses (*Spiranthes spiralis*) and some of the rare clovers which are much more difficult to identify accurately. These could be added to the list below if necessary.

2.21 The range of negative features is the same as for other dune habitat types.

2 Priority Habitat under the Habitats Directive

Table 1 Indicators of Local Distinctiveness

Scientific Name	English Name	Status	Abundance and Habitat Location in 2005
Armeria arenaria	Jersey thrift	Absent from Britain	Lf - Dune plain and southern unit
Bupleurum baldense	Small hare's ear	RDB	Lo -Dune plain and southern unit
Centaurea aspera	Rough star thistle	Neophyte, rare in S. England	Lf - Dune plain
Corynephorus canescens	Grey hair grass	RDB	Lo - All areas
Himantoglossum hircinum	Lizard orchid	RDB	Low dunes east of Le Carrière car park
Hypochaeris glabra	Smooth cat's ear	RDB	F - All units
Matthiola sinuata	Sea stock	RDB	Not found 2005, but known to be Rare on frontal dunes mostly
Mibora minima	Early sand grass	RDB	Lo - All units
Petrorhagia nanteuilii	Childing pink	RDB	Dune plain near paths
Poa infirma	Early meadow grass	Nationally Scarce	Dune plain
Polycarpon tetraphyllum	Four-leaved all-seed	RDB	R - various
Romulea columnae	Sand crocus	RDB	R - Dune plain
Scrophularia scorodonia	Balm-leaved figwort	Nationally scarce but neophyte	Scrub
Thesium humifusum	Bastard toadflax	Nationally scarce	R - Dune plain
Veronica officinalis	Heath speedwell	Rare in Jersey	Granite cliffs above Le Carrière car park
Viola kitaibeliana	Dwarf pansy	RDB	Grey dunes

Dune Heathland HMO

2.22 Dune heath is also a Priority Habitat and the conservation objective is to maintain the same area of dune heath patches on Les Blanches Banques. As with several other habitats, the patches can move with time, but others should develop to take their place. A high quality threshold (>95%) was set as it was considered that most patches should meet this objective, although the criteria need to be tested in the field.

2.23 Dune heath is defined as having >20% heather or bell heather cover (mostly) in the dune grassland vegetation. A list of accompanying dune grassland species is given (on the monitoring form) as those most likely to be in fixed dune grassland (which is where the heathland is most likely to be) rather than the open lichen-rich swards. These species need to be field tested and others added or removed if required as they were derived from a list for all the heathland patches, and their relative distribution may determine some changes.

2.24 Again the range of negative features is the same as for other habitat types.

The Woodland and Scrub HMOs

2.25 These HMOs were altered slightly from those used elsewhere in Jersey to include the species and categories relevant to the dunes.

Mature Gorse

2.26 The HMO was initially prepared for the mature gorse on Les Landes and focused on the cover of European gorse and structure. Small amendments were applied before the HMO and record sheet were applied to the dunes. Gorse patches are known to move around the dunes and are particularly affected by storms and salt spray which can kill large areas in certain years.

2.27 The whole patch needs to be assessed and four gorse height categories recorded to link with management. The overall cover of gorse in the area should give an indication of the canopy openness which, in turn, will affect the growth of plants through or under the gorse. The underlying vegetation; grey/yellow dune, heathland, bramble, bracken and scrub are also of interest. All vegetation types are acceptable under the gorse, but limits on the proportion of patches with bracken or bramble may be set.

2.28 Trees are a negative feature in the gorse patches and comments on the replacement species/habitat of a patch where gorse has decreased would be of value to inform management decisions in the future.

Scrub Habitats

2.29 Scrub is not a key dune habitat. In the HMO there is flexibility in the extent criterion so that the scrub can develop and move around in a habitat. Scrub is defined as a habitat of woody shrubs under which the surveyor can not walk. This HMO is not used for European gorse dominated patches on the dunes which are covered by the previous HMO and recording sheet.

2.30 The height structure is not vital to the scrub condition, as it could be affected more by the location, i.e. wind and salt blasted from the coast, or sheltered areas at the back of the dunes.

2.31 The composition of the scrub, presence of non-native species and trees is of importance, as is the composition of the ground flora. This will be important in any decision as to whether the scrub will be allowed to develop into woodland and in the management of the patch if non-native species are to be removed. The ground flora species will give an indication of the practicality of restoring the area to the vegetation of adjacent habitats should it be decided that the scrub is to be removed and dune restored.

2.32 Trees are a negative feature in the scrub patches and disturbance to the scrub habitat should be noted.

Woodland

2.33 The methodology used to survey a woodland block may affect the outcome of the condition assessment and clear survey guidance is required prior to any assessment. The reasons for this are set out in the PAA 2013a report and are mainly due to the scale of the survey. On the dunes, the woodland blocks are small and concentrated on the high dunes and in a small valley on the southern dunes.

2.34 The assessment should be carried out on the whole stand where practically possible. The higher value woodlands will be dominated by native species. In the PAA 2013a report there was a list of woody species given which were regarded in the Flora of Jersey (Le Sueur 1984) as invasive or non-native and undesirable. This has been shortened in Table 2 (below) to list only the trees and shrubs already recorded on the dunes. However, after discussions with the Jersey Natural Environment Officer, evergreen oak has been moved to the 'Introduced and Undesirable' column within the table.

Table 2 Woody Species in the Woodland HMO for Les Blanches Banques

Native or Probably Native	Tolerated, Not or Possibly Not Native	Introduced and Undesirable
Crataegus monogyna - Hawthorn	*Acer pseudoplatanus* - Sycamore	*Buddleia davidii* – butterfly-bush
Ligustrum vulgare - Wild privet	*Pinus* spp. - Pine species	*Malus sp* - Apple
Prunus spinosa - Blackthorn		*Populus canadensis* - Italian poplar
Quercus robur - Pedunculate oak		*Rosa sp* - Roses (garden species)
Rosa arvensis - Field rose		*Quercus ilex* - Evergreen oak
Rosa canina - Dog rose		
Salix caprea/cinerea - Goat/ grey willow		
Salix fragilis - Crack willow		
Sambucus nigra - Elder		
Ulex europaeus - European gorse		
Ulmus sp - Elm species		

2.35 The criterion is to have 90% or more of the wood canopy and understorey dominated by the species in the first two columns of Table 2 and <10% by those in the last column. The abundance of native, tolerated and undesirable species should be noted for future comparison and management advice.

2.36 The desirable ground flora list (PAA 2013a) has similarly been reduced to include only the plants recorded on the dunes (Table 3, below), although this may need to be modified once the new woodland associated with Bosdet has been surveyed as part of the current project.

Table 3 Ground Flora Species in Les Blanches Banques Woodlands

Scientific Name	English Name	General Abundance in High Value Woodlands
Athyrium filix-femina	Lady fern	Generally abundant
Dryopteris filix-mas	Male fern	
Dryopteris dilatata	Broad buckler fern	
Phyllitis scolopendrium	Harts tongue	
Polystichum spp	Shield ferns	
Polypodium	Polypody	
Arum spp	Lords and Ladies – all spp	Italian spp feature of Jersey, rare
Carex spp	Sedge spp, pendulous sedge, remote sedge, wood sedge	Rare – need to note presence
Chrysosplenium oppositifolium	Opposite-leaved golden saxifrage	Only in wet areas, therefore distinctive there
Circaea lutetiana	Enchanter's nightshade	frequent
Conopodium majus	Pignut	Rare to occasional, but ancient woodland indicator

Scientific Name	English Name	General Abundance in High Value Woodlands
Digitalis purpurea	Foxglove	Rare to frequent
Euphorbia amygdaloides	Wood spurge	Rare to occasional
Geranium robertianum	Herb Robert	frequent
Geum urbanum	Wood avens	occasional
Hyacinthoides non-scripta	Bluebell	Frequent
Iris foetidissima	Stinking iris	Occasional
Lamiastrum galeobdolon	Yellow archangel	Locally abundant St Catherine's, possible ancient woodland indicator
Lonicera periclymenum	Honeysuckle	Abundant
Mercurialis perennis	Dog's mercury	Locally frequent, St Catherine's, possible ancient woodland indicator
Oxalis acetosella	Wood sorrel	Absent to occasional
Primula vulgaris	Primrose	Rare
Ruscus aculeatus	Butcher's broom	Occasional to frequent
Silene dioica	Red campion	Frequent
Stellaria holostea	Greater stitchwort	Rare to Frequent
Viola riviniana	Common dog violet	Only violet likely to be seen, absent to locally frequent

Site Assessment

2.37 The survey work for the site assessment in 2014 was undertaken over a week from 30th June to 5th July at the same time as the re-mapping of the dune habitats. A team of five surveyors worked methodically across the site. The work was undertaken at a very similar time to the 2005 survey (5th to 8th July) so that data collected was as similar as possible. However, the whole of June 2014 had been very dry, leaving some of the early flowering species difficult to detect and identify.

2.38 The mapping survey methodology is described in detail in PAA 2015a. In brief, the re-mapping survey allocated the previously mapped habitat patches to one of a number of plant community types or, where two or more communities were co-dominant, the relevant community codes were used separated by a slash. Where the community boundaries identified in 2005 were no longer visible, these were removed and new boundaries drawn. A description of the plant communities and the relevant codes is given in Appendix 2.

The Distribution of the Condition Assessments Between the Habitats and the Units

2.39 In 2005 the condition assessments were undertaken for the fixed dune grassland (grey dunes) and the mobile dunes (yellow dunes) in three areas of the dunes - the dune plain, the high dune and the southern area. During the survey a 'W' walk was used to sample the vegetation types and gain information for the habitat type in that area.

2.40 Quadrats (2x2m) were taken in the four areas/units of the dunes to give detailed species information (species occurrence and DAFOR[3] frequency) and to collect data for the condition

3 DAFOR D=dominant, A=abundant, F= frequent, O=occasional, R=rare

assessments. Eleven quadrats were taken in the dune plain, 20 in the high dune area, six in the southern area and three on the escarpment. However, the boundary between the areas/units was mapped after the data had been collected and it was discovered that there was some confusion as to the location of the dune plain and the high dune boundary. Three of the quadrats initially thought to be in the high dune area were actually located in the dune plain and have been re-numbered as DPQ12, DPQ13 and DPQ14 on the dune plain with the high dune number remaining the same but without HDQ1-3.

2.41 The development of the HMO in the period between the surveys has lead to the need to collect much more information to satisfy the range of criteria in the new HMO. The quadrat data were collected again in the same habitat patches recorded in 2005 so that direct comparisons could be made over the nine year period.

2.42 A series of condition assessment 'stops' were chosen for each habitat in each unit of the site to collect additional information. The location of the condition assessment stops was roughly determined in advance of the survey, with 20 patches recommended for the grey and yellow dunes on the two main dune areas (high dune and dune plain) and an additional 20 grey dune records from other dune units. Across the whole site it was also recommended that 10 heathland patches, 20 patches each of gorse and scrub habitats, and five woodland patches were recorded (150 patches) in total for the condition assessments.

2.43 As many individual habitat patches were to be visited to collect the quadrat data recorded in 2005 it was deemed sensible to use the majority of these locations as condition assessment stops. Twenty nine of the 39 nine quadrat locations were used as condition assessment stops. The quadrat locations in 2005 had been chosen at random and the remaining condition assessment locations were chosen at random, within the framework outlined above, by marking patches of the relevant habitat (using the 2005 codes) on the aerial photographs before the field survey took place.

2.44 On some occasions the allocated patch was not suitable for the condition assessment when re-located as the habitat had changed in the intervening years, in which case the closest patch of the habitat required was recorded instead. For the scrub patches smaller patches were deliberately sought to enable the patch to be assessed from one vantage point (see para 2.27 *et. seq.* scrub condition assessments). In total, 164 stops were made and detailed information gathered on the record forms provided in Appendix 1. The exact number and distribution of each habitat suggested was not met exactly due to constraints in the availability of habitats in the dune areas but, in most cases, higher numbers of habitats were assessed.

2.45 The individual condition assessment data are provided in Appendix 3 (supplied digitally only) on a unit and habitat basis and numbered to reflect the location of the patches shown on Figure 2. This is a very large dataset and is provided electronically but not reproduced in the report. The location of the condition assessment stops are shown on Figure 2 with 'Q' indicating where a quadrat location coincides with the condition assessment. The locations of all the quadrats, irrespective of the condition assessment data, are on Figure 3. This information is summarised in Table 4 (page 11).

2.46 The number of patches that have been assessed for each habitat type using the HMO framework in 2014 is much higher than the number of quadrats or the assessment under the 'W' walk undertaken in 2005. This is related to the separation of all the habitats for independent assessment in the new HMOs and the inclusion of more dune units. The condition assessment patches are referred to in the text as 'CA' with a number where appropriate.

Table 4 The Location of the Condition Assessment Stops and Quadrats

	Habitat Type						
Unit	**Yellow Dunes**	**Grey Dunes**	**Gorse**	**Scrub**	**Woodland**	**Heathland**	**Total**
Dune plain	17 (2)	24 (12)	6	3	0	5 (1)	54 (14)
High dunes	18 (5)	22 (12)	4	6	3	1	55 (17)
Southern dunes	2	5 (4)	2	2	1	2 (1)	14 (5)
Frontal dunes	5	5	-	1	-	-	11
Escarpment	-	-	5	5	-	2 (3)	12 (3)
Bosdet	4	5	5	4	-	-	18
Total	46 (5)	61 (28)	22	21	4	10 (1)	**164 (39)**

NB. The figures in brackets are the number of quadrats surveyed in each area

3. ASSESSMENT RESULTS

3.1 The following chapter provides the results of the assessment against the criteria for each of the six habitats where they occur in the six units identified on Figure 1. The criteria recorded in the field are discussed first with changes in habitat extent detailed later, in Chapter 4.

3.2 The HMOs for the dunes were developed as a desk-based task without checking features or thresholds on the ground. The current survey therefore provides the opportunity to test the methodology and to use the results to tweak or more radically alter the criteria where warranted. The assessment was conducted based on the assumption that the majority of habitats on the dunes were in good condition (as was apparent visually on the ground) and, therefore, the results should reflect this. In other words, the objective was to ensure that the condition assessment process matched the quality of the site in order to provide a baseline for the future, rather than to provide a judgement on its current condition. Thus, if the assessment produces negative results, then the targets and goals in the HMOs will need to be altered to accommodate the conditions found on the site during the survey.

Yellow Dunes

3.3 During the survey, 46 condition assessments were recorded in this habitat across the site (Figure 2). Table 5 (see tables at end of report) has the amalgamated results as a percentage of the stops in each unit of the dunes; the number of stops in each unit is also given in the table.

Quality Criteria

3.4 The HMO described in Chapter 2 suggested that a figure of 90% of patches should be in good condition but that this should be tested. During the survey it became apparent that some of the criteria /attributes were not appropriate.

Vegetation Composition

Cover of Marram

3.5 The first attribute recorded was a 'healthy cover of marram' as defined by the abundance of flowering spikes. The majority of the marram was not flowering profusely (only described as 'flowering well' in one patch across the site) and all units would therefore fail. However, in general terms, the marram seemed to be healthy in that it was tussocky and growing strongly and upright within the D community (closed marram), but less so (as is typical) in the C community (open marram) despite the sparse flowering. In addition, there was some variation in the way this characteristic was recorded between surveyors which made its interpretation more difficult. It is therefore considered that healthy marram does not need to be flowering on Les Blanches Banques, and this feature is not necessary and should be removed from the form.

3.6 A key feature of the open dunes is the cover of marram and, to a lesser extent, sea couch (*Elytrigia atherica*) and sand couch (*Elytrigia juncea*), which are much less widespread and only recorded on one site in the frontal dune unit within the sample patches. The cover of sea and sand couch could, therefore, be removed from the forms for future surveys. They were included as they are frequent in the dune strip to the north of Les Blanches Banques and their abundance on the fontal dunes area was unclear as these had not been previously surveyed.

Vegetation Height

3.7 Table 5 (see tables at end of report) shows that 82% of the patches on the dune plain and 72% of the patches on the high dune had 60% of the vegetation over 30cm in height whilst, in the other areas (southern dunes, frontal dunes and Bosdet), there were far fewer patches with this structure. In these units the cover did not reach the required 60% but the vegetation height was generally sufficient.

3.8 Again, there were some discrepancies in recording this feature because of the phraseology on the form and in the HMO and this hampered interpretation of the results. In future, a clear marram cover should be recorded and, in addition, the percentage of marram falling into two height categories - <30cm or >30cm - should be recorded. So if marram cover was 70%, the next section on vegetation height would have 30% <30cm and 40% >30cm (i.e. the percentage totals for the cover of marram). The height is an average height of the stand excluding flower heads.

3.9 Where the yellow dunes have an 'open' character (plant community C) the cover of marram was frequently only 35% and shorter than expected (the height guideline in the HMO had been derived from general knowledge and needed testing on the actual dunes), so the cover criteria is better altered to >30% cover.

Cover of Bare Sand

3.10 The cover of bare sand suggested for favourable condition is now thought to be too high and was rarely achieved. From the results of the assessment (Table 5 – see tables at end of report) it is suggested that it should be reduced to >20%, although there will still be several patches (15, 33%) which fall under this threshold – many (nine) of these are the yellow dunes on the dune plain and these patches have <10% bare sand.

3.11 It is therefore suggested that for this criteria (cover of bare sand) the 'Quality Limit' should be reduced to 60% of patches reaching the required level rather than the overarching 90% target of patches meeting all the criteria given on the current form. This would provide for more variation and the fact that there are not enough pure C or D patches to sample and some mixed vegetation was included which results in even more natural variation in the results.

Associated Vegetation Communities

3.12 The marram communities cover a very broad range of vegetation stability and, therefore, communities in this category. They were mixed with species-rich dune grassland (plant community B), rank grassland, (community E) or rose-dominated areas (community J).

Species Distinctive of the Yellow Dunes

3.13 There were few early colonisers, i.e. sea holly (*Eryngium maritimum*), sea bindweed (*Calystegia soldanella)* and early sand-grass (*Mibora minima),* and therefore the number of characteristic species was not as high as expected.

3.14 Following the trialling of the forms it is suggested that additional characteristic species are included to give a wider range of species (as shown in Table 6 – page 14) and that the minimum number of species recorded should be increased to five.

Table 6 Characteristic Species for the Yellow Dune HMO

Scientific Name	English Name
Calystegia soldanella	Sea bindweed
Carex arenaria	Sand sedge
Cochlearia danica	Danish scurvy grass
Corynephorus canescens	Grey hair-grass
Crepis capillaris	Smooth hawk's-beard
Daucus carota	Wild carrot
Eryngium maritimum	Sea holly
Euphorbia portlandica	Portland spurge
Euphrasia sp	Eyebright
Galium verum	Lady's bedstraw
Hypochaeris radicata	Common cat's-ear
Lagurus ovatus	Hare's tail
Leontodon saxatile	Lesser hawkbit
Lotus corniculatus	Bird's-foot-trefoil
Matthiola sinuata	Sea stock
Mibora minima	Early sand-grass
Ononis repens	Common restharrow
Phleum arenarium	Sand cat's tail
Thymus polytrichus	Wild thyme

3.15 The abundance of several of the species was also at lower levels than expected and the criteria of more than two species at occasional or greater frequency was rarely met on the dune plain (6%) and only met for half the yellow dunes in the high dune unit. It is therefore recommended that the requirement for an 'occasional or greater level of occurrence' is deleted from the criteria - five or more species should simply be present.

3.16 Whilst undertaking the condition assessment, the surveyors generally tried to choose patches of pure C or D plant communities, not mixtures with other vegetation types, but there were very few of these in some areas. Plant community D (dense marram) is quite uncommon away from the frontal dunes and is mostly mixed with E/B (rank or species rich) grassland communities where it does occur.

Damaging Features

3.17 The goal of 'no scrub or tree' was found in practice to be unrealistic on most of the dune vegetation, as many patches had one or two saplings noted as rare but not considered to be detracting significantly from the quality of the rest of the patch. The cover of scrub or trees in the vicinity was frequently not recorded and this information should be noted along with the height and species to identify whether it is likely to become a management issue in the future. From the results obtained, it is suggested that an objective for less than 2% cover of scrub or trees in any patch of yellow dunes would be more appropriate.

3.18 There was generally little difficulty with the patches falling within the cover levels acceptable for bracken, bramble, ragwort and common nettle. Those that fell outside the criteria were

generally located on the southern dunes and Bosdet where bracken particularly is more abundant. These criteria levels appear appropriate.

3.19 There was no stock recorded on the site during the survey but it was included as a criterion as there have been proposals to introduce grazing to the site in the past, and it may be relevant in the future. It would be advantageous to comment on the abundance of rabbit signs and some information was collected on this, but rather patchily, in the survey so is not reported here.

Summary

3.20 Overall, the surveyors considered that the yellow dunes were generally in good condition and that the HMO and the recording form thresholds needed to be altered to reflect this as detailed above. This would need to be undertaken prior to the next assessment programme.

Grey Dunes

3.21 Sixty one condition assessments were undertaken for this habitat across five of the six units (Figure 2). The escarpment does not support an appreciable area of this habitat and no assessments were undertaken in that unit for grey dune vegetation. Most assessments were undertaken on the dune plain (24) and the high dunes (22) as these units support the largest proportion of this habitat type. Five assessments were undertaken in each of the other units - southern dunes, frontal dunes and Bosdet. The summary results for each habitat are presented in Tables 7a & 7b, with the detailed data in Appendix 3 (supplied digitally only).

Quality Criteria

3.22 A high 90% (to be tested) lower limit for quality was adopted as this is a Priority Habitat.

Vegetation Composition

3.23 The grey dunes comprise an amalgamation of a number of plant community types previously identified separately - short species-rich habitats (B, Bi and Bii a trampled habitat), tall rank grassland (E) and rose-dominated grassland (J). These habitats all have different characteristics and attributes, and the diversity of habitat type and the species they contain within the group collectively known as grey dunes is important. However, this level of variation makes setting targets complex. The greatest differences between the grey dune vegetation is likely to be between the species-rich grassland (B, Bi, Bii) and the tall rank grassland (E), so these have been separated in the analysis. The rose-dominated community (J) can be species-poor or, when merging with more species-rich vegetation, it too can become species-rich.

Community Assignment

3.24 The HMO requires the gathering of various data which is aimed at assigning the vegetation to a plant community as described above (B and derivatives, E or J). The relevant criteria can then, in theory, be applied to the correct vegetation type. However, this is very hard to then analyse over a large number of assessment patches, 61 in total.

3.25 The first attribute measured is whether burnet rose is dominant or co-dominant, i.e. >40% cover. This is not a pass or fail criteria, it is purely descriptive of the habitat type. The species-rich grey dune vegetation on the high dune, the ranker grey dunes on Bosdet and in the

southern dunes have over half of the patches with dominant rose. This community type is generally on the higher ground towards the back of the dune system and away from the coast. The mapping report (PAA 2015a) shows that the rose-dominated or co-dominated areas largely lie in these areas rather than on the dune plain (although burnet rose is still abundant in the latter).

3.26 Bare sand is important within the species-rich vegetation allowing annual species to seed and grow, and the dunes are especially important for their high numbers of annual species. The descriptor to separate out the more gappy species-rich habitats (B) was bare sand covering more than 15% of the patch. Of the total grey dune patch assessments, only those species-rich and rose-dominated vegetation (B/J) communities in the Bosdet area have consistently over 15% bare sand so this criterion did exclude the rank (E) categories. Of the high dune B/J areas, only three have over 15% bare sand, although there are nine CA patches classed as B community. This criterion, therefore, is set too high at 15% to successfully separate out the gappy species-rich habitats (B) from the other grey dune habitats. The data show that of the 46 patches on the high dunes and dune plain, a bare sand level of 5% or over would only include 36% and 16.7% of patches respectively and still miss some of the B areas. It is not, therefore, a good criteria to separate out the B community from the other grey dune habitats.

3.27 The abundance of lichens and mosses is another way of identifying the species-rich B community from the other grey dune habitats without identifying all the species. The results in the summary tables (Table 7a and 7b - see tables at end of report) show the percentage of patches with mosses and lichens frequent or abundant. The results for the frontal dunes and southern dune show the expected pattern, that there are 100% of the quadrats described as B/J communities with mosses and lichens abundant or frequent whilst in the taller denser vegetation (the E communities) there are no patches with this level of mosses and lichen cover. Again this criterion is a descriptor of the vegetation type.

3.28 The picture is more complex in the high dunes and dune plain. This may be because the pure E categories are hard to find in these units and the E community is mixed with more species-rich B vegetation. Many of the grey dune patches are mixes of the various B communities, several of the CA plots with any combination of B and J communities have a frequent to abundant moss/lichen cover and, therefore, it is not easy to separate out only the B category using this feature.

3.29 The gappiness of the vegetation is again an important feature associated with the ability of annuals to find niches in which to germinate. Annuals are a very important part of the grey dune flora. This criterion also ties in with the cover of bare sand recorded earlier. It would be expected that more of the B/J communities have gaps than the E grassland. Whilst this is the case, the level of 'gappiness' assessed is lower than expected with the highest level of gappiness in the B vegetation recorded at Bosdet (all of the three patches described as gappy). The frontal and southern dunes both have two thirds of plots recorded as gappy and less than half of the dune plain (45%) and high dune (44%) patches regarded as gappy. The B/J communities would generally be expected to be more gappy than the E community.

3.30 The assessment also asked whether there were more than 20 plant species in the sward of the patch, this was surprisingly difficult to assess on the ground without listing the species. The aim was to separate out the rank grassland from the species-rich but, in practice, this separation only worked in the southern dune unit. At Bosdet the species are more restricted than elsewhere on the dunes and even the 'species-rich' vegetation only met the 'greater than 20 species' criterion in two of the three patches. It is not considered that this is an appropriate

measure to use in future as some of E had more than 20 (but was taller), whereas some of the B communities were not that diverse.

3.31 During the survey and assessment it was decided that vegetation height is a much better indicator of the diversity and character of the grassland and more effective in separating the B and E categories. However, to reach the 90% target for this attribute it is suggested that the height categories are altered to 5–20cm and over 20cm tall.

3.32 The fruiting and flowering criteria was easily met with the exception of the southern dune unit where, of the five CA patches, one, a rose dominated patch, had only occasional flowering. The abundance of flowering and fruiting is a target to ensure that the grazing levels (stock or rabbits) are not too high but adequate to maintain the turf diversity.

Overall Vegetation Composition

3.33 The two descriptive criteria - 'Is 30-70% of the sward sp rich turf?' Y/N and 'Is it dense vegetation with taller plants?' Y/N - met the expected pattern for the smaller units, i.e. the southern dunes, the frontal dunes and Bosdet. The B/J communities fit the species-rich, short vegetation type and the E communities fit the taller, dense vegetation with generally, but not always, lower numbers of species. However, this distinction was less clear on the dune plain, presumably because of the combinations of the communities within the grassland mosaics and the overall heterogeneity of this group of communities.

3.34 The idea of dividing the further assessment into two, i.e. 'if the answer to Q2, 3 and 4 is yes and there are >20sp and vegetation 5-30cm tall' or 'if the answer to Q2, 3 and 4 is no, dense vegetation <20sp and vegetation <30cm tall', has been revised as it hampers the combining of the data and over complicates assessment.

3.35 The separation of the patches into the component parts of the grey dunes by the descriptors listed above has been shown to work only in part because of the complex interlinking and intermediate communities recorded. It, therefore became too complex to divide the patches to this degree using the levels of the criteria used.

Number of Dune Species

3.36 The target number of dune species recorded (10) was, in most cases, met. However, in both the southern dunes and the frontal dunes, one patch of the species-rich vegetation did not meet the criteria and, as the sample size was small, the overall 90% target was not met. On the dune plain, two patches had nine species and on the high dunes, three patches also had nine species. It is suggested that the table on the record form is expanded to include the following species to increase the likelihood of the target being met more often:

- *Daucus carota* - Wild carrot
- *Leontodon saxatilis* - Lesser hawkbit
- *Silene nutans* - Nottingham catchfly
- *Vicia sativa* - Common vetch

3.37 In addition, as the grassland types differ on the Bosdet area of the dunes and on the area within La Moye Golf Club (PAA 2015a for a full description) and are less species-rich as they are an acid grassland habitat, the additional species should be included in the list just for these areas:

- *Agrostis capillaris* - Common bent
- *Rumex acetosa* - Common sorrel
- *Teucrium scorodonia* - Wood sage

3.38 As for the characteristic species on the yellow dunes, it is recommended that the requirement for a level of occurrence be deleted from the criteria.

3.39 Table 8, below, shows the number of CA patches the dune species were recorded in and also as a percentage of the CA patches in each unit. Wild thyme for example occurs in 100% of the grey dune CA patches in the high dunes and Bosdet but only 20% of patches in the frontal dunes. Variation of dune species within the units makes the results complex.

Table 8 The Number of Condition Assessments in which Each Species was Recorded in the Different Units

		Dune Plain (24)	High Dunes (22)	Southern Dunes (5)	Frontal Dunes (5)	Bosdet (5)
Aira caryophyllea	Silver hair-grass	18 (75%)	8 (36.4%)	3 (60%)	2 (40%)	2 (40%)
Aira praecox	Early hair-grass	12 (50%)	13 (59.1%)	2 (40%)	1 (20%)	3 (60%)
Arenaria serpyllifolia	Thyme-leaved sandwort	16 (66.7%)	20 (90.9%)	2 (40%)	2 (40%)	3 (60%)
Allium vineale	Wild onion	2 (8.3%)			5 (100%)	4 (80%)
Carex arenaria	Sand sedge	23 (95.8%)	15 (68.2%)	4 (80%)	1 (20%)	4 (80%)
Centaurium erythraea	Common centaury	20 (83.3%)	17 (77.3%)	1 (20%)		4 (80%)
Cerastium fontanum	Common mouse-ear	17 (70.8%)	16 (72.7%)		5 (100%)	1 (20%)
Crepis capillaris	Smooth hawk's-beard	13 (54.2%)	5 (22.7%)	3 (60%)	2 (40%)	4 (80%)
Erodium cicutarium	Common stork's-bill	5 (20.8%)	8 (36.4%)	2 (40%)	4 (80%)	
Euphorbia portlandica	Portland spurge	22 (91.7%)	22 (100%)	3 (60%)		2 (40%)
Euphrasia officinalis	Eyebright	2 (8.3%)	4 (18.2%)	1 (20%)	5 (100%)	
Festuca sp	Fescues	23 (95.8%)	21 (95.5%)	4 (80%)	5 (100%)	5 (100%)
Galium verum	Lady's bedstraw	23 (95.8%)	20 (90.9%)	4 (80%)		4 (80%)
Geranium molle	Dove's-foot crane's bill			2 (40%)	1 (20%)	1 (20%)
Hypochaeris radicata	Common cat's-ear	4 (16.7%)	6 (27.3%)			3 (60%)
Lotus corniculatus	Bird's-foot trefoil	16 (66.7%)	11 (50.0%)	3 (60%)	3 (60%)	4 (80%)
Ononis repens	Common restharrow	18 (75%)	12 (54.5%)		3 (60%)	
Plantago lanceolata	Ribwort plantain	21 (87.5%)	13 (59.1%)	2 (40%)	3 (60%)	4 (80%)
Prunella vulgaris	Self-heal	1 (4.2%)				1 (20%)
Rosa pimpinellifolia	Burnet rose	23 (95.8%)	22 (100%)	4 (80%)	3 (60%)	5 (100%)
Sedum acre	Biting stonecrop	10 (41.7%)	17 (77.3%)	2 (40%)		3 (60%)
Thymus polytrichus	Wild thyme	19 (79.2%)	22 (100%)	3 (60%)	1 (20%)	5 (100%)
Trifolium arvense	Hare's-foot clover	7 (29.2%)			1 (20%)	
Vicia hirsuta	Hairy tare	7 (29.2%)	2 (9.1%)		1 (20%)	

3.40 Species of local distinctiveness were included on the grey dune assessment as many of the 'special species' of the dunes occur in this habitat. The occurrence and frequency of the

different species in the units is shown in Table 9 (page 19). The collection of species data for the habitat condition assessments is important to give a baseline level of these species across the site and, assuming the same patches are used in future assessments changes in the quality of the grey dunes could be measured in part by the changes in distribution and abundance of these species.

3.41 In future assessments it is recommended that this list of species of local distinctiveness should also be included on the yellow dunes form to collect the maximum information on these species during future condition assessment monitoring. It would also be advantageous to add in any other protected or locally rare species known to occur to this list.

Table 9 The Number of Condition Assessment patches in which the Species of Local Distinctiveness were Recorded in the Different Units

		Dune Plain (24)	High Dunes (22)	Southern Dunes (5)	Frontal Dunes (5)	Bosdet (5)
Armeria arenaria	Jersey thrift	8 (33.3%)		1 (20%)	5 (100%)	1 (20%)
Bupleurum baldense	Small hare's ear	6 (25%)	7 (31.8%)		2 (40%)	
Centaurea aspera	Rough star thistle	2 (8.3%)	3 (13.6%)	1 (20%)	3 (60%)	
Corynephorus canescens	Grey hair grass		8 (36.4%)			1 (20%)
Himantoglossum hircinum	Lizard orchid					
Hypochaeris glabra	Smooth cat's ear	8 (33.3%)	18 (81.8%)	2 (40%)	1 (20%)	1 (20%)
Matthiola sinuata	Sea stock					
Mibora minima	Early sand grass	6 (25%)	9 (40.9%)	1 (20%)	1 (20%)	1 (20%)
Petrorhagia nanteuilii	Childing pink				1 (20%)	
Poa infirma	Early meadow grass					
Polycarpon tetraphyllum	Four-leaved all-seed	13 (54.2%)	8 (36.4%)	1 (20%)		
Romulea columnae	Sand crocus	6 (25%)	3 (13.6%)	2 (40%)		
Scrophularia scorodonia	Balm-leaved figwort					
Thesium humifusum	Bastard toadflax					
Veronica officinalis	Heath speedwell		2 (9.1%)			
Viola kitaibeliana	Dwarf pansy	2 (8.3%)				

Damaging Features

3.42 The goal of 'no scrub or tree' is unrealistic, as described in the yellow dune section, and the assessment has been undertaken using the 2% target discussed above. All units would pass this level of woody species cover at the 90% pass limit.

3.43 The other negative features also pass with the exception of the bramble cover on one of the 'E community' vegetation type patches on the dune plain where the cover is 10%. However, it was noted that white stonecrop (*Sedum album*), an introduced species, and ragwort were recorded in high levels in some plots and it could be worth including these species to reflect management

needs in future surveys. In addition, pampas grass (*Cortadera selloana*)[4] was recorded within the grey dune system and should be removed before it spreads.

3.44 The comments on stock mirror those for yellow dunes noted above.

Summary

3.45 The information collected is valuable and describes the individual communities, but trying to categorise the wide range of grey dune habitats by using the descriptors and criteria above has been fraught with difficulties. The detail of the HMO needs to be re-thought and decisions made as to whether it should be used to separate the richer elements from the rank grassland, or whether separate assessments are required if a simple pass/fail system is required for the very different elements of the grey dune grassland, i.e. B and E grassland communities.

3.46 Overall, the surveyors considered that the grey dunes were generally in good condition. The HMO and the recording form thresholds needed to be altered to reflect this in the way described above. Again this would need to be undertaken prior to the next monitoring assessment.

Mature Gorse

Vegetation Composition

3.47 The aim of the condition assessment for the gorse scrub was to supply information on the height and structure of the gorse patch as well as providing information about the underlying vegetation below the gorse. There were 22 stops in predominantly gorse-dominated scrub areas. The location of these is shown on Figure 2 and the summarised data for each unit is given in Table 10 (see tables at end of report).

3.48 The HMO had originally been designed for the mature gorse on Les Landes and there was an emphasis on vegetation structure, despite the addition of wider height categories. In practice the information to be collected was at times found to be confusing as it separated out the height of the vegetation in the patch from the gorse (assuming other species were significant). Not all features were recorded on all units as a result of the confusion. Amendments to the recording form are required to prioritise the gorse height data and to collect more consistent data on the other vegetation in the patch.

3.49 One difficulty in assessing gorse (and scrub) patches was the choice of patch. In general, patches were selected which were discrete, small enough to view and mostly small enough to walk at least partly around to be able to assess. There is, therefore, a clear bias towards smaller patches which were accessible for assessing. This will also affect the results of the assessments slightly but will not be a problem as long as a similar method/bias is used in subsequent surveys.

Cover and Height of Gorse

3.50 A low cover (<10%) of short gorse (<30cm) was recorded in two patches on the dune plain and three on the escarpment (this feature was not recorded for two stops on the dune plain or any

4 No detailed location was given but it should be relatively easy to locate

of the four high dune stops, six in total), which equated with almost third (31.3%) of the sites where this feature was recorded. This suggests that gorse regeneration may be occurring in some areas. It would, in future, be useful to have an attribute relating to gorse seedlings rather than just height, which may simply relate to rabbit grazing pressures at the edge of the patch.

3.51 The other height categories should be consecutive without the exclusion from any category of gorse i.e. the 30-40cm tall gorse does not currently fit any category. Across the patches, 13 (61%) have more gorse in the 40-100cm category than the taller (100-200cm) category. This may relate more to patch selection, (i.e. the inaccessible patches were not sampled) than the range of gorse height across the dunes.

3.52 The attribute of the percentage cover of gorse is generally higher than the target set, with only six patches (27%) having a cover of less than 80% (but this was originally based on the nature of the gorse on the heathlands where intense rabbit grazing often creates open areas within the patches – this is less obvious on the dunes). Possibly this target should be set higher, i.e. 60-90% of the patch should have gorse cover. It would also be useful to have a simple description of the gorse structure, e.g. continuous canopy, old leggy or percentage of each.

Associated Habitats

3.53 Fifteen of the patches (68%) had dune vegetation under/around the gorse canopy but only three had a cover of this vegetation of over 10% and, in some cases, the percentage cover was not recorded. Several of the patches have few dune species except burnet rose and marram. Most species are weedy, e.g. thistle species (*Cirsium* sp, and *Carduus tenuiflorus*), sea radish (*Raphanus maritimus*), ragwort and Jersey cudweed (*Gnaphalium luteoalbum*) all of which were recorded associated with the gorse.

Damaging Features

3.54 Bracken and bramble have been included as negative species but both can be part of a scrub/gorse community. It may be better to regarded either as a negative feature only when it has a cover over 10% and/or dune grassland or heathland could be at risk of being lost if either were to expand. Bramble tends to increase when there has been soil enrichment, which can occur on an area when there has been scrub/gorse for some time. The categorising of bramble and bracken as a negative indicator, therefore, needs to be more defined than the present simple percentage cover attribute.

3.55 Rabbit warrens are very hard to see and count in dense gorse and scrub but it is useful to know where the rabbit communities are. Possibly this should be a comment on any visual effect of rabbits on the vegetation of the gorse patch as well as the number of warrens recorded.

Summary

3.56 The gorse patches were generally thought to be enhancing the overall diversity of the dune system. There was a wide range of gorse habitats located during the survey, ensuring that the benefits associated with gorse will be retained on the site for the foreseeable future. The problems with the variation in recording certain features makes it hard to state whether, overall, the habitat is in favourable or unfavourable condition.

Scrub

3.57 Twenty one scrub patches were surveyed for the condition assessment, some of which were a mixture of scrub and gorse. The high dunes and escarpment support the largest area of these habitats and therefore most sampling was concentrated in these areas (Figure 2, Table 11 - see tables at end of report).

Vegetation Composition and Quality Criteria

3.58 The condition assessment relates to all scrub within the SSI where this habitat is a feature and of importance as either a habitat in its own right or for invertebrates and birds. The criteria are related primarily to the structure and composition. Scrub, by definition, is impenetrable, so any sampling point is unlikely to be completely representative of the whole patch, it is therefore important to mark on aerial photographs where the assessment was undertaken if comparable results are required over time. Again, as for gorse, many patches selected were those where the surveyor could at least walk round or look down onto them to be able to undertake the assessment. Smaller patches tended to be selected for these reasons and they are not very representative of some of the large areas on the dunes. Most large areas of scrub are a mixed habitat with gorse and bracken.

3.59 The level of compliance for this habitat with the criteria is set lower than for the other habitats discussed so far as the habitat itself is not of such high value. Those areas which are failing the criteria relating to the cover of the scrub (escarpment and high dunes) do so as the cover is higher than the 90% acceptable limit. The question needs to be asked whether it matters if scrub covers more than 90% of the patch – this also relates to the chosen boundary of the patch – if the boundary hugs the scrub tightly then there would be less potential for other vegetation. The key is whether the scrub is invading the more valuable dune vegetation – this can be gauged from the mapping rather than the patch assessment. This suggests that scrub cover up to 100% should be acceptable as long as it is not expanding outwards.

3.60 The species composition of the scrub is relatively poor, with hawthorn (*Crataegus monogyna*), wild privet (*Ligustrum vulgare*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*) and gorse the most common species. Dog rose (*Rosa canina*) occurred in one patch of the 21. Of the non-native species, evergreen oak (*Quercus ilex*) occurs most frequently, pine was recorded in two patches on the high dunes, sycamore (*Acer pseudoplatanus*) appears once as a single sapling and shrubby orache (*Atriplex halimus*) on the one patch of scrub sampled on the frontal dunes. There does not appear to be a problem with invasive woody species in this habitat.

Damaging Features

3.61 Trees occurring in the scrub patches are generally evergreen oak with one sycamore sapling recorded. Evergreen oak expansion on the dunes is considered undesirable and therefore management will be required to reduce the saplings and, possibly, the more mature trees too.

3.62 Two of the areas on the high dunes have associated comments stating that these areas are developing into woodland (patches 94 and 102, Figure 2). The boundary which was drawn around the canopy has certainly expanded on the aerial photographs since the 2005 survey. This is a management decision that needs to be related to where the scrub is, whether more valuable habitats are being lost at the developing woodland's expense and whether further woodland in this area is acceptable.

3.63 There was very little woodland ground flora recorded beneath the scrub and no mention of dune grassland. Only a few shade-tolerant species were recorded including ivy (*Hedera helix*), stinking iris (*Iris foetidissima*), field madder (*Sherardia arvensis*), bramble, bracken and hemlock (*Conium maculatum*). Ragwort and sea radish were also recorded around scrub areas. Bramble was found within most scrub patches but rarely over the 20% threshold and as this species has benefits as well as disadvantages, a cover of <20% is thought to be beneficial to the value of the community.

3.64 It would be useful to include a count of rabbit warrens visible in the scrub patch or, as suggested for the gorse patches, a comment on any visual effect of rabbits on the vegetation of the scrub patch should be included on the recording form.

Summary

3.65 The scrub patches were, as with gorse, generally thought to be enhancing the overall diversity of the dune system. Again, there was a wide range of scrub habitats located across the dunes adding diversity of structure and species. In general terms, the scrub habitats appeared to be in good condition but some of the criteria may need altering in line with the comments above.

Woodland

3.66 There are few areas of woodland on the dunes and these are concentrated on the high dunes and the southern dunes. Four areas of woodland were assessed in the current survey and the data summarised in Table 12 (see tables at end of report) with the location shown on Figure 2.

Vegetation Composition

3.67 As for scrub, the condition assessment criteria are related primarily to the structure and composition of the woodland with the emphasis on native woodland species being present in all levels of the vegetation. In the three areas for which structural information was collected, the woodlands all have native seedlings and saplings but the data for the composition of the sub-storey is patchy. There are native species in that layer but the percentage cover is inadequately recorded to comment. Dead wood appears to be at low levels and should be promoted in the woodlands.

3.68 Conifers, if they occur, are at less than 10% cover in the woodlands surveyed, and the percentage of broad leaved trees with DBH >20cm varies from 60-80% across the patches. Only one patch has ancient or veteran trees and they comprise 20% of the canopy in this patch.

3.69 The native tree species recorded mirror, as expected, many of the species recorded in the scrub patches and include hawthorn, blackthorn, elder, pedunculate oak (*Quercus robur*), goat/grey willow (*Salix caprea/cinerea*), crack willow (*Salix fragilis*) and gorse. Of the non-native but 'tolerated' species (see Table 2 – page 8), pine is found in three sites and sycamore in one. The 'undesirable' species recorded were evergreen oak and Italian poplar (*Populus x canadensis*).

3.70 The ground flora in three of the woodlands contains more than three desirable woodland ground flora species and the same three woodlands also support ferns.

Damaging Features

3.71 Invasive ground flora species and rhododendron (*Rhododendron ponticum*) have not been recorded, neither was there any evidence of dumping or fly tipping in any of the woodlands.

Summary

3.72 From the discussion above it can be seen that three of the four woodlands meet the majority of the condition assessment criteria. The woodland patch CA83 (Figure 2) is the most species and structurally diverse of the woodlands assessed, however it also contains locally dominant sycamore. Woodland CA patches CA117 and CA119 have no dead wood or ancient trees and support a generally poor ground flora diversity. The woodland in the southern dune unit is a willow-dominated wet woodland and is fairly unique on the dune system. It has grown up from a former line of willows alongside a small stream emanating from the La Moye Golf Course above. Without management, the scrub has grown into a sprawling patch of willow woodland which can now be penetrated There are decisions to be made as to whether this woodland is maintained or partially cleared to restore the wet flush previously recorded here.

3.73 In general, the woodlands are in favourable condition. The recording form has not always returned enough detail on the overall cover of selected criteria. There is an inherent problem in some of the woodlands in that they have a high cover of sycamore and, in one case, pine. These are undesirable species but a decision has to be made as to whether their occurrence is acceptable and/or whether management should be targeted at removing them or at least controlling their spread and regeneration.

3.74 Invasive ground flora species, except for winter heliotrope (*Petasites fragrans*) (see PAA 2015a), rubbish and other damaging features are largely absent, which is encouraging. The diversity of the ground flora is expected to increase as the woodlands age.

Dune Heathland

3.75 During the condition assessment, 10 patches of dune heathland were assessed. The main areas of this habitat are found on the back of the dune plain, on the escarpment and, to a lesser extent, on the southern dunes. Dune heathland is not widespread across the dunes as a whole.

Quality Criteria

3.76 The condition assessment forms worked well for this habitat, although some changes in the species list and number of species would be of benefit if the patches are to reach the 95% target of favourable condition. The level of compliance of patches for a favourable condition assessment at 95% does not allow for much habitat variability. The heathland is a Priority Habitat type of restricted occurrence across the site and it is important that the quality is maintained, but a more realistic figure of 90% of patches meeting the criteria is recommended.

Vegetation Composition

3.77 In all units the areas classed as heathland had over 25% dwarf shrub cover with, the dominant species being bell heather and no heather was recorded. Flowering of the bell heather is good (frequent or abundant) and all patches have associated fixed grey dune grassland comprising 25-75% of the patch.

3.78 Of the 19 heathland species listed on the recording form (Table 13 - see tables at end of report) only 11 were recorded in any of the patches. The characteristic species should be expanded to include wild madder (*Rubia peregrina*), common milkwort (*Polygala vulgaris*) and field wood-rush (*Luzula campestris*). With the addition of these species, the target of eight may be more achievable, or it could be reduced to six as it is clear that the heathland community is not particularly diverse. Species that have not been found could be removed from the list.

Damaging Features

3.79 The lack of damaging features is encouraging across all the heathland patches. The level of tolerance for all features should be altered from zero to <1%, the presence of one 30cm tall evergreen oak (although this should be removed) should not make the patch unfavourable. Wild privet was recorded as 2% cover in three patches. If this level of cover is considered acceptable, then possibly the tolerance level should be adjusted to trees and scrub <5%. Bracken, ragwort, bramble and common nettles were very low in cover and there was no observed dumping or damage to the heathland communities.

3.80 Rabbits varied in their abundance with the highest levels seen on the heathland patch on the high dunes/escarpment boundary; however they were maintaining the vegetation not damaging it.

Summary

3.81 The dune heathland in all the units recorded appears to be in good condition.

4. THE AREA MEASUREMENTS FOR THE HABITATS

4.1 The condition assessment requires that the habitat areas are measured. There are different targets for the acceptable change in area for each of the six habitats assessed. As the condition assessment was undertaken alongside the re-mapping of the dune vegetation, the changes in area can be calculated. However, the dataset for the dunes is complex with many multiple codes on small areas of habitat. The use of multiple codes presents a serious challenge as to how to calculate the habitat areas.

4.2 The mapping was undertaken using the plant communities mentioned earlier in the report, in Appendix 2 and described in detail in the PAA 2015a report. The use of the yellow and grey dune habitats allows amalgamation of several plant communities, i.e. for the yellow dunes plant communities C (open marram) and D (closed marram) can be combined, and for the grey dunes communities B, Bi, Bii, E and J (species rich and rank grassland and rose-dominated vegetation) are combined. This should, and does, simplify the analysis. However, there are still many multiple plant community classes which can occur together and which cross-over between these major groups.

4.3 One way to handle the data is to split the area of a habitat patch between its constituent parts, i.e. an area 0.63ha which has the classification Bi/C/G (species-rich grassland, open marram and scrub) could be divided equally into three - 0.21ha of grey dune (Bi), 0.21ha of yellow dune (C) and 0.21ha of scrub. This is the approach which has been taken for this part of the project. It assumes that the three communities are all of equal importance in the mapped patch (in accordance with the mapping classification methodology). It is felt that this is likely to be the most accurate, unbiased and, most importantly, repeatable way of analysing the data. For a habitat patch to be re-classified to a different plant community or combination of communities between surveys there would have to have been a substantial shift in the proportions of the communities.

4.4 All the habitat codes have been split into seven categories relating to the six habitats which have been assessed for their condition and an ‘other’ group. The other group has been further split into bracken and other (comprising bare ground, sand, individual trees, wetlands and other minor habitats/areas) which can be split further if required, but it was not necessary to analyse these habitats further for this part of the condition assessment report.

4.5 The second challenge is to define the area of the dunes to be measured. As one of the condition assessment criteria is to measure change, the survey boundary used in the 2005 report has been used as the basis for all area calculations to show change over time. For the additional areas surveyed in 2014, but not included in the 2005 report (Figure 1), the same process of calculating the habitat areas has been undertaken and these data can be used as a baseline for future surveys.

4.6 Table 14 (page 27) shows the areas (ha) of the six condition assessment habitats, bracken and other habitats in each of the four dune units included in the 2005 survey. Even within these broad areas there have been small changes in the boundary surveyed, so the GIS data have been ‘clipped’ to allow for direct comparison of the areas surveyed both in 2005 and 2014, this covers a total of 106.04ha of the dune system.

Table 14 The Area of Habitat in Each Unit of the Dunes in 2005 and 2014

All Areas 2014		Dune Plain		High Dune		Southern Dune		Escarpment		Total Area of Each Habitat	
		ha	%	ha	%	ha	%	ha	%	ha	%
Yellow dunes	**2005**	4.83	4.55	12.97	12.23	0.81	0.76	0.12	0.12	18.73	17.67
	2014	4.90	4.62	10.38	9.79	0.70	0.66	0.11	0.10	16.08	15.17
Grey dunes	**2005**	25.56	24.10	23.70	22.35	2.95	2.78	0.49	0.46	52.70	49.70
	2014	25.24	23.80	24.04	22.67	2.72	2.56	0.37	0.35	52.37	49.38
Gorse	**2005**	0.81	0.77	2.15	2.03	0.50	0.47	1.16	1.09	4.61	4.35
	2014	0.49	0.46	2.00	1.89	0.60	0.57	0.78	0.74	3.88	3.66
Scrub	**2005**	0.09	0.08	7.15	6.75	0.60	0.57	1.20	1.13	9.04	8.53
	2014	0.38	0.36	7.99	7.54	0.79	0.74	2.31	2.18	11.47	10.82
Woodland	**2005**	0.00	0.00	0.61	0.58	0.29	0.27	0.00	0.00	0.90	0.85
	2014	0.00	0.00	1.15	1.09	0.37	0.35	0.00	0.00	1.52	1.43
Heathland	**2005**	0.05	0.04	0.05	0.04	0.15	0.14	0.33	0.31	0.58	0.54
	2014	0.04	0.03	0.09	0.08	0.19	0.18	0.11	0.10	0.42	0.40
Bracken	**2005**	0.03	0.03	3.16	2.98	4.53	4.27	4.09	3.86	11.81	11.13
	2014	0.05	0.05	3.37	3.18	4.40	4.15	3.72	3.51	11.54	10.88
Other habitats	**2005**	1.11	1.05	5.39	5.09	0.80	0.76	0.36	0.34	7.67	7.23
	2014	1.39	1.31	6.17	5.82	0.86	0.81	0.35	0.33	8.76	8.26
Total of the Unit		**32.48**	**30.63**	**55.19**	**52.04**	**10.62**	**10.02**	**7.75**	**7.31**	**106.04**	**100.00**

4.7 The table gives the area of each habitat in each unit and the percentage of that habitat as a total of the whole site. The condition assessment specifically relates to changes in percentage area of a habitat in a unit. This information is provided below and is discussed in turn in relation to the targets for each habitat type.

Yellow Dune

4.8 The target for yellow dune is no reduction in cover, although movement of the areas of yellow dune is acceptable.

4.9 In 2005, yellow dune vegetation covered 18.73% of the dunes and was therefore a major habitat. This has fallen to 16.08% in 2014, a reduction of 2.65ha or a 14.14% decrease (Table 15 – page 28). The decline in yellow dune is seen across all units of the site in roughly similar percentages except on the dune plain where there is almost no change in extent. A loss of this proportion of the yellow dune habitat is significant and of concern. This level of change means that the habitat would fail the condition assessment across the site as a whole and in three of the dune units.

4.10 Figure 4 shows the changes of yellow dune habitat from 2005 to 2014, including areas where it is in a habitat mosaic with other habitats. Yellow dune habitat is a valuable habitat with specific species dependant on the presence of the marram habitat.

4.11 On Figure 4 it is apparent that the majority of the yellow dune habitat is situated on the high dune and at the back of the dune plain and that much of the marram community is in a mosaic

with grey dune habitats (hatching on the figure). Some of the decline in the yellow dune habitat appears to be due to a small expansion of grey dune on the high dunes unit.

4.12 It is known that this habitat changes to other dune habitats and vice-versa depending on the availability of sand and perturbations in the dune system. From the habitat mapping (PAA 2015a) it is suggested that the decline in this habitat is part of the natural processes on the dunes. Further monitoring of the area of the yellow dune habitat is required to see if this trend of decline continues before the need to consider drastic management to increase available bare sand is recommended.

Table 15 The Distribution of Yellow Dune Habitat Across the Site

	Yellow Dunes ha			Change (%)
	2005	2014	Change	
Dune Plain	4.8257	4.90	0.07	1.45
High Dune	12.9735	10.38	-2.59	-19.97
Southern Dune	0.81	0.70	-0.11	-13.72
Escarpment	0.12	0.11	-0.02	-14.05
Total of Whole Site	**18.73**	**16.08**	**-2.65**	**-14.14**

Grey Dune

4.13 The condition assessment sets a target for grey dunes of 'no reduction in cover'. Table 14 (page 27) shows that in 2005, 52.70ha of the whole mapped area was classed as grey dune, equivalent to 49.70%, and that there has been remarkably little change in area by 2014 (52.37ha or 49.38% of the area surveyed). Figure 5 shows the areas of grey dune habitat, including areas where it is in a habitat mosaic with other habitats, especially yellow dunes, in 2005 and 2014.

4.14 Table 16 (page 29) shows that there has been a slight overall decrease (0.33ha) in area and in the percentage change (0.63%) across the dunes so, as a whole, the condition assessment target of no reduction in cover has not been met and, overall, the site is in unfavourable condition.

4.15 There have been mostly small area changes within the units. The area of grey dune has increased between 2005 and 2014 in the high dune unit but decreased in the other three units. Therefore, assessing areas on a unit basis would also result in three of the units failing the favourable condition assessment for this habitat. The decrease in cover in the escarpment unit is small (0.12ha) but is a significant proportion of this habitat within this unit (24.69%). The grey dune habitat on the escarpment is not the same as elsewhere as the effect of the granite is dominant on the soils and species diversity.

4.16 What the current condition assessment and area data do not show is the change in quality of the grey dune grassland as defined by the separate plant communities recorded on the dunes. There is significant change between the proportions of the species-rich (B, Bi and Bii) habitats,

the dune dominated areas (J) and rank grassland (E), as described in Chapter 4 of the Vegetation Mapping Report (PAA 2015a).

Table 16 The Distribution of Grey Dunes Across the Site

	Grey Dunes ha			Change (%)
	2005	2014	Change	
Dune Plain	25.56	25.24	-0.32	-1.25
High Dune	23.70	24.04	0.34	1.41
Southern Dune	2.95	2.72	-0.23	-7.71
Escarpment	0.49	0.37	-0.12	-24.69
Total of Whole Site	**52.70**	**52.37**	**-0.33**	**-0.63**

Gorse

4.17 The area of gorse on the dunes as a whole was 4.61ha in 2005 (Table 17, below) and has declined by 15.85% to 3.88ha in the nine years to 2014. The decline occurs in three of the four dune units (not in the southern dunes) and is most dramatic on the dune plain and escarpment respectively where 39.57% and 32.22% of the gorse present in 2005 has disappeared. The distribution of gorse patches, either on its own or in a mosaic with another habitat, is shown for both years on Figure 6.

Table 17 The Distribution of Gorse Across the Site

	Gorse ha			Change (%)
	2005	2014	Change	
Dune Plain	0.81	0.49	-0.32	-39.57
High Dune	2.15	2.00	-0.15	-6.80
Southern Dune	0.50	0.60	0.11	21.93
Escarpment	1.16	0.78	-0.37	-32.22
Total of Whole Site	**4.61**	**3.88**	**-0.73**	**-15.85**

4.18 The condition assessment target for gorse was no decrease and no more than a 15% increase. The data shows a significant decrease in percentage terms (15.85%) although it is a relatively small decline of 0.73ha in area. This habitat would therefore fail the condition assessment target.

4.19 It is possible that the loss of gorse on the dune plain has resulted from the winter storms and that this is a cyclical process, whereby it will re-establish, assuming no further salt-laden storms in its young growth cycle. In this case, the loss would be temporary and recovery could occur in the future. If not, then the criteria for no decrease may need to be re-visited.

4.20 The 'lost' gorse sites have, in some cases, turned to scrub, e.g., Area A on the dune plain was gorse in 2005 but in 2014 was recorded as a scrub/tall herb mosaic (Figure 6). In other situations the gorse has been part of mixed vegetation in which the balance has shifted, e.g. Area B (Figure 6) on the escarpment which has changed from a gorse/scrub/bracken mosaic to a scrub/bracken mixture. Gorse may actually still be present but at a lower cover than previously recorded, changing the woody vegetation community code to scrub.

4.21 The decrease in gorse and increase in scrub appears to be a reciprocal relationship across much of the dune system, with gorse rarely changing to other habitats than scrub/bracken/tall herb mosaics. There is, however, one very small area on the dune plain (Area C) where gorse changes to yellow dune (C community type).

4.22 No loss of good quality dune grassland at the expense of gorse is another target. There are three mosaic habitats recorded in 2005 which include grey and yellow dune elements (Bi/C/J, Bi/D/E and Bi/C/J) which have been recorded as gorse in 2014. There has been, therefore, a small loss of species-rich grey dune to gorse in the nine year period, but this is very uncommon.

Scrub

4.23 The condition assessment target for scrub gave no lower limit, i.e. the minimum area was unimportant but the upper limit was that there should be no increase from that recorded in 2005. Table 18, below, shows clearly that this target has not been met, with an increase of 2.37ha across the site or a 26.01% increase in cover. The distribution of scrub is given in Figure 7.

Table 18 The Distribution of Scrub Across the Site

	Scrub ha			Change (%)
	2005	**2014**	**Change**	
Dune Plain	0.09	0.38	0.29	319.71
High Dune	7.15	7.99	0.84	11.68
Southern Dune	0.60	0.79	0.19	31.53
Escarpment	1.20	2.31	1.12	93.08
Total of Whole Site	**9.04**	**11.47**	**2.43**	**26.84**

4.24 Scrub cover has increased in all units, and is particularly dramatic in terms of percentage increase (319.7%) on the dune plain, because the area involved is low, it has only altered by 0.29ha over the nine years. Figure 7 shows quite clearly that, on the dune plain, one of the larger areas (A) which was gorse in 2005 has changed to a mixed scrub/tall herb habitat in 2014. This pattern can be seen across the dune system, where the gorse has declined and scrub has increased. However, the area of gorse decline across the whole system was 0.73ha and the increase in scrub is 2.43ha, so the decline of gorse and prevalence of scrub in these areas is only part of the explanation.

4.25 On Figure 7 Area B (southern dunes) represents a scrub/bracken mosaic in 2005 which has changed to bracken in 2014. This may be a result of management or death of the woody

species. Area C (escarpment) shows an area of scrub/bracken mosaic in 2005 which has developed into scrub losing the bracken cover, resulting in an increase of scrub.

4.26 There are few examples where scrub has expanded in to habitats other than bracken or gorse. Area D (high dunes, Figure 7) indicates a small patch which was dense marram and rose mosaic which has altered between 2005 and 2014 to a scrub/rose mosaic. This would strictly be categorised as a loss of grey and yellow dune habitat and is very much an example of what would be considered as a negative expansion of scrub. However, in this case, the yellow dune/grey dune habitat was a very small area adjacent to a scrub/woodland habitat and would only have continued as an open habitat with significant management input.

Woodland

4.27 Changes in woodland cover are shown in Table 19, below, and on Figure 8. Woodland habitat only occurs in two of the units included in the 2005 survey, the high and southern dunes, and compromised a relatively small area of 0.9ha. There has been a significant change in the cover of woodland in the high dune by 2014, with an 87.9% increase, and the total area of woodland across the site in 2014 totals 1.52ha.

4.28 In the majority of cases the additional woodland area has been derived from habitat classed as scrub in 2005. This is due to the incremental growth of woody species altering a scrub patch into woodland, i.e. tall enough to walk under, for example Area A (high dune, Figure 8). In addition, the expanded canopy cover of the younger trees has increased the area woodland.

4.29 In most of the other situations the woodland has edged outwards into scrub/gorse/bracken mosaics (Area B, southern dunes, Figure 8).

4.30 Despite the high percentage increase of woodland across the dunes (68.34), the area of woodland overall is still low (1.52ha) and a very small percentage of the dunes as a whole or of any unit.

Table 19 The Distribution of Woodland Across the Site

	Woodland ha			Change (%)
	2005	2014	Change	
Dune Plain	0.00	0.00	0.00	0.00
High Dune	0.61	1.15	0.54	87.90
Southern Dune	0.29	0.37	0.08	26.83
Escarpment	0.00	0.00	0.00	0.00
Total of Whole Site	**0.90**	**1.52**	**0.62**	**68.34**

4.31 The condition assessment target for woodland was that the cover did not decrease from the 2005 level and that any increase should not be at the expense of habitats of greater value. The woodland cover has not decreased so, in that respect, the target has been met. There are a small number of tiny patches around the edges of a few woodland blocks that have changed from sand or rank grey dune grassland (E community type) to woodland in the nine year period.

There is no significant loss of good dune habitats to woodland, although there may be small encroachments of the woodland canopy and shade effects.

4.32 Whether the expansion of woodland cover is acceptable needs to be determined on a patch by patch basis and the required management enacted.

Heathland

4.33 Heathland habitat is a very small area on the dunes, 0.58ha in 2005 and 0.42ha in 2014 (Table 20, below, and Figure 9). There has been an increase in cover in two of the four units and a decrease in the other two units, with an overall decrease across the site of 0.14ha (25.14%). It would appear that the heathland patches have moved substantially over the nine year period (Figure 9) and this is allowed for within the condition assessment criterion.

Table 20 The Distribution of Heathland Across the Site

	Heathland ha			Change (%)
	2005	2014	Change	
Dune Plain	0.05	0.04	-0.01	-11.58
High Dune	0.05	0.09	0.05	105.12
Southern Dune	0.15	0.19	0.04	26.25
Escarpment	0.33	0.11	-0.23	-68.32
Total of Whole Site	**0.58**	**0.42**	**-0.14**	**-25.14**

4.34 In several situations the heathland in mosaics with bracken or scrub, recorded in 2005, appear to have been overwhelmed by the more vigorous community type and many losses of heathland are from such mixed mosaics, e.g. Area A (escarpment, Figure 9) has changed from a heathland/bracken mosaic to a gorse/bracken mosaic.

4.35 Figure 9 also shows a number of 'new' heathland areas. Area B in the southern dunes has changed from grey dune (E - rank grassland) to heath in nine years. The occurrence of new heathland patches is encouraging.

4.36 The condition assessment target 'no overall decrease in the heathland habitat' has not been met. The criteria may need to be altered since heath development is a natural process that cannot be artificially manipulated and managed.

4.37 The vegetation mapping report (PAA 2015a) shows that the heathland cover has fluctuated substantially between 1994 and 2014 increasing to a high in 2005 and declining again to 2014. It may be that with winter storms and salt-laden winds affecting the dunes at times, possibly increasingly so with climate change, the dwarf shrubs may be vulnerable to salt damage and death in the future. Natural fluctuation therefore appears as part of the system, and little in management terms can be undertaken to rectify the situation, although a change as high as 25% over nine years is undesirable and requires further monitoring.

Bracken

4.38 Bracken is not a vegetation type that has been assessed against condition criteria, it is, however, a substantial component of the vegetation across the dunes at Les Blanches Banques, c.11.5ha (over 10% of the site). Increasing bracken cover is generally regarded as a negative feature.

4.39 Table 21, below, shows overall relatively little change in the cover of bracken over the nine year monitoring period from 11.81ha in 2005 to 11.57 ha in 2014. Changes have been modest, except on the dune plain where bracken has had a low cover which has increased in 2014 by 0.02ha or 60% over the monitoring period. The distribution of bracken is discussed in more detail in Chapter 4 of the Vegetation Mapping Report (PAA 2015a).

Table 21 The Distribution of Bracken Across the Site

	Bracken ha			Change (%)
	2005	2014	Change	
Dune Plain	0.03	0.05	0.02	60.12
High Dune	3.16	3.37	0.22	6.83
Southern Dune	4.53	4.40	-0.10	-2.21
Escarpment	4.09	3.72	-0.37	-9.01
Total of Whole Site	**11.81**	**11.54**	**-0.23**	**-1.98**

Summary of the Condition Assessment Area Criteria

4.40 Of the six habitats assessed, only one habitat, woodland, meets the overall area target of no decline in area. There is a similarly low compliance if the area criteria are applied to the individual dune units. In Chapter 2 there is a recurring theme that the dune communities are mobile and alter in distribution across the site (this is strongly supported by the results in PAA 2015a) which implies that, within specific dune areas of the whole dune system, the targets of no change are unlikely to be realistic.

4.41 The woodland expansion appears to be mostly spreading into areas classed as scrub and bracken habitats in 2005 and therefore this is generally acceptable, but any new management plan should include a management prescription for woodland edges to ensure the spread does not encroach into species-rich dune vegetation or more valuable habitats.

4.42 The extent of the grey dune habitat in 2015 is very close to the cover recorded in 2005, with only a loss of 0.33ha which equates to 0.63% of the habitat. This small percentage change resulting in an unfavourable condition assessment shows that, realistically, a 'no loss' criterion is unrealistic in any highly dynamic vegetation system.

4.43 There are significant percentage declines in the yellow dune and heathland areas which cause these habitats to fail the condition assessment on this feature, as the target for both is to maintain the overall area, although their location within the system may alter. A more detailed study of the habitat changes in the two surveys is required to try to understand the patch

dynamics of these habitat types to ascertain exact habitat changes. However, it is very hard to extract broad generalisations from the complex data as it appears that the dynamics are often patch specific.

4.44 The gorse habitat fails the target as it has declined and the scrub habitat fails as it has increased substantially. It appears that these targets of no decline and no increase, respectively, are unrealistic and need to be altered. These habitats add to the diversity of the dunes, but are not the most important elements, and more flexibility in area changes would be appropriate. Gorse cover, for example, can be dramatically affected by salt spray brought inland by large storm events which can alter a mixed gorse/scrub habitat rapidly to a scrub-dominated one, with no impact on the more species-rich elements of the flora.

Recommendations

4.45 The area criterion is arguably the most important of the criteria in any condition assessment and the premise is that, certainly for the ecologically important dune elements, there should be no loss. This can, however, relate to the whole site, specific habitats or habitats in specific units.

4.46 The starting position for the dunes is that there should be no habitat loss within the SSI boundary. What is much harder to set is what variation is permissible within each habitat type when it is known that the dune habitats, particularly the yellow and grey dunes and heathland habitats fluctuate substantially over a 10-20 year time scale (PAA 2015a).

4.47 The data are available from the re-mapping work to set whatever target is felt appropriate. It may be considered that a 5-10% fluctuation in these three key vegetation types is acceptable. However, if the targets are not met there has to be a strategy in place for how this can be rectified. Heathland and yellow dunes have shown around a 15% or greater decline in area between 2005 and 2014 so, by setting a 5-10% limit in area, these habitats would still fail. There would then, logically, have to be management efforts made to rectify this situation. Possibly a 30% fluctuation in the area of heathland and yellow dunes could be set as more realistic, but more consideration is required.

4.48 For the less important habitats, i.e. scrub, gorse and woodland on the dune system, the area criterion is relatively unimportant as long as ‘good habitat’ is not lost in their expansion and that these habitats are not lost from the dune system.

4.49 From the above it can be seen that setting area goals for the relatively arbitrate units on the dunes is further fraught with complications. The distribution of the habitats within the dune areas is, however, still of interest as it highlights the areas of most change, but it is suggested that habitat distribution within the units is not set as an assessment criteria.

Baseline for the Next Survey

4.50 The description of habitats above relates to the changes in the area surveyed in 2005 and 2014. In 2014, there were two additional areas surveyed called the ‘frontal dunes’ (9.27ha) and ‘Bosdet’ (9.54ha). There were also additional areas of dune included in the 2014 survey at the very eastern edge of the high dunes (0.80ha), a larger area of 3.88ha adjacent to the La Moye Golf Club which is included in the Escarpment area, and a small area on the southern boundary of the southern dunes (0.16ha). These areas and their vegetation are described in the vegetation mapping report (PAA 2015a).

4.51 The habitats within this larger area form the basis of a larger and more complete habitat map for the whole SSI (129.70ha). Table 22, below, gives the area of the habitats in the six units of the dune system and Figures 10 to 15 show the distribution of the habitats included in the condition assessments.

4.52 The areas of the habitats on the additional units have been derived in the same way as for the areas on the maps described earlier in Chapter 4.

Table 22 Distribution of the Habitats Across the Six Units of the Dunes in 2014

	Dune Plain (ha)	High Dune (ha)	Southern Dunes (ha)	Frontal Dunes (ha)	Escarpment (ha)	Bosdet (ha)	Overall Total (ha)	Overall Total (%)
Yellow dunes	4.90	10.38	0.70	5.15	0.15	0.21	21.49	16.57
Grey dunes	25.24	24.32	2.73	2.01	0.93	2.04	57.26	44.15
Gorse	0.49	2.01	0.61	0.00	1.11	1.40	5.63	4.34
Scrub	0.38	8.23	0.82	0.12	3.95	2.48	15.98	12.32
Woodland	0.00	1.38	0.38	0.04	0.18	1.71	3.70	2.85
Heathland	0.04	0.09	0.19	0.00	0.14	0.00	0.45	0.35
Bracken	0.05	3.41	4.46	0.86	4.39	1.55	14.72	11.35
Other habitats	1.39	6.17	0.91	1.09	0.78	0.15	10.48	8.08
Total	**32.48**	**55.99**	**10.79**	**9.27**	**11.63**	**9.54**	**129.70**	**100.00**

4.53 Of the total 2014 survey area, the yellow and grey dunes comprise 78.75ha (60.72%), gorse, scrub and woodland add a further 25.31ha (19.51%), whilst heathland is 0.45ha (0.35%). Bracken accounts for 14.75ha (11.35%) and the 'other' category, 10.48ha (8.08%), is mainly sand with a small amount of wet grassland (H community type) and tall disturbed vegetation (A community). This 'other' category also includes bare ground, rocks and areas assigned to specific trees, such as pine and evergreen oak, were mapped individually. The data on which the table are based are provided as Appendix 4.

5. CHANGES WITHIN THE VEGETATION AT A QUADRAT LEVEL

5.1 In 2005 a number of dune grassland quadrats were recorded in the grey, yellow and heathland vegetation types as described in Chapter 2. The species recorded in the quadrats have been tabulated according to their location in the original four units recorded in 2005, the data are presented in Tables 23 to 26 (see tables at end of report).

5.2 Overall, remarkably few of the quadrats have changed their main plant community type significantly in the nine years between surveys, bearing in mind that the quadrat location is not fixed exactly but just related to a particular patch of vegetation. Table 27 (see tables at end of report) shows that the plant community has only changed enough in six of the 39 quadrats (15.4%) to alter the description of the key habitat type. There are another nine quadrats (23.1%) which show subtle change in the plant communities but which do not result in an overall change in key habitat type.

5.3 The species frequency data have been collected as DAFOR rather than any quantitative measures, and statistical analysis is difficult without making several assumptions about the data. As an alternative approach it was thought that there could be interesting trends between the number of species of local distinctiveness, typical dune species and/or annual species within the plots in each of the areas. The lists used to produce these categories are based on lists presented in Appendix 5 which are derived from knowledge of the dunes, lists of species used in the condition assessment methodologies and the Jersey Flora (Le Sueur 1984). Table 27 (see tables at end of report) shows the results of analysis undertaken for all the quadrats in both years.

5.4 It should be noted that the drought period prior to the 2014 recording period (late June/early July) meant that many annuals were likely to have disappeared or were too shrivelled to identify accurately. These species will therefore be missing from the data.

5.5 From Table 27 (see tables at end of report) it can be seen that there are relatively low numbers of species of local distinctiveness in the quadrats, with a maximum of four occurring only twice across all 39 quadrats in either year. The highest number of species of local distinctiveness both occurred in B/Bi plant communities, which is part of the grey dune habitat type.

5.6 The number of typical dune species varies across the quadrats within the dune units and within the same community types. The dune plain and the high dune units overall have a noticeably higher average number of dune species than the escarpment and southern dunes.

5.7 Dune plain quadrat 10 (DPQ10) had the greatest change in dune species numbers in any quadrat over the period, a decline of seven species (from 13 to six). Despite this dramatic change in typical dune species in the quadrat, the plant community type stayed the same a D/Bi (closed marram–yellow dune/short species rich grey dune vegetation). The second greatest change was seen in the southern dune quadrat (SAQ3) where the community type altered along with the number of typical dune species changing from four (in a closed marram community – D) to 10 (in a short species rich grey dune community). There appears little logical explanation as to why the changes in numbers of dune species do or do not alter the plant community classification and why the changes are so variable.

5.8 The numbers of annual species were intermediate between the other categories but, again, varied considerably, even when the plant community type was constant.

5.9 The quadrat data was also analysed for any changes in abundance levels of two or more steps, i.e. 'r' rare to 'f' frequent or 'o' occasional to 'a' abundant, with these differences highlighted on Tables 23 to 26 (see tables at end of report). This allows for different surveyor interpretation and for changes in the relative abundance of species related to growth and appearance owing to different antecedent weather conditions.

5.10 Across the dune plains there are a few trends which emerge (Table 23 – see tables at end of report). There are increases of two steps for burnet rose in four quadrats, sweet vernal-grass (five quadrats) and ribwort plantain (three quadrats). There are also decreases in abundance for downy oat-grass, bird's-foot-trefoil, and wild thyme (three quadrats each).

5.11 Patterns on the high dunes are less clear, with many species increasing in one quadrat and decreasing in another (Table 24 – see tables at end of report). In general terms, however, there appears to be an increase in burnet rose and sand sedge in four quadrats and an increase in fragrant evening-primrose. Large decreases (in four quadrates) were seen in crested hair-grass (*Koeleria macrantha*), with declines in mouse-ear species (four quadrats), white stonecrop (three quadrats) and common century (two quadrats). Changes in mosses were not analysed as the recording of bryophytes was generally less consistent.

5.12 The southern area (Table 25 – see tables at end of report) followed several of the changes seen on the other areas, with increasing burnet rose (three quadrats) and sand sedge (two quadrats) being the obvious changes. There were also increases in sheep's fescue, thyme-leaved sandwort, field wood-rush and silver hair-grass (two quadrats each). In contrast to the dune plain, sweet vernal-grass declined (two quadrats) here.

5.13 There were only three quadrats recorded on the escarpment, and therefore any trends are harder to detect. The only species to alter in the same manner in more than one quadrat was sheep's fescue, which declined in two quadrats. Burnet rose was recorded as at high levels (abundant) already in two of the quadrats so a 'two step' increase could not have been recorded.

5.14 Overall, there does appear to be an increasing trend in three areas for burnet rose (11 quadrats), i.e. 28%, and generally high levels of this species across the whole site. This is at odds with the decline in rose dominated vegetation (J) reported in the vegetation mapping report (PAA 2015a). It may be that the rose is increasing within the mixed communities and mosaics rather than any increase in pure stands of rose.

5.15 The other trends occurring in each unit do not appear to stay consistent across the different dune units and are therefore location specific rather than dune wide trends.

Conclusions

5.16 The quadrat data are valuable in recording changes from a specific area of the dune habitat, but are difficult to utilise to describe within-unit differences. This is partly as the quadrats, although mostly from the grey and yellow dune habitats, cover several plant community types within each unit, and also because the data collected is not numerical and cannot be analysed statistically to show more clearly significant changes and trends.

5.17 It is suggested that the creation of fixed quadrats is considered in the same locations as the current quadrats are taken, as these would return more useful data, especially if the percentage cover of species and bare ground was recorded rather than DAFOR data. The quadrat corners should be physically marked on the ground, either with posts or metal pins. In addition, the use

of fixed point photographs would be an invaluable and quick way to record changes over time to inform future management of the areas.

6. OVERALL CONCLUSIONS

6.1 The new HMO approach and division of the dune habitats into different categories with separate targets is a significantly different approach to the condition assessment methodology applied in 2005. The latter was based on the JNCC (2004) Common Standards Monitoring protocol adapted for the Jersey dunes. The new approach, with the assessment of the six different habitats within the six different units, has significantly complicated the condition assessment compared to the 2005 methodology. The problems of setting and meeting targets have been examined in the previous chapters (3 and 4). Some changes have been suggested to the existing HMOs to make the future recording more informative and more easily standardised. However, the use of all these habitat assessments needs to be questioned.

6.2 The most important habitats on the dunes are the yellow and grey dunes, together with the heathland and wetlands. One objective for the 2014 survey work was to prepare a new HMO for the *Molinia* strip on the southern dune unit. As this habitat had disappeared in 2014, this has not been done. Wetlands are a very limited but important and diverse part of the dune habitat mosaic. The generic wetland HMO (PAA 2013c) probably would not be suitable for the variety of wetlands on the dunes. Detailed site specific survey and mapping is more appropriate to track changes in these small localised communities as the direction of change is hard to predict and, therefore, the features to be monitored unclear.

6.3 The scrub, gorse and woodland are ancillary habitats, important for many species like breeding birds, but not particular to the dune environment. The question needs to be asked, therefore, whether the assessment procedure for gorse, scrub and woodland is really worthwhile on the dunes. Undoubtedly the collection of monitoring data is valuable but it could be simpler in the future.

6.4 The grey dunes comprise a mix of habitats that are all important for the future of the dune's nature conservation importance. This category should, ideally, be divided into the species-rich vegetation plus rose, and the rank grassland, although these are regularly mixed as well, complicating the issues further. The grey dune assessment methodology is asking for too many things from a very diverse flora/habitat mixture and is not very satisfactory because of that. The approach to this habitat will need to be re-considered. It may be more appropriate to have two condition assessment forms one for the species rich communities (B, Bi and Bii plus J) and one for the taller rank grassland (E).

6.5 The 2014 dune vegetation survey and condition assessment has provided a considerable amount of detailed information (164 condition assessment patches, and 39 quadrats) on the different habitats of the dunes. This will be a good baseline for following the vegetation in these patches whatever possible changes are made to the individual and overall condition assessments.

7. REFERENCES

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TABLES

Table 5 Summary of Yellow Dunes Monitoring Assessment

Compartment:		Dune Plain	High Dune	Frontal Dunes	Southern Dunes	Bosdet
No of Patches		17	18	5	2	4
Attribute	**Target (for the entire feature)**					
Extent of habitat	Lower limit - no loss of habitat from 2005, Movement of patches is acceptable					
	Upper limit - none set but note if displaces good quality dune veg and consider action if sig.					
Quality lower limit	90% of patches should meet the following criteria;					
Vegetation composition						
Healthy cover of marram and /or sand couch. As recorded by abundant flowering of marram		100% Quadrats have marram. Flowering was never frequent or abundant when recorded.	100% Quadrats have marram. Flowering was never frequent or abundant when recorded.	100% Quadrats have marram, 20% sea couch. Flowering was never frequent or abundant.	100% Quadrats have marram. Flowering was frequent or abundant in 50% (1 patch).	100% Quadrats have marram. Flowering was never frequent or abundant.
Vegetation height: 60% of vegetation should be >30cm tall		82% plots had >60% veg >30cm	72% plots had >60% veg >30cm	20% plots had >60% veg >30cm	0% plots had >60% veg >30cm	0% plots had >60% veg >30cm
Bare sand should be > 30-40% of the patch (open marram) area (unless mixed with other veg.)		65% have >30% bare sand	50% have >30% bare sand	20% have >30% bare sand	None have >30% bare sand	25% have >30% bare sand
What other veg types and % cover in patch		B, Bi, D, E	B, Bi, E, J	B, E, bramble	E, J, I, bramble	B, I
Characteristic species		**Number of Patches in which Species were Recorded**				
Sea bindweed	*Calystegia soldanella*		2	2		
Grey hair-grass	*Corynephorus canescens*	3	10	1		
Sea holly	*Eryngium maritimum*	1	6	2		
Lady's bedstraw	*Galium verum*	13	8	3	1	3
Hare's tail	*Lagurus ovatus*		3	2	1	
Lesser hawkbit	*Leontodon saxatile*	12	8	4	1	4
Early sand-grass	*Mibora minima*	1	4			1
Sand cat's tail	*Phleum arenarium*	1	4	1		
More than 2 of above species		53% have >2 sp	78% have >2 sp	80% have >2 sp	50% have >2 sp	75% have >2 sp
More than 2 of above species occassional		6% have 2 sp >occ	50% have 2 sp >occ	80% have 2 sp >occ	50% have 2 sp >occ	50% have 2 sp >occ
Estimate effect of rabbits	DAFOR based on droppings, flowering, digging	35% >occ	72% >occ	100>occ	NR	NR
Damaging features						
Cover of trees/scrub, specify species. Should be no trees		94% have <1% cover (or rare)	89% have <1% cover (or rare)	100% have <1% cover (or rare)	100% have <1% cover (or rare)	100% have <1% cover. Qi, Cm, Ue, Ps. Lig ov
Cover of brachen <15%	*Bracken <15% when fully open, not dense or shading out other spp.*	100% <15% bracken	100% <15% bracken	100% <15% bracken	50% <15% bracken	50% <15% bracken
Cover of ragwort <5%	*Ragwort, bramble, nettle combined < 5%*	100% <5% ragwort	100% <5% ragwort	100% <5% ragwort	100% <5% ragwort	50% <5% ragwort
Cover of bramble <5%		100% <5% bramble	100% <5% bramble	80% <5% bramble	50% <5% bramble	100% <5% bramble
Cover of nettle <5%		94% <5% nettle	100% <5% nettle	100% <5% nettle	100% <5% nettle	100% <5% nettle
Damage from vehicles, excavation, dumping, etc	*No damage from vehicles, excavation, dumping, etc*	No damage	11% have paths	40% have paths	No damage	No damage
Is stock present?	*If stock present estimate % flowering of main plants*	No stock	No stock	No stock	No stock	No stock
Percentage flowering of main plants		N/A	N/A	N/A	N/A	N/A
Effect of stock trampling	*Comment on degree of any stock trampling damage (<20% affected)*	N/A	N/A	N/A	N/A	N/A

Table 7a Summary of Grey Dunes Monitoring Assessment

Compartment:		**Dune Plain**		**High Dune**	
Number of patches		21	3	20	2
Community Type		B/J	E	B/J	E

Attribute	**Target (for the entire feature)**	**Monitoring technique**				
Extent of Habitat						
Lower Limit	No loss of habitat from 2005, Movement of patches is acceptable	Aerial photography				
Upper Limit	None set but note if displaces good quality dune veg and consider action if sig.					
Quality lower limit	90% of patches should meet the following criteria;					
Vegetation Composition						
1) Is burnet rose dominant or co-dominant with> 40-50% cover. Y/N and approx cover		Visual assessment across the patch. (% cover or Dafor).	**N** =57%	**N** =66%	**Y** =90%	**N** =100%
2) Is there bare sand covering >15% of ground, Y/N approx cover			**N** = 100% <15% bare sand	**N** = 100% <15% bare sand	**N** = 85% <15% bare sand	**N** = 100% <15% bare sand
3) Frequency of mosses & lichens in the vegetation (DAFOR)			**Y** =9.5% Abundant, 43% frequent	**Y** =33% Abundant, 33% frequent	**Y** =30% Abundant, 50% frequent	**Y** =50% Abundant,
4) Is the vegetation dense (D) **or** with many small gaps between plants with sand or litter visible. (G)			45% G, 55% D	33% G, 66% D	44% G, 55% D	100% D
5) Are there more or less than 20 species in the patch. Omit burnet rose. Y/N		Assess by eye, only list those in table below	**Y**=100% >20sp (when recorded)	**Y**=100% >20sp (when recorded)	**Y**=79% >20sp (when recorded)	**Y**=100% >20sp
6) Vegetation height 5-30cm or over 30-40cm tall		Measure to 5cm, exclude flowering grass stalks	**S**=95%	**T**=66%	**S**=95%	**S**=100%
Flowering & fruiting of species to be at least frequent		Visual assessment across patch (Dafor)	**Y**=100% Abundant/frequent	**Y**=100% Abundant/frequent	**Y**=90% Abundant/frequent	**Y**=10% Abundant/frequent
Is 30-70% of sward sp rich turf? Y/N comment if needed	If YES to Q2,3,4 and >20sp and vegetation 5-30 cm tall then: 30-70% of sward should be species rich short turf. And at least 10 species (in list 1) should be more than occasional.	Visual across patch	**Y**=95%	**N=**66%	**Y=**90%	**Y**=50%, **N =** 50%
Is it dense vegetation with taller plants. Y/N comment if needed	If NO to Q2 and 3, dense vegetation , <20 species and taller plants, then at least 6 species from List 1 should be occasional.	Visual across patch	**N**=71%	**Y**=66%	**N**=95%	**Y**=50%, **N** = 50%

List 1 (Dafor)			**Number of patches in which each species was recorded**			
Silver hair-grass	*Aira caryophyllea*	Visual assessment across the patch. (Dafor). (10 or more should be more than occasional)	17	1	8	
Early hair-grass	*Aira praecox*		12		13	
Thyme-leaved sandwort	*Arenaria serpyllifolia*		14	2	19	1
Wild onion	*Allium vineale*		1	1		
Sand sedge	*Carex arenaria*		20	3	13	2
Common centaury	*Centaurium erythraea*		17	3	15	2
Common mouse-ear	*Cerastium fontanum*		16	1	15	1
Smooth hawk's-beard	*Crepis capillaris*		12	1	4	1
Common stork's-bill	*Erodium cicutarium*		5		7	1
Portland spurge	*Euphorbia portlandica*		20	2	20	2
Eyebright	*Euphrasia officinalis*		2		3	1
Fescues	*Festuca sp*		20	3	19	2
Lady's bedstraw	*Galium verum*		20	3	18	2
Dove's-foot crane's bill	*Geranium molle*					
Common cat's-ear	*Hypochaeris radicata*		4		5	1
Bird's-foot trefoil	*Lotus corniculatus*		14	2	10	1
Common restharrow	*Ononis repens*		16	2	10	2
Ribwort plantain	*Plantago lanceolata*		18	3	11	2
Self-heal	*Prunella vulgaris*		1			
Burnet rose	*Rosa pimpinellifolia*		20	3	20	2
Biting stonecrop	*Sedum acre*		9	1	15	2
Wild thyme	*Thymus polytrichus*		17	2	20	2
Hare's-foot clover	*Trifolium arvense*		6	1		
Hairy tare	*Vicia hirsuta*		5	2	1	1
Number of species >10			86% (9-17 sp)	100% (10-16sp)	85% (9-17sp)	100% (14sp)
Number of species >10 occ or higher			48% (5-14sp)	66% (5-14sp)	45% (4-17sp)	100% (10sp)
Attribute	**Target (for the entire feature)**	**Monitoring technique**	**Number of patches in which each species was recorded**			
Species of local distinctiveness						
Jersey thrift	*Armeria arenaria*	Visual assessment across the patch (spike or plant count of lizard orchid)	7	1		
Small hare's ear	*Bupleurum baldense*		5	1	6	1
Rough star thistle	*Centaurea aspera*		2		2	1
Grey hair grass	*Corynephorus canescens*				7	1
Lizard orchid	*Himantoglossum hircinum*					
Smooth cat's ear	*Hypochaeris glabra*		8		16	2
Sea stock	*Matthiola sinuata*					
Early sand grass	*Mibora minima*		5	1	9	
Childing pink	*Petrorhagia nanteuilii*					
Early meadow grass	*Poa infirma*					
Four-leaved all-seed	*Polycarpon tetraphyllum*		12	1	8	
Sand crocus	*Romulea columnae*		5	1	3	
Balm-leaved figwort	*Scrophularia scorodonia*					
Bastard toadflax	*Thesium humifusum*					
Heath speedwell	*Veronica officinalis*				2	
Dwarf pansy	*Viola kitaibeliana*		2			
Estimate effect of rabbits	**DAFOR based on droppings, flowering, digging**	**Visual estimate across patch**	24% abundant or frequent	33% abundant or frequent	35% abundant or frequent	50% abundant or frequent
Damaging Features						
Cover of trees and scrub specify species	No scrub or trees (exclude burnet rose)	Estimate % cover across the patch and list species	90% <1% cover	100% <1% cover	95% <1% cover	100% <1% cover
Cover of bracken	Bracken <15% when fully open, not shading other spp		100% <15% cover	100% <15% cover	100% <15% cover	100% <15% cover
Cover of ragwort	Ragwort, bramble or nettle< 5%		100% <5% cover	100% <5% cover	100% <5% cover	100% <5% cover
Cover of bramble			100% <5% cover	66% <5% cover	100% <5% cover	100% <5% cover
Cover of nettle			100% <5% cover	100% <5% cover	100% <5% cover	100% <5% cover
	No damage from vehicles, excavation, dumping, trampling, etc	Estimate % cover across the patch and note type of damage	14% trampling c%5	14% trampling	10% trampling	10% trampling
Is stock present	If stock present estimate % flowering of main plants		None	None	None	None
Percentage flowering of main plants			N/A	N/A	N/A	N/A
Effect of stock trampling	Comment on degree of any stock trampling damage <20%		N/A	N/A	N/A	N/A

Table 7b Summary of Grey Dunes Monitoring Assessment

Compartment:			**Southern Dunes**			**Frontal Dunes**		**Bosdet**	
Number of patches			3	1	1	3	2	3	2
Community Type			B	J	E	B/J	E	B/J	E
Attribute	**Target (for the entire feature)**	**Monitoring technique**							
Extent of habitat	Lower limit - no loss of habitat from 2005, Movement of patches is acceptable	Aerial photography							
	Upper limit - none set but note if displaces good quality dune veg and consider action if sig.								
Quality lower limit	90% of patches should meet the following criteria;								
Vegetation composition									
1) Is burnet rose dominant or co-dominant with> 40-50% cover. Y/N and approx cover		Visual assessment across the patch. (% cover or Dafor).	**N** = 100%	**Y**	**Y**	**Y** =33%	**N** = 100%	**Y** =33%	**Y** =100%
2) Is there bare sand covering >15% of ground, Y/N approx cover			**N** = 100% bare sand	**N**	**N**	**N** = 100% <15% bare sand	**N** = 100% <15% bare sand	**Y**= 100% >15% bare sand	**N** = 100% <15% bare sand
3) Frequency of mosses & lichens in the vegetation (DAFOR)			**Y** = 100% freqent	**N**	**N**	**Y** =100% Abundant	**N** = 100% = rare	**Y** = 66% freqent	**N** = 100% absent
4) Is the vegetation dense (D) **or** with many small gaps between plants with sand or litter visible. (G)			66% G, 33% D	D	D	66% G, 33% D	100% D	100% G	100% D
5) Are there more or less than 20 species in the patch. Omit burnet rose. Y/N		Assess by eye, only list those in table below	**Y**=100% >20sp	**N**	**N**	**Y**=100% >20sp	**Y**=100% >20sp	**Y**=66% >20sp	**N** = 100% <20sp
6) Vegetation height 5-30cm or over 30-40cm tall		Measure to 5cm, exclude flowering grass stalks	**S**=100%	**S**	**S**	**S**=100%	**T**=100%	**S** = 66%	**T** =100%
Flowering & fruiting of species to be at least frequent		Visual assessment across patch (Dafor)	**Y** = 100% frequent	**N** occ	**Y** = frequent	**Y**=100% Abundant	**Y**=100% Abundant	**Y** = 100% frequent	**Y** = 100% frequent
Is 30-70% of sward sp rich turf? Y/N comment if needed	If YES to Q2,3,4 and >20sp and vegetation 5-30 cm tall then: 30-70% of sward should be species rich short turf. And at least 10 species (in list 1) should be more than occasional.	Visual across patch	**Y**=100%	**N**	**N**	**Y**=100%	**N**=100%	**Y**=100%	**N**=100%
Is it dense vegetation with taller plants. Y/N comment if needed	If NO to Q2 and 3, dense vegetation , <20 species and taller plants, then at least 6 species from List 1 should be occasional.	Visual across patch	**N**=100%	**Y**=100%	**Y**=100%	**N**=100%	**Y**=50%	**N**=100%	**Y**=100%
List 1 (Dafor)			**Number of patches in which each species was recorded**						
Silver hair-grass	*Aira caryophyllea*	Visual assessment across the patch. (Dafor). (10 or more should be more than occasional)	2	1				2	
Early hair-grass	*Aira praecox*		2			2		3	
Thyme-leaved sandwort	*Arenaria serpyllifolia*		2			1		3	
Wild onion	*Allium vineale*					1	1	2	2
Sand sedge	*Carex arenaria*		3		1	3	2	3	1
Common centaury	*Centaurium erythraea*		1			1		2	2
Common mouse-ear	*Cerastium fontanum*							1	
Smooth hawk's-beard	*Crepis capillaris*		2		1	3	2	3	1
Common stork's-bill	*Erodium cicutarium*		2			2			
Portland spurge	*Euphorbia portlandica*		1	1	1	3	1	2	
Eyebright	*Euphrasia officinalis*		1						
Fescues	*Festuca sp*		2	1	1	3	2	3	2
Lady's bedstraw	*Galium verum*		2	1	1	3	2	2	2
Dove's-foot crane's bill	*Geranium molle*		1		1			1	
Common cat's-ear	*Hypochaeris radicata*					1		1	2
Bird's-foot trefoil	*Lotus corniculatus*		2		1			3	1
Common restharrow	*Ononis repens*					2	1		
Ribwort plantain	*Plantago lanceolata*		2			1	2	2	2
Self-heal	*Prunella vulgaris*							1	
Burnet rose	*Rosa pimpinellifolia*		2	1	1	2	1	3	2
Biting stonecrop	*Sedum acre*		2					3	
Wild thyme	*Thymus polytrichus*		2		1	1		3	2
Hare's-foot clover	*Trifolium arvense*						1		
Hairy tare	*Vicia hirsuta*						1		
Number of species >10			66% (8-12)	0% (5sp)	0% (9sp)	66% (6-12 sp)	0% (8-6sp)	100% (13-15)	100% (9-10)
Number of species >10 occ or higher			66% (5-10)	0% (4sp)	0% (5sp)	66% (6-10 sp)	0% (8-6sp)	100% (12-13)	0% (5-8)
Attribute	**Target (for the entire feature)**	**Monitoring technique**	**Number of patches in which each species was recorded**						
Species of local distinctiveness									
Jersey thrift	*Armeria arenaria*	Visual assessment across the patch (spike or plant count of lizard orchid)	1			3	2	1	
Small hare's ear	*Bupleurum baldense*					2			
Rough star thistle	*Centaurea aspera*		1			2	1		
Grey hair grass	*Corynephorus canescens*							1	
Lizard orchid	*Himantoglossum hircinum*								
Smooth cat's ear	*Hypochaeris glabra*		2			1		1	
Sea stock	*Matthiola sinuata*								
Early sand grass	*Mibora minima*		1			1		1	
Childing pink	*Petrorhagia nanteuilii*					1			
Early meadow grass	*Poa infirma*								
Four-leaved all-seed	*Polycarpon tetraphyllum*		1						
Sand crocus	*Romulea columnae*		2						
Balm-leaved figwort	*Scrophularia scorodonia*								
Bastard toadflax	*Thesium humifusum*								
Heath speedwell	*Veronica officinalis*								
Dwarf pansy	*Viola kitaibeliana*								
Estimate effect of rabbits	**DAFOR based on droppings, flowering, digging**	**visual estimate across patch**	100% frequent	100% locally occasional		100% abundant	50% abundant 50% rare	100% abundant	50% abundant 50% occasional
Damaging features									
Cover of trees and scrub specify species	*No scrub or trees (exclude burnet rose)*	Estimate % cover across the patch and list species	100% <1% cover	100% <1% cover	100% <1% cove	100% <1% cover	100% <1% cover	100% <1% cover	100% <1% cover
Cover of bracken	*Bracken <15% when fully open, not shading other spp*		100% <15% cove	100% <15% cove	100% <15% cov	100% <15% cover	100% <15% cover	100% <15% cover	100% <15% cover
Cover of ragwort	*Ragwort, bramble or nettle< 5%*		100% <5% cover	100% <5% cover	100% <5% cove	100% <5% cover	100% <5% cover	100% <5% cover	100% <5% cover
Cover of bramble			100% <5% cover	100% <5% cover	100% <5% cove	100% <5% cover	100% <5% cover	100% <5% cover	100% <5% cover
Cover of nettle			100% <5% cover	100% <5% cover	100% <5% cove	100% <5% cover	100% <5% cover	100% <5% cover	100% <5% cover
	No damage from vehicles, excavation, dumping, trampling, etc	Estimate % cover across the patch and note type of damage	100% None	100% None	100% None	33% trampling c%	100% trampling c%	100% None	100% None
Is stock present	*If stock present estimate % flowering of main plants*		None	None	None	None	None	None	None
Percentage flowering of main plants			N/A	N/A	N/A	N/A	N/A	N/A	N/A
Effect of stock trampling	*Comment on degree of any stock trampling damage <20%*		N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 10 Summary of Mature Gorse Monitoring Assessment

Compartment			Dune Plain	High Dune	Southern Dunes	Escarpment	Bosdet
No of Patches			6	4	2	5	5

Attribute	Target (for the entire feature)	Monitoring Technique					
Extent of Habitat	No greater than 15% decrease below the 2005 aerial photo	Base line map showing distribution of mature gorse					
	No greater than 15% increase on the 2005 aerial photo						
Quality	> 85% of the total site area meets the following criteria;						
Vegetation Structure			**Percentage of sites in the height and cover range**				
Vegetation Height	20% and <40% of vegetation cover < 30cm tall	Visual assessment of % cover of as much of the patch that is visible from the sampling point.	33.3	25	0	20	0
	25% to 35% of vegetation cover 40-100cm tall		16.7	0	50	40	20
	25% to 35% of vegetation cover 100-200cm tall		33.3	0	0	40	0
	Vegetation cover over 200cm in height		16.7	25	0	80	20
	Vegetation cover over 300cm in height		0%	0	0	0	0
Vegetation Composition			**Percentage of sites in the height and cover range**				
Gorse Cover	% Gorse cover <30 cm tall	Visual assessment of as much of the patch that is visible from the sampling point. Record % cover	50	NR	0	60	0
	25-35% gorse cover 40-100cm tall		25	NR	0	20	20
	25-35% gorse cover 100-200cm tall		25	NR	0	40	20
	% cover of gorse 60-80% of the area		66.7	75	50	0	60
Underlying Vegetation							
% cover of dune (yellow or grey) vegetation. Specify which	(good condition >15% area)	Visual assessment of as much of the patch that is visible from the sampling point. Record % cover	**75% good condition,** 100% had grey dune veg : 33% yellow dune veg	% cover of dune veg not recorded, 75% grey dune veg, 25% yellow dune veg	% cover of dune veg not recorded, 50% grey dune veg, 50% no dune veg	20% had grey dune veg %5 cover. 80% no dune veg cover	60% had grey dune cover max 10% cover. 40% no dune veg
% cover of bracken/bramble. List species and cover	(good condition <10% area)		66.7% less that <10% cover.	75% less that <10% cover.	50% less that <10% cover.	60% less that <10% cover.	40% less that <10% cover.
% cover scrub/trees cover. List species & cover (exclude R. pimp)	(good condition <5%)		80% less than 5% cover	75% less than 5% cover	**100% less than 5% cover**	60% less than 5% cover	**100% less than 5% cover**
Disturbance							
Rabbit Presence	The number of visible rabbit warrens within the patch to be recorded	Visual assessment of as much of the patch that is visible from the sampling point.	0-3	0-3	0	0	0

Table 11 Summary of Scrub Habitats Monitoring Assessment

Compartment			Dune Plain	High Dune	Southern Dunes	Frontal Dunes	Escarpment	Bosdet
No of Patches			3	7	2	1	5	4
Attribute	**Target (for the entire feature)**	**Monitoring Technique**						
Extent of Habitat								
Lower Limit	No Limit Set	Base line map showing distribution of scrub vegetation						
Upper Limit	Extent recorded in 2005 aerial photograph							
Quality of Habitat								
Lower Limit	>60% of the area meets the following criteria	**Frequency** - Visual assessment of as much of the feature that is visible from the sampling point. Mark location on aerial photos						
Upper Limit	No Limit Set							
Vegetation Structure								
Within the defined area of the patch:	The scrub patch should have a 60 - 90% canopy cover of the patch (record % cover)	Visual assessment of as much of the feature that is visible from the sampling point.	67% of patches have 60-90% canopy cover	57% of patches have 60-90% canopy cover	100% of patches have 60-90% canopy cover	100% of patches have 60-90% canopy cover	40% of patches have 60-90% canopy cover	100% of patches have 60-90% canopy cover
Vegetation composition			**Percentage of Patches Recorded In**					
Hawthorn	*Crataegus monogyna*	The species should be native and consist of trees and shrubs of at least two from the list (list all that apply including addit. spp).		recorded in 58%	recorded in 50%		recorded in 80%	recorded in 50%
Broom	*Cytisus scoparius*							
Holly	*Ilex aquifolium*							
Wild privet	*Ligustrum vulgare*		recorded in 100%	recorded in 86%			recorded in 80%	recorded in 100%
Blackthorn	*Prunus spinosa*		recorded in 67%	recorded in 14%	recorded in 50%		recorded in 100%	recorded in 25%
Dog rose	*Rosa canina*							recorded in 25%
Willows	*Salix* spp							
Elder	*Sambucus nigra*		recorded in 67%	recorded in 14%			recorded in 60%	
Common gorse	*Ulex europaeus*		recorded in 100%	recorded in 43%			recorded in 60%	recorded in 50%
Patches with two or more of above list			100%	71%	none	none	100%	75%
Sycamore	*Acer pseudoplatanus*	Other woody species - record for management information		recorded in 14%				
Shrubby orache	*Atriplex halimus*					recorded in 100%		
Pine species	*Pinus* sp			recorded in 29%				
Holm oak	*Quercus ilex*		recorded in 33%	recorded in 58%		recorded in 100%		
Flora beneath/around canopy	Any typical shade-tolerant spp	% cover of total shade-tolerant spp	Iris foet	*Hedera helix, Iris foet, Sher arve*	Rf, Pt, *Iris foet* , *Conium, Rhaph*	None	None	None
Negative Indicators								
	There should be no trees (including Holm oak, oak, ash, sycamore, elm, cherry pine etc). Note the cover of each species.	Visual assessment of as much of the feature that is visible from the sampling point	33% have low tree cover , Qi	48% have substantial tree cover Qi and rare Ap	100% no tree cover	100% have tree cover c20% Qi	100% no tree cover	50% have low tree cover, Qi
	There should be no non-native shrubs (including tamarisk, apple, conifer, Japanese privet, cotoneaster, buddleia etc). Note % cover by spp.		67% had no non native shrubs. 1 patch had a *Malus* tree	100% had no non native shrubs	100% had no non native shrubs	100% had non native shrubs, Atriplex halimus	80% had no non native shrubs, 20% had Buddlia	100% had no non native shrubs
% cover of bracken and bramble	Bracken and/or bramble < 20% of the area		100% had bracken & bramble <20%	100% had bracken & bramble <20%	50% had bracken & bramble <20%	100% had bracken & bramble <20%	100% had bracken & bramble <20%	100% had bracken & bramble <20%
Disturbance	Rubbish, burning, damage to scrub, vehicle movements etc	Visual assessment	Rabbit disturbance frequent in one plot	NR	NR	NR	NR	NR

Table 12 Summary of Woodland Monitoring Assessment

Compartment:			High Dunes	High Dunes	High Dunes	Southern Dunes
Assessment Patch Number			83	117	119	143
Attribute	**Target (for the entire feature)**	**Monitoring Technique**				
Extent of Habitat	No loss of habitat from 2005 aerial	Aerial photography				
	Upper limit - should not be spreading onto habitats of greater value					
Quality Lower Limit	> 80% of the area meets the following criteria;					
Vegetation Structure						
Ground Story	Seedlings and saplings of native species should be at least rare. Specify all species	Visual assessement inside patch	**Y** Sn f, Cm r, Ps r, Ap f, Fe r, Qr r - o	**Y** Pinus r, Qi r, Ps o, Ue r	**Y** Ue r, Cm o, Lv r, Ps r	
Sub Story	(Sub story = the layer 2-5m high). To have at least 20% cover. Specify species.	Assessment within patch. State % cover	**N** = 5% Salix sp r, Ps r, Qr r, Ap o	Cover not given Qi o, Ps o, Sn r, Cm r	Cover not given Qi f, Cm r	
Dead Wood	At least one dead tree >20cm DBH should be present in the patch/ or plenty of small scattered pieces.	Assessment abundance within patch	**N** Standing deadwood present but rare	**N**	**N**	
	Dead wood safe?		**Y**	N/A	N/A	
Vegetation Composition						
No more than 10% conifer canopy present		Visual assessment of as much of the feature that is visible in patch	**Y** >10	**Y** >11	**Y** >12	**Y** = None
State % BL trees with DBH >20cm			70	70 (Qi)	60	80
Ancient & veteran trees present? (% cover)			**Y** 20	**N** = None	**N** = None	**N** = None
Native species Not located previously on the dunes (alder, ash, aspen, elm, hazel, holly, sweet chestnut) . **List if seen**	The woodland composition should be dominated by native species. 90% of wood native por tolerated spp	Assessment within patch. List tree species/ note DAFOR abundance	Not stated on record sheets			
Hawthorn	*Crataegus monogyna*	Assessment of whole patch. Note abundance (DAFOR)	r	r	f	r
Broom	*Cytisus scoparius*					
Wild privet	*Ligustrum vulgare*					
Blackthorn	*Prunus spinosa*		r	o	r	
Pedunculate oak	*Quercus robur*		r - ld			
Field rose,	*Rosa arvensis*					
Dog rose,	*Rosa canina*					
Sallow/ grey willow	*Salix cinerea*					d
Crack willow,	*Salix fragilis*		r			
Elder	*Sambucus nigra*		o	r		o
European gorse	*Ulex europaeus*			r		
Tolerated - But not previously located on the dunes) silver birch, beech, downy birch, hornbeam, field maple, yew, dogwood, medlar, rowan, cherry) **List if seen**	The woodland composition can include tolerated species at a level of > frequent	Assessment of whole patch. List tree species/ note abundance (DAFOR)	Not stated on record sheets			None
Sycamore	*Acer pseudoplatanus*		ld			None
Pine species	*Pinus* sp.		r	a	f	None
Undesirable - But not previously located on the dunes (horse chestnut, Norway spruce, Monterey cypress, poplars, Turkey oak, western red cedar, snowberry) **List if seen.**	The woodland composition should include undesirable species at a level of occasional or less	Assessment of whole patch. List tree species/ note abundance (DAFOR)	**Y** = r	**Y** = None	**Y** = r	**Y** = None
Butterfly-bush	*Buddleja davidii*					
Apple species	*Malus* sp.					
Italian poplar	*Populus x canadensis*		r		r	
Holme/ Evergreen oak	*Quercus ilex*		r - ld	r	d	
Rose species (garden)	*Rosa* sp.					
Ground Flora						
		List woodland ground flora sp from table + DAFOR	Dryopteris felix-mas, Iris foetidissima, Phyllitis scolopendrium, Arum sp, Geum urbanum r, Silene dioica.	Iris foetidissima o, Geum urbanum r, Polypodium interjectum r, Silene sp	None	Ruscus aculeatus r, Dryopteris dilatata lf, Lonicera periclymenum r, Phyllitis scolopendrium r
Polypody, mosses and lichens	Presence should be at least occasional and general abundance noted.	Visual assessment within patch	**Y**, r - lf	**Y** = only Polypodium	**N**	**Y** = f
Negative Indicators						
Invasive Species		These species should be absent - record DAFOR. Any other potential invasive species should be noted.	**Y** = 0	**Y** =0	**Y** = 0	**Y** = 0
Periwinkle	*Vinca* spp					
Winter heliotrope	*Petasites hybridus*					
Spanish bluebell	*Hyacinthoides hispanica*					
Rhododendron	*Rhododendron ponticum*					
Erosion	Less than 1% of feature to show signs of 'hard' erosion or damage	Visual assessment	Paths well used	Bare sand 10% ground, Rabbits	Bare sand	None
Introduced material	There must be no evidence of fly tipping or other damage		Dog fouling			None

Table 13 Summary of the Dune Heathland Monitoring Assessment

Compartment:			High Dunes	Dune Plain	Escarpment	Southern Dunes
Number of Patches:			1	5	2	2
Attribute	**Target (for entire feature)**	**Monitoring Technique**				
Extent of Habitat						
Lower Limit	No loss of habitat from 2005, Movement of patches is acceptable	Aerial photography				
Upper Limite	None set but note if displaces good quality dune veg and consider action if sig.					
Quality lower limit	95% of patches should meet the following criteria;					
Vegetation Composition in Patch						
At least one dwarf shrub species more than occasional >20% cover		Note species and % cover	**Y** 30 (Ec)	**Y** 100% (Ec 25-75%)	**Y** 100% (Ec 25-30%)	**Y** 100% (Ec f-a)
Flowering & fruiting of all species should be at least frequent		Visual assessment across the patch. (% cover or Dafor).	**Y** f - a	**Y** 100% a	**Y** 100% f-a	**Y** 100% a
Remainder of vegetation composed of fixed grey dune grassland			**Y** 70	**Y** 100% contain some grey dune (25-75%)	**Y** 100% contain some grey dune (7075%)	**Y** 100% contain some grey dune (25-50%)
At least 8 species more than occasional from list 1			**Y** 8 (100%)	**N** 0% (2-5sp)	**N** 0% (5-6sp)	**N** 0% (4sp)
List 1 (Dafor)			**Percentage of Patches Recorded In**			
Sand sedge	*Carex arenaria*	Visual assessment across the patch. (Dafor). (8 or more should be more than occasional)	o	occurs in 80% (r)	occurs in 100% (r-o)	occurs in 100% (o)
Common centaury	*Centaurium erythraea*		o	occurs in 80% (r-o)	occurs in 50% (o)	occurs in 50% (r)
Common mouse-ear	*Cerastium fontanum*					
Smooth hawk's-beard	*Crepis capillaris*					
Common stork's-bill	*Erodium cicutarium*					
Portland spurge	*Euphorbia portlandica*		f	occurs in 80% (r)	occurs in 50% (r)	occurs in 50% (r)
Eyebright	*Euphrasia officinalis*		a		occurs in 100% (f-a)	
Fescues	*Festuca sp*		f	occurs in 80% (o-f)	occurs in 100% (o-f)	occurs in 100% (f)
Lady's bedstraw	*Galium verum*			occurs in 1100% (r-o)		occurs in 1100% (r-o)
Dove's-foot crane's bill	*Geranium molle*					
Common cat's-ear	*Hypochaeris radicata*			occurs in 40% (r)	occurs in 50% (r)	
Bird's-foot trefoil	*Lotus corniculatus*		o	occurs in 20% (r)	occurs in 50% (o)	
Common restharrow	*Ononis repens*					
Ribwort plantain	*Plantago lanceolata*			occurs in 40% (o)		occurs in 50% (o)
Self-heal	*Prunella vulgaris*					
Burnet rose	*Rosa pimpinellifolia*		d	occurs in 100% (o-f)	occurs in 100% (d)	occurs in 100% (f-a
Wild thyme	*Thymus polytrichus*		f	occurs in 80% (r-o)	occurs in 100% (o)	occurs in 50% (o)
Hare's-foot clover	*Trifolium arvense*					
Hairy tare	*Vicia hirsuta*					
Total Number of species	**At least >8**		**100% (8)**	**80% (4-8)**	**50% (6-8)**	**0% (4-6)**
Damaging Features						
No scrub or trees (except burnet rose, heather or bell heather)		Estimate % cover across the patch and list species	**N** 2 Lv, <1 Qi	**Y** no patches have scrub or trees	**N** 2 Lv, <1 Cm	**Y** 1 Qi <1%
Bracken <15% when fully open, no shading or other spp			**Y** <15% (5%)	**Y** no patches have bracken	**Y** both patches have bracken <15%	**Y** all patches <1%
Ragwort, bramble or nettle< 5% cover			0	**Y** no patches have these species	**Y** 1 patch has these species <1%	**Y** all patches <1%
No damage from vehicles, excavation, dumping, etc		Estimate % cover across the patch and note type of damage	None	None	None	None
Is stock present? Y/N			No	No	No	No
If stock present estimate % flowering of main plants			90	N/A	N/A	N/A
Comment on degree of any stock trampling damage (<20% affected)			N/A	N/A	N/A	N/A
Estimate effect of rabbits (DAFOR)	Use abundance of droppings/diggings flowering	Across whole patch	Abundant (maintaining short vegetation)	Rare in all patches	Occ-frequent	Occ-frequent

Table 23 Dune Plain Quadrat Data

English Name	Scientific Name	Species Code	Quadrat Number																											
			DPQ1		DPQ2		DPQ3		DPQ4		DPQ5		DPQ6		DPQ7		DPQ8		DPQ9		DPQ10		DPQ11		DPQ12		DPQ13		DPQ14	
Survey Year			2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014
Plant Community Code			D/E	D/C	B	B	B	B/Bi	E	E	E	E	E	B	Bi	B	B	B/Bi	B/Bi	B	D/Bi	Bi/D	Bi/L	Bi/L	C	C	B	B	C/B	Bi/C
Sward height in cm			60	10	10 - 30	6	10 - 30	15	20 - 60	9	40 - 80	45	15 - 70	10	5 - 12	7	5 - 50	4	3 - 13	6	10 - 60	45	25 - 30	20		1-65		4		25
Bare Ground (%)			0	2	1	2	<1	0	0	0	0	0	0	<1	<1	0	<1	0	0	0	0	0	0	0	20	5	2	5	5	0
Trees & Shrubs																														
Wild privet	*Ligustrum vulgare*																													o
Burnet rose	*Rosa pimpinellifolia*	DS	f - a	f	o	f		o	f	f	f	f	o	f	f	f	r	r	f	f		o	o	f		o	f	a		f
Common gorse	*Ulex europaeus*																													o
Herbs, Grasses & Ferns																														
Common bent	*Agrostis capillaris*											f	f	r			r						o							
Silver hair-grass	*Aira caryophyllea*	DS, A				r		o		r				r	r	r	o	r	r	r								a		
Early hair-grass	*Aira praecox*	DS, A			o	r	d	o						r	r	r	r	r	r	r						r	o	o		
Garlic mustard	*Alliaria petiolata*	DS																												
Wild onion	*Allium vineale*	DS	r								r	r	r												f	f			o	o
Marram	*Ammophila arenaria*	DS	o	o																	d - f	f						r	r	r
Ripgut brome	*Anisantha rigida*	A																												
Brome species	*Anisantha/Bromus sp.*	A					r																							
Sweet vernal-grass	*Anthoxanthum odoratum*									o		a		o							r	f		f			r			
Thyme-leaved sandwort	*Arenaria serpyllifolia* ssp. *leptoclados*	DS, A				r																								
Thyme-leaved sandwort	*Arenaria serpyllifolia* ssp. *serpyllifolia*	DS, A			o	r		o		r				o	r	r	o	r									r			
Jersey thrift	*Armeria arenaria*	LD		r	o	r		f									o - f													
Downy oat-grass	*Avenula pubescens*		f	r	r				f	r	o	o									o		r							
Great quaking grass	*Briza maxima*	A																									o			
Soft-brome	*Bromus hordeaceus*	A	r				r					r			r															
Small hare's-ear	*Bupleurum baldense*	LD, A				o																					o			
Sand sedge	*Carex arenaria*	DS	r	r	o	r	o	f	r	r			o	o	o	r	o	o	o	o	o	r	r							
Sea fern-grass	*Catapodium marinum*	A			r		r	o									r													
Fern-grass	*Catapodium rigidum*	A																										r		r
Rough star-thistle	*Centaurea aspera*	LD					o	f																						
Common centaury	*Centaurium erythraea*	DS, A		r	r	r								r	r	r				o						r				
Common mouse-ear	*Cerastium fontanum*	DS		r									r										r			o				
Mouse-ear species	*Cerastium sp.*	DS			f		f	r							o	r	o	r												r
Grey hair-grass	*Corynephorus canescens*	LD, DS																								o	r			
Smooth hawk's-beard	*Crepis capillaris*	DS	r		o	o	o	o		r				r			r											r		
Cock's-foot	*Dactylis glomerata*		r				r		o	o	f	f	r	r	r		r				r	o		r						
Heath-grass	*Danthonia decumbens*																						o							
Wild carrot	*Daucus carota*	DS					r										r				r									
Bell heather	*Erica cinerea*																						a	a						
Common stork's-bill	*Erodium cicutarium*	DS, A						r																						
Sea holly	*Eryngium maritimum*	DS																									r	o-f		
Portland spurge	*Euphorbia portlandica*	DS	r		r	o	o	o	r	r						o	r	o			r		r							
Eyebright	*Euphrasia officinalis*	DS, A																			o						f	f		
Red fescue	*Festuca rubra*											r										o								r
Fescue species	*Festuca sp.*		f	o		o		o	f	f	f	r	o	o	a	f	o	o	f	o	f		f	f							
Lady's bedstraw	*Galium verum*	DS		o	f	o	f	o	r	r	r	o	o	o	o	r	o - f	r	o	r	o	o	o	r							
Dove's-foot crane's-bill	*Geranium molle*	DS, A			r										r										r					
Cape cudweed	*Gnaphalium undulatum*																r													
Yorkshire-fog	*Holcus lanatus*	LD																								r				
Smooth cat's-ear	*Hypochaeris glabra*	LD								r						r		r									r	o		
Common cat's-ear	*Hypochaeris radicata*	DS	r	r			r			r				r							r							o			
Crested hair-grass	*Koeleria macrantha*				r		r	o			r			r		r	r		r	r	r							r			
Hare's-tail	*Lagurus ovatus*	DS																							o	o	r		o	r
Lesser hawkbit	*Leontodon saxatilis*	DS	r														r				r							o-f		
Perennial rye-grass	*Lolium perenne*											r																		
Common bird's-foot-trefoil	*Lotus corniculatus*	DS		o	r								o	o	d	r			r	r	o						o	r	r	
Field wood-rush	*Luzula campestre*		r								r		r	o	r	r		r	r		o	r	d			r				
Early sand-grass	*Mibora minima*	LD			r	r	r	r									r	r												
Early forget-me-not	*Myosotis ramosissima*	A		r	r																				o		o	o		r
Fragrant evening-primrose	*Oenothera stricta*	DS		r	r		r	o									f	o		r					o		r		o - f	r
Common restharrow	*Ononis repens*	DS	o	r	o		f	f	r		r				r	r	o	o			o	r								
Common broomrape	*Orobanche minor*	A					r																							
Sand cat's-tail	*Phleum arenarium*	DS																											o	
Mouse-ear hawkweed	*Pilosella officinarum*																												r	
Shaggy Mouse-ear hawkweed	*Pilosella peleteriana*																													
Buck's-horn plantain	*Plantago coronopus*				r		r	r							r			r									r		o	
Ribwort plantain	*Plantago lanceolata*	DS	o	o	r		r			o		o	r	o	r	r			o	r	r	r	r	r				o			
Smooth meadow-grass	*Poa pratensis*								r																					
Meadow-grass species	*Poa sp.*							r																						
Rough meadow-grass	*Poa trivialis*	LD																								r		r		
Four-leaved allseed	*Polycarpon tetraphyllum*	LD			r	r											r	r										r		
Common milkwort	*Polygala vulgaris*		r											r																
Sand crocus	*Romulea columnae*	LD																r												
Bramble	*Rubus fruticosus*		o	o																										
Common sorrel	*Rumex acetosa*	DS													r		r								r	o	r	f	r	
Sheep's sorrel	*Rumex acetosella*																			r										
Biting stonecrop	*Sedum acre*	DS		r	o	o	r	o							r	r	r	r		r										
White stonecrop	*Sedum album*																								r	o			r	r
Ragwort	*Senecio jacobaea*				r		r								r		r		r		r									

Table 23 Dune Plain Quadrat Data

English Name	Scientific Name	Species Code	Quadrat Number																									
			DPQ1		DPQ2		DPQ3		DPQ4		DPQ5		DPQ6		DPQ7		DPQ8		DPQ9		DPQ10		DPQ11		DPQ12		DPQ13		DPQ14	
Field madder	*Sherardia arvensis*	DS																									o	
Dandelion	*Taraxacum officinale agg*	DS																							r	o	o	o	f	r
Wild thyme	*Thymus polytrichus*	DS	o	o					r	o	o	r	o	o	o	r		r	f	r	o		r						
Hare's-foot clover	*Trifolium arvense*	DS, A						r		r						r													
Hop trefoil	*Trifolium campestre*	A			r					r						r													
Rough clover	*Trifolium scabrum*	A			r		r								r		r												
Grey field-speedwell	*Veronica polita*	A			r										r														
Speedwell species	*Veronica sp.*									r																			
Hairy tare	*Vicia hirsuta*	DS, A	r			r			r	r		r	r								d - f			r					
Spring vetch	*Vicia lathyroides*	A			r						r												r						
Common vetch	*Vicia sativa*	DS, A	r						r	r	r	r	r	r																r
Dwarf pansy	*Viola kitaibeliana*	A																									r			
Squirreltail fescue	*Vulpia bromoides*	A													r		r													
Dune fescue	*Vulpia fasciculata*	A															r													
Fescue species	*Vulpia* sp.	A						r										r		r										
Mosses																														
Moss species	*Dicranum scoparium*																		r											
Moss species	*Dicranella heteromalla*																								f - a					
Moss species	*Hypnum cupressiforme*																										o			
Moss species	*Hypnum sp.*			o		o		r						o				r		o		o							f	
Moss species	*Scleropodium purum*		o						r	r			f	o				r	o		o		o	o	r					
Moss species	*Tortula sp.*			r	o		r										r													
																										o				
Lichens																														
																									o					
Lichen species	*Cladonia rangiferina*			o	f		o										o										f	f		
Lichen species	*Cladonia sp.*					f		r						o				r		f							f			
Lichen species	*Parmelia sp.*																										r			
Dog Lichen	*Peltigera canina*				r		r																							
Total number of species			**21**	**21**	**31**	**19**	**26**	**25**	**13**	**21**	**12**	**15**	**15**	**23**	**24**	**20**	**30**	**23**	**14**	**17**	**21**	**11**	**15**	**9**	**11**	**14**	**24**	**18**	**13**	**14**

Key:

d = dominant
a = abundant
f = frequent
o = occasional
r = rare
l = local/locally

Changes in abundance levels of two or more steps

DS = dune species
LD = species of local distinctiveness
A = annual species

Table 24 High Dune Quadrat Data

English Name	Scientific Name	Species code	Quadrat Number																															
			HDQ4		HDQ5		HDQ6		HDQ7		HDQ8		HDQ9		HDQ10		HDQ11		HDQ12		HDQ13		HDQ14		HDQ15		HDQ16		HDQ17		HDQ18		HDQ19		HDQ20	
Survey Year			2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	2014	2005	5014	2005	2014	2005	2014	2005	2014	2005	2014
Plant Community			C	C	B/Bi	B	C/B	Bi/I	J	J	C	C	J	J	C/Bi	C	J	J	B	Bi/J	J	I	C/S	C/S	B	B	C	C	E/D	D/E	B	B	B	B	B	B
Sward height in cm				64		4		85		3		90		8		3		8		12		5	3-20	4	1-20	5-10		2		25	10-15	3		7	2-6	7
Bare Ground (%)			20	15	5	1	<1	<5	0	1	10	20	0	0	5	70	0	0	0	0	8	1	50	2	20	0	6	2	0	0	0	5	0	2	4	0
Trees & Shrubs																																				
Hawthorn	*Crataegus monogyna*											r								r															
Wild privet	*Ligustrum vulgare*													r																					
Evergreen oak	*Quercus ilex*							r																	r					r	r				
Pedunculate oak	*Quercus robur*																														r					
Burnet rose	*Rosa pimpinellifolia*	DS		o		f	o	o	a	a	r	f	d	a			d	a	f	a	a	d		r	o	a	r		f	f	a	a	f	f	f	a
Common gorse	*Ulex europaeus*																																			
Herbs, grasses and ferns																																				
Silver hair-grass	*Aira caryophyllea*	DS, A				o				r																						r				
Early hair-grass	*Aira praecox*	DS, A	o		r	r			r	r			r		r	r					o	r									r	r		o		
Garlic mustard	*Alliaria petiolata*																																			
Wild onion	*Allium vineale*	DS																																		
Marram	*Ammophila arenaria*	DS	o	a				f			a	a	r	r	o	r							r	r			o	o	o	f				o		r
Sweet vernal-grass	*Anthoxanthum odoratum*										o																		f	o			o			r
Thyme-leaved sandwort	*Arenaria serpyllifolia* ssp. *leptoclados*	DS, A		r												r																				
Thyme-leaved sandwort	*Arenaria serpyllifolia* ssp. *serpyllifolia*	DS, A				r	r		r	r												r	o	r	o	o	r	r			o	r		r	o	r
Jersey thrift	*Armeria arenaria*	LD			r		r																											r		
False oat-grass	*Arrhenatherum elatius*																														r					
Downy oat-grass	*Avenula pubescens*																													r						
Great quaking grass	*Briza maxima*	A						o																												
Soft-brome	*Bromus hordeaceus*	A			r			r	r								r						r	r				r							
Small hare's-ear	*Bupleurum baldense*	LD, A			o				r												r			r								r			
Sand sedge	*Carex arenaria*	DS			o	o	r	o	r	r			r	r					o	f	r			o		r		f		o		o			
Fern-grass	*Catapodium rigidum*	A																					r													
Sea fern-grass	*Catapodium marinum*	DS, A					r		r	r			r			r							o	r	o	o		r			o					
Rough star-thistle	*Centaurea aspera*	LD			o	r											o	o							r						o			r		
Common centaury	*Centaurium erythraea*	DS, A									o										r			r		r			f							
Common mouse-ear	*Cerastium fontanum*	DS												r					r	r											r					
Mouse-ear species	*Cerastium sp.*	DS	o			r	o			r		f	o	r		r					o		o		f	f		o			o	r		r	f	r
Slender thistle	*Carduus tenuiflorus*																																			
Grey hair-grass	*Corynephorus canescens*	LD		o											r	o								r		f	o	r								
Smooth hawk's-beard	*Crepis capillaris*	DS	r				r		r			o	r	o			r	o			r		r		r					o				r		
Cock's-foot	*Dactylis glomerata*						r				o																	r	o							
Wild carrot	*Daucus carota*	DS			r		r				o	o			r										r											
Sea couch	*Elytrigia atherica*																								r											
Blue fleabane	*Erigeron acer*						r																													
Common stork's-bill	*Erodium cicutarium*	DS																			r			r										r		
Common whitlowgrass	*Erophila verna*	A														r					r										r				
Sea holly	*Eryngium maritimum*	DS	r					r																												
Portland spurge	*Euphorbia portlandica*	DS	r			o	r	o	r	r		r		r			r	o		r	r	o	r	r	r	f		r		r	f	r		r	r	o
Eyebright	*Euphrasia officinalis*	DS, A																						r												
Sheep's-fescue	*Festuca ovina*		o			o	r		r	o			f	f			f	f			f	o		a	o	f				o	o	o		f	o	o
Red fescue	*Festuca rubra*										f									f																
Lady's bedstraw	*Galium verum*	DS		r		r	o	r	f	r		r	f	o							f	r		o		f					r		r		o		r
Dove's-foot crane's-bill	*Geranium molle*	DS, A					r																													
Cape cudweed	*Gnaphalium undulatum*			r								r																								
Lizard orchid	*Himantoglossum hircinum*	LD																																		
Yorkshire-fog	*Holcus lanatus*											o																								
Smooth cat's-ear	*Hypochaeris glabra*	LD																				r		r		r		r				r		r		r
Common cat's-ear	*Hypochaeris radicata*	DS	r	r			r		r				r	r			r			r	r	o	r			r					r					
Crested hair-grass	*Koeleria macrantha*		r		r	r	r		r		r		d			r	r		r	r	r	r	f		r		o	r			o		o			
Hare's-tail	*Lagurus ovatus*	DS																																		
Lesser hawkbit	*Leontodon saxatilis*	DS	o	o	r		r	r	r		r	o	r	o	o			o	r		r		r		o	o	r				o		r	r	r	
Common bird's-foot-trefoil	*Lotus corniculatus*	DS												o						r										r			r		r
Field wood-rush	*Luzula campestre*					r			r				o	r					r		o			r	r	r				r	r	r		o		
Early sand-grass	*Mibora minima*	LD		o																	r							f			r			o		
Early forget-me-not	*Myosotis ramosissima*	A																							r											
Fragrant evening-primrose	*Oenothera stricta*	DS		o		o	o	o		r		o	r	r		r	r	r								r	o					r				
Common restharrow	*Ononis repens*	DS	o	o				o	r		o	o		o	f	o	o		f	a			r	f	o	o	o	f					r			
Sand cat's-tail	*Phleum arenarium*	DS	o												r	r							o				r							o		
Mouse-ear hawkweed	*Pilosella officinarum*																																			
Shaggy Mouse-ear hawkweed	*Pilosella peleteriana*												r																							
Buck's-horn plantain	*Plantago coronopus*																																		r	
Ribwort plantain	*Plantago lanceolata*	DS				r			r	r	r	r					o		o	o				r								o	r	r	r
Smooth meadow-grass	*Poa pratensis*																												r							
Rough meadow-grass	*Poa trivialis*						f																													
Four-leaved allseed	*Polycarpon tetraphyllum*	LD		r						r															r						r	r		r		
Common milkwort	*Polygala vulgaris*													r				r	r				r											r		
Bracken	*Pteridium aquilinum*							o																								r	r				
Bramble	*Rubus fruticosus*										r	o																									
Common sorrel	*Rumex acetosa*										r																									
Biting stonecrop	*Sedum acre*	DS	r		r	r	o		o	r					r	r	r		r		r	r	o		o	r	r	o			r	r	r		o	

Table 24 High Dune Quadrat Data

English Name	Scientific Name	Species code	Quadrat Number																															
			HDQ4		HDQ5		HDQ6		HDQ7		HDQ8		HDQ9		HDQ10		HDQ11		HDQ12		HDQ13		HDQ14		HDQ15		HDQ16		HDQ17		HDQ18		HDQ19		HDQ20	
White stonecrop	*Sedum album*																						f	o											
Ragwort	*Senecio jacobaea*				r		r		r			r	r	r			r	r	r	r	r			r	r			o							
Field madder	*Sherardia arvensis*								r																										
Nottingham catchfly	*Silene nutans*	DS						r	r	r				r																		r			
Prickly sow thistle	*Sonchus oleraceus*							r																											
Dandelion	*Taraxacum officinale agg*		r								r							r					r												
Wild thyme	*Thymus polytrichus*	DS	r	r	o	o		o	o	o			f	o		r	o	f	f		o		o	o	o	f	r	f	r	o	o	o	o	o	r
Hop trefoil	*Trifolium campestre*	A																						r											
Germander speedwell	*Veronica chamaedrys*																		r		r														
Grey field-speedwell	*Veronica polita*	A							r												o								o						
Hairy tare	*Vicia hirsuta*	DS, A																										r							
Common vetch	*Vicia sativa*	A					r					r	r														r								
Dwarf pansy	*Viola kitaibeliana*	LD, A																											r						
Squirreltail fescue	*Vulpia bromoides*	A																																	
Dune fescue	*Vulpia fasciculata*	DS, A																							r					r					
Fescue species	*Vulpia sp.*	A								r																			r						
Mosses												a		a																					
Moss species	*Campylopus sp.*		o																				o		f						f			
Moss species	*Dicranum scoparium*							f																							r			r	
Moss species	*Dicranella heteromalla*																									a									
Moss species	*Hypnum cupressiforme*																		r								o			r					
Moss species	*Hypnum sp.*		a			a	a			o						o						f		f		f					f		f		
Moss species	*Scleropodium purum*																							r				a			r		f		
Moss species	*Tortula sp.*														r	r					r	r	r				r	f							
Lichens																																			
Lichen species	*Cladonia rangiferina*																						f						f	o		o	f		
Lichen species	*Cladonia sp.*		r			f	a	o-f		f																a									
Lichen species	*Parmelia sp.*																						f	r						r			f		
Dog lichen	*Peltigera canina*																							o						r					
Total number of species recorded			18	13	12	19	24	18	23	19	14	18	18	21	9	15	14	11	14	12	22	13	21	25	21	24	13	19	8	14	28	18	14	19	21	13

Key:

d = dominant
a = abundant
f = frequent
o = occasional
r = rare
l = local/locally

DS = dune species
LD = species of local distinctiveness
A = annual species

(+) species recorded in previous year and not re-located in 2005

Changes in abundance levels of two or more steps

Table 25 Southern Area Quadrat Data

English Name	Scientific Name	Species Code	Quadrat Number, Habitat Type and DAFOR									
			SAQ1		SAQ2		SAQ3		SAQ4		SAQ6	
Survey Year			**2005**	**2014**	**2005**	**2014**	**2005**	**2014**	**2005**	**2014**	**2005**	**2014**
Plant Community Code			**L**	**L**	**B**	**B**	**D**	**Bi**	**E**	**J**	**B**	**Bi**
Sward height (cm)			**10-15**	**30**	**2-4**	**8**	**19**	**8**	**41**	**18**	**5-10**	**8-10**
Bare Ground (%)			0	0	<10	0	0	0	0	0	<10	0
Trees & Shrubs												
Burnet rose	*Rosa pimpinellifolia*	DS	f - a	f		a	o - f	a	o	d		o
Spurge-laurel	*Daphne laureola*				o				r		r	
Herbs, Grasses & Ferns												
Common bent	*Agrostis capillaris*		o	f	lr	r			a	o		r
Silver hair-grass	*Aira caryophyllea*	DS, A		o		r	r	f				
Early hair-grass	*Aira praecox*	DS, A			o	o		r				r
Marram	*Ammophila arenaria*	DS							d			
Sweet vernal-grass	*Anthoxanthum odoratum*		a	o		o	o		a		r - o	o
Thyme-leaved sandwort	*Arenaria serpyllifolia ssp serpyllifolia*	DS, A			lr	r		o				o
Jersey thrift	*Armeria arenaria*	LD									r	o
Soft-brome	*Bromus hordeaceus*	A										r
Slender thistle	*Carduus tenuiflorus*									o		
Sand sedge	*Carex arenaria*	DS		o		o	o	o			f	o
Fern-grass	*Catapodium rigidum*	A				r						o
Mouse-ear species	*Cerastium sp.*	DS			r		r					o
Smooth hawk's-beard	*Crepis capillaris*	DS										f
Cock's-foot	*Dactylis glomerata*								r		r	
Bell heather	*Erica cinerea*		a	a								
Common stork's-bill	*Erodium cicutarium*	DS, A			r							
Sea stork's-bill	*Erodium maritimum*	A			r							
Common whitlowgrass	*Erophila verna*	A			r							
Portland spurge	*Euphorbia portlandica*	DS										o
Sheep's-fescue	*Festuca ovina*		f	f	r	o		f		f	r	r
Red fescue	*Festuca rubra*											
Common cudweed	*Filago germanica*	A			r							
Lady's bedstraw	*Galium verum*	DS	r		r	f		r	o - f	o	o - f	f
Smooth cat's-ear	*Hypochaeris glabra*	LD				o	r	o				r
Lesser hawkbit	*Leontodon saxatilis*	DS			r						r-lo	
Common bird's-foot-trefoil	*Lotus corniculatus*	DS						o				
Field wood-rush	*Luzula campestris*			o		r		o				
Fragrant evening-primrose	*Oenothera stricta*	DS						r	o			r
Buck's-horn plantain	*Plantago coronopus*				r						r - o	
Ribwort plantain	*Plantago lanceolata*	DS						r			r	
Smooth meadow-grass	*Poa pratensis*								r	r		
Bracken	*Pteridium aquilinum*											
Buttercup sp.	*Ranunculus sp.*											r
Sand crocus	*Romulea columnae*	LD				r		r				
Wild madder	*Rubia peregrina*											
Bramble	*Rubus fruticosus*											
Sheep's sorrel	*Rumex acetosella*				r - o	o					r - o	r
Curled dock	*Rumex crispus*								r			
White stonecrop	*Sedum album*				lo	r					d	a
Ragwort	*Senecio jacobaea*		r						r	o	r	o
Wild thyme	*Thymus polytrichus*	DS	o					o	r			
Rough clover	*Trifolium scabrum*	A	r		r							
Wall speedwell	*Veronica arvensis*	A						o		r		r
Common vetch	*Vicia sativa*	A						r				
Total number of vascular plants			**9**	**8**	**16**	**17**	**6**	**18**	**12**	**8**	**13**	**21**
Mosses						f		o				
Moss species	*Dicranum scoparium*		lo		lr							
Moss species	*Hypnum cupressiforme*		r - lo		lo		o - f		r		r - o	
Moss species	*Scleropodium purum*				lr							
Moss species	*Tortula sp.*				r		o					
Lichens						o		f				
Lichen species	*Cladonia rangiferina*		r - lo		r						r	
Dog lichen	*Peltigera canina*				o							

NB: Q5 excluded IN 2014 as not a habitat of interest (bracken dominated)

Key:

d = dominant
a = abundant
f = frequent
o = occasional
r = rare
l = local/locally

DS = dune species
LD = species of local distinctiveness
A = annual species

Changes in abundance levels of two or more steps

Table 26 Escarpment Quadrat Data

English Name	Scientific Name	Species Code	Quadrat Number, Habitat Type and DAFOR					
			EQ1		EQ2		EQ3	
Survey Year			**2005**	**2014**	**2005**	**2014**	**2005**	**2014**
Plant Community Code			**L**	**L**	**L**	**Bi/L**	**L**	**B/L**
Sward height (cm)			**5**	**10**	**6**	**10**	**11**	**20**
Bare ground (%)			**0**	**1**	**5**	**10**	**0**	**0**
Trees & Shrubs								
Hawthorn	*Crataegus monogyna*							r
Spurge-laurel	*Daphne laureola*				r			
Wild privet	*Ligustrum vulgare*					r		
Evergreen oak	*Quercus ilex*			r				
Burnet rose	*Rosa pimpinellifolia*	DS	a	a	f	f	a - d	a
Herbs, Grasses & Ferns								
Silver hair-grass	*Aira caryophyllea*	DS, A		r		r		
Marram	*Ammophila arenaria*	DS						o
Sweet vernal-grass	*Anthoxanthum odoratum*		r	r				r
Downy oat-grass	*Avenula pubescens*						f	r
Sand sedge	*Carex arenaria*	DS				r		r
Sedge species	*Carex sp.*	DS					o	
Common centaury	*Centaurium erythraea*	DS, A	l - r	r	o		r	
Common mouse-ear	*Cerastium fontanum*	DS	l - r		o		r	
Mouse-ear species	*Cerastium sp.*					r		
Smooth hawk's-beard	*Crepis capillaris*	DS			r - o			
Heath-grass	*Danthonia decumbens*		r					
Bell heather	*Erica cinerea*		a	f	o	f	a - d	f
Portland spurge	*Euphorbia portlandica*	DS				r		r
Sheep's-fescue	*Festuca ovina*		a	o	a	o	r - o	o
Lady's bedstraw	*Galium verum*	DS	r- o	o	r - o	o		r
Ivy	*Hedera helix*							r
Crested hair-grass	*Koeleria macrantha*		o					
Lesser hawkbit	*Leontodon saxatilis*	DS			r			
Common bird's-foot-trefoil	*Lotus corniculatus*	DS	r	o	o	o		
Field wood-rush	*Luzula campestre*		r - o		r			
Fragrant evening-primrose	*Oenothera stricta*	DS						r
Ribwort plantain	*Plantago lanceolata*	DS					r	
Smooth meadow-grass	*Poa pratensis*		l - o					
Heath milkwort	*Polygala serpyllifolia*			r				
White stonecrop	*Sedum album*				r			
English stonecrop	*Sedum anglicum*			r				
Ragwort	*Senecio jacobaea*				r			
Nottingham catchfly	*Silene nutans*	DS	r			o		
Wild thyme	*Thymus polytrichus*	DS		r		r	r	
Mosses								
Moss species	*Dicranum scoparium*			r		r		
Moss species	*Hypnum cupressiforme*					r		
Lichens								
Lichen species	*Cladonia rangiferina*			r		o		
Total number of species			**13**	**14**	**13**	**15**	**9**	**12**

Key:

d = dominant
a = abundant
f = frequent
o = occasional
r = rare
l = local/locally

Changes in abundance levels of two or more steps

DS = dune species
LD = species of local distinctiveness
A = annual species

Table 27 Changes in the Plant Communities and Species of the Quadrats between 2005 and 2014

	Plant Community			Species of Local Distinctiveness		Dune Species		Annual Species	
Dune Plain	**2005**	**2014**	**Habitat Change**	**2005**	**2014**	**2005**	**2014**	**2005**	**2014**
DPQ1	D/E	D/C	Yellow/grey to yellow	0	1	13	13	10	6
DPQ2	B	B	No change	3	3	14	12	5	3
DPQ3	B	B/Bi	No change	2	2	11	13	2	6
DPQ4	E	E	No change	0	1	8	13	2	6
DPQ5	E	E	No change	0	0	6	7	2	3
DPQ6	E	B	No change (both grey dunes)	0	0	10	12	2	4
DPQ7	Bi	B	No change	0	1	14	14	9	6
DPQ8	B	B/Bi	No change	3	4	14	11	7	4
DPQ9	B/Bi	B	No change	0	0	8	11	2	4
DPQ10	D/Bi	D/Bi	No change	0	0	13	6	0	0
DPQ11	Bi/L	Bi/L	No change	0	0	7	4	1	1
DPQ12	C	C	No change	0	2	6	9	1	2
DPQ13	B	B	No change	2	3	12	12	4	4
DPQ14	B/C	Bi/C	No change	0	0	9	7	0	3
Average Number				*0.7*	*1.2*	*10.4*	*10.3*	*3.4*	*3.7*

High Dunes	**2005**	**2014**	**Habitat Change**						
HDQ4	C	C	No change	0	3	12	9	1	1
HDQ5	B/Bi	B	No change	3	1	6	12	3	3
HDQ6	C/B	Bi/I	Yellow/grey to grey and bracken	1	0	14	11	4	2
HDQ7	J	J	No change	1	1	15	14	6	5
HDQ8	C	C	No change	0	0	7	11	1	1
HDQ9	J	J	No change	0	0	12	15	3	0
HDQ10	C/Bi	C	Yellow/grey to yellow	1	1	7	10	1	4
HDQ11	J	J	No change	1	1	9	6	1	0
HDQ12	B	Bi/J	No change	0	0	8	8	0	0
HDQ13	J	I	No change	2	1	12	7	6	2
HDQ14	C/S	C/S	No change	0	2	12	14	4	8
HDQ15	B	B	No change	1	3	13	13	4	3
HDQ16	C	C	No change	1	3	9	10	1	3
HDQ17	E/D	D/E	No change	0	0	4	8	2	1
HDQ18	B	B	No change	4	2	12	11	7	3
HDQ19	B	B	No change	1	2	6	13	1	2
HDQ20	B	B	No change	3	1	12	9	3	1
Average Number				*1.1*	*1.2*	*10.0*	*10.6*	*2.8*	*2.3*

Southern Dunes	**2005**	**2014**	**Habitat Change**						
SAQ1	L	L	No change	0	0	2	3	1	1
SAQ2	B	B	No change	0	2	6	4	7	4
SAQ3	D	Bi	Yellow to grey	1	1	4	10	1	5
SAQ4	E	J	No change	0	0	4	1	0	0
SAQ6	B	Bi	No change	1	2	3	9	0	5
Average Number				*0.4*	*1.0*	*3.8*	*5.4*	*1.8*	*3.0*

Escarpment	**2005**	**2014**	**Habitat Change**						
EQ1	L	L	No change	0	0	6	6	1	2
EQ2	L	Bi/L	Heathland to grey/heathland	0	0	7	8	1	1
EQ3	L	B/L	Heathland to grey/heathland	0	0	5	6	1	0
Average Number				*0.0*	*0.0*	*6.0*	*6.7*	*1.0*	*1.0*

The Plant Communities are described in Appendix 2
Species lists for the: Species of Local Distinctiveness, Dune Species and Annual Species are given in Appendix 5

FIGURES

33500.000000 34000.000000 34500.000000 35000.000000

67500.000000 67000.000000 66500.000000 66000.000000

Cafe

4 Le Mont a la Brune (Upper CP)

3 Le Mont a la Brune (Lower CP)

5 Le Braye (CP)

Five Mile Road

2 La Carriere CP

1 La Pulente (Long stay CP)

Bosdet Golf Course

La Moye Golf Course (east)

La Moye Golf Course (west)

Quarry

Dune Plain

Bosdet

High Dune

Escarpment

Frontal Dunes

Southern Area

Aerial photography: States of Jersey 2013

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

Legend

- 2014 survey boundary
- 2005 survey boundary within SSI
- Dune areas
- Additions for 2014
- Car Park
- Cafe
- Golf Course
- Quarry
- Road

N

ISO A3

Metres

0 25 50 100 150

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Project Name: Vegetation Condition Assessment - LBB 2014

Discipline: Ecology

Title:

Overview of Survey Areas 2014 and 2005

Scale	Drawing No.	
1:7,000	Figure 1	
Drawn By: JL	Originator: KL	Date: MAR 2015
PAA Ref: G:\JIDC30-31_Remapping_2014\Maps\Figures_ConditionAssessment_JIDC30	Revision: B	