



## CASTLEMARTIN RANGE

### Integrated Land Management Plan



Army Training Estate, Pembrokeshire

## **ACKNOWLEDGEMENT**

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### **CONTRIBUTING ORGANISATIONS**

Cambria Archaeology

Countryside Council for Wales

Environment Agency Wales

Field Studies Council

Ministry of Defence	-	Defence Estates
	-	Army Training Estate
	-	South Pembrokeshire Range Recording and Advisory Group

Pembrokeshire Coast National Park Authority

Pembrokeshire County Council

RPS Clouston (Consultants)

The National Trust

Dyfed Wildlife Trust

British Institute

## **GLOSSARY**

ATE	Army Training Estate
CA	Cambria Archaeology
CCW	Countryside Council for Wales
CMP	Component Management Plan
DE	Defence Estates
EIA	Environmental Impact Assessment
GIS	Geographical Information System
ILMP	Integrated Land Management Plan
MoD	Ministry of Defence
NOPD	Notice of Proposed Development
PO	Primary Objective
PCNPA	Pembrokeshire Coast National Park Authority
PID	Project Initiation Document
PIT	Project Implementation Team
SPRRAG	South Pembrokeshire Ranges Recording and Advisory Group
WW1	World War One

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## **SECTION 1.0**

## **PREAMBLE**

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### **1.1 INTRODUCTION**

**1.1.1** The Ministry of Defence (MoD) occupies land and property solely to support the delivery of defence capabilities. MoD recognises that there are other interests, especially relating to conservation, agriculture and recreation that need to be taken into account if the Estate is to be sympathetically managed in a way that sustains the various interests.

**1.1.2** The Integrated Land Management Plan (ILMP) for Castlemartin Range has been prepared by Defence Estates (DE) Brecon, the Commander and staff of the Army Training Estate Pembrokeshire together with the joint stakeholders, the Pembrokeshire Coast National Park Authority (PCNPA) and the Countryside Council for Wales (CCW) (see 1.3.1). Many other statutory, and non-statutory organisations and individuals with an interest in the management of the Range have made valued contributions to the ILMP (see page 1).

**1.1.3** MoD's commitment to the interests above are supported by its " 1987 Declaration of Commitment to the National Parks " its " 1995 Declaration of Intent " with CCW and in formal agreements to its agricultural tenants. MOD has prepared a national Strategy for the Defence Estate, part of which relates to the rural estate. The strategy reflects the significant changes in the use of the Estate following the Strategic Defence Review (see section 4.0).

### **1.2 ORIGINS OF THE ILMP**

**1.2.1** In 1993 a mechanised brigade exercise on Salisbury Plain caused significant damage to the training area. This resulted in MoD commissioning a study into the effects that such training would have on the Plain's environment. The study identified the need for a long term monitoring strategy, a prerequisite of which was an assessment of existing baseline conditions, which could be used to inform future management decisions. Various organisations were consulted on the development of management plans but their suggestions were too focussed on certain aspects for them to be fully relevant to the management of the diverse MoD Estate. Defence Estates, HQ Land Command, and Consultants, developed a management plan appropriate for the Defence Estate which, in 1995, led to a programme for the preparation of Integrated Land Management Plans.

**1.2.2** In order to meet MoD's commitment to integrated training area management a UK Project Team, headed by HQ Land Command and Defence Estates, was formed for the production of 14 ILMPs in the UK. The Project Team produced a " Project Initiation Document " (PID) and commissioned consultants to produce 8 scoping studies on representative sites. A format for the content and production of ILMPs was developed and work on the ILMPs for MoD's Pembrokeshire Ranges commenced in 1996.

### **1.3 THE MANAGEMENT OF THE ILMP PROCESS AND PLAN**

**1.3.1** The MoD formed a Project Implementation Team (PIT) to advise and assist in the production of the three ILMPs for its Pembrokeshire Training Estate Ranges i.e. Castlemartin, Manorbier and Penally. The Pembrokeshire Coast National Park Authority and the Countryside Council for Wales (with whom MoD have entered into Declarations of Intent and Commitment respectively) are referred to as stakeholders in the process, as are the representatives of other key statutory and non statutory organisations and individuals appointed to the PIT. The PIT members are all members of the South Pembrokeshire Range Recording Advisory Group (SPRRAG) who are representatives of Statutory Bodies, Non Statutory Organisations and individuals who have a wide knowledge of the special interests that are found within the South Pembrokeshire area.

### **1.4 THE AIM OF THE ILMP**

**1.4.1** The aim of the ILMP is to maximise the military training potential of each area in a way that is consistent, economic and environmentally acceptable using wide consultation to produce strategic management plans to optimise sustainable levels of military training. Sustainable levels of each interest in the range vary from site to site. A sustainable level of military training for example is defined as the degree of use that does not cause unacceptable changes to other interests (especially environmental and conservation ones).

**1.4.2** The ILMP reflects the objectives of various land uses on the Range and provides a framework upon which future management decisions can be made. Ongoing monitoring is an essential requirement for sustainable use.

**1.4.3** To fulfil the purpose of the ILMP certain tasks need to be achieved.

- Describe and map environmental and training resources to provide baseline information.
- Identify objectives for each land use.
- Provide management information to support decisions on military training and associated infrastructure aspirations for the next 1-10 years.
- Establish sustainable levels of military training.
- Identify the requirements for environmental protection, damage prevention, mitigation and remediation.
- Monitor levels of military training and the condition of environmental resources.
- Formally review and update management procedures.

**1.4.4** The ILMP provides prescriptions within the component plans and identifies where these conflict with other component plans. Recommendations are made for those prescriptions that should be implemented. The ILMP process provides a framework for fully integrating military activities with other land uses including nature conservation, cultural heritage, archaeology, agriculture, forestry, landscape and recreation and special interests. It provides a method for defining:

- the optimal planning of military activities
- the balanced management of the non- military uses of the rural estate

and, in the future, is planned to provide an assessment of sustainable levels of military training

**1.4.5** An integrated approach to management is addressed by ensuring that interested parties, including Statutory Bodies and Non-Governmental organisations, are consulted and their responsibilities and concerns for the site considered in the production of the ILMP.

**1.4.6** Castlemartin Range, which is set in the Pembrokeshire Coast National Park, has the following designations: -

- Angle Bay to Caldey Island Heritage Coast
- Pembrokeshire Coast Path National Trail
- The Castlemartin Cliffs & Dunes Site of Special Scientific Interest
- Number of Scheduled Ancient Monuments & Listed Buildings
- Limestone Sea-Cliffs of South West Wales candidate Special Area of Conservation
- Castlemartin Coast Special Protection Area

**1.4.7** The individual CMPs (see section 2.0) contain specific detail relating to the designations together with the attendant responsibilities and priorities. The statutory designations influence the military use, and help to define the priorities for the non-military use, of the Range.

## **1.5 COMPONENT MANAGEMENT PLANS ( CMP's ).**

**1.5.1** The six CMP categories represent the main land uses on the site and they encapsulate many different interests e.g. Access and Recreation includes, walkers, sightseers, fishermen (commercial and recreational), rock climbers and yachtsmen. The main section of the ILMP comprises the CMPs which set the baseline for each of the main land uses on the site, identifying the current practices and customs and proposed objectives for the future management. CMPs have been written for:

- Military Use
- Archaeology and Cultural Heritage
- Nature Conservation
- Landscape
- Access and Recreation
- Estate Management

**1.5.2** The CMPs have been written by the Chair (or their nominee) of each CMP team which is composed as follows: -

- Chair - An individual with relevant specialist knowledge and experience.
- Members - Representatives of Statutory Bodies and Non Statutory organisations that form part of the SPRRAG

**1.5.3** MoD's consultants have carried out extensive survey work (to provide basic information for the writing of the CMPs, to supplement the information currently held for the range.

**1.5.4** The CMPs have been written in a broadly common format to consider the following points.

- A description of the current management and interests at Castlemartin.
- Objectives for maintaining and enhancing the interests.
- An analysis of current achievements in meeting the objectives and the likely interaction with the other CMPs.
- Prescriptions for meeting the objectives, which provide a basis for the integration phase and the costed Action Plans for implementation.

**1.5.5** The CMPs provide baseline information for the integrated management of the Range and set a series of primary and secondary objectives in each plan. The objectives reflect MoD's statutory, and non-statutory responsibilities, and its commitment to the MoD Strategy for the Defence Estate.

## **1.6 INTEGRATION PROCESS & FUTURE PLANS**

**1.6.1** Each CMP contains a set of objectives to protect, enhance and develop its interest. Section 4.0 of the ILMP sets out an integration process that is implemented through the prioritised work plan of the ILMP to achieve the objectives. The achievement of objectives will inevitably be constrained by many factors, for example finance, nature's cycle, social pressures etc. The CMP chairs, the DE Land Agent and the Commander ATE (Pembrokeshire), who together form the Management Implementation Team (MIT), carry out this integration process. Where conflicts cannot be resolved locally they are referred to Headquarters Army Training Estate for a decision.

**1.6.2** Within the ILMP process, the Military CMP identifies infrastructure development proposals for the site for the next 1 – 10 years. These developments will, as usual, form the basis of Planning Consultations



and provide an opportunity for Commander ATE (Pembrokeshire) to discuss alternatives and any necessary remediation measures. The advantage of the ILMP process is that it provides visibility of these developments so that the direct and indirect effects can be considered for the site as a whole at the earliest possible stage in the development process. There are proposals for the development of Castlemartin in the Strategic Defence Review and these developments are addressed in the Military Training CMP, as well as in the Higher Level Environmental Appraisal for the Rural Estate, which was produced in 2000 to take account of the SDR proposals.

- 1.6.3** When significant future changes or developments are proposed for the use of the Range, such as those mentioned above, the flow chart (Table 4.3) will be followed to ensure that the proposals are fully integrated. The process is especially relevant to proposed development requiring planning clearance under Welsh Office Circular 37/84 procedures.

## **1.7 DEVELOPMENTS**

- 1.7.1** It is intended to incorporate CMP data onto a Geographical Information System (GIS) to facilitate ease of use and regular updating of management data. There is potential in the future for the GIS could be linked to the Army's Range Booking system (GP22) and be developed, for example, to record usage and damage.

- 1.7.2** The ILMP formula was originally devised in 1995, in response to a direct requirement for intervention and the requirement to develop a sustainable management tool. The ILMP concept is being developed as part of the Rural Estate Strategy (see [www.mod.uk](http://www.mod.uk)) as a means of delivering objectives and prescriptions on a site basis, this may mean that the current ILMP format is updated or reviewed as part of this MoD initiative.

## **1.8 MONITORING AND REVIEW**

- 1.8.1** Ongoing monitoring and review is an essential part of the ILMP process to provide an update for the integrated management of the Range and an assessment of the progress of action plans for the implementation of the CMP objectives. Section 5 of the document outlines the review process and the monitoring requirements of the ILMP.

- 1.8.2** The ILMP process is currently managed by the Project Implementation Team (see 1.3.1) who have contributed a considerable amount of time and dedication to the process and it is anticipated that this group will continue to carry out works identified in the Castlemartin work programme. On completion of the first edition of the ILMP, the PIT will be replaced by a Management Implementation Team (MIT) who will be responsible for the management, monitoring and implementation of the individual prescriptions. The Conservation Group, SPRRAG will continue to record and monitor species and habitats on the range. The results of this work will be passed to the MIT.

**1.8.3** The monitoring and review process will provide an opportunity to: -

- assess the progress of action plans.
- monitor the financial aspects of the action plans.
- monitor the changing condition of specific interests and features.
- review the ILMP on an ongoing basis and in response to changes in the use of the Range.
- Identify whether stakeholder responsibilities are being undertaken.
- provide information to SPRRAG
- provide information to the Annual Stewardship Report on the Management of the Defence Estate.

**1.8.4** It is also intended that an annual review will be undertaken by the Project Manager (ATE) and Defence Estates to ensure that the actions needed to achieve objectives identified in the component management plans are being undertaken. A secondary role will be to ensure that any new legislation or responsibilities relating to MoD, are incorporated into the ILMP.

## **I.L.M.P. RECREATION & ACCESS SUB-PLAN**

### **Castlemartin Range**

#### **Section 1 Description - Recreational Context and Use**

##### **1.1 Recreation - Overall Context**

The Castlemartin Range occupies an area of 2389 ha on the coast of South Pembrokeshire, entirely within the Pembrokeshire Coast National Park. The MoD also leases the foreshore of the Range area from the Crown Estate. The range can be considered broadly in three parts. (i) The coastal strip of Range East, from Stack Rocks Car Park in the West to Trevalen in the East where there is access during non-firing times. (ii) The remainder of Range East and Range West where access is by permit only (Map 1). (iii) The range also has a sea danger area, D113, which extends to approximately 12 nautical miles out to sea. This section of the plan will consider these three elements - Range East coastal strip, remainder of Range East and West and the sea area separately (Map 2). For the purposes of this plan, the foreshore leased by the MoD from the Crown Estate and the areas leased to the PCNP at Stack Rocks and St Govan's and Flimston Farm are included as an integral part of the Range.

##### **1.2 Range East (coastal strip) - access principles**

Access to Range East is by public road. There are three car parks serving the range:

- Broad Haven, National Trust paying car park giving access to the east.
- St Govan's Chapel, National Park Authority free car park.
- Stack Rocks a free car park also operated by the PCNP giving access to the western end of range east and the Green Bridge of Wales.

The car parks on both of the PCNP sites, together with the immediately surrounding land (Map 3) are leased by the PCNP from the MoD. From each of these car parks, access onto Range East is along the Pembrokeshire Coast Path (one of only 15 National Trails in England and Wales). Access to the coastal strip results from an earlier agreement by the MoD to limit use of chemical energy ammunition to Range West.

Under the Castlemartin Range bye-laws, access to the coastal strip of Range East is only available on days or parts of days when no firing is taking place (or evenings when there is no night firing). In practice it is permitted at some time of the day on most days of the year. Parts of the coastal strip may be available if they are unaffected by firing. Firing leads to the closure of the Stack Rocks road and (less frequently) the St Govan's road. The public are allowed to use the areas of land leased to the National Park Authority at Stack Rocks and St Govan's and the Coast Path east from Stack Rocks. Land between the Coast Path and the foreshore is also available for public access.

##### **1.3 Range West and inland Range East Access Principles**

The inland area of Range East has not been cleared of explosive remains from past use and is not available for uncontrolled public use because of the continued use of the area for chemical energy firing. Range West includes the present impact area for firing at Castlemartin and therefore has even more limited potential for access. Access to these areas is only given for specific activities to take place, usually at specific locations or routes, and given to named individuals who have been briefed (annually) about the hazards of the site. Access is of course only possible when no firing is in progress. The requirement for briefing applies to all users including graziers and MoD staff.

#### 1.4 **Description of use : Range East**

The coastal strip of Range East is used for a variety of recreational activities:

- 1.4.1. **Sight seeing:** St Govan's Chapel and Stack Rocks, together with the spectacular and easily-accessible coastal strip, provide an important and valued sight-seeing facility when the access roads are open. The PCNP car parks at Stack Rocks and St Govan's, and the NT car park at Broad Haven provide the only vehicle access onto a coastal landscape which is unique in Pembrokeshire and in particular give close-up views of a very wide range of seabirds, apparently without significant disturbance. They provide very easy access for those unable to walk to more remote areas and the car parks are frequently full to capacity (186) during the spring and summer periods.

The Chapel at St Govan's is leased from the MoD and is a valued visitor attraction. The National Park Authority restored it in 1980. The dramatic geomorphology of the coast, together with the cultural history of the site, adds to the quality of the visit. There is further visitor interest at Flimston Chapel (the key of the chapel is available at the guardroom) and potentially at Flimston Farm, when this becomes available for public access. There are interpretation boards at both car parks and ice cream tenders are let between April and September.

- 1.4.2. **Bird watching:** This site is valued both by enthusiasts and casual visitors. The car parks provide important access and there is a viewing platform above The Green Bridge of Wales allowing visitors to see one of the main seabird colonies without causing further cliff-edge erosion or running into danger.
- 1.4.3. **Walking and disabled access** The Coast Path here is part of the 186 -mile National Trail around Pembrokeshire. This Trail is important for visitors and locals and when it is closed for firing, a much less interesting road-based route of up to 12 km is a poor substitute (Map 3). Even when no firing is taking place the closure of Range West for access means that walkers passing the Range need to follow roads away from the coast for 7 km.

The 1997 Coast Path Users survey recorded that the zones from Angle to Stackpole were used by 30-40% of long distance users (walking for more than two consecutive days) and by only around 3% of short distance users. These are significantly lower proportions than would be expected in this area without the constraint of the range. Around 9% of all users questioned on the whole Coast Path recorded that military use had had a negative impact on their enjoyment of the walk.

The route along the coast at Range East provides unusually flat and easy walking for serious and casual walkers alike. In 1997 the path between Stack Rocks and St Govan's was gated, making it more available for less-able people. The hard surfaced bridleway between Stack Rocks and St Govan's is available for use by some types of wheelchairs.

- 1.4.4. **Climbing:** The cliffs of Range East are valued as some of the best sea-cliff climbing sites in Europe. For many years they have been the subject of extensive agreed voluntary cliff-climbing restrictions, negotiated at an annual cliff-climbing liaison group meeting between conservation organisations, the MoD, the British Mountaineering Council and the local Coastguard (see Appendix for detailed membership).

Despite these restrictions, which are designed to protect nesting and feeding areas for choughs, peregrines and a wide variety of seabirds, this remains the most heavily-used climbing area in Pembrokeshire with over 200 climbers being regularly present on spring bank-holiday weekend days with good

weather. Peaks of climbing are seen in the spring, with lower levels maintained throughout the summer. (Appendix 2 for climbing figures.) A Ranger has been employed to monitor use and inform climbers and other users of the importance of the area for nature conservation since 1992. The National Park and the MoD jointly funded this post. (The Ranger was 3 days per week in 1997.) In 1998 the post was jointly funded by PCNP/NT/MoD, extended to 5 days/week and given a larger area of the south coast to cover.

- 1.4.5. **Fishing:** The cliffs and rocks along Range East are used by small numbers of fishermen; access to fishing sites may also involve climbing and abseiling. Map 4 shows the main fishing sites.
- 1.4.6. **Cycling:** Climbers use mountain bikes to gain access along Range East. The Coast Path from Stack Rocks to St Govan's Chapel is of bridleway status and is increasingly used by cyclists as a through route. A SPARC cycleway leaflet published in 1995 includes this route. This is one of the only parts of the Pembrokeshire Coast Path registered as a bridleway and provides a rare opportunity for cycle access along a cliff coastal route apparently without major safety problems.
- 1.4.7. **Riding:** The bridleway is not very much used for horseriding but gates were installed in 1997. The bridleway here is one of the only routes in Pembrokeshire offering riding on a cliffed coastal route.
- 1.4.8. **Caving:** Caves on Range East are of considerable archaeological and biological conservation interest and have been of interest to cavers in the past. The main caves in the region are:

Ogof Garreg Hir  
Ogof Bran Goesgoch  
Ogof Morfran  
Ogof Gofan, Nr Saddle Head  
Ogof Pen Cyfrwy

Most of the caves are 'protected' by the problems of access to them (lying part way down the cliffs). The easiest cave for access Ogof Bran Goesgoch has not been excavated archaeologically but 2 others Ogof Gofan and Ogof Garreg Hir had some archaeological work carried out.

- 1.4.9. **Miscellaneous:** Other events on Range East include an RNLI sponsored walk, organised annually, on a circular route from St Govan's to Stack Rocks and Flimston Chapel with about 200 participants. There is public access to Newquay Beach during non-firing times. Military use includes abseiling and climbing. In 1998 a site in Range East was used for a televised challenge show

## **1.5 Description and Evaluation of Use: Range East (inland) & Range West**

### **1.5.1. Inland Range East**

The boundary between the coastal strip (with access) and the inland area of Range East is marked with white posts and signs. Access to the inland part of the Range is subject to the same rules as Range West (Below).

In recent years (since 1992) the MoD have organised an annual range ride and carriage-driving event on the inland area of Range East. Use has been restricted to the area shown in Map 4 and has involved around 200 people per day.

### **1.5.2. Range West**

Access to Range West is for a much wider variety of activities. The full list is shown at Table 1. The most significant activities are described below.

**Walking:** Before 1976, there was virtually no public access to Range West. Since then guided walks on pre-arranged dates have been permitted, providing walk leaders (usually from the National Park Activities and Events leaders or from the Ramblers' Association) attend an annual briefing. This covers the safety and conservation interest to the Range. The walks follow a pre-determined route (usually along the coastal track from Stack Rocks to Linney Head with an inland route sometimes used for return, being defined in 1996 & 1997) (Map 4) All members of the party sign an MoD disclaimer (F LANDS 501).

Access to Range West is very valued by both the National Park Authority and the Ramblers' Association. There are limits to the numbers that can take part in the walks, these are currently set at 30 for PCNP walks and 50 (A coachload) for Ramblers' walks. The experience of walking Range West, with its own dramatic and distinctive landscape is heightened by the relative absence of other recreational impacts and the undisturbed nature of much of the coastal strip. The geological and nature conservation interest of the walk is very high and the views both within and from the Range add greatly to the experience of the walk.

**Fishermen and surfers:** Fishermen and surfers are allowed access to Frainslake Sands providing they enter in via the Sandpits Gate and have attended an annual briefing and signed the disclaimers. Numbers of surfers attending the briefings have been around 40, with the ability to use Frainslake being valued by local surfers. There are around 200 fishermen listed who have access to Range West but their use is limited to Frainslake beach.

**Climbers:** After an agreement between MoD and BMC in 1992, climbers have been allowed to use Range West. Their access is limited to non-firing days between mid-August (after the end of the bird-breeding season) and the end of January (From 2000 this was brought forward to the start of August.) Climbers have to attend annual safety and conservation briefings to obtain a permit and must sign disclaimers on entry to the Range. Numbers are limited to 30 on any one day and an area around Hobby Horse Bay and Castle Bay has a permanent all-year-round climbing restriction because of archaeological interest.

Although interest in gaining access to Range West was very high, numbers of climbers attending briefings have remained at around 200 despite the fact that briefings have been provided in Bristol and N Wales in 1999/2000. The actual numbers using the climbs on any one day are relatively low, ranging between 25 and 0 in 1999. This is linked both to weather conditions and the need for all members of the climbing party to have attended the annual briefing.

**Mini-bus trips:** These are organised by PCNP and are led by briefed leaders. They visit the historic farmhouses on Range West and participants have to sign disclaimers. Numbers attending these trips average around 12 and the route follows the road system within the Ranges, visiting Flimston, Pricaston, Linney, Brownslade and Frainslake Mill.

**Riding:** There is an annual British Driving Association weekend meeting, normally in August, which takes place in the south east of Range West and in Range East (Map 4).

**Shooting:** Organised through a club comprising personnel of ATC Pembrokeshire.

## 1.6 Recreational Use of the Sea Area

1.6.1 For the purpose of this plan, 'access' was also taken to cover commercial fishing. A consultant was commissioned by the MoD to carry out a questionnaire and interview survey of a sample of users and organisations to ascertain, levels of each type of use, degree to which the presence each of the ranges hampered use and suggestions for optimising arrangements. The consultants' full report is available at MoD Castlemartin and PCNP, Haverfordwest offices.

1.6.2 The main commercial ports on this section of coast are in Milford Haven (Milford Haven and Pembroke Dock) and at Swansea. Smaller commercial harbours and jetties exist at Port Talbot, Llanelli and Burry Port.

The majority of commercial shipping does not need to cross the danger area and this category has not been quantified for the purposes of this Plan.

The main fishing harbours are at Milford Haven and Swansea with smaller harbours or groups of moorings at Burry Port, Saundersfoot, Tenby, Freshwater East, Stackpole Quay and within Milford Haven. Fishing in this area includes inshore Lobster and Crab pots, Bass and Mackerel fishing using lines, Whelks, and Sand eels.

Of the registered boats, only a limited number, fish regularly along the coast between Milford Haven and Saundersfoot. Current enquiries indicate that there are probably fewer than 20 full-time fishing boats using this area.

The recreational users include sailing, sea angling, and diving, canoeing, power boating and foreshore 'coasteering'.

The total number of other recreational users is more difficult to quantify since they are typically either not organised into a formal club or, as in the case of divers and canoeists, they travel to Pembrokeshire from a very wide area.

1.6.3 Within the Castlemartin sea danger area the principal commercial users are the inshore fishermen.

The main fishing areas include:

- The rocky coast from Linney Head to St Govan's Head for Lobsters and Crabs,
- The St Govan's Shoals for Lobsters and Crabs,
- The St Govan's Shoals for Bass and Mackerel,
- Linney Head to St Govan's Head for Whelks. (Map 2)

The Lobster and Crab Potting and Bass fisheries are relatively active although there has been a slight decline in the number of full time fishermen over the last five years. The fishery runs throughout the year (with some reduction from November to February).

There is some use of the area by Commercial Charter boats based in Milford Haven for either diving or sea angling. However, there are numerous alternative destinations, particularly the Pembrokeshire Islands, and as such these vessels make little use of the sea danger area.

The recreational users need to be considered separately under each category since there are significant variations in the patterns of use.

**Sailing** within the sea danger area is generally restricted to small cruising yachts and occasional passage races. There are also some windsurfers who

sail within the area.

The majority of yachts are based at the various marinas within Milford Haven. There are a few yachts at Freshwater East and Saundersfoot and a slightly larger number at Tenby

A significant number of yachts pass through the area on passage to Milford Haven, from bases further up the Bristol Channel particularly at Swansea and Cardiff.

The sailing season is typically from May to October with the largest demand at weekends, bank holidays and during the schools holidays.

The tides around the South Pembrokeshire coast are particularly strong and this can restrict the ability of yachts to make particular passages or courses at certain times of the day. Typically a passage will have to be timed to take the benefit of the strong tidal flows or may need to be close inshore to catch tidal eddies.

Use by **windsurfers** is throughout the year and typically based on Freshwater West, Freshwater East and Broad Haven. Whilst much windsurfing is inshore and outside the danger area, there is an increasing trend towards coastal passage making on windsurfers particularly 'down wind'.

Recreational **sea angling** is popular in the area with boats based mainly at Milford Haven, Freshwater East and Tenby. The sea anglers look for similar fishing grounds to commercial fishermen. The sea-angling season is typically Easter to October.

The South Pembrokeshire coast is a popular area for **recreational diving** with several well-preserved wrecks and a variety of reef and shoal areas. The main launching areas are within Milford Haven although dive boats could launch from most small slipways. There are a number of wrecks of interest within the danger area particularly off Linney Head and St Govan's Head.

The main diving season is from May to October and the majority of recreational diving takes places during the weekends. Diving is often limited to the slack water periods at either high or low tide.

The South Pembrokeshire coast is a popular destination for **coastal canoeing** and Freshwater West also provides opportunities for surf canoeing. A typical popular passage would be from Freshwater West to Broad Haven where the sandy beaches are suitable for launching and recovery.

The main season is from April to September, particularly during summer evenings or at weekends. Canoeing also forms part of various organised adventure training courses for both children and adults. Again Freshwater West and Broad Haven are popular locations.

Milford Haven is a popular centre for **powerboats and jet skis**. Many do not venture outside the sheltered waters of the Haven and access to the danger area is limited. Some RIB users like to make coastal passages and a typical route would be from Milford Haven to Tenby. The season is typically April to October.

## 1.7 **Effects off the Range**

With around 130 Armoured Fighting Vehicle (AFV) days firing per year and a variety of weapons up to heavy tank firing, the noise of firing can be heard up to 15 miles from the Range. Effects on enjoyment of Coast Path walkers on either



side of the Range, or visitors to Stackpole, Broad Haven and Freshwater West are inevitable as is disturbance of visitors. The withdrawal of German tank training from the range has reduced the levels of use of battle tank weapons significantly, reducing noise levels.

The increasing need (with the withdrawal of German troops from Castlemartin who left their tanks on site for several months) to bring new armoured vehicles onto the Range for each new training unit, brings problems of disturbance and congestion on the minor roads from the A477 or Pembroke Dock.

## **Section 2 Recreational Issues and Management**

### **2.1 Introduction**

The management of recreation in Range East and Range West is the subject of regular discussion at, amongst other venues, annual meetings with the BMC to review climbing arrangements and 6 monthly Range Recording and Advisory Group meetings (membership see Appendix 1). The issues described below derive from the meetings, from the experiences of those involved in the Recreation Sub-group and from the consultation with the organisations listed in Appendix 3. A list of the main issues raised by consultees is appended at Appendix 4 together with responses by MoD Commandments of the Ranges affected.

### **2.2 Range East Coastal Strip**

#### **General access issues**

- Concern at a perceived increased level of firing - day, night and dry training (including blanks) at weekends.
- Concern that proposed weekend use of infantry firing range will close Range East at weekends. - See separate discussion in Paragraph 3.2 .
- The Range is often available for use though firing notices predicted no access.(Cancellations often occur at short notice for unavoidable operational reasons)
- Need to minimise the above and provide up-to-date, daily firing information.
- There is pressure to give more access to Range East on holiday periods in addition to that already given on Bank Holidays and weekends.
- Present (1999) firing information is not clear in terms of areas affected, phone numbers, access permitted, etc.

#### **Car access**

- Car parks relatively close to cliff edge (though moved back in the 1970s) concentrate large numbers of people on small areas of exposed cliff.
- Safety concerns of St Govan's; steps, cliff edges, and at Green Bridge of Wales, etc.
- Visual impact of car parking in remote area.
- Presentation of car parks could be improved.
- Interpretation of sites needs improving.

#### **Walking**

- Inability to access inland Range East without briefing etc. means that use is concentrated on coastal strip.
- Consequent lack of circular walks
- Coast Path - a National Trail is closed during firing and inland route is not of satisfactory standard for a National Trail.
- Even when only part of Range East is closed, the Coast Path cannot be used as a through route.

- The status of the Coast Path between St Govan's and Broad Haven needs to be confirmed, preferably as bridleway.

### **Disabled Use**

- The area clearly provides readily accessible viewing, bird watching and walking along the Coast Path for less able people.
- The condition of the bridleway between St Govan's Chapel and Stack Rocks means that the stretch of coast is accessible, at least to powered wheelchairs.
- There is potential to increase disabled access in this area in ways which respect the landscape and nature conservation qualities of the sites..

### **Sightseeing/Bird watching**

- Very good and easy access to spectacular cliffed coastline is unusual in S. Pems.
- Stack Rocks car park gives an opportunity for access to view breeding bird colonies which is unique in Southern Britain.
- Concentration of people in 2 areas causes erosion problems.
- Access to St Govan's Chapel is much valued but the steps down are difficult to use and limit access. Safety work or improvement would be expensive and may damage the historic interest of the site.

### **Fishing**

- There is some concern that fishermen may use areas where climbing is subject to seasonal restrictions without realising that they may have a similar impact on nesting birds.
- There are also concerns over fishing rubbish and lost tackle.

### **Climbing**

- The voluntary climbing restrictions on Range East are part of a system operating over South Pembrokeshire (Appendix 8). They are seen as a model in other areas; at the same time they are complex and need a good deal of management to explain and maintain.
- There is a regular dialogue between conservation and climbing organisations and this helps to maintain confidence in the need and effectiveness of the agreements.
- Issues such as belaying onto military equipment/fences and the need to keep climb access points clear of fencing, etc, need regular discussion.
- S Pembrokeshire is agreed as a bolt-free zone in climbing terms and this agreement is much valued by PCNP, CCW and the MoD.

### **Caving**

- Access is limited because of problems in reaching the caves and because of concerns over archaeology and bats.
- The Cambrian Caving Club would value continued access by negotiation and agreement.
- One cave, Ogof Bran Goesgoch, may need additional protection.
- There is little information on caving available and caves are not mentioned in the climbing leaflet. There may be some casual/informal use of sites.

### **Cycling**

- The bridleway from Stack Rocks gives cycle access to Range East. Most cyclists do not use the track and there are concerns over safety and damage to adjoining grassland.

## **2.3 Range East (inland) and Range West**

### **General Points**

- The case has been put in the consultations for this plan, that military training is not appropriate in National Parks in principle. This argument is beyond the scope of this plan. However the argument is strengthened by the need for tight restrictions on access in Range West and most of Range East and by the increased use of Castlemartin in recent years for uses other than AFV firing.
- There is a strong demand for a continuation of the National Trail through Range West to be open during non-firing times. At present the use of live ammunition makes this unobtainable. If access were available, conservation concerns would need to be evaluated and taken into account. Extension of the Coast Path would almost inevitably open the Range to other users, which would need to be managed to take account of the conservation importance of the area.
- There is some pressure to increase access to inland areas of Range East. If the coastal strip can be cleared, why can the same process not apply on inland areas? (Even if the cost and manpower implications of such a process are prohibitive should it be a target for the MoD ?)
- Other points in the Range East (coastal strip) General paragraphs (2.1) apply to Range West.

### **Walking**

- Access to Range West by guided walks is popular but demand is much more for unsupervised, informal access as in Range East (coastal strip).
- There is potential for guided walks in inland Range East but this has not been tested in terms of popularity. Again demand is probably more for an informal self-guided circular walk to be available.
- When the Range is closed, the alternative Coast Path is mainly on roads as in Map 3. This is not presently a popular stretch of path (graph of user numbers Appendix 5) and there is evidence that numbers of users would considerably increase if more access were available.
- There is potential for a better inland Coast Path route from Bosherton, via Kaled Quarry, to Carew Farm, to Trenorgan and Hayston but this a low priority compared to the demand for access to Range West. (The second part of the route passes near an ammunition dump and is not a possibility at present.)
- The availability of an inland return walk on Range West provides a better variety of walks than was previously available but the main demand is for the coast walk..

### **Climbing**

- Access for climbers (mid-August or 1 Aug in 2000 to 31<sup>st</sup> January) has been available since 1992. As with other users, all climbers need to be briefed, sign an army disclaimer (F. Lands. 501) and sign in/out of Range West.
- There is pressure to further simplify briefings, extend open periods and allow briefed climbers to take others. Since 1998 experimental briefings in Bristol and Plas y Brenin have been provided in June & July. This has not significantly increased climber numbers.
- Ideally some form of agreed climbing restrictions on individual climbs as on Range East, are sought.
- In particular better access is sought to climbing areas close to the Stack Rocks car park. (Greenham Common, Mount Sion Central and East.)

- At present all access for climbers is via Stack Rocks to Range West. If cycles could be used for access and/or one of the western gates could be used then climbing time would be increased.
- There are few natural belays on Range W climbs and no consent to install stakes because of safety concerns. One option would be to place boulders at certain sites to allow belaying. There are concerns over liability and erosion but there is some scope for BMC to pursue this approach on limited sites.

### **Horse riding**

- There has been since 1992 an annual horse-riding event either in the inland area of Range East and a carriage-driving event in both ranges. The sites of these are agreed with the Range Recording and Advisory Group and cause no known problems.
- There is some demand for local residents to use inland areas of the Range in small numbers for seasonal use. This may be available by individual negotiation and licence.

### **Fishermen**

- Only have access to the beach at Frainslake (N of Pole) not to cliffs in Range West.
- There may be potential problems of recreational use at Frainslake with ringed plovers nesting on the beach since 1998.
- Only briefed fishermen are allowed access but access is available 12 months of the year.
- Concern at access to Frainslake Beach over risk to "Nebria Complanata" because of possible removal of debris that it lives under.

### **Surfers**

- Access as for fishermen with similar issues, access is on the waves from Freshwater West and they can then exit by the Gupton Gate.

### **Falconry**

- To 1997 used by one or two individuals but concern expressed over risks to Chough, etc. Discontinued in 1998 until review in this plan.
- Reported as the best countryside in Wales for rook hawking - hawks trained to avoid other prey and fitted with radio tracking gear.
- Concern over principle of activity on site of this significance and especially over possible threat to Chough.

### **MoD Picnics**

- Concern over use of Frainslake because of disturbance – (Cf. Surfers & fishermen) and over barbecues using driftwood that provides a niche for Nebria Complanata. Participants are briefed to gather wood from non-sensitive sites.

### **Shooting/Ferreting**

- Shooting is organised as an official MoD shoot, no rabbits are shot at Rrag request. MoD shoot is also responsible for vermin control. A concern over loss of rabbits (useful for grazing coastal grassland and dunes) and possibly related attacks on raptors means this may need to be reviewed.
- Clay pigeon shooting is limited to a portable range used for practice and competitions around 4 times per year with boat fishermen.

### **Motor Rallying**

- This was a new activity in 1998 and is confined to tank training tracks. It is not generally an activity that would be encouraged in a National Park but the scale of Range West means that, as far as is known, impacts are minimal.

#### **Unofficial Access**

- This is by its nature largely unrecorded but it would be useful to keep a record of unauthorised people found on Range West

## **2.4 Marine Areas of Range East and West**

The issues raised by the marine users tend to be the same for all Pembrokeshire ranges and are summarised from the Consultants' report.

### **Constraints on access**

#### **2.4.1 Commercial Fishing**

The commercial fishermen are currently able to arrange their fishing periods around the main firing periods. In this respect they will place or recover pots in the early mornings, evenings or at weekends.

During the summer there is sufficient daylight to make these periods a satisfactory length, however during the winter they have to rely predominantly on the weekend periods.

The commercial fishermen liaise closely with the range safety boats and where necessary with the control towers.

Typically they are happy with the level of information provided by the safety boats. They generally feel able to discuss particular access requirements with the range safety boats and where firing permits, the range boats keep them informed of opportunities to enter or cross the danger area.

One concern expressed by some of the fishermen was a lack of flexibility when there were exceptional conditions. A typical string of pots could cost around £4,500 and if an unexpectedly heavy storm is forecast, the fishermen would like to gain access to recover their gear before it was irreparably damaged.

They are happy with informal arrangements to advise them when firing finishes early but are concerned that they are not always contacted as soon as MoD know that firing will be cancelled.

There was a general regret that the Castlemartin firing notices were no longer circulated as widely since the newspaper advertisements were not always easy to find and did not appear each week. Fishermen would appreciate either contact the previous evening if it is known that firing is to be cancelled or some 'out of hours' recorded information, which they can use to get an update prior to departure.

The South Wales Sea Fisheries Committee consider that fish stocks in the area are relatively healthy, possibly due to the restrictions on access and the fishery therefore has a good long term future.

The bass fishing is concentrated on shoals, some of which such as the St. Govan's Shoals and Offing Patches are right on the boundaries of the danger areas. There are concerns that the boundaries of the firing templates have either been changed recently to include the St Govan's Shoals and that the GPS positioning used by fishermen and the lines used by MoD do not coincide.

The commercial users are most concerned about any proposals for additional weekend firing since this is their main working period and further restrictions could seriously affect the viability of their businesses.

#### **2.4.2 Recreational Use**

The majority of recreational use in all categories is at weekends and during the summer holidays period. In this respect the current pattern of firing has limited impact particularly at Castlemartin although the weekend activity at Manorbier sometimes causes concern, particularly to users based in Tenby.

The main constraints on sailing relate to passage making to and from Tenby and Milford Haven. Sailing yachts are typically slow, constrained by wind strength and direction and heavily influenced by tidal flows.

The strong tides in this area can effectively halve the speed over the ground of a yacht if they are in an adverse direction. Yachts will also try to keep close to the coast both to avoid the tidal streams and the offshore shoals.

When a yacht is on passage it is therefore often difficult to set a course outside the danger areas since this may lead to adverse wind or tidal conditions.

The information available to yachts from outside the Pembrokeshire area is limited. The chart information is not very specific and may not be up-to-date and it is not possible to contact the coastguard at Milford Haven by VHF until a yacht is within radio range.

Local yachts are more familiar with range arrangements and either contact the Coastguard or the Range Safety Boats to request information.

The opportunities for day sailing and cruising outside the weekend periods are reported to be significantly constrained by the danger areas, particularly when the operation of the Pendine Range is taken into account

The majority of sea angling is at weekends, evenings or during the summer months. In respect the constraints met are similar to those for sailing.

Information was typically obtained by contacting either the Coast guard or the range boats.

As a user group canoeists probably have one of the highest distributions across the country and the most mobility. As such one of the main concerns was the need to be able to find out about firing times from a distance.

There were no specific issues raised by power boat users which have not been covered by other users

### **Section 3 Strategic Issues and Options**

#### **3.1 Issues that may be beyond the scope of the ILMP**

**The overall aim of the ILMP is as follows:**

**"To maximise the training potential of training areas in a way that is consistent, economic, environmentally acceptable and reflects MoD policy in pursuit of active conservation measures."**

This plan needs to be produced in the light of current usage and plans insofar as they are known. There are however three areas which are beyond the control of the management at Range level and which, if addressed, could greatly increase the recreational value of this area.

i) **Reduced firing during the holiday period at Castlemartin**

If the national need for the MoD to have an AFV firing range in the National Park is acknowledged, it may still be possible to meet recreational demand and national defence needs by a change of overall policy.

At present, Castlemartin, as other ranges, measures its efficiency partly in terms of the number of days the Range is used, the number of units served, in effect the return for the investment. This is understandable and very much a response to the need for effective use of scarce resources. Another way of looking at the overall problem could produce benefits for Pembrokeshire without significant loss to the MoD.

Instead of all-out competition to try and fill the individual ranges, there could be a more strategic view; either to aim to fill Castlemartin in the winter months or only to use Castlemartin for activities that are, a) of national significance and b) cannot take place elsewhere. This might, for example, mean that the key tourist months of July and August could have a predictable no-firing period except in cases of operational emergency and so could accommodate greater access. This would be a development of the present policy of reduced firing levels in August.

ii) **An independent review of the problems of opening Range West**

The biggest single area of demand on Castlemartin in recreational terms is for access to Range West in a similar way to that available on Range East. This is not possible for a number of safety reasons but also raises conservation concerns. At present the only organisation who can comment on the safety concerns are the MoD who (it is perceived) have a vested interest in keeping the area clear of people anyway. If a well respected and totally independent authority could be identified and commissioned to produce a report on these issues then, either those campaigning for better access may accept (for a while) that such access is genuinely impossible or, ways may be found to improve access while maintaining military use.

Such a study could for example address:

- a) Whether all the live (explosive headed) firing that takes place on Range West could be concentrated on one or two targets thus allowing other impact areas to be swept and access permitted.
- b) Given that only c.10% of present firing is of explosive-headed ammunition and that allocations are reducing, could this type of firing take place elsewhere making this range exclusively for use with practice rounds?
- c) Whether simulation of firing can replace live firing and, if so when this may take place?
- d) Whether other types of training, e.g. Warrior and infantry firing and Cadet training have to be located at Castlemartin or whether this is simply a way of getting more cost-effective use of the Range? (See 3.1.i. above.)

If any of these questions do result in greater possibilities for access then clearly there will be conservation and management issues that will need to be addressed before any access changes are considered. The exercise however would certainly reinforce the approach of openness and plain dealing taken to the production of the ILMPs themselves.

iii) **Co-ordination of closed periods between the three ranges** (and ideally Pendine) to benefit visitor use in holiday periods. This is especially true of marine

danger areas which cut the coastal route between Swansea and Milford Haven in four places and which are perceived to have a major detrimental effect on levels of passage along the SW Wales Coast.

### **3.2 Access Option for Range East**

One proposal, which should be considered in detail in this plan, is the suggestion of weekend firing on range 6 at Castlemartin Range East. This appears in the Military plan for the ILMP and has been linked to a possibility of withdrawal from Penally Range.

The benefits of additional use of the ETR would be to provide training for Cadet and TA units and it is seen as particularly important that Pembrokeshire units should be accommodated, as there is no comparable facility west of Brecon in Wales. A proposed maximum use of 44 weekends/year has been discussed and there is a proposal to maintain access along the Coast Path at Range East by means of a diversion around the inland side of the Electric Target Range (Map 4).

The proposal has not yet been brought forward as a planning application to PCNP and the existing planning consent for the ETR specifically requires that this should occur before the site is used for weekend firing.

From a recreational point of view the use of the ETR at weekends would have the following effects:

- i) Loss of the clear message that describes current firing patterns that "Range East is always available for use on weekends". This would have a detrimental effect on access to Range East as a whole.
- ii) Loss of reliable weekend access to a popular and spectacular piece of coastline including major geological and archaeological features, e.g. Devil's Cauldron and Flimston Bay. Loss of major sightseeing and bird watching opportunities though access to Stack Rocks and the Green Bridge viewing area would remain available..
- iii) Requirement for walkers to walk inland towards Flimston and around the back of the range to access the Coast Path. Destroys the integrity of the walk from St Govan's to Stack Rocks.
- iv) Disturbance from firing to users in the area – loss of tranquillity and experience, which are regularly highlighted as key reasons for enjoyment of the National Park.
- v) Loss of disabled access along coast east of Stack Rocks.
- vi) Loss of coastal bridleway access east of Stack Rocks (New route could be multi-user).
- vii) Encouragement of users, especially coaches to use the St Govan's car park which is already too heavily used.
- viii) Small reduction in sea access at weekends to danger area (including closure of some fishing areas).
- ix) Loss of access to climbing routes – After 31July for restricted areas, all year for a small number of unrestricted climbs.

Clearly some of these points could be addressed in any proposal, for example disabled and bridleway access could be provided. Even if, however, the route was an attractive one, and admitting that some find military use interesting and a positive feature, for the majority of users this would be a significant loss of experience and quality of visit.

There is a case that such costs might be worth paying to obtain all year access at



Penally and, at the end of the day this is to some extent a subjective decision. Certainly Penally is much closer to main centres both of local and visitor population, includes a comparable piece of coastal walking of greater length and a not particularly attractive alternative route for the Coast Path. There is some logic in concentrating use at Castlemartin and indeed the National Park Local Plan does identify Penally as a site for a local nature reserve should the MoD withdraw.

Despite all of these aspects the conclusion from the consultations is clearly to oppose any extension of firing at Castlemartin at weekends and to seek to maintain existing or develop more access to the East of Stack Rocks.

### 3.3 **Access Options for Range West**

From para. 1.5.2 it is clear that access to Range West has developed in response to a series of demands over a number of years in a way which, while justifiable, runs the danger of becoming an unequal system which is hard to defend.

The complex arguments against public access to Range West stem from a combination of MoD and conservation concerns. Put extremely simply these are:

**MoD:** Concern at the danger to users from unexploded ordnance, targets and other MoD operating equipment. This means that everybody must undergo an annual briefing before gaining access, they must sign an F LANDS 501 (Appendix 9) and they must book in and out, at the guardroom.

**Conservation:** Detailed concerns include archaeological, geological, bird breeding/feeding/roosting and botanical issues. Put simply, Castlemartin Range West is one of the very few places on the coast where there is limited public access and the whole area shows benefits from this. While small numbers of well-managed users are unlikely to cause significant impact, any increase in access drives the wedge in further and may lead to uncontrolled access and loss of the special qualities (including tranquillity and wildness when range not in use) that characterise this area.

- a) One option, which might address this, would be to review present access situations and start again from a more consistent point of view.

The MoD concern could be addressed by requiring all individuals gaining access to Range West to be briefed (as at present), or for accredited organisations to take groups (who must then keep together) to have at least one (2 for groups over 5) briefed leaders. Everyone would sign F LANDS 501 and any visits by groups or individuals would be booked in advance.

The key to addressing the conservation concerns is to limit TOTAL NUMBERS using sensitive parts of Range West (or ideally the whole of the SSSI on Range West). The limit would vary with the time of year and would apply to ALL USERS including walkers, climbers, fishermen, surfers, farmers, soldiers, birdwatchers, members of RRAG and military recreation use. So, for example, on a non-firing day out of the nesting season, a maximum of perhaps 50 people could use Range West. These might include a wide range of users, but all would book their place in advance and if all of the places were taken then they would agree not to use the area.

The advantages of this would be that

- a) The access system would be (and would be seen to be) equitable for all types of activity.
- b) The impact of recreation could be more easily monitored and if necessary numbers could adjusted year on year.

- c) The system would be less open to steady erosion by pressure groups.

The difficulty of the proposal would be that those with the greatest legitimate right for inclusion – the MoD, would have to agree to be included within the system but they may well feel that the benefits of such an approach make this worthwhile. The actual level of use by the MOD of the coastal area is low.

Of course within the overall access there would need to be seasonal (or local permanent) restrictions for example to protect cliff -nesting birds or ringed plovers nesting in the dunes at Frainslake. These however would apply to all users and could be reinforced through the annual briefings. Access for walkers would be limited to particular routes.

Finally this proposal would bring costs to those operating it both in terms of administration, briefings and monitoring on the ground (though the proposed closed circuit TV cameras to be installed for range safety reasons may help with the last of these). It would be worthwhile considering whether the annual permit should be charged for, not as a payment for access but to cover the management expenses of the system.

- b) Another option would be to maintain the present arrangements over use, but to provide a written summary of access arrangements explaining why certain activities have the particular restrictions or opportunities. This would have the merit of clarifying the situation and would be able to be made available through local information centres, libraries, etc. This would make the access arrangements more transparent and inclusive. The availability of the ILMP will assist in this respect.

An opportunity for users of Range West to meet with the MoD, CCW, PCNP, etc. might be useful to review the implementation of the plan and to explain safety and conservation issues. Such a meeting already exists for climbers and commercial fishermen and graziers but an additional meeting or meetings could usefully be set up on a trial basis' to include surfers, fishermen and other land users at one annual meeting, a second meeting for commercial sea fishermen and another for recreational users of the sea danger area. These could be linked to briefings (for land activities) and run on an experimental basis for the first two years. They would provide a good opportunity to develop knowledge of, and support for, the ILMP.

- c) A third, more strategic approach to Range West is discussed in paragraph 3. 1. ii)
- d) Failing any major change in the access situation at Range West the PCNP should explore the possibility of making a guide available at Stack Rocks every weekend day in July/August to gather a group of long distance walkers and escort them through range west
- e) A fifth option would be to limit numbers of any increased access to Range West by closing or moving the Stack Rocks car park or to compensate for increased disturbance by moving the St Govans car park inland and thus reducing disturbance on Range East. Each of these options would be likely to generate significant opposition but should be considered if the issue can be pursued in the medium/long term future.

## **Section 4 Castlemartin Range Objectives**

### **4.1 Primary Objective**

Within the constraints of the ILMP objectives **the primary objective of the Recreation Sub-plan is to maximise opportunities for public access, enjoyment and**

**appreciation of the Range areas.**

**4.2 Secondary Objectives**

- i) To provide access for a wide range of activities, (including specialist recreation), that draws on the special qualities of the range and actively avoids conflicts with conservation and other user groups.
- ii) To promote understanding and support for the special qualities of the Range and of the need for management.
- iii) To make optimum use of non-firing times and information to provide as much land and sea access during times of high demand as is consistent with safety, range use and conservation priorities.

**Section 5 Prescriptions to Meet Objectives**

**5.1 Primary Objective**

**Within the constraints of the ILMP objectives the primary objective of the Recreation Sub-plan is to maximise opportunities for public access, enjoyment and appreciation of the Range areas.**

**5.1.1 Current progress towards objective:**

- a) Range East coast available for use during non-firing periods.
- b) Firing times notified monthly in paper and to variety of contacts (Appendix 6).
- c) Range East coastal strip no firing on 215 days (0000 – 2359)(1999) including summer weekends and Bank Holidays (in fact part of every day the land is open).
- d) Range East (coastal strip) open partially if only part of Range in use.
- e) Car parks and National Park managed access land at Stack Rocks and St Govan's, Chapel restored and interpretation on both sites.
- f) Climbing (under permit system/briefing/seasonally) has been available on Range West since 1992. Surfing and fishing (beach casting) also available on Range West.
- g) Guided walks available on Range West since 1976 with return route introduced 1995.
- h) National Park also leases Flimston Farm.
- i) Range Safety Craft make a positive contribution to the safety of marine users.
- j) Access arranged for numerous special interest groups.

MOD

**5.1.2 Constraints on primary objective:**

- a) The main purpose of the Range is for military (especially AFV) training. When this occurs access is inevitably restricted because of live explosive ordinance.
- b) A legacy of many years of live firing together with day to day live firing (Range West) means that access is restricted.
- c) The whole Range, but especially the popular coastal strip and cliffs are important for a variety of conservation reasons: geology, archaeology, flora and fauna, cliff nesting, feeding and roosting birds and bats, etc., that means human use needs to be managed and monitored.
- d) Whole coast is SSSI, parts are SAC, SPA, Marine SAC, SAM, SPA listed building, National Park, etc.
- e) Information weakness: inadequate notice of availability when firing that was expected does not occur.

- f) Loss of a sense of freedom in a unique part of the Park and for climbers on cliffs of international importance.
- g) No range safety boats during night firing, system relies on radar.

	<b>5.1.3 Prescription to Meet Primary Objective</b>	<b>Action</b>	<b>Cost</b>	<b>One off or Regular</b>
	<b><u>Range East Coast</u></b>			
a	Maintain access to Range East coastal strip in non-firing times especially at weekends. Increase summer access especially in summer holidays. Alter by-law/range notification to encompass whole strip of Range East not just Coast Path.	MoD  MoD MoD	?  High Nil	R  R Oo
b	Legally define Coast Path from Broad Haven South to St Govan's	MoD/PCNP	Low	Oo
c	Maintain existing leases to National Park at St Govan's and Stack Rocks. Provide and improve car parks, access and interpretation.	MoD/PCNP	Income	Reg
d	Maintain current programme of climbing liaison and build closer contacts with other users.	MoD/RRAG	Med	Reg
e	Maintain and develop joint ranger role on Castlemartin.	MoD/PCNP	Med	Reg
f	Provide annual statistics to show number of days/nights fired (and access closed) and accuracy of times predicted against actual firing.	MoD	Low	Reg
g	Maintain present caving access arrangements with Cambrian Caving Council. Meet periodically to review arrangement.	MoD	Low	Reg
h	Seek funding for Castlemartin interpretation leaflet to explain special features and management.	MoD/CCW	Med	Oo
i	Long term review location of car parks	PCNP/MoD	Med	Oo
	<b><u>Range East Inland &amp; Range West</u></b>			
j	Develop with National Park a guided inland walk on Range East. (Would require EOD clearance)	MoD/PCNP	Med/High	R
k	If successful develop a circular walk on Range East that is available for unguided access. (Would require participants to be briefed under present arrangements)	MoD/PCNP	Low	Oo
l	Address access issues on Range West by following through one of the options in para.1.5. Explore potential of making a guide available at Stack Rocks every weekend day in July/August to gather a group of long distance walkers and escort through range west.	MoD/RRAG		
m	Within present access regime: <ul style="list-style-type: none"> <li>Review existing programme of Range West access – linear and return walks, minibus tours and other visiting groups</li> <li>Ensure that guided walks (in bird breeding season) stick to the defined route.</li> <li>Amend present blanket climbing restriction to end on 1<sup>st</sup> August rather than 16<sup>th</sup> August.</li> <li>Any proposals for changes in access from present arrangements should be discussed with users before being implemented. At same time changes must also be considered by SPRRAG.</li> </ul>	MoD/PCNP  PCNP  MoD/ SPRRAG  MoD/PCNP/ CCW	Low  None  None  Low	Reg  R  Oo  Reg
	<b>N.B. Changes to access regime will mean prescriptions change</b>			
	<b><u>Marine</u></b>			

n	Co-ordinate firing information for Castlemartin, Manorbier, Penally (and if possible Pendine) and distribute a single, easily interpreted sheet of information fortnightly giving detail for the month ahead. (App. 7)	MoD	Low	Reg
o	Publicise a phone number with a recorded message giving a daily update for all ranges in S Pembs of firing times and areas.	MoD	low	Reg
p	With Penally and Manorbier co-ordinate a predictable no-firing period (or periods) to maximise public access benefit e.g. No firing on Sundays or in August. (Not a present practicable for Penally/Manorbier.)	MoD	?	Reg
q	Review side of sea danger area for firing. Can information show the restricted areas more clearly? (App 7)	MoD	?	Oo
r	Clarify by-law interpretation to clearly allow boats on passage through range and publicise this arrangement.	MoD	-	Reg
s	Request chart publishers to show the range on main charts. (PEXA chart is not available locally except on order.)	MoD	Low	Oo
t	Provide annual statistics information to show number of days/nights fired, times of week/year and accuracy of times predicted against actual firing.	MoD	Low	Reg
u	Using the expected "Range Open" days for the sea danger areas (Manorbier and Castlemartin) seek to promote guided boat trips along south coast with special emphasis on Range East and West. If done in late July/August there is little potential for conservation conflict and this would give significant access to view Range West for all.	MoD/PCNP	Low	Reg

**5.2 To provide access for a wide range of activities, (including specialist recreation), that draws on the special qualities of the range and actively avoids conflicts with conservation and other user groups**

**5.2.1 Current progress towards the objective:**

- a) All notes from 5.1.1 also contribute to this objective
- b) Range East provides access for wide variety of users including walkers, sightseers, fishermen, cyclists, horse riders (bridleway) and wheelchair users.
- c) Range West has a wide range of individual users licensed through MoD agreements.
- d) Quality of landscape, ground flora, birds and invertebrates very high. Climbing of international importance and disabled access unusually good.
- e) Potential for more interpretation of estate history and archaeology.
- f) Agreement for access for Princes' Trust to Newquay when that part of Range East is not being used for firing.
- g) Joint funded PCNP/NT/MoD Ranger provides information and monitors climbing agreement and other recreational use. With the increased profile of the range and the increasing numbers of cadets etc using the site, there may be scope to expand this role.

**5.2.2 Constraints on the achievement of the objective**

- a) All constraints listed in 5.1.2 apply to the objective.
- b) Minority users or one off events need to be considered and accepted on the range. a) If they can be demonstrated not to harm the special qualities of the site and b) where they will not conflict with the fundamental message

of low key sustainable recreation making the most of the special qualities of the area.

- c) Much of the special character of Range West and to a lesser extent Range East, stems from a natural undeveloped atmosphere. The landscape is very open and there is little shelter on the Coast. The landscape and the habitats have relatively low carrying capacities for users before some this unique character is lost.
- d) Having said this The Wash in Range West, would potentially be one of the best sites on the south coast for groups from outdoor activity centres to carry out climbing training outside the bird breeding season.
- e) There is a perception that St Govan's Car Park could be open more regularly if the boundary of Range 9 could be moved slightly to the west or could be used as a last choice.
- f) There could be more potential for access to the eastern part of range east (The most heavily used climbing areas) when only part of the range is in use. A sentry post to the west of St Govan's would increase possibilities of access to Saddle Head.

	<b>5.2.3 Prescription to Meet Objective 5.2</b>	<b>Action</b>	<b>Cost</b>	<b>One off or Regular</b>
	Prescriptions from 5.1.3 meet this objective as well			
a	Maintain Range East Coast Path (Stack Rocks to St Govans) as a bridleway	PCNP/MoD	Low	R
b	Create Coast Path to St Govans to Trevalen (and thence to Broad Haven South) as Right of Way – Preferred option is bridleway.	MoD/PCNP/NT	Med	Oo
c	Review and formalise arrangements for access to Range West. (Depends on decisions at para. 1.5.4)	MoD/RRAG	Low	R
d	In enhancement of leased car parks seek opportunities to further improve disabled access.	PCNP/MoD	Med	Oo
e	For events, apply best practice principles to not only avoid damage but to promote principles of good management and appropriate siting and activities.	MoD/CCW	Low	R
f	BMC to provide belay boulders at appropriate places in Range West. (Subject to MoD/CCW/PCNP agreements confirmed by SPRAGG.)	BMC	Med	Oo
g	For all minor activities and events, need to establish a consistent and rigorous approach. Consider numbers of people benefiting from an access opportunity, degree to which this opportunity uses the special quality of the range, any impacts on the special qualities of the site, on other users' enjoyment and on the overall management ethos being put forward.	MoD/RRAG	Low	R

### 5.3 **To promote understanding and support for the special qualities of the Range and of the need for management**

#### 5.3.1 Current progress towards the objective:

- a) PCNP/MoD/NT jointly funded Ranger present most weekends and Bank Holidays in tourist season provides information and monitors/promotes good practice (Range E).
- b) PCNP free car parks provided at Stack Rock and St Govan's include information boards, Stack Rocks include viewing platform.
- c) PCNP (and others) information on the area available from TICs (Pembroke) and other outlets.

- d) PCNP produce climbing leaflet and information also in climbing guides for the area.
- e) PCNP manage guided walks across range and minibus tours (Range West).
- f) MoD provide briefings for Range West and inland Range E users and welcome visiting groups to the range.
- g) PCNP restored and opens St Govan's Chapel. Other sites restored by MoD are visited by PCNP guided walks.

#### 5.3.2 Constraints on objective:

- a) No specific site information leaflet or capacity to distribute information on site. (Ranger on site.)
- b) Existing car parks and interpretation boards are in need of enhancement/replacement.
- c) Perception that firing periods have increased and that range is often closed when not in use (Range E).
- d) Loss of use by general visitors/walkers because of lack of knowledge of availability (i.e. Range information refers to closure but range is actually open).
- e) Reduced opportunities for guided sea trips because of lack of co-ordination between of ranges along Pembrokeshire Coast.
- f) Access to Range West perceived as arbitrary and inconsistent – each class of user feels that others have special advantages).

	<b>5.3.3 Prescription to Meet Objective 5.3</b>	<b>Action</b>	<b>Cost</b>	<b>One off or Regular</b>
a	Seek joint funding for site specific leaflet for Castlemartin.	MoD/CCW/PCNP	Med	Oo
b	Maintain Ranger presence during spring/summer. In light of the prescriptions in the ILMP, examine the potential to develop a jointly funded post to assist with implementation of ILMP, user briefings and environmental education. To work across all 3 South Pems. Ranges.	PCNP/MoD	Med	R
c	Seek funding for joint enhancement of PCNP car parks including interpretation and viewing. Review potential for wider interpretation of area with NT.	PCNP/MoD	Med	Oo
d	Continue to produce and distribute free climbing leaflet.	PCNP	Med	R
e	Improve clarity, content and distribution of firing information.	MoD	Low	R
f	Provide information for users on reverse of firing information sheets that are distributed App. 7	MoD	Low	R
g	Consider guaranteed access days across whole of South Pembrokeshire and promote interpretative boat trips (possible joint venture with RNLI).	MoD/PCNP	Med	R
h	Inform Consultees of progress of ILMP and make Executive summary document widely available.	MoD	Med	Oo
i	Make whole plan available on Internet and publicise.	MoD	Med	Oo
j	Provide annual liaison meeting for users – a) Range West land users, b) Marine commercial users, c) Marine recreation users. Meet annually initially on an experimental basis to launch ILMP. Continue if found	MoD	Med	R



	5.3.3 Prescription to Meet Objective 5.3	Action	Cost	One off or Regular
	useful.			

**5.4 To make optimum use of non-firing times and information to provide as much land and sea access as is consistent with safety, range use and conservation priorities**

**5.4.1 Current progress towards the objective:**

- a) Firing does not take place at weekends or on Bank Holidays and is limited in August (mainly small arms use).
- b) Access to St Govan's on Stack Rocks car park is possible at same time on most days.
- c) When only part of the range is in use the only part of the access land affected is closed.
- d) Firing by tanks that close off the largest part of the sea danger area is much reduced in comparison with the early 1990's.
- e) Information on firing is provided to a number of outlets and is published monthly by Western Telegraph.
- f) Firing takes place on dates previously notified with few exceptions.
- g) Firing details are provided daily to HMCG and are available by marine radio.
- h) A phone number is provided with all firing notices and this can be used to get updated information.

**5.4.2 Constraints on the objective:**

- a) Firing period cannot always be predicted well in advance because of operational demands, weather, etc. This limits pre-planning of events on the range.
- b) Firing requirement at Castlemartin and Manorbier are very different. This makes co-ordination problematic though bringing all three Pembrokeshire Ranges under joint command should bring opportunities.
- c) There is a strong perception that access to St Govan's is increasingly restricted because of military use.
- d) The pattern of range use is complex but there is a need to co-ordinate and publish historical usage information that would allow trends of use/access to be demonstrated clearly.
- e) It is perceived that parts of Range East could be open more frequently if, for example, there was a checkpoint on one of the fence lines between St Govan's and Stack Rocks. There is a check point here for use when the Newton Range is in use. Could it be used more when firing is only on the west side of Range E?
- f) The firing by the helicopter range is particularly unpredictable with long period's booked and relatively short periods in use.
- g) There is not an easy way to inform the public when firing is unexpectedly cancelled and the range is therefore available. (A telephone number is now available.)
- h) Increased dry training, while not closing the range, does reduce the tranquillity of the area.
- i) The present firing notices are not especially clear or easily understood e.g. the notice appears to make out access off the Coast Path, e.g. to cliffs on Range East.

- j) The list to which firing notices are sent has been cut down in recent years.
- k) Firing information distribution is not co-ordinated between the three Pembrokeshire Ranges (and Pendine).

	<b>5.4.3 Prescription to Meet Objective 5.4</b>	<b>Action</b>	<b>Cost</b>	<b>One off or Regular</b>
a	Ideally to minimise firing in July/August and allocate predictable 'firing free' periods for Castlemartin and Manorbier to allow for planned access.	MoD	Med	R
b	Establish a 24-hour answer phone giving firing details updated morning and evening.	MoD	Med	R
c	Explore potential of increasing use of checkpoints between Stack Rocks and St Govan's to increase chances to reach coast when only part of Range E is in use (e.g. at each of the main fence lines).	MoD	Med	Oo
d	Review list of information outlets for firing times and distribute to commercial fishermen.	MoD	Low	Oo
e	Co-ordinate firing time information between 3 ranges. Could allow for more frequent distribution at same cost.	MoD	Low	R
f	Review format of firing notice and opportunity to provide information (cf. Appendix 7)	MoD	Low	Oo
g	Explore placing firing information on the Internet and publicising.	MoD	Med	R
h	Provide statistics to show level of use each year against recent past use, example, e.g. "Days St Govan's car park open 9 – 5".	MoD	Low	R
i	Provide annually table showing days of expected firing against days actually used and monitor trends.	MoD	Low	Reg
j	Formally review requirement for dry training – see also para 3.1 and publish plans for future levels of use.	MoD	?High	Oo
k	Continue to keep Castlemartin free of live firing at weekends and Bank Holidays – this greatly assists the development of use of the area both land and sea.	MoD	Low	R
l	Establish user meeting for a) Range West land areas, b) marine commercial users, c) marine recreational users. Meet annually initially on an experimental basis to launch ILMP. Continue if found useful.	MoD	Med	R
m	Offer range information on Castlemartin Range to chart publishers to improve information for marine users.	MoD	Low	Oo



## INTEGRATED LAND MANAGEMENT PLAN

### ARCHAEOLOGY COMPONENT MANAGEMENT PLAN

#### CASTLEMARTIN RANGE

##### 1. GENERAL

###### 1.1 CMP Committee.

Cambria Archaeology (Chairman)  
Commandant Castlemartin AFTC  
DE  
PCNPA Buildings Conservation Officer  
CCW  
National Trust

Heather James  
Col. M. Portman  
Brian Goodman  
Claire Deacon  
A. McConnell  
E. Plunkett-Dillon.

##### 2. SOURCES OF INFORMATION.

###### 2.1 Records, Indexes and Archives.

The principal source of information for the historic environment of all three ranges is the *Sites and Monuments Record* maintained by Cambria Archaeology, one of the four Welsh Archaeological Trusts, with grant-aid from The Royal Commission on Ancient and Historical Monuments Wales (hence RCAHMW). This is a dynamic database, which, provided proper arrangements are in place for up-dating and maintenance, should form part of the Ranges' GIS for management purposes. The relevant section of the SMR has been adopted by Pembrokeshire Coast National Park Authority (hence PCNP) as its archaeological record for planning purposes. Individual sites in the record are numbered sequentially with a unique number - the primary record number or prn; each site also has a national primary record number - nprn - within ENDEX a national index maintained by RCAHMW. The SMR is both an index to past work and source material and an archive of work carried out by the Trust. Detailed records are also held within the National Monuments Record of Wales (NMR), the national archive for the archaeology, architectural and historical heritage of the country, administered by RCAHMW.

The most significant piece of recent archaeological field-work was that funded by MoD during the Castlemartin Range electrification scheme of 1993 (Murphy, K., 1993, Castlemartin RAC Range Electrification Scheme 1993, Report on Archaeological Monitoring). Within the NMR are extensive records of the former farms on the range and the social and agricultural history of the Castlemartin peninsula, made by A.J.P. Parkinson, then Investigator, RCAHMW and sometime member of the Castlemartin Range Advisory Group (hence CRAG). Recently the SMR has been entrusted with the safe keeping of the late Mel Davies's archive relating to the investigation of the Castlemartin cliff caves. Aerial photographs for archaeological purposes are held by Cambria Archaeology and RCAHMW. Roger Thomas was commissioned by PCNPA,

the Welsh Development Agency and Cadw in 1993 to produce *A Survey of 19th and 20th century Military Buildings of Pembrokeshire*. Mr Thomas continues to supply information on these sites to the SMR but has a considerable amount of information of his own on the military archaeology of Castlemartin and Penally ranges and has published articles on them in *Sanctuary*. Also relevant and of value is the recent survey (August 1997) of Limekilns within Pembrokeshire Coast National Park, prepared for PCNP and the National Trust by Jody Brown US/ICOMOS intern.

It is thought that copies of primary records and various reports are held at Castlemartin and MoD Conservation Office. Other material is held by PCNP. Full catalogues of both were not available during the compilation of this Component Management Plan, nor has it been possible to carry out an exhaustive search for primary records for the historic environment.

## 2.2 Status of Information.

It is important to recognize that archaeological information for the Ranges is derived from a variety of sources: antiquarian finds and records, some recent survey and condition monitoring, air photography and 'watching brief' type recording. There have been no modern large-scale archaeological excavations of sites on Castlemartin, Manorbier or Penally ranges. By contrast some of the building recording, and the recent recording of military archaeology by Roger Thomas is to the best level of current practice. Whilst primarily intended as 'condition surveys', the quinquennial reports produced by Peter Holden Architects for the main historic buildings on the Castlemartin Range (Brownslade, Flimston and Pricaston) are valuable sources. The last 'round' was in 1996. The status of the information on the historic environment of all three ranges is therefore variable. As work progresses, new information continues to be added on existing and new sites and features. It is thus a dynamic dataset and this means that management objectives and procedures need periodic review.

## 3. DESCRIPTION

### 3.1 Introduction.

Castlemartin Range is an extremely important and rare example of a landscape which has remained relatively un-changed since the medieval period. The historic land-use of the area can still be read in the present day field and communication patterns.

The nature, extent, condition and importance of the archaeological resource at Castlemartin are described in two ways. First, spatially, as historic landscape units into which all three areas can be divided, using the LANDMAP method of historic landscape characterisation designed by The Countryside Council for Wales (hence CCW). This includes an indication of the main historical processes that have affected the landscape. Second, chronologically, summarizing the archaeological evidence by period with a brief description of characteristic site types and finds. A list of the more important sites, features and areas is given, selected primarily on the basis that they are or should be subject to specific management prescriptions. These sites and features should form an 'Archaeological Management' layer on the Ranges' GIS. This baseline information

explains and supports the evaluation of the historic resource and management objectives and prescriptions.

### 3.2 CASTLEMARTIN HISTORIC LANDSCAPE CHARACTER AREAS

#### 3.2.1 Brownslade, Linney and Gupton Burrows - Area includes c.308 hectares.

These extensive sand dunes form the north-west boundary area of the Range, with a clear western boundary of coast edge at Blucks Pool Bay and Frainslake sands. To the north, a steeply rising old red sandstone ridge bounds and overlooks the dunes, as do the limestone cliffs at Linney Head on the south. The limits of the Burrows are less definite to the east where dune edges have been stabilized by marram grass and the ground made more level for enclosed pasture. The whole of this Historic Landscape (hence HL) area is thus within the boundaries of Castlemartin Range. In Pembrokeshire the place name element 'burrows' simply means sand dunes and does not necessarily denote any past use as rabbit warrens. A more modern use has been sand quarrying at Gupton, which ceased in 1996. This has left a legacy of former sand pits and quarries.

Archaeologically, this HL area is important as a **buried** landscape of early prehistoric date. It is likely, by analogy, with nearby Stackpole Warren, that sand dune formation began in the Bronze Age, but sand continued to accumulate through the medieval period. An extensive programme of research excavation would be necessary to establish the precise chronology of dune accumulation here. The primary evidence for intensive prehistoric landuse and settlement consists of finds of flint tools and implements, sometimes in sufficient concentrations to be termed 'working floors' (see sections below on the Mesolithic and Neolithic). Middens have also been recorded but not in sufficient detail to know whether they predate sand accumulation or are founded on earlier sand dune surfaces. Many of these finds were made earlier this century which not only suggests that the dunes were then more mobile, but also that there was more access by those with the leisure and knowledge to collect material. Not surprisingly, many of the finds have been at the coast edge from prehistoric land surfaces that survive in a now intertidal location (peat shelves or 'submerged forests') or exposed by erosion at the beach head. Finds of organic material (bone) from middens and from an inter-tidally exposed surface in Frainslake Bay (prn 515) are particularly important indicators of the earlier occupation. Bronze Age burial mounds or barrows (*tumulus* on Ordnance Survey maps) are discussed as a site type below, but the siting of four such mounds in prominent coast edge and dune edge positions indicates prehistoric spatial organisation as well as leaving relict features in the present day landscape.

Though rich in evidence of prehistoric occupation, the finds and site types can be paralleled elsewhere in sand dunes along the west Wales coasts. Much more recently, (20th century), there are important remains of military structures, some part of coastal defence along the whole of the Pembrokeshire coast in World War II but others located here specifically because Castlemartin was already a military range. The structures are a reasonably prominent and thus obviously man-made elements in the sand dunes and foreshore natural landscape of this HL area. The monuments consist of observation posts,

brick and concrete emplacements and so-called 'Tobruk' shelters. The first group were part of anti-invasion coastal defences built between 1940 and 1941. The 'Tobruk' shelters however, with other defence posts and a live minefield may date to 1943, providing training facilities for the 79th Armoured Division's preparations for invading continental Europe.

It is the high ecological value of this habitat and the Military Training requirement to have a realistic natural landscape, rather than its archaeological importance, that ensures a restricted military use of driver training and vehicle recovery exercises, these being restricted to existing tracks. The dunes are also used for cattle and sheep grazing, providing winter shelter.

**Condition:** stable provided that the present level of military and agricultural use is not increased. There has been a small amount of modification of the landform for ecological gain (provision of dune slacks etc).

#### 3.2.2. Frainslake Valley - Area includes c.29 hectares

Like the other two 'valley' historic landscapes - Castle Lady Valley and Bosherston Valley - the smaller Frainslake Valley reflects the WNW-SSE trend of the geology. In historic terms it is both a buried and a drowned landscape. Although the stream still flows out to the beach, its valley has been besanded and it may, in prehistoric and early historic times, have been more of an inlet than at present. However, it still retains an enclosed feel, accentuated by the metalled track down its length from Brownslade farm, now in use for military access and patrol. The mill is of medieval origin - the name 'lake' equals stream in Pembrokeshire and the 'Frains' is a personal element - the medieval family of *Ffroyne*. The mill, the ruined Frainslake cottage and the fine 19th century limekiln have lost much of their landscape context through the modern water management regimes of a higher water level in the lower pond part drowning the mill and the construction of a pumping station.

**Condition:** stable. The Listed limekiln is programmed for repair work.

#### 3.2.3 Castlemartin Cliffs - the Downs - Area includes c.429 hectares. etc.

Names of component units: Linney Down, Penyholt Down, Bulliber Down, Mount Sion Down, Flimston Down, Longstone Down, Crickmail Down, Buckspool Down, Newton Down, Trevallen Downs.

This area extends east from the south side of Bluck's Pool along the whole length of the limestone sea cliffs forming the southern landward boundary of Castlemartin Range to its eastern boundary beyond St Govan's Head at Broad Haven. Like HL Area 1 therefore, this is wholly within the boundaries of Castlemartin Range. It is an open landscape with slight dips and rises in level and extensive views along the coastal cliffs. The area today is traversed by a rough coast edge track, which in Range East comprises the Pembrokeshire Coast Path and is used by military vehicles and by walkers. It is not, however an historic route, but one created for military access. The historic pattern of

communication and boundary to the cliff edge is of north-south aligned routes and boundary banks. Most of these are now relict, not working, land divisions but in many cases they extend down to the cliff edge and are now cut across by modern tracks. At the eastern end of the area, particularly at Trevalen Downs, the cliff edge zone is demarcated from the enclosed fields by a continuous common southern boundary to blocks of fields. The cliffs themselves also include caves. Investigations of within some have demonstrated the presence of archaeological material dating from the Neolithic period and later while other sites are considered likely to contain earlier deposits.

This area's historic land use of coastal grazing is evidenced primarily by its toponymy, the common place name element 'down' linked to the individual farms into which the pre-Range area was divided. Sheep and cattle continue to graze down to the coast edge during the different seasonal grazing regimes that can be meshed in with military uses. This pastoral usage is likely to have been a very ancient one. If, as seems likely, the rectilinear field pattern on Linney Down is of Iron Age origin and thus contemporary with some at least of the coastal promontory forts, other elements in the field boundaries and trackways to the east may also be of Iron Age date, used and developed in succeeding centuries. The coastal promontory forts (for a list see Iron Age section below) which are the principal and outstanding archaeological monuments of this HL Area thus may have been sited on open grazing land, not within the fields - such siting preferences are known elsewhere in Britain.

In the mid 18th to early 19th centuries there was some small scale limestone quarrying along the cliff edge; at Buckspool, a ruined limekiln (prn 26301) adjoins the quarry. This was essentially for local farming use in contrast to the larger scale quarrying at Southrow in Range East (see 3.2.6 below). Air photographs of faint plough ridges show that for a period (probably during the Napoleonic Wars) there was ploughing right up to the cliff edge in places. Visually, present-day military uses have produced a few prominent embanked lookouts at Linney Head, Mewsford Point and Newton. At the far eastern end of the area, at Trevalen Downs is a large bombing target of 'Cold War' date. This was formed by scraping off soil cover and laying out 3 large concentric stone circles with a central cross and cardinal-point arrow alignments.

**Condition:** the cliff edge is subject to natural erosion by the sea undercutting the cliffs and from sea spray; the resultant loss and retreat of soil cover has been accelerated and exacerbated by military traffic and much earth scraping by machine. The tracks are well used. The erosion is potentially, and in areas adjacent to and within the hillforts, demonstrably, detrimental to any buried archaeology and causes erosion of earthworks. The evident loss of interior area in the coastal promontory forts gives an indication of the amount of cliff edge collapse over the last two millennia.

#### 3.2.4: Castle Lady Valley - Area includes c.89 hectares

Castle Lady Valley's alignment reflects the ENE-WSW axis of geological strata that dominate the whole peninsula and corresponds to Bosherton Valley (HL Area 7) on the east side of the Range. In the generally open landscape of the Castlemartin range, the



enclosed feel of the Castle Lady valley, provides a marked contrast, accentuated by its wooded southern slopes. The military usage is primarily access through the lower part of the valley and up a side track to Delta Quarry demolition area. Water treatment works have also produced a modern appearance to the lower half of the valley. This contrasts with the upper part of the valley with a gradual rise in level to open ground. Two important archaeological sites are located on the southern side of the ridge of high ground on the south side of the valley - Bulliber Hillfort, and further to the north east Bulliber East Camp (see Iron Age section below). The name derives from the former farmholding of Bulliber, whose buildings have been totally destroyed.

**Condition** is stable, but there is a danger of encroachment over the Iron Age sites by scrub, even though an annual programme of scrub cutting takes place.

### 3.2.5 Range West - Area includes c. 884 hectares

Because of the relatively small size of this area in comparison to other military ranges in Britain (i.e Sennybridge or Otterburn) and its open, plateau, almost treeless appearance and particularly because of the nature, as much as the amount, of military activity within it, the character of the area is thus now principally that of a military training area rather than a relict landscape in which military training takes place. A prominent feature of this Armoured Fighting Vehicle area of the Range are the lines of concrete roads, forming battle runs with moveable targets. Equally visible are the large earth mounds protecting the Blockhouses. But this does not mean that these mid- to late- 20th century uses have obliterated the earlier, pre-range farming landscape. The physical traces of this earlier landscape, farm houses and buildings, the field systems, with their access tracks and boundaries survive as ruins and relict features, with varying degrees of present day use, actual and potential. One very distinctive type of landscape therefore literally **overlies** another. This is entirely due to the fact that the tanks are confined to the concrete runs, so that the adjacent land is relatively unscarred and usable for grazing. Other modifications to the relict farming landscape have been the 19th century Mount Sion covert for sporting purposes and late 20th century planting and management of thickets for wildlife conservation and a certain reorganisation of grazing units by fencing.

The relict landscape was organised around several farm complexes. There has been much clearance and demolition of buildings, both farms, farm buildings and cottages, mostly it would seem in the immediate post-war period. But it is important to appreciate that unless the site of buildings has been bulldozed and a blockhouse built upon it, they still remain as ruins or earthworks in the landscape and form archaeological sites in their own right. Since these farms ceased operation in the late 1930s, the buried traces of earlier activities, buildings and settlements are more likely to survive than on more intensively altered modern farms. The principal surviving sites in this HL area are Brownslade, Linney, Pricaston and Flimston (see Early Modern and Modern period descriptions below for individual descriptions). These buildings are of different dates of origin and development, some being medieval, and survive in different conditions. In a very detailed Historic Landscape Characterisation, Brownslade, Linney, and Flimston would form landscape units in their own right.

**Condition:** Inevitably, the visibility of the relict landscape is changing. The key controls are the amounts and location of animal grazing to keep grasslands intact, the restriction of military activities to existing tracks and locations and the maintenance of buildings as stable accessible ruins. Since the dominant characteristic of this unusual HL unit is one specialist type of use (military) overlying an earlier (agricultural) now relict, these controls are essential to maintain its character and are thus objectives in their own right - see below.

### 3.2.6 Range East - Area includes c.707 hectares

The relict landscape of this area is of similar character to that of Range West. But its different, less intensive military uses and its own 'military archaeology' have had a different impact on the relict landscape, which justifies its characterisation as a second military training landscape. It could, as the Landscape Assessment carried out by RPS Clouston shows, be further sub-divided, as 5a Range East Grasslands, 5b Longstone Down Plateau and 5c Merrion plateau. The degree of survival and visibility of the once overall field and farm boundary hedges and field patterns is the principal means of differentiation between the sub-areas and is directly related to past and, to a lesser extent, present military uses. There are two areas of tank range blockhouses and former target railways, one east of Longstone Covert and the north of Crickmail Down of WWII date (see Modern Military period list below) These caused major breaches in, and disruption of, the former field patterns and boundary hedges.

The field banks and hedges defining the holdings of the dispersed individual farms (Trenorgan etc) are better preserved than those in the military training area in Range West, and the lines of communication between them - former lanes and tracks, still evident and some still in use. Within the area there are differences between the more regular, rectilinear layout of fields over the western part, and the irregular patterns around Trenorgan. This might indicate, as indeed the place-name suggests, that Trenorgan was a pre-Norman 'tref' freeholding continuing on into the Anglo-Norman period, whereas the farms to the west seem part of a reorganised landscape. However, it must be recognised, as Murphy has pointed out (Murphy 1993, 11-13) that the changes between 1780 and 1840 in finally amalgamating scattered land holdings and enclosing commons into a reduced number of farm units, carried out by the improver, John Mirehouse for the Cawdor estate produced the present-day relict landscape.

The farming landscape was also affected in the 18th and 19th centuries by mineral workings - limestone quarries and their attached kilns. Flimston clay-pits, also of geological importance, were worked by the Earl of Cawdor in the early 19th century and again in the 1880s for making firebricks. Nothing remains of the engine house and brick kilns. Other 'estate' features include the plantations and coverts (Longstone especially.) for combined timber production and sporting purposes and these remain dominant features in an otherwise treeless landscape, particularly since they are being extended by new woodland planting. Entering Range East from the north the military presence is dominant, with the ordered, purposeful landscape of Merrion Camp, the Washdown facility, Ammunition Store and so on. The most visible boundary is to the north, where the church towers and spire of Warren and St Twynnell's churches are still dominant

visually amongst military buildings in Meadows Camp and the distant oil refinery and power station chimneys and stacks. To the south there is no direct view to the coast since the ground dips slightly and then rises to a low ridge along Crickmail Down. The dominant impression however is of an open, plateau, with boundaries now provided by entry gates at Newton for the Helicopter range.

**Condition:** The relict landscape pattern of field boundaries and lines of communication is in decay over large areas and suffering either from lack of use and maintenance, or erosion of banks and walls or scrub encroachment over large parts of this HL Area. Leisure uses can cause erosion of banks - for example, the horse jumps along the continuous boundary at Trevalen Down.

### 3.2.7 Bosherton Valley - Area includes c.20 hectares

Like the other two 'valley' HL areas, the east-west alignment reflects the underlying geology. The valley as a whole has been significantly altered by human action and thus falls into two HL areas. The lower part of the valley now forms part of the artificial 'Bosherton Lakes' - part of the park features of Stackpole Court, a registered Historic Park and Garden. The upper part, most, though not all, of which is contained within Castlemartin Range is a relict industrial landscape. It has been subject to limestone quarrying of the valley sides leaving craggy exposures and flat quarry floors along the northern side of the valley at Southrow Quarries. There is a progression in scale of working from west to east with the large modern Bosherton quarry (recently abandoned) at the eastern end. The working probably all dates from the early 19th to the 20th century and was carried out by the Cawdor estate, the quarries being reached by a track from Bosherton village. Prior to extensive quarrying in the second half of the 19th century, there was a small hamlet at Southrow. A quarry (prn 26336) at Southrow in existence by 1864 had been worked on the site of Southrow farm (mentioned in 1551). Other buildings have been demolished since the establishment of the range - a well preserved ruined 'quarryman's house' survives in woodland. Strips of woodland have developed over abandoned quarries at the western end and along the valley sides. The upper part of valley entering the Range has been most affected by military activity. A newly surfaced road has upgraded the earlier track, with long lengths of old hedgebanks removed on either side of it creating a very determined breach in the relict landscape.

**Condition:** changing through refurbished access roads and new planting; otherwise stable.

## **3.3 CHRONOLOGICAL SUMMARY**

### 3.3.1 Late Quaternary (Holocene)

Any evidence for human occupation or activity for this remote period will come from either buried soils or from caves. No evidence has yet been forthcoming but both contexts are considered to have archaeological potential.

Loess is a calcareous wind-blown silt of late glacial to early post-glacial date. Some indication of the extent and depths of this soil which overlies the limestone bed was provided by the archaeological watching brief in 1993 of the trenches dug for Castlemartin range's electrification scheme (Murphy, 1993, Map12). In some areas an older paleosol underlies the loess. These ancient soils have the potential, through pollen analysis and other scientific techniques, for providing information on the dry, cold periglacial environment. Small populations of 'Ice-Age Hunters' were present in South Wales in inter-glacial periods and the loess deposits, along with cave sites, have the potential therefore for Paleolithic remains. At nearby Stackpole Warren, finds of mesolithic, neolithic and early Bronze Age material came from the upper surfaces of the loess.

#### **Key Sites:**

In 1993 K. Murphy identified a good exposure of loess and paleosol in section in the disused quarry west of Blockhouse Echo (Murphy, 1993, pp7). These deposits are not 'threatened' by current landuses, military and non-military. They should be seen as an archaeological 'asset' and a research, even educational, resource within the spectrum of the Range's geology.

#### 3.3.2 Mesolithic (8500BC - 4000BC).

Finds of flint implements, (characteristically of small size) are the main archaeological evidence for this period, being the tools and weapons of small, nomadic, 'hunter-gatherer' communities. In some locations the finds have been of sufficient numbers and type to justify terming the area a 'flint-working floor'; though presumably close to settlements no evidence of what were probably small encampments have been found. Other find-spots are classified in the SMR as 'middens' - i.e. containing bone, shell and charcoal as domestic refuse where mesolithic material is often mixed up with that of a later date. Most of the finds have come from Linney and Brownslade Burrows, one of the densest distributions in south west Wales. The contemporary land surfaces are assumed to be either buried beneath the sand-dunes, or drowned by rising sea levels, or denuded and destroyed by subsequent land uses. However, a peat shelf, or 'submerged forest' - an inter-tidally exposed landsurface of the 5th or 4th millennium BC is intermittently visible off Frainslake and diagnostic 'tranchet axe' flint tool was recovered from the surface of the 'submerged forest' at Freshwater West. No mesolithic material has been found in the cliff caves, but these may have been used in the period being then sited some distance from the sea.

#### **Key sites.**

Many of the earlier finds sites cannot now be relocated due to poor referencing or changing dune cover. Management therefore is best dealt with under conservation of the Burrows as a whole.

#### 3.3.3 Neolithic (4000BC - 2500BC).

Recent research now suggests that the change between the nomadic 'hunter-gatherer' lifestyles of the mesolithic and the settled farming lifestyles of the neolithic was neither

so sudden, nor so absolute as previously supposed. Changes may have come more through the ‘acculturation’ of the indigenous population than the example of incoming settlers and have been contingent upon changes to the environment. It is not surprising therefore that the characteristic neolithic flints, especially the leaf-shaped arrowheads, are found in many of the same locations as the mesolithic material albeit in greater quantities. There is no direct evidence for neolithic changes to the environment in the Castlemartin Range area, but work on pollen cores from Castlemartin Cors shows that widespread woodland clearance had taken place by the early second millennium BC. There are no Neolithic burial monuments - chambered tombs or cromlechs - from Castlemartin (the Devil’s Quoit, Kilpaison Burrows Pe 20 is the nearest), but in view of the density of the finds and the paleoenvironmental evidence, continuity of settlement and landuse obliterating such early traces is a more likely explanation than that this was a little used area in the Neolithic.

**Key sites:**

Find spots with the Burrows - as above. Potential of the Ranges indicated by finds 608 and 611 of polished stone axes at Longstown Down SR940945 and Castle Tank SR96509339 but no specific management recommendations by site or area can be made.

3.3.4 Bronze Age (2,500 - 800BC)

Woodland clearance continued into the Bronze Age and the modern treeless appearance of the Castlemartin peninsula (apart from ‘estate’ planting) is thus an early feature with land open both for grazing and arable farming. Changes in burial and ritual practices and the appearance of bronze for weapons and tools, as well as gold for jewelry, will have made little change to husbandry. However, increased social differentiation may mean that some of the defended Iron Age sites (hillforts) may have late Bronze Age origins. A further indication of continuity is the appearance of Bronze Age flint tools in the same locations as earlier. At nearby Stackpole Warren, buried fields with ploughmarks were excavated below sand dunes, part of a large field system and associated settlement. Similar evidence may lie sealed below Linney and Brownslade Burrows and it is clear that sand incursions and the development of the sand dunes of the south Wales coast begins in the Bronze Age around 1000 BC causing changes to coastal valleys such as Frainslake. As elsewhere however, it is principally ritual or funerary monuments (barrows and standing stones) that survive as visible features in the present landscape.

**Key sites.**

Of the Bronze Age barrows and standing stones known from fieldwork, the antiquarian record, earlier excavations and place-name evidence, few remain in intact condition. All surviving mounds, whether scheduled or not and part excavated or altered, must be registered on the ‘archaeological management’ layer of the GIS and be the subject of active management to ensure their preservation. These are:

<i>Name</i>	<i>PRN</i>	<i>SAM</i>	<i>Note</i>
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Linney Burrows	511	Pe 468	prominent position, poss stone kerb
Linney Burrows	512		difficult to locate
Linney Burrows	513		difficult to locate
Brownsdale Burrows	523		part excavated - cremation & pottery
Crowback	536	Pe 467	part excavated - 2 cist burials - prominent
Churchways, Brownsdale	542	Pe 315	large mound - dark age re-use for burials

### 3.3.5 Iron Age/Romano- British (800 BC - 400 AD).

This period is the most important of the prehistoric era in terms of surviving monuments and, possibly, relict landscape features contemporary with them. This is recognized in the statutory designation of Scheduled Ancient Monuments for all the large coastal promontory forts and inland hillforts. Their elaborate defences and complex entrances may have been as much a mark of status for the settlements within as simply for military defence. There are now no traces of the smaller enclosures or open farmsteads that survive elsewhere in Wales in less intensively used landscapes.

We must envisage a fairly densely settled, well-used and managed environment of mixed farming with population levels perhaps close to those of the middle ages. Elements therefore within the present pattern of land organisation (in the case of the Range the relict farming era) of trackways, field boundaries, shapes and overall patterns may be Iron Age in origin and have been used continuously since. The distinctive block of rectilinear fields in the Linney area at the western end of Range West has been suggested as prehistoric in origin (Murphy, 1993, 12-13). A few stray finds, by analogy with better, excavated assemblages elsewhere in Pembrokeshire, demonstrate continued occupation of these sites in the Roman period when there was access to wider markets and trade and assimilation of the tribal elites to Romanised lifestyles.

#### **Key sites**

There are five Iron Age coastal promontory forts, or remains of forts along the length of Castlemartin Cliffs. There are two sites in Castle Lady valley.

<i>Name</i>	<i>PRN</i>	<i>SAM</i>	<i>Description</i>
Berry Slade	14663	-	low length of curving bank, most visible from the air - possible remains of a single banked coast fort.
Linney Head	539	Pe 316	Two banks and ditches enclose a substantial inner promontory area; an elaborate central entrance denotes high status, a slighter inner bank an earlier fort.
Flimston Bay	602	Pe 318	Obvious evidence of massive coastal erosion resulting in loss of much of interior of this well defended site. Triple banks & ditches with entrance across middle of inner 2 still provides an impressive approach. 18th/19th century track through entrance to rock ledge with a building at cliff edge - shipping place in settled conditions for Flimston clay & bricks.
Crockysdam Camp	603	Pe 319	Simple single banked enclosure of triangular headland, within larger promontory . Small scale excavations have produced evidence of Roman-British occupation, also poss. In Iron Age burial in bank of fort.
Buckspool Camp	609	Pe 320	triangular headland with sloping sides and cliff edge

			enclose by 2 or 3 banks, details lost in places through erosion hole of natural arch & small quarry, part excavated - Romano-British finds-
Bulliber Camp	549	Pe 21	Important hillfort on ridge of high ground with 4 banks & ditches on e. side cut across the hill, substantial defences to the w. and an outer bank covering the entrance approach. Find of dark age pottery suggests post-Roman occupation as well as earlier.
Bulliber East Camp	561	Pe 314	Small, single banked enclosure - more a defended farmstead of IA date than a hillfort.

### 3.3.6 Medieval. (400 - 1400 AD).

The Castlemartin peninsula containing Castlemartin, Manorbier & Penally ranges is of particular interest to Welsh history and archaeology for this period because it was a wealthy, well-settled area with important early Christian sites in the early medieval period yet was thoroughly conquered and settled by the Anglo-Normans from the late 11th century onwards. It has been argued that this conquest produced a dispossession of the Welsh and the imposition of a wholly new 'Anglo-Norman landscape package'. The extent to which native Welsh patterns of settlement and land use and indeed ecclesiastical organisation survived and were utilised by the Normans are thus subjects of active research and are of more than local importance.

An important 'indicator' find of imported 5th/6th century Mediterranean pottery from the Brownslade Burrows area may have come from Bulliber/Castle Lady Camp, raising interesting questions as to whether Frainslake was then a more navigable tidal creek than it is now and indicating an important centre of power. The re-use of the Bronze Age Churchways Barrow (prn 542) for stone cist burials and chapel site (prn 544) near Brownslade seem to indicate a large early Christian cemetery and pre-Norman chapel. The holy well and chapel of St Govan's are likely to be of pre-Norman origin. But the parochial organisation and chapels of ease like Flimston are all part of the Anglo-Norman land organisation, together with individual farms, centres of knights' fees and hamlets and villages practising systems of communal, 'open-field' arable cultivation.

The extent to which such historical information can be localised within the present day environment is limited and this affects the scope of any specific management objectives and prescriptions targeted to this period. However it is the historical processes of the whole medieval period that have created the framework of the present day landscape and this supports the archaeological interest and potential of seemingly later buildings and their environs.

### **Key sites**

<i>Name</i>	<i>PRN</i>	<i>SAM</i>	<i>Description</i>
Churchways	544		ruins of a small stone building excavated in 19th C by Laws. Possible chapel
Churchways barrow	542	Pe 315	Bronze Age barrow reused for ?early christian burials

St Govan's Chapel	630	Pe 321	- assoc with 544. A holy well on the cliff ledge below the chapel and a cave in the rock which may have been the original hermitage. These now form a well known group of features with the probably 14th century chapel typifying the 'celtic church'.
Flimston Chapel	563	LBII	med chapel, converted to farm buildings in 18th C. but restored 1901 by Col. Lambton, and again to relig. use in 1963 by Range staff.
Linney DMV	14632	Pe 469	Rare example of the earthworks of a deserted medieval village - rows of house platforms on n. slope overlooking Castle Lady Valley a short distance from site of Linney farm.

### 3.3.7 Late Medieval - early 19th century 1400 - 1840 AD.

This lengthy period of time is compressed for the purposes of this plan for two reasons: first because many surviving features are multi-period with at least late medieval if not earlier origins, secondly detailed cartographic as well as documentary sources are only available in quantity from the mid to late 18th century to reconstruct past landscapes. At the start of this period, propelled partly by the demographic collapse through plague and famine in the 14th century, there were major changes in land-holding and organisation. Individual farms, themselves part of gentry estates were created from the former common lands of hamlets at places like Linney, Flimston. These processes took place at different times in different places.

In the late 18th/early 19th century there were moves to improve farming by new techniques and the intake of new land - John Mirehouse, agent of the Cawdor estate rebuilt Brownslade as a model farm, and drained Castlemartin Cors. These activities extended to changes and improvements to the 'infrastructure' of the area - the new, straight road between Stackpole and Brownslade now vital to access to the Range being a notable example. Since, fortunately, so many late 18th century Estate Maps survive for the Range, the amalgamation of fields and holdings between 1780 and 1840 show that this was a period of considerable change that has produced the relict landscape that survives today.

#### **Key sites.**

<i>Name</i>	<i>PRN</i>	<i>SAM or LB</i>	<i>Description</i>
Linney	6969		Now a low ruin and earthwork, - archaeological potential because a knights' fee in origin and record of med. features in a later gentry farm house, later let to tenants.
Pricaston	6976	LB II & Pe 451	Overgrown and decaying ruin of large farmhouse and buildings within enclosure, with important medieval elements of vaulted through passage with arched doorways, part of a medieval hall house. Extensively rebuilt in 1700 and of architectural interest for that period also.
Flimston	6452	LB II & Pe 447	Well preserved and conserved ruins of a large farmhouse and farm buildings adjacent to Flimston Chapel, In origin a small medieval first floor hall-



Brownslade farm buildings	6447 & 26462	LB II	house, extended c. 1600 into a 3 unit farmhouse and further extended and altered in the 18th and 19th C House demolished c. 1980 - home of John Mirehouse, the agricultural improver, agent of Lord Cawdor. Well preserved ruins of c. 1800 farm buildings arranged around a courtyard with formal entrance - interesting group of model farm buildings, Refurbished for use as stone tents.
Trenorgan Farm	2604		Farm in existence by 1787 - recent refurbishment of farm and outbuildings as stone tents - re-rendered and re-roofed.
Frainslake Mill	4678		Roofless, but with standing walls, now part submerged in lake, possible 16/17th C elements - needs survey.
Frainslake Cottage	6440		Ruin, but with walls to full height, large ? 17th C chimney to mainly 19th C building
Cuckoo Rock Cloyne	6442 6445		Low walls of ruined 'cottage & garden' (1839) Demolished, but earthworks indicate site of farm abandoned in 1920s - archaeological potential
Castle Lady Slade	6446 6978		Low walls of ? cottage, poss 17th C chimney. Low walls and earthworks of farmstead - ? 17th C chimney. Archaeol potential demonstrated by finds from trench during 1993 Range electrification.
Moor Cottages	7846		Demolished but earthworks survive & low walls, a substantial farm converted to cottages in 19th C - archaeological potential
Penyholt	9907		Ruin - 2 m. high walls, new farm built between 1787 and 1839 - Cawdor Estate.
Kenton	14637		Field name, earthwork platform & med & post-med pottery from 1993 Electrification trench indicate archaeol potential.
Layton	14650		Buried site revealed by finds and surfaces (1993) of possible 16th c. farm of Layton.
Linney Burrows Coxey	26320 26321		Ruined cottage becoming engulfed by sand. Demolished buildings, now rubble heap, of at least 17thC in origin farmstead - archaeol potential.
Warmans Hill	26323		demolished farm and buildings, now heaps of rubble & some walls - probable medieval holding - archaeological potential.
Longstone	26337		Demolished farmstead, some ruined walls - a 1930s survey identified 17th C features - archaeological potential.
Ansey's Down	26357		Ruin - estab. by 1787, abandoned 1908 - single storey with loft, bread ovens and chimney. Unusually complete
Crickmail Down	26351		Ruined cottage, there by 1837.
Crickmail Down	26352		Ruined cottage, there by 1837
Crickmail	26358		Site of demolished farmstead - 3 storey Georgian House - poss earlier origins - archaeological site.
Stevnes Down Midland	26359 26320		Earthworks mark the site of a farmstead there by 1787. rubble and low walls in a thicket mark site of farm established by 1787
Eastland	26361		Established by 1787 and ruinous by 1930, pre-Range, reasonable height of stone walls and plan of building detectable - archaeol potential.

Buckspool Down	26366	earthwork of small cottage, there by 1837, deserted by 1908 - archaeological potential.
Little Newton	26374	There by 1787, roofed and boarded up, farmstead. unusual level of survival.
Quarpool	26435	There by 1725, abandoned by 1822, archaeolo potential demonstrated in finds and structures in electrification trench 1993 - 17th/18th C pottery
Tar Shipping	26445	Some earthworks remain after military clearance of site known in late 17th C - minor archaeol potential now
Linney Row	26447	Earliest ref 1623, gone by 1838 but replaced by Penyholt Farm - low walls and earthworks in scrub - archaeol potential.
Castle Lady Valley	26476	2-roomed rectangular building, ruin, low walls
Eastland Cottages	26478	extant, still part-roofed, late 19th c cottages
Blucks Pool	26485	Coastguard Station, there by 1864, foundations

### 3.3.8 Modern Military.

The military archaeology of Castlemartin and Manorbier Ranges is predominantly of 20th century date, but Penally also has interesting Victorian origins. The sites and buildings are of two types; those found elsewhere along the Pembrokeshire coast and inland, and those belonging to earlier operations within the Ranges. Both are of interest and value.

#### **Key sites.**

<b>Name</b>	<b>NGR</b>	<b>SMR prn</b>	<b>Description</b>
Linney Burrows:			All on Crow back headland, Linney and Brownslade Burrows - WWII
Defence Post		28743	semi-sunken, hole in roof
Defence Post		28744	semi-sunken, door in e.wall, roof intact
Gun emplacement		28745	low circ. brick wall enclosing concrete gun floor
Tobruk shelters, Linney Downs			Central monuments in a group of features thought to be a practice landing beach, 1943
Linney Down:			
Blockhouse		33442	Disused Blockhouse WWII or 'Cold war'?
Blockhouse		33443	..
Blockhouse		33444	..
Blockhouse C and railtrack			..
Blockhouse D			
Blockhouse R			
Blockhouses & railtrack		33445	Mount Sion Down
Blockhouses & disused railtrack	SR941950		East of Longstone Covert - WWII or Cold war?
Blockhouses & dismantled tramway	SR948950		All for tank target practice
Blockhouses & dismantled tramways	SR952947		

Blockhouses & tramway	33450, 33448, 33449	
Blockhouses & tramway	33451, 33452, 33453	
Bombing Target	33520	concentric circles & cardinal points laid out in stone lines for approaching aircraft

#### 4. OBJECTIVES.

##### 4.1 Historic Environment: Conservation and Management Objectives Castlemartin Range.

###### *Overall Objectives.*

1. To conserve, manage and enhance the historic environment of the three active military ranges to the same level and standards as those set by Pembrokeshire Coast National Park in its Plan Policies, the Ministry of Defence in its Conservation Guidelines and in accord with the full intentions of statutory provisions and explanatory guidelines.
2. Conserve and enhance the condition and appearance of archaeological sites and monuments, scheduled and non-scheduled, maintain relict buildings as well as those in current use, listed and non-listed and prevent any further destruction of upstanding buildings, however small or recent, unless absolutely necessary.
3. To protect the buried archaeological resources from erosion or destruction.
4. To protect and enhance those relict and working features which contribute to the distinctive character of each of the Historic Landscape areas.
5. To promote the historic environment resource by means of access, and interpretation, on and off site, for public enjoyment and education, within the constraints of military activity and conservation needs.

#### 5. ANALYSIS OF CURRENT ACHIEVEMENT IN MEETING OBJECTIVES.

<b>Objective</b>	<b>Achievements</b>
1. PCNP & MoD Consv standards	<p>* Monitoring through archaeologist (Cambria Archaeology) representing PCNP and Cadw, &amp; MoD Consv staff attendance at CRAG meetings.</p> <p>* Copies of relevant policies &amp; legislation held by &amp; known to all Mod &amp; DE managerial staff</p>

2. Enhance condition of sites & buildings	<ul style="list-style-type: none"> <li>* some scrub clearance of earthworks.</li> <li>* repair of buildings</li> <li>* no recent demolition of ruined buildings</li> </ul>
3. protect buried resource	<ul style="list-style-type: none"> <li>* marking 'cordons' around protected monuments on Range operational map.</li> <li>* restriction of much heavy vehicle movement to concrete tracks</li> <li>* limited access within dunes and keeping to tracks.</li> <li>* limited 'off-roading' for smaller military vehicles</li> <li>* restricting climbing near eroding cliff edges of SAMs IA forts</li> <li>* planning applications for major works allowing for archaeological conditions.</li> <li>* controls on cave access.</li> <li>* MoD policy: no metal detectors on Army Ranges.</li> </ul>
4. conserve historic landscapes	<ul style="list-style-type: none"> <li>* restriction of much heavy vehicle movement to existing tracks</li> <li>* marking off sites and wildlife areas as 'out of bounds' on Range maps</li> <li>* maintaining a low intensity agricultural regime - i.e grazing.</li> </ul>
5. promote & interpret	<ul style="list-style-type: none"> <li>* articles on archaeology in <i>Sanctuary</i></li> <li>* some sites &amp; features highlighted in Park's guided walks.</li> <li>* access and facilities provided for special interest groups and students - i.e Fortress Study Group &amp; MA students.</li> </ul>

## 6. FACTORS IN MEETING OBJECTIVES AND LIKELY INTERACTION WITH OTHER CMPS.

Objective	Factor	Interaction with other CMPS
1. Conservation standards	None.	None
2. Enhance sites & buildings	Funding, consents (SMCs and LBCs)	Possible effects on vegetation or habitats. Military -possible constraints in uses of stone tents.
3. Protect buried resource	Funding, planning consents for large scale works.	Military - possible changes in practice for dry-training
4. Conserve historic landscapes	possible funding.	Some changes of practice in Estate Management
5. Promote and interpret	changing mindsets MoD & PCNP, funding	military operational constraints; conservation safeguards.

## 7. PRESCRIPTION FOR MEETING OBJECTIVES

Objective	Prescription
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<b>1. Conservation Standards</b>	<p><b>1.1.</b> Organise access to professional ‘curatorial’ archaeological advice and make provision for preparation of Briefs and Specifications for all contractual archaeological work and the monitoring of its performance.</p> <p><b>1.2</b> Maintain liaison with relevant conservation officers in PCNP both inside and outside the framework of the Castlemartin Range Advisory Committee.</p> <p><b>1.3.</b> Maintain liaison between MoD Conservation Staff and archaeological curator in order to inform and be informed of archaeological conservation throughout the MoD Ranges.</p> <p><b>1.4.</b> Regular monitoring of condition of sites .</p> <p><b>1.5.</b> Regular update of records.</p>
<b>2. Enhance sites and buildings</b>	<p><b>2.1.</b> Draw up a management plan as soon as possible, in consultation with Cadw, for the coastal promontory Iron Age forts and the Castle Lady Valley Forts which will seek means of preventing erosion of both banks and ditches and interiors, repairing damaged banks, selective clearance of scrub to maintain the visibility of the monuments and prevent damage by mature trees.</p> <p><b>2.2.</b> Combine the information from the architects’ quinquennial surveys into an overall action plan for consolidation and repair that is presented to SPRRAG for information.</p> <p><b>2.3.</b> Within the Buildings Action Plan, prioritise Pricaston for consolidation and repair in order to bring it to the condition of Flimston as a safe, and accessible ruin by seeking LBC from Cadw/PCNP for any proposed works in good time in order to make use of any ‘windfalls’ or to serve as a platform for grant applications.</p> <p><b>2.4.</b> Register all surviving buildings on the Ranges GIS as part of the ‘historic environment management layer’ (see notes below) and attach short descriptive text and photograph to each with the appropriate management actions .</p>
<b>3. Protect the buried archaeological resource.</b>	<p><b>3.1</b> In conjunction with the archaeological advisor, list earth-moving or digging activities which form part of current and future military uses and do not require planning permission in order to establish:</p> <p>a) whether these are causing or likely to cause damage.</p> <p>b) whether any modifications are possible in order to reduce damage.</p> <p>c) whether any mitigation in terms of observation of or monitoring the impact of the activities is practicable or desirable.</p> <p>d) whether any research opportunities are provided by military operations</p>
<b>4. Conserve historic landscape.</b>	<p><b>4.1.</b> Consider reusing historic field boundary lines, even if surmounted with fences, to preserve as working elements, for grazing blocs.</p> <p><b>4.2 .</b> Consider use of relict lanes and tracks in any new footpaths.</p> <p><b>4.3.</b> Direct new planting for ecological gain to reinstate and reinforce underlying landscape patterns where possible.</p>
<b>5. Promote and Interpret .</b>	<p><b>5.1.</b> Draw up a research agenda for the archaeology and historic environment of Castlemartin Range in order to:</p> <p>a) Underpin and inform the objectives of all briefs and specifications necessary for each individual archaeological assessment, watching brief, excavation or building recording which might be required in future as mitigation for any works affecting archaeological sites, features and buildings.</p> <p>b) raise the profile of the historic environment in order to stimulate</p>

academic interest and possible projects.

**5.2.** Consider, in partnership with PCNP and/or other MoD Ranges the production of popular leaflets/guides and on or of site interpretation.

**5.3.** Actively seek opportunities to conserve and promote the military archaeology of the Range itself in order the 'set standards' for others. (i.e become a 'lead-body' in this aspect of the historic environment of South Pembrokeshire.

**22 JANUARY 2001**

**CASTLEMARTIN RANGE  
INTEGRATED LAND MANAGEMENT PLAN**

**ESTATE MANAGEMENT**

**COMPONENT MANAGEMENT PLAN**

**DEFENCE ESTATES  
THE BARRACKS  
BRECON  
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## **CASTLEMARTIN RANGE**

### **ESTATE MANAGEMENT COMPONENT MANAGEMENT PLAN**

#### **ABBREVIATIONS**

<b>CCW</b>	<b>- Countryside Council for Wales</b>
<b>DE</b>	<b>- Defence Estates</b>
<b>EOD</b>	<b>- Explosive Ordnance Device</b>
<b>est</b>	<b>- Estimated</b>
<b>ha</b>	<b>- hectare</b>
<b>ILMP</b>	<b>- Integrated Land Management Plan</b>
<b>MoD</b>	<b>- Ministry of Defence</b>
<b>PCNPA</b>	<b>- Pembrokeshire Coast National Park Authority</b>
<b>PO</b>	<b>- Primary Objective</b>
<b>SPRRAG</b>	<b>- South Pembrokeshire Range Recording Advisory Group</b>
<b>SSSI</b>	<b>- Site of Special Scientific Interest</b>



## **CASTLEMARTIN RANGE INTEGRATED LAND MANAGEMENT PLAN**

### **COMPONENT MANAGEMENT PLAN - ESTATE MANAGEMENT**

#### **PREAMBLE**

This component management plan is one of six being prepared as part of an Integrated Land Management Plan (ILMP) for Castlemartin Range.

The ILMP seeks to optimise sustainable military use of Castlemartin Range commensurate with the divergent non military interests in the Range and MoD's commitment to the Environment, Nature Conservation, Public Access and its Agricultural and Commercial tenants.

Castlemartin Range is wholly situated within the Pembrokeshire Coast National Park with the exception of the sea danger area and is crossed by the Pembrokeshire Coast Path (a National Trail). Castlemartin Range is one of two military training areas in the Park. Castlemartin employs some 140 civilians and makes a significant contribution to the local economy.

Castlemartin's maritime situation on the south-western coast of Wales, its physical grandeur and historic landscape, attracts summer and winter visitors alike who visit the area in search of traditional holiday pursuits and sporting interests. Military training also attracts interest from visitors and a spectator area has been created at Warren to provide a safe viewing point.

Nature conservation is of paramount importance on the Range, which is considered, by many, to be the "nature conservation jewel" of the MoD's Estate. Undoubtedly it is, within Wales the largest area of Calcerious unimproved and semi improved neutral and semi neutral sea cliff grassland that has not been subjected to modern (post war) agricultural practices. The exceptional flora and fauna found on the Range have attracted both national and international designations.

The Strategic Defence Review published in 1999 has, to date, little changed the Military use of Castlemartin Range. It continues to provide collective training facilities for AFVs (Armoured Fighting Vehicles) up to and including main battle tanks on the western half of the Range. Small arms ranges and infantry training is undertaken principally on the eastern half of the Range. Other uses include a Naval air to ground machine gun range at Newton. Specialist uses are super imposed on the above ranges such as multi launch rocket systems, missiles, air launched munitions, artillery and air defence training.

The Strategy for the Defence Estate, "In Trust and On Trust" was launched, in Wales, on the 24 July 2000 at the Royal Welsh Show and at ATE Pembrokeshire at the Castlemartin Forces Open Day. The Castlemartin ILMP reflects the detailed objectives contained in the strategy for the management of the Rural Estate.

The aim of the estate management component plan is to expose the issues relating to land management and seek to establish a balance with the military training. The areas covered fall under the following headings.

Maintain balance within range uses	EM1
Maintain economic viability of lettings	EM2
To safeguard the welfare of stock on the Range	EM3
To control invasive species	EM4
To promote the commercial and casual use of the Range	EM5
To provide and manage woodlands for military training	EM6
To maintain the quality of water on Range	EM7
To assess marine pollution and plan to clear up third party spillages	EM8
To ensure safe noise levels	EM9
Litter and debris clearance.	EM10

## **STRATEGY FOR THE NON- MILITARY MANAGEMENT OF THE RANGE**

The MoD occupies land and property solely to support the delivery of defence capabilities. However the ownership and use of a 160,000 ha rural estate attracts broader responsibilities and legal obligations which have to be balanced with the Estate's primary role. The interests of stakeholders, outside the MoD, are recognised particularly in regional planning, environmental sustainability, rural access, transport matters and nature conservation.

The priorities for the use of the MoD Army Estate are laid down in Army General Administrative Instruction Volume 1 Chapter 16. They are :-

1. The Army Training Requirement
2. Public Safety
3. Conservation and Land Management including Economic Factors
4. Access

## STATISTICS

Land Holding :        MoD Freehold                                2389.7 ha

Hiring :	Foreshore rights leased/licensed from the Crown Estate	9.71 ha
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Lettings :	11 Agricultural Lettings	220.83 ha
	2 Commercial Lettings	6.43 ha

### Communal Grazing :

Cattle                      7 Graziers                      circa 500 cattle

Sheep	13 Graziers	11,759 sheep
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Military Use: From 1986 use of the Range has been regulated by the Castlemartin Byelaws made under Statutory Instrument 1982, No. 1834.

Designations:

European	SPAs –European1979 bird directive	}	
	SAC Habitat and Species directive		
		}	
	Limestone Sea Cliffs of South West Wales	}	Natura 2000
	(Candidate Special Area of Conservation)	}	network
	Pembrokeshire Marine SAC		
	Castlemartin Coast Special Protection Area		

National	SSSI - Castlemartin Cliffs and Dunes
	National Park
	Schedule Ancient Monuments
	Listed Buildings

## **AGRICULTURE**

The current agricultural use of the Range is a grazing regime that has been developed and refined over the last 25 years by MoD and the South Pembrokeshire Ranges Recording and Advisory Group (SPRRAG). The agricultural management reflects especially, the conservation interest in the Range. The two interests are interdependent and have resulted in the Range becoming an important contributor to the local agricultural economy whilst remaining one of the most important areas for nature conservation in Wales. Castlemartin has the only remaining un-intensified Grade One land in Pembrokeshire.

The agricultural use of the Range falls into three categories: -

- Communal grazing of sheep.
- Communal grazing of cattle.
- Enclosed lettings (ongoing) for grazing and winter fodder.

### **COMMUNAL GRAZING OF SHEEP**

Following the extreme winter of 1947 MoD agreed that the flockmasters from the Preseli Hills could overwinter their sheep on the Range. The mild, maritime, climate provides ample nutrition for over 11,000 ewes without the necessity for supplementary feeding (except in the harshest of winters). A total of 13 licences are issued annually whilst a rota for shepherding the sheep is organised by the flockmasters.

The arrival and departure of the flocks are established fixtures in the agricultural year as is the annual rent audit at the London House Hotel in Crymych. The grazing facility is an important feature of the agricultural economy of the Preseli Hills

The grazing season runs from November to May except that sheep numbers on Range West are, according to the season, and firing programme, reduced by up to 25% in February.

### **COMMUNAL GRAZING OF CATTLE**

The communal grazing of cattle complements the communal sheep grazing by providing the mixed grazing that is less frequently found, today, on commercial farms off the Range. This low input, extensively grazing system enhances the qualities that contribute to the exceptional variety of flora found on the Range.

The communal grazing licences run, annually, from June to May in two distinct periods. From June to Christmas up to 650 cattle graze Range East, Range West and Brownslade Burrows whilst after Christmas a varying number of stock graze according to firing programmes and calving policies. Numbers grazing the Range are agreed annually and reflect the state of the livestock industry and the quality (and quantity) of the sward on the Range and military activity.

Without exception the communal cattle graziers are farmers with commercial farms in the vicinity of the Range.

## ENCLOSED LETTINGS

A total of 11 enclosed lettings (see map) are situated around the periphery of the Range. They are principally used for grazing and fodder production. In certain circumstances agisted stock graze during the winter months.

Recent lettings are "Farm Business Tenancies" whilst historically lettings have been granted under Section 2 of the Agricultural Holdings Acts.

## AGRICULTURAL OBJECTIVES

<b>EM1 TO MAINTAIN A BALANCE BETWEEN THE MILITARY USE, AGRICULTURE AND CONSERVATION INTERESTS ON THE RANGE</b>
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### **Current achievement in meeting the objective.**

Nature Conservation and Land Management currently have equal standing in the Priorities for the use of the MoD Estate. The Commander ATE Pembrokeshire and Defence Estates are responsible for the management of the Range. They are supported by the South Pembrokeshire Ranges Recording and Advisory Group (SPRRAG) whose members provide invaluable specialist nature conservation knowledge that informs management decisions on grazing patterns and stocking densities.

The balance between the two interests is fragile and requires ongoing review. The majority of the conservation interests depend on the grazing to continue to maintain them in favourable conditions, for example close grazing in the Chough feeding area is essential whilst the overgrazing of habitat detrimental to flora and fauna.

The current communal grazing regime has been developed over, and has served both interests well, for many years but will need to be re-addressed in the light of the survey carried out, for this ILMP, on the inland area of the Range.

### **Interaction with other CMPs**

#### **Landscape**

Agricultural fencing can have a visual impact

#### **Military**

Stock in the wrong place at the wrong time can cause delays to firing

#### **Recreation**

There is the possibility of human interaction with live stock

## Nature Conservation

Controlled grazing is an essential prerequisite to the conservation of the flora and fauna on the Range. Existing historic agreements for the ongoing agricultural lettings pay scant regard to nature conservation. The completion of local Biodiversity Action Plans will identify areas where scarce habitat and species require particular attention.

### **Prescriptions for meeting the objective**

1. New agreements for enclosed lettings will have regard to particular conservation interests and stocking densities.
2. Licensees of enclosed land will be encouraged to promote mixed grazing (cattle and sheep) where possible.
3. Monitor and establish stocking densities, by survey, of enclosed and communally grazed areas.
4. Investigate the eligibility of the enclosed lettings to join the Tir Gofal scheme.

## **EM2 TO MAINTAIN THE PRESENCE AND ECONOMIC VIABILITY OF THE LETTINGS.**

### **Current achievement in meeting the objective.**

Over the years MoD have always been under pressure to maximise income from the estate and discreet areas have been identified to create permanent lettings. These areas have usually been behind the firing points where access can be allowed on a more regular basis. Retention of this land is still required as it forms part of the danger area for the weapons.

MoD has taken into account the decline in agricultural incomes in the assessment, and review, of rents and licence fees. Current charges have been negotiated with the communal graziers (or their representatives) at annual reviews whilst the fees for enclosed lettings are reviewed at the times required under individual agreements.

### **Interaction with other CMPs.**

#### Access and Recreation.

The two interests co-exist in quiet harmony. Access to the enclosed lettings is rarely requested but enclosed land is made available, by agreement with tenants, for annual events such as the "Forces Open Day" and the "Range Ride". There is potential for dogs to worry sheep if gates are left open.

#### Archaeology and Cultural Heritage

The potential for damage to archaeological sites is considered to be low. Arable operations (reseeding pasture) are a potentially damaging operation.

## Landscape

The agricultural use of the Range has made a major contribution to its landscape quality. Additional fencing has the potential to cause visual impact.

## Military

The two interests are interdependent. Restricted access during live firing exercises can cause shepherding problems whilst live firing has the potential to affect animal welfare. Firing programmes restricts effective grazing of Range West and can cause stock management problems during lambing. Current policy also prevents a potential fire hazards.

## Nature Conservation.

Commercial farming is detrimental to nature conservation.

### **Prescriptions for meeting the objective**

1. The requirement for enclosed lettings will be reviewed, on an ongoing basis, in light of changing demands for military training and MoD's wider environmental commitments.
2. Licence fees will be freely negotiated to reflect: - market conditions, legal and contractual constraints, eligibility for grant aid especially for conservation and environmental matters.
3. Consider longer-term lettings to ensure sound husbandry and qualification for Agri-environmental schemes.

<b>EM3 TO SAFEGUARD THE WELFARE OF STOCK ON THE RANGE</b>
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### **Current achievement in meeting the objective**

The productive capacity of the Range is such that supplementary feeding is rarely necessary except in extreme weather. The Communally grazed sheep have lambed successfully on the Range each Spring for many years.

Stock losses, attributable to the military use of the Range are very limited and none have been recorded in recent years. An extension to the firing programme, on Range West, in 1995 created livestock management implications that were resolved by the erection of additional stock fencing.

Access to the Range for shepherding purposes is, of necessity, carefully controlled. The communally grazed sheep are shepherded under a roster run by the Preseli flockmasters. Defence Estates; Military Personnel and employees assist where necessary reporting sheep in distress.

Natural causes are responsible for most livestock losses, falls from cliff tops have accounted for occasional cattle losses. Fallen stock is either removed to sheep burial pits located at strategic points on the Range or removed, from the Range, for disposal.

## **Interaction with other CMPs**

### **Access and Recreation**

Unnecessary human interference can cause distress to hill sheep especially at lambing time. Walkers can attract the attention of cattle.

### **Archaeology and Cultural Heritage**

There is little interaction except that unfenced archaeological digs have the potential to trap stock and there is also potential for cattle to erode sites.

### **Landscape.**

Grazing has contributed to openness of the current landscape features. Newly erected stock fencing can in certain locations be visually intrusive.

### **Military Use**

Live firing presents a potential threat. The necessity to move sheep from live firing areas, close to lambing, can cause stress to the livestock.  
The enclosed lettings on the boundary of the range deter unauthorised access onto it.

### **Nature Conservation**

The “odd” natural dead carcass can supply a natural food source.

## **Prescriptions for meeting the objective**

1. Assess the stock supporting capacity and the suitability of stock of the Range, on an ongoing basis, to ensure that appropriate numbers are accommodated.
2. Ensure that fences damaged during training (and by other causes) are repaired quickly to keep stock out of live firing areas.
3. Investigate the possibility of rescheduling the firing programme to avoid the Spring lambing period.
4. Carry out regular shepherding of stock to maintain high levels of health and welfare.
5. Investigate and maintain appropriate range signage



## **EM4 TO CONTROL INVASIVE SPECIES**

The invasive species thrive upon the range owing to the extensive nature of the grazing regime. They come in two forms “agriculturally notifyable” and “non native”. Of the former Ragwort is the main threat being poisonous to cattle but is only palatable to them once it is desiccated. The species which present a threat to most interests on the range include Japanese Knotweed, Blackthorn, Bracken, Bramble, Creeping and Spear thistle. Without control significant environmental damage will be caused and the infantry training value of the Range will be prejudiced.

### **Interaction with other CMPs**

#### Access and recreation

Scrub, gorse and blackthorn can hinder access.

#### Archaeology and Cultural Heritage

The root systems of Japanese knot weed and woody scrub can cause physical damage to old structures and archaeological sites and can obscure ancient field boundary systems.

#### Landscape

Woody scrub can, without control, have an impact upon the landscape of the Range.

#### Military

Extensive areas of woody vegetation and Japanese knotweed can prevent free movement across the range and interfere, or eliminate lines of sight for weaponry and safety markers. Handling ragwort has a potential health risk.

#### Nature Conservation.

Scrub encroachment can have an adverse effect habitat and species but alternatively can be a worthy habitat in its own right.

### **Prescriptions for meeting the objective.**

1. Carry out surveys to identify the extent of the species.
2. Formulate, and implement, a programme for their control.
3. Ensure that tenants of enclosed lettings meet their weed control obligations in an environmentally acceptable manner.

## **TO PROMOTE THE COMMERCIAL AND CASUAL (ad hoc) LETTING**

### **EM 5 TO PROMOTE THE COMMERCIAL AND CASUAL USE OF THE RANGE**

#### **Current achievements in meeting the objective.**

The non-military use of, and access to, the range is the fourth priority for the use of the range. The facilities given are much valued by commercial organisations and members of the public alike. The income derived from the lettings is of significant value to the running of the Army Training Estate.

The Commandant ATE Pembrokeshire authorises the commercial and casual uses on the range with due regard being given to the military, and other interests in the range before licences or access rights are granted.

The Castlemartin shoot is mainly restricted to Range West where there is limited live firing at weekends. Shooting on Range east is restricted by the incidence of infantry training throughout.

Pheasants, woodcock, snipe and wood pigeon are shoot together with other vermin species. Ground "game" is limited to rabbits but a voluntary ban has been imposed since the recent outbreak of viral haemorrhagic disease.

Duck are shot over natural and man made ponds in both Range East and West. Bismuth shot is used when shooting over water and wetlands.

Game management follows the established annual patterns dictated by nature and the statutory closed and open seasons, about 1000 poults are reared and released each year.

Authorised personnel only are allowed to carry out vermin control.

There are three non-agricultural ongoing commercial lettings (all to the PCNPA) on the range.

They are for: -

- Flimston Farmstead
- Stack Rocks car park and picnic area
- St Govans car park and chapel

Casual lettings are principally granted for: -

- Sporting –horse riding, shooting, car rallying
- Filming
- Short term lettings of buildings
- Sea weed collection (for lava bread)

Formal safety briefings are given to users prior to entering the range and Defence Estates issue appropriate licences. Users are expected to have third party insurance cover and charges raised reflect those made for similar facilities in the locality.

## **Interaction with other CMPs**

### Access and Recreation

Control is exercised to ensure that casual uses do not clash or cause excessive pressure on sensitive features. It is also accepted that there is a potential conflict with recreation activities to be managed.

The Ministry of Defence currently sponsors (25% of the cost) of providing a National Park Warden for the Castlemartin range area.

Shooting is generally inland, well organised, seasonal at weekends from October to January when the demand for access and recreation on the range is minimal.

### Archaeology and Cultural Heritage

Potential physical damage due to erosion can be caused to sensitive sites.

### Landscape

The casual lettings are usually short term but permanent physical and environmental damage can be caused if care and users do not exercise constraint. Some sites are valued for filming purposes.

Some pheasant pens associated with the shoot can be intrusive if poorly sited.

### Military Training

The commercial and casual activities are undertaken when they do not conflict with military training.

### Nature Conservation

Commercial and casual uses have the potential to cause physical disturbance/damage to habitats and disturbance to wildlife.

## **Prescriptions for meeting the objectives.**

Range users and organisers will be subject to a prior safety briefing before events are undertaken and will have insurance cover to meet MoD current policy requirements.

1. Casual use will be monitored to avoid over use and dual bookings especially at peak periods.
2. Prior liaison with the SPRAAG will be undertaken in respect of proposed uses that are potentially damaging to nature conservation features.

3. Review, on an annual basis, the list of quarry shot to take account of pressures on any particular species.

### **Woodland**

There are only a few areas of woodland on this site (see plan). The dominant species being *Acer pseudoplatanus* (sycamore) and *Fraxinus excelsior* (Ash). The main woodland blocks are located at Frainslake Cottage (GR 901976) and Mount Sion Covert (GR916957) with other smaller wooded areas at Pen y Holt (GR 898965), Brownslade Farm and at Castle Lady Valley (GR 938951).

As outlined the mature strands of trees in Castlemartin consist mainly of Ash and Sycamore with outlying Oak. Natural regeneration is taking place where the woods are fenced but sparse where the woods are open to the ranges and grazed by the livestock.

There is a general trend against amenity planting unless specifically required for military training purposes and/or as a result of planning obligations.

Tree planting for conservation will be sympathetic with environmental considerations e.g. gaps in hedgerows to provide or improve bat Flight paths. New woodland planting has taken place in recent years (since 1998) on the Meadows site and Winter Pits site with the total area amounting to under five acres.

<b>EM6 TO PROVIDE AND MANAGE WOODLAND FOR MILITARY TRAINING WHILIST BEING COMPATIBLE WITH OTHER INTERESTS</b>
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#### **Current achievement in meeting the objective.**

The current woodland management regime is successful and the objective is being met.

#### **Interaction with other CMPs**

##### **Archaeology and Cultural Heritage**

There is a limited possibility for damage to sites as a result of tree root growth. Tree plantations or scrub encroachment could obscure medieval field structures.

##### **Landscape.**

The planting of additional woodland outside the valleys or traditional locations would have an impact on the open landscape.

##### **Military Use**

The woodland on Range provides a diversity of cover for military training. However excessive scrub growth can interfere with the visibility of targetry.

## Nature Conservation

New planting could result in the loss of more valuable species and habitat. Open dry, sunny grassland areas provide ideal habitat for invertebrates. Maintenance of traditional field boundaries would be beneficial for bats

### **Prescription for meeting the objective.**

- 1.Current trends are against further planting unless required for military requirement, planning or would be conservation enhancing.
- 2.All woodlands will be managed as part of current DE woodland management plans and will be reviewed in line with ILMP process.
- 3.Prior consultation with SPRAAG will be taken in respect of all proposed new planting.
- 4.Where practical new planting shall be grant assisted under appropriate schemes.

### **Current achievement in meeting the objective.**

The current forestry regime is successful and the objective is being met.

## **Interaction with other CMPs**

### Access and recreation

The location and size of the woodland at Castlemartin ensures that there are limited opportunities for conflict.

### Archaeology and Cultural Heritage

There are limited possibilities for damage to sites as a result of tree root growth.

### Landscape.

The planting of additional woodland would not be in keeping with the local landscape.

### Military Use

The woodland on Range provides a diversity of cover for military training resulting in positive interaction between the two CMPs.

## Nature Conservation

There is potential for root growth damage to locations such as the SSSI areas, the wooded areas provide ideal habitat for protected bird species.

### **Prescription for meeting the objective.**

- 1.The general trend is against further planting unless military requirements dictate or if required under planning obligations.
- 2.All woodlands will be managed in keeping with DE woodland management plans.
- 3.Prior consultation will be taken in respect of all proposed new planting.
- 4.Any future planting shall reflect native species.
- 6.Where practical new planting shall be grant assisted under appropriate schemes

### **Pollution Control and Waste Management**

The information has been gleaned from MOD and DE sources and from information supplied by local Environmental Agency

The main sources of pollution affecting the Range are potentially sea borne litter, atmospheric pollution, noise, chemical spillage and that as a result of military activity.

Whilst the MoD being part of the Crown Estate is technically immune from the constraints of pollution related legislation it behaves as though there is no immunity.

The main Legislation which relates to pollution is found in the following acts:-

The Environmental Pollution Act 1990  
The Control of Pollution Act 1974  
The Water Resources Act 1991

Natural water on the Range is a significant resource that affects not only the Range but also the surrounding areas through the underground aquifers and natural surface drainage.

<b>EM 7 TO MAINTAIN THE QUALITY OF THE NATURAL SURFACE AND GROUND WATER ON THE RANGE</b>
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### **Current achievements in meeting the objective.**

The quality of the natural water can be affected by: -

Human use of the Range (Military and Public)  
Agricultural use  
Military Live Firing and training.

There are few recorded incidents of the natural water resources being polluted although detailed records have not been kept. Water supplied to the Camp is regularly tested and treated prior to human consumption. The Environment Agency test ground water taken from its borehole at Sampson's Cross.

Boreholes were dug at various points on the Range, in 1998, as part of the survey work for the ILMP process. Since 1998 DE have logged water levels in the boreholes on a weekly basis. Chemical analysis of samples has not yet been undertaken.

There are potential pollution risks, which are outside MOD freehold, to the Ranges from "off-site" areas such as the rising ground towards Warren village. Any use of this land especially "artificial" fertilisers and sprays, for agricultural purposes on these areas would be a potential threat to the water quality on the Range.

## **INTERACTION WITH OTHER CMPs**

### **Landscape**

Certain physical features, such as Frainslake and Chapel marshes are important landscape characteristics of the Range. Any adverse change to water quality would have an aesthetic impact.

### **Military**

The military human element is well catered for by the provision of toilet facilities at strategic training locations on the Range.

Sewage from Merrion Camp is treated at a locally run Hyder works.

The act of live firing has little or no impact on the natural water quality but the use of hydrocarbons in vehicles is a potential source of contamination.

Infantry Training on the Range is considered to be a low risk to water quality

Tank and vehicle washing is under taken in a fully contained wash down with sediment pools etc using recycled water.

### **Nature Conservation**

Contamination of the water quality could dramatically impact upon the ecology of the surface ponds, lake and marshes on the Range. Potentially off Range interests such as Bosheston Lily ponds could be affected through contaminated surface water drainage and ground water.

All sheep are dipped two weeks prior to transportation to the range.

### **Prescription for meeting the objective.**

1. Promote the awareness of the importance of reporting all pollution incidents so that they can be properly dealt with.
2. Strictly adhere to the Range Standing Orders when servicing and re-fuelling vehicles.
3. Monitor and analysis ground water samples from the boreholes.
4. Investigate with the associate stakeholders the provision of public toilets at strategic locations on the Range.
5. The MOD will continue to act as appropriate landlords.

<b>EM8 TO ASSESS MARINE POLLUTION AND PLAN TO CLEAR UP THIRD PARTY SPILLAGES</b>
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The sea its self also raises potential issues firstly in that we do not current know the potential polluting threat of firing. Although at this stage this issue is being addressed by the survey work which is currently being undertaken. There is also the threat to the land from an incident at sea such as the Sea Empress grounding and the subsequent chemical spillage. Marine pollution is also a threat to the coastline and the range. In the result of a major pollution incident there is a need for the M.O.D to work closely with Local Authority and emergency planners other bodies is expected that the MOD will play their full part should such a need arise.

### **Current achievements in achieving the objective**

There is a recognised need for MOD to work closely with the local emergency planners to enable a quick response at sea and on shore should contaminate be washed up.

### **INTERACTION WITH OTHER CMPS**

Access and recreation

Would be curtailed in the event of a pollution incident

Landscape

Pollution and the destruction it causes is visually intrusive

Military training

Key operational training could cause a delay in access being permitted.

Nature Conservation

When an incidence occurs time is of the essence to start the clean up process to restrict the damage



Prescriptions for meeting the objective

1. Complete marine survey and analyse results
2. Agree strategy for access with emergency planners

<b>EM9 WE WILL SEEK TO ENSURE THAT NOISE LEVELS REMAIN WITHIN IN LEGAL REQUIREMENTS</b>
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**Current achievements in achieving objective**

Being a live firing range there is always potential at Castlemartin to have noise pollution problems. Current monitoring confirms that nationally agreed noise levels are not being exceeded.

**INTERACTION WITH OTHER CMPs**

Access and Recreation

Scope for interaction is limited as access is strictly controlled during firing programmes.

Archaeology and Cultural Heritage

Limited scope for interaction as noise levels within safe levels for structural damage

Nature Conservation

Noise has the potential to affect sea-nesting birds, especially helicopters in the breeding season. However rare and common species have flourished despite many years of intensive military activity.

Prescription for meeting the objective

- 1 Weather and hence noise forecasts will be made prior to training.
2. Noise complains will be investigated diligently.

<b>EM 10 ENDEAVOUR TO KEEP THE TRAINING AREA CLEAR OF ALL LITTER AND DEBRIS</b>
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**Current achievements in meeting objective**

It is apparent that there is a wide cross-section of sources of litter and debris on range. Varying from the residue from military firing, current and former targetry, to the litter of recreational visitors. Sea borne from high tides and storms. There is also evidence of agricultural and domestic litter being left on the site.

## **Interaction with other CMPs**

### Access and recreation

Increased public access could lead to increased amount of litter. Alternatively there is also the acetic impact of other litter and debris on the public's enjoyment of the ranges.

### Archaeology and Cultural Heritage

Current practise is not to fire at protected and sensitive sites but there is a possibility of former military debris lying in their vicinity.

### Landscape

The filling of blowholes is detrimental; degrading and destructs natural landscape features (remains of military, agricultural and domestic debris observed in holes).

### Military

The military users clear up unexploded blinds after firing. Current military debris on range is usually the uncovered legacy of a previous generation of military activity. Degenerating military targetry can devalue the landscape value.

### Nature Conservation

Litter and debris have the potential to damage flora and fauna, e.g. through illegal fly tipping in blowholes.

## **Prescriptions for meeting objectives.**

- 1 Promote awareness and ensure proper disposal of litter
- 2 Review waste management and disposal
- 3 Review clean up policy for military and other debris.

## **Integrated Land Management Plan: Castlemartin Range** **Landscape Component Management Plan**

### ***Section 1 - Introduction***

- 1.1 This Report provides the Landscape Component Management Plan (CMP) element of the Castlemartin Integrated Land Management Plan (ILMP). It is based on a landscape assessment exercise commissioned especially for the ILMP and carried out by R. P. S. Clouston Ltd. of Abingdon. The CMP, including an evaluation of the Landscape Assessment, setting of objectives, and identification of management prescriptions, was prepared by a group comprising Ifor Jones (PCNPA), Chairman; Lt. Col. M. Portman (Commandant, Castlemartin Range); Brian Goodman (DEO, Castlemartin); Mike Mellors (DEO, Brecon); Alex Wigmore (National Trust); and Barry Long (Countryside Council for Wales).
- 1.2 Castlemartin Range lies within the Pembrokeshire Coast National Park, the only primarily coastal National Park in England and Wales, and it contains some of the finest limestone coastal scenery in the Park. The area's landscape character results from the interplay between natural dimensions – including geology, topography, soils, climate, ecology and erosion – and man's activities over many centuries, culminating in today's distinctive landscape character and pattern of landuse.
- 1.3 The area's landscape has a unique scenic and visual character. Every individual's appreciation of this landscape is similarly unique, reflecting their individual experience, drawing on their own historical, cultural, architectural, scientific, and emotional values, and reflecting the ever-changing conditions of lighting, weather and season in the landscape.
- 1.4 The general public's experience of Castlemartin Range is primarily from the public highways bordering the centre and from the extensive views from roads and rights-of-way in the surrounding countryside. A more intimate experience is obtained from the limited access to the centre itself from the Coast Path and public access routes to Stack Rocks and St. Govan's Chapel. The completely different view of the centre from the sea is experienced by a few, particularly bearing in mind the extensive sea-danger area with restricted access which lies offshore.

### **The South Pembrokeshire Coastal Landscape**

- 1.5 Southern Pembrokeshire comprises a large peninsula in the far south west of Wales defined by Carmarthen Bay to the east, the Atlantic Ocean to the south and west, and the Milford Haven estuary to the north. The region is part of the extensive coastal plateau of south-west Wales, formed by marine and glacial planing. Subsequent erosion and dissection by rivers has resulted in an undulating landscape of exposed

plateau tops and secluded valleys. The diverse, primarily agricultural landscape apparent today, has evolved through a combination of this topography, variations in underlying geology and soils, coastal influences, microclimate, and the historical patterns of settlement and land use.

### **Background to Castlemartin Range**

- 1.6 Castlemartin Range provides ranges for direct fire armoured fighting vehicle (AFV) live gunnery, air-to-ground exercises using helicopters, and with scope for other weapons and for dry training. The main direction of fire is towards the sea. Use is made of cliffs and beaches on the shoreline for assault landings, but is restricted during bird nesting periods. The Range is used by all Regular Army, TA units, Cadet forces and other services including NATO units. It is also used by civilian organisations, MoD sponsored arms manufacturers and research establishments.
- 1.7 The site comprises 2381 hectares of MoD freehold land. The area was requisitioned by the War Office in 1938 from the Cawdor Estate, and was purchased in 1948. Many ruins of former settlements can still be seen.
- 1.8 The Range is made up of Merrion and Meadow Camps, and three main AFV ranges comprising static firing points leading to battle runs on fixed hardcore tracks, and a further two semi-structured battle runs. No tracked vehicle movement is permitted off the designated tracks for safety reasons and to prevent damage to the wider Range environment. There are also small arms ranges and a RN helicopter range.
- 1.9 The military use and regime of grazing by cattle and sheep has resulted in the maintenance of a coastal heath/grassland and unimproved pasture across some of the potentially most productive agricultural land in the National Park, which potential is almost certain to have been realised many years ago through agricultural “improvement” but for the military presence. Today cattle are grazed on 133 hectares of the site, while in winter a further 2,144 hectares are grazed by sheep, which spend their summers in the Preseli hills and beyond.
- 1.10 The nature conservation importance of the Castlemartin Range is highlighted by designation of the full length of its coastal heath and grasslands (approximately one quarter of the total area of the Range) as a site of Special Scientific Interest, most of which has also been put forward to Europe by the British Government as a candidate Special Area of Conservation (under the European Habitats Directive), and the coast has also been defined as a Special Protection Area (SPA) under the European Wild Birds Directive, specifically for its chough population.
- 1.11 The Range is also a site of considerable archaeological and historic conservation importance, and the general importance of its coastal

landscape is reflected in its definition within the Angle Bay to Caldey Island Heritage Coast. Extensive areas of coastal features, moor and heath, as well as the centres deciduous woodlands have been identified by the National Park Authority as areas particularly important to conserve in its Conservation Map published in accordance with the requirements of Section 3 of the Wildlife and Countryside Act (as amended), 1981.

- 1.12 The Range is of acknowledged recreational value, and during non-firing periods the public has a right of way along a section of the Pembrokeshire Coast Path which runs from Trevallen, via Stack Rocks, to the B4319 Castlemartin road. The cliffs and beaches are used for water sports and rock climbing subject to seasonal conservation restrictions and access arrangements. A long stretch of coast within Range West is closed to the public at all times because of live firing and the residual unexploded ordnance. However access is permitted in non-firing periods subject to conservation concerns and a briefing process. A wide variety of access is allowed through this process, with over 1,200 people briefed during 2000, including 312 who participated in the NPA programme of guided walks across the Range.

### **Landscape Assessment Methodology and Context**

- 1.13 The purpose of the Landscape Assessment was to provide the basis for the consideration of future landscape management within the ILMP. The approach adopted for this assessment was based generally on guidelines provided by the Countryside Commission in its publication "Landscape Assessment Guidance". The Assessment proceeded in three stages: desk study; field survey; and consultation with partner organisations.
- 1.14 A sound framework for the Assessment was also provided by a Landscape Assessment of the former South Pembrokeshire District Council area, under-taken in 1997 by Chris Blandford Associates for Pembrokeshire County Council.
- 1.15 This identifies six primary landscape divisions, the Castlemartin Range lying entirely within the *Castlemartin Peninsula* division, for which key characteristics are identified as follows:
- *Peninsula character of area enclosed by the Atlantic Ocean to the west, south and east, and by Milford Haven estuary to the north and north-west*
  - *Alternating WNW-ESE Old Red Sandstone ridges and limestone valleys with small streams.*
  - *Rugged limestone coast of vertical cliffs, headlands and promontories, sea stacks, blowholes and arches separated by eroded sandy bays and dune fields.*

- *Coastal fringe dissected by narrow, shallow river valleys.*
- *Dense network of lanes linking villages and hamlets.*
- *Limestone castles and churches and numerous remnant features of archaeological interest.*
- *Urbanisation of the southern Milford Haven shoreline contrasts starkly with the rural nature of most of the surrounding area.*
- *Open nature of ridge and plateau tops with long views, contrasts with the enclosed river valleys.*
- *Predominance of improved grazing pasture, with market gardening on favourable slopes utilising the fine fertile soils.*

1.16 The geology of the Castlemartin Peninsula is dominated by alternating east/west orientated bands of Carboniferous Limestones and Shales, where rivers have exploited the weaker strata to form valleys, and Devonian Old Red Sandstone, indicated by the ridges. At the coast, the more resistant limestone rocks are associated with high cliffs, headlands and points, whereas the softer sandstone and sedimentary rocks are associated with expansive sandy bays, dune fields and small coves.

1.17 The limestone areas are associated with typical brown, well drained loams, and the sandstone ridges with well drained fine loamy red soils, which tint the fields a distinct red colour. The plateau areas comprise generally moderately sized fields of improved pasture enclosed by hedgebanks, originating from late enclosure of medieval open field and strip systems.

1.18 The 'Landscape Assessment of Southern Pembrokeshire' further divides the primary landscape divisions into landscape character areas. The Castlemartin Range falls entirely within, and comprises a substantial part of the *Castlemartin Coastal Plateau* character area. This is described as follows (I):

4.4.1 *A predominantly flat area of limestone plateau about 45 metres AOD comprises the exposed southern coast of southern Pembrokeshire. This area includes three distinct sub-units: the flat waterless limestone plateau areas with steep vertical cliffs which plunge into the sea, the extensive dune fields and broad sandy bays, and the wooded valley system of Bosherton.*

4.4.2 *Much of the distinctive character of the area is given by the predominant Ministry of Defence land use, and as a consequence there is little settlement except for the army base at Merrion Camp. The walls and field boundaries are largely in a state of disrepair, and much of the land area is rough grassland used for sheep and cattle grazing. Vegetation along the length*

*of exposed limestone coast is typically bleached limestone grassland with distinctive wild flowers which create a striking display in spring and summer. The few trees in this area are sculptured by westerly winds from the Atlantic Ocean, and the hedgebanks are more commonly replaced by turf topped banks. Little of the area is accessible to the public due to its military use, and there are few roads. Barbed wire, danger signs and the noise from firing detracts from what is otherwise an attractive landscape.*

*4.4.3 The Pembrokeshire Coast Path allows access to the spectacular coastline which, between Bosherton and the natural arch of the Green Bridge of Wales [and beyond into Range West], is of SSSI status and includes the National Nature Reserve at Stackpole Head. Caves, stacks, archways and blowholes, inaccessible coves and vertical cliffs have been eroded by the ocean and provide a rich and fascinating coastline. Various historic features including forts, St Govan's Chapel and tumuli add to the interest provided by this coast.*

*4.4.4 In contrast to this bleak, exposed plateau is the system of valleys between Stackpole and Bosherton which are narrow, deeply incised and well wooded.*

*4.4.5 Large areas of sand dunes back the sandy bays creating an area of almost desert like appearance at Broomhill and Brownslade Burrows. These dunes were constructed by winds over 1000 years ago and have been stabilised by a succession of vegetation, the ecological diversity of which increases with distance from the beach. Their dry hummocky nature, which extends right up to the ridge tops at 50 metres AOD, makes for a very distinctive and unusual landscape.*

*4.4.6 The Castlemartin Plateau extends up to the Old Red Sandstone ridge on which the settlements of Castlemartin, Warren and St Twynnels lie. This ridge line provides visual containment to the area. South of here the predominantly National Park status of the area reflects the landscape qualities of the different units described.*

1.19 The landscape character of the Castlemartin Range is influenced visually by the elevated farmland on the Old Red Sandstone ridge, which forms a backdrop to many views looking inland from the site, with the church spire at Warren, and tower at St Twynnels forming skyline features on the ridge top. Tall chimneys of the heavy industry at Milford Haven are also visible beyond the ridge from many areas. Conversely, extensive views across the site can be obtained from many parts of the ridge, looking south towards the sea.

## **Section 2. Landscape Character of the Castlemartin Range**

- 2.1. The 'Landscape Assessment of Southern Pembrokeshire' was intended as:

*... the first stage in highlighting the importance of Pembrokeshire's diverse, attractive and unspoiled landscapes*

This report comprises the next stage in the assessment process, through the further division of the landscape character areas into landscape character types, each with their own individual landscape characteristics, and identified by appropriate geographical features. These characteristics are mainly defined by a combination of land use and topography. However, it is important to recognise that there are often no precise boundaries between landscape character units, and that there are generally transition zones at all scales of assessment.

- 2.2 The Castlemartin Range comprises three main parts: the base camp near the hamlet of Merrion, and the eastern and western ranges, defined by the north-south orientated minor road between Warren and Stack Rocks. Range West is further defined to its north generally by the B4319 road between Warren and Gupton Burrows passing through Castlemartin village, and to its south and west by the coastline. The boundary of Range East follows various road and field boundaries south-eastwards from Warren to St Govan's Head, and is again defined by the coastline to its south. Differences in the use and treatment of Range West and Range East are reflected in the character of their respective landscapes.
- 2.3 Some character types have been further sub-divided into units displaying subtle but distinct variations, although the boundaries to these are rather less clearly defined than those of their main type. Landscape character types and sub-divisions as identified are shown on Plan 1.
- 2.4 In addition to their defining characteristic qualities, there are smaller scale features within these landscape types which contribute, to a greater or lesser extent, to their individual character. Both aspects are described in the following sections. A full version of the Landscape Assessment carried out by R.P.S. Clouston Ltd., which includes representative photographs of each landscape character type along with photographs of many of the individual features, is available separately to this Report.

### **Landscape character types**

- 1. Merrion Camp**
- 2. Castlemartin Farmland Fringe**



3. **Castlemartin Coastal Fringe**
  - 3a Trevallen Downs Peninsula
  - 3b Range East Downs
  - 3c Range West Downs
  - 3d Great Furzenip Point
4. **Brownslade and Linney Burrows**
5. **Range East Training Area**
  - 5a Range East Grasslands
  - 5b Longstone Down Plateau
  - 5c Merrion Plateau
6. **Range West Training Area**
  - 6a Range West Scrublands
  - 6b Linney Plateau
  - 6c Frainslake Grasslands
7. **Bosherston Valley**
8. **Trevallen Valley**
9. **Frainslake Valley**
10. **Castle Lady Valley**

### **Type 1: Merrion Camp**

- 2.5 **Location:** This comprises the main buildings and facilities of the Range, made up of two parts namely Merrion and Meadow Camps, and the Tank Park. The Camps are located on the northern side of Range East, off the B4319 Castlemartin-Pembroke road, with the Tank Park to its south, around 1km away from the road. The Camp facilities comprise offices, stores, workshops, accommodation (including an area for tents), NAAFI, and sports and fitness centre. The Tank Park comprises vehicle park, hangars, washdowns, armouries and ammunition stores.

## **2.6 Landscape characteristics:**

- Industrial style buildings in sheet metal cladding and other modern materials;
- Accommodation units, administrative facilities and other buildings in brick, painted blockwork or vertical timber boarding, with slate, corrugated metal or flat felt roofs;
- Extensive areas of mown grass;
- Generally open setting, with little mature vegetation;
- Areas of hardstanding and geometric pattern of circulation roads.

## **2.7 Features in the landscape:**

- Perimeter security fencing and gates;
- Pair of Centurion and Conqueror tanks at main entrance off the B4319.

## **Type 2: Castlemartin Farmland Fringe**

**2.8 Location:** A belt of land along the central northern edge of the Range to west and east of Merrion and Meadow Camps, generally adjacent to the B4319 and a minor road to the east of the Camps.

## **2.9 Landscape characteristics:**

- Gently undulating land; small pasture fields with substantially intact pattern of hedges and hedgerows characteristic of the locality, and some larger areas of pasture; absence of hedgerow trees;
- Relates physically and visually to the wider, inland, pastoral landscapes, as opposed to the coastal landscape, as a result of local topography;
- Grazing cattle and sheep;
- Presence of, generally low key, military features including roads, tracks and buildings.

## **2.10 Features in the landscape:**

- Hamlet at the eastern end of the Camps, including Hayston;

- Trenorgan, a group of traditional farm buildings, recently renovated for use as a 'stone tent';
- Hill top observation tower and public viewing point near Warren;
- Sentry posts and barriers at road junctions, roadside flags and warning signs, red and white perimeter gates;
- Woodland (S3 Map: *woodlands*) and derelict settlement at Brownslade.

### **Type 3: Castlemartin Coastal Fringe**

2.11 The maritime heath and grassland communities which have developed on the exposed rocky headlands are amongst the finest examples of their type, comprising a mosaic of grassland, dry heath with bell heather and dwarf gorse, and sea-cliff grassland.

2.12 **Location:** The Castlemartin Coastal Fringe comprises a belt of land around the whole of the coast, including the coastline itself, with the exception of part of the western side of Range West. It corresponds broadly with the areas of the SSSI and S3 'Map area of *coastal features*'. The greatest deviation from the latter is in the Range West area where the designation is less extensive than the Coastal Fringe area identified here, and there is possibly a transitional overlap between this and the *moor and heath* designation. This extensive tract of land has been sub-divided into areas displaying individual characteristics, substantially derived from their relative intensity of use, as follows:

**3a Trevalen Downs Peninsula:** the south-eastern corner of Range East, east of the Bosherton road;

**3b Range East Downs:** the coastline between the Bosherton road and the Stack Rocks road (including the public access area at Stack Rocks), comprising Newton Down, Buckspool Down, Crickmail Down and Longstone Down;

**3c Range West Downs:** the coastline between Stack Rocks and Linney, comprising Flimston Down, Mount Sion Down, Bulliber Down, Pen-y-holt Down and Linney Down;

**3d Great Furzenip Point:** the north-western corner of Range West, adjacent to the B4319.

2.13 **Landscape characteristics generally:**

- Rugged cliff coastline with small coves, caves and rocky points;

- Cliff-top land comprising species-rich sea-cliff grassland or heath, grazed in places;
- Some military features, including 'blockhouses' (earth-covered bunkers), radar towers, roads and tracks;
- Absence of field boundaries, with the exception of some stretches of recent stock proof fencing and traces of some remnant banks

## **Type 3a. Trevallen Downs Peninsula**

### **2.14 Landscape characteristics:**

- Relatively low-lying, open landscape with sea views to south, east and west;
- Views to the sandstone ridge to the north, and industrial chimneys at Milford Haven beyond;
- Heavy recreational use for walking on the Pembrokeshire Coast Path, and rock climbing with resulting cliff-top erosion, and further areas of disturbed soil as a result of military use;
- Presence of military installations and PCNPA coastal car parks (including that at Broad Haven, beyond the Range, visible to the north-east);
- Grazing cattle.

### **2.15 Features in the landscape:**

- Sentry posts and barriers at access points;
- Public car park at the end of the Bosherton road (leased to PCNPA);
- New Quay, a rocky inlet with small harbour for Bosherton;
- Long Matthew Point, and St Govan's Head with look-out post, on the peninsula;
- St Govan's Chapel dating from the 12th Century, built into the rock face, and St Govan's Well.

## **Type 3b: Range East Downs**

### **2.16 Landscape characteristics:**

- Open, gently undulating, cliff-top plateau landscape;
- Strongly related to the sea, rather than the inland farmland, as a result of adjacent rising land to the north, giving a feeling of remoteness;
- Light informal recreational use of the Pembrokeshire Coast Path.

#### **2.16 Features in the landscape:**

- Warning signs and sentry posts at access points;
- Public car park at Stack Rocks (leased to PCNPA);
- Radar installations at Saddle Head and Castle Head, and look-out post at Mewsford Point;
- Stennis Ford and Huntsman's Leap fissures;
- Iron Age forts at Castle Head, Moody Nose and Flimston Castle - known as Devil's Cauldron;
- Coves at Bullslaughter Bay and Flimston Bay;
- Rock formations at Stack Rocks, including the Green Bridge of Wales and Elegug Stacks.

### **Type 3c: Range West Downs**

#### **2.18 Landscape characteristics:**

- Open, flat or gently rolling, cliff-top plateau landscape;
- Strongly related to the sea, but tops of chimneys at Milford Haven visible from slightly more elevated parts;
- Feeling of total remoteness, with no open public access.

#### **2.19 Features in the landscape:**

- Natural arches, blowholes and abandoned settlement around Linney Head;
- Pen-y-holt Stack and fissure at The Wash;
- Coves at Pen-y-holt Bay, Hobbyhorse Bay and Wind Bay;
- Look-out point and tank hulks at Linney Head;

- Patches of burnt gorse caused by live firing.

### **Type 3d: Great Furzenip Point**

#### **2.20 Landscape characteristics:**

- Open sandstone ridge separating areas of dunes to north and south;
- Adjacent to B4319 and influenced by military installations.

#### **2.21 Features in the landscape:**

- Hill top radar tower and look-out point;
- Roadside warning signs, flags and barbed wire;
- Great Furzenip promontory.

### **Type 4: Brownslade and Linney Burrows**

**2.22 Location:** An extensive coastal area on the western side of Range West, and south of the B4319, stretching between Great Furzenip and Linney. The boundary coincides largely with that of the SSSI and S3 Map area of *coastal features*.

#### **2.23 Landscape characteristics:**

- Hummocky sand dunes, largely vegetated with coarse grass;
- Coastline comprising a broad bay made up of a wide sandy beach - Frainslake Sands - with flat rock formations at each end adjacent to the adjoining Castlemartin Coastal Fringe character areas to north and south.

#### **2.24 Features in the landscape:**

- Disused sand pits;
- Blown-up pillboxes.

### **Type 5: Range East Training Area**

**2.25 Location:** This comprises the bulk of Range East, stretching inland from the Castlemartin Coastal Fringe character area, and bounded to

the west by the Stack Rocks road. Three sub-divisions have been identified, as follows:

- 5a Range East Grasslands:** stretching from the Stack Rocks road to Trevallen;
- 5b Longstone Down Plateau:** towards the centre of the Range East Grasslands, adjacent to the Castlemartin Coastal Fringe character area;
- 5c Merrion Plateau:** situated between Merrion Camp and the Range East Grasslands, east of the Stack Rocks road.

## **Type 5a: Range East Grasslands**

### **2.26 Landscape characteristics**

- Undulating land ranging from valley tops to plateau tops, relating partly to the inland landscapes to the north, and partly to the coastal landscapes to the south, depending on topography;
- Rough grassland, some grazed, with local areas of cut grass, but with generally unmanaged appearance;
- Reasonably strong surviving remnant field pattern, including lanes, and unmanaged hedges and hedgebanks, but likely to be in decline; some recent stock proof fencing;
- Absence of hedgerow trees;
- Churches on the sandstone ridge, and parts of the power station and oil refineries at Milford Haven visible;
- Presence of military facilities including buildings, blockhouses, roads, tracks, firing ranges with moving target tracks, and range markers.

### **2.27 Features in the landscape:**

- Ammunition compound south of the Tank Park;
- 'Midland'- ruined house;
- Minor road from Bosherton to the coast;
- Longstone Lane and Addlegutter Lane, old lanes now forming part of the Range circulation network;

- Longstone Covert, an area of woodland (S3 Map: *woodlands*), scrub and wetland;
- Quarry south-west of the Tank Park;
- Observation towers, sentry posts and barriers, roadside flags and warning signs, and red and white perimeter gates along the Bosherton road;
- Barrier gates at crossing points on the Stack Rocks road;
- Scrub and wetland on the site of a former clay pit east of the Stack Rocks road;
- Look-out tower on the plateau top east of the Stack Rocks road.

## **Type 5b: Longstone Down Plateau**

### **2.28 Landscape characteristics:**

- Elevated plateau topography, relating to the coastal landscapes;
- Differs from the Range East Grasslands, in that the remnant field pattern is virtually non-existent, with sporadic patches of thorn scrub indicating locations of former hedges;
- Largely featureless, open and exposed landscape.

## **Type 5c: Merrion Plateau**

### **2.29 Landscape characteristics:**

- Elevated plateau topography, relating to the wider inland landscapes;
- Open and exposed grassland landscape with large scale rectilinear field pattern and remnant hedges.

### **2.30 Features in the landscape:**

- Wide, straight military roads;
- Stark, wind sculpted thorns.

## **Type 6: Range West Training Area**



2.31 **Location:** This comprises the bulk of the central part of Range West, stretching inland from the Castlemartin Coastal Fringe character area, and bounded to the east by the Stack Rocks road. The southern part coincides with the S3 Map area of *moor and heath*. Three sub-divisions have been identified as follows:

**6a Range West Scrublands:** adjacent to and west of the Stack Rocks road;

**6b Linney Plateau:** the south-western corner of the Range, between Linney Burrows and the Castlemartin Coastal Fringe;

**6c Frainslake Grasslands:** east of Brownslade and Linney Burrows.

## **Type 6a: Range West Scrublands**

### **2.32 Landscape characteristics:**

- Undulating plateau land, relating partly to the inland landscapes to the north, and partly to the coastal landscapes to the south and west, depending on topography;
- Rough grassland, some grazed, with areas of encroaching scrub and generally unmanaged appearance; absence of hedgerow trees;
- Remnant field pattern largely indistinguishable due to lack of management resulting in decline or uncontrolled spreading of shrubby vegetation through suckering habit of thorn, and breaking up of former field pattern by unrelated network of tank tracks, and to a lesser extent by the introduction of stock proof fencing;
- Milford Haven chimneys visible from parts;
- Presence of derelict skeleton settlements, and tank and other armoured vehicle hulks in the open landscape;
- Absence of people;
- Combat vehicles and live firing during exercises.

### **2.33 Features in the landscape:**

- Former lanes now forming part of the Range circulation network;
- Flimston Chapel, and skeleton villages of Pricaston and Flimston;
- Gates and barriers at access points off the Stack Rocks road and B4319;

- Quarries and tank holding area south-east of Linney;
- Presence of military features, including moving target tracks, pop-up targets and cut-out soldiers; observation tower close to the Stack Rocks road.

## **Type 6b: Linney Plateau**

### **2.34 Landscape characteristics :**

- Differs from the Range West Scrublands in that the vegetation cover comprises chiefly long grass, with a comparatively strong pattern of former field hedges;
- Landform is rolling and generally rather lower lying, allowing views of chimneys and other tall industrial development at Milford Haven;
- Presence of military facilities including blockhouses, roads, tracks, moving target rails, and range markers.

### **2.35 Features in the landscape:**

- Hulks of tanks and other armoured vehicles.

## **Type 6c: Frainslake Grasslands**

### **2.36 Landscape characteristics:**

- Featureless open grassland forming a transition landscape between the dunes and the Range West training area.

## **Type 7: Bosherton Valley**

**2.37 Location:** Towards the centre of Range East, comprising the upper reaches of the valley above Bosherton.

### **2.38 Landscape characteristics:**

- Linear, valley landform and associated enclosure contrast with the surrounding plateau landscapes;
- Dry and moderately well wooded;
- Contains mature trees as a result of the shelter offered by the topography.

### **2.39 Features in the landscape:**

- Track running along the length of the valley bottom;
- Small areas of recent new woodland planting;
- Disused quarry.

## **Type 8: Trevallen Valley**

2.40 **Location:** On the boundary towards the eastern end of Range East, comprising a small part of the upper reaches of the valley above Trevallen.

### **2.41 Landscape characteristics:**

- Valley landform and intimate scale contrast with the surrounding plateau landscapes;
- Well wooded with areas of encroaching scrub;
- Damp valley bottom with small areas of pasture and rough grass.

## **Type 9: Frainslake Valley**

2.42 **Location:** Within the north-western area of Range West, above Brownslade Burrows.

### **2.43 Landscape characteristics:**

- Valley landform contrasts with the surrounding plateau landscapes, creating shelter and intimate scale by contrast with adjacent exposed plateau topography;
- Damp valley bottom, and associated wetland habitats contrast with the adjacent dry plateau and dunes land;
- Variety of habitat types within a relatively confined area, including areas of woodland;
- Presence of historical features.

### **2.44 Features in the landscape:**

- Reed beds through the dunes;
- Semi-submerged Frainslake Mill;

- Series of artificial ponds with dams and sluices, and associated aquatic vegetation;
- Pumping station and spring at Frainslake Cottage;
- Stone ruins of Brownslade Farm, including road through archway;
- Woodland (S3 Map: *woodlands*) and scrub in upper reaches above Brownslade Farm.

## **Type 10: Castle Lady Valley**

**2.45 Location:** Through the central part of Range West, above Linney Burrows, generally coinciding with the northern edge of the S3 Map area of *moor and heath*.

### **2.46 Landscape characteristics:**

- Broad valley landform, with dry valley bottom;
- Enclosed nature of topography in contrast to the surrounding plateau landscapes;
- Rough grassland vegetation with extensive areas of encroaching scrub and some woodland;
- Presence of a variety of historical artefacts.

### **2.47 Features in the landscape:**

- Mount Sion Covert - the most extensive area of woodland within the Range (S3 Map: *woodlands*);
- Mount Sion Lane;
- Lane (formerly to Pen-y-holt) up wooded tributary valley in main valley side;
- Historical earthworks, including hill fort and camp;
- Remnant foundations of settlement at Linney;
- Disused quarries and lime kilns.

### Section 3 - Evaluation Matrix

	Scenic Qualities	Unspoilt character	Remoteness	Nature conservation interest	Historic conservation interest	Recreation value	Views from within	Views from outside
1. Merrion Camp	L	L	L	L	L/M	L	L	L
2. Castlemartin Farmland Fringe	M	M	L	L/M	L/M	H	M	H
3. Castlemartin Coastal Fringe	H	H	H	H	H	H	H	H
4. Brownslade and Linney Burrows	H	H	H	H	H	L	H	H
5. Range East Training Area	H	H	H	H	H	L	H	H
6. Range West Training Area	H	H	H	H	H	L	H	H
7. Bosherton Valley	M	M	M	M	H	L	M	M
8. Trevalen Valley	H	H	M	M	M	L	H	M
9. Frainslake Valley	H	H	H	H	H	L	M	H
10. Castle Lady Valley	H	H	H	H	H	L	M	H

H = High value

M = Medium value

L = Low value

#### Notes:

**Area 1:** Utilitarian, prominent and a largely discordant feature in the wider landscape, lacking any unifying pattern or character. Buildings, open spaces and boundary features are bleak. Local cricket and soccer teams use sports pitches within the camp.

**Area 2:** Area forms a visual transition zone between the uncultivated training area and the more typical farming landscape of Southern Pembrokeshire. Public viewing area provides fine panoramic views across Range West.

**Area 3:** Area of the very highest landscape quality, whether experienced from within or viewed from outside, including from the sea. Access to Range West restricted to briefed parties and individuals,

increasing sense of remoteness. Coastal landforms on 3B of outstanding landscape importance, complemented by maritime heath and grassland communities and feeling of remoteness. Range East area of prime informal recreation value. Discordant landscape features in signs, sentry-posts, public viewing platform at the Green Bridge of Wales, and radar installations detract from overall quality.

**Area 4:** Recreational value limited by access constraints. Area of high landscape value, burrows complementing adjoining limestone scenery and contributing to character of wider landscape, both within the range and northward to Castlemartin Corse and Freshwater West.

**Area 5:** Low intensity of management of grasslands gives area a rare and distinctive quality and feeling of remoteness. Recreational value limited by access constraints.

**Area 6:** Recreational value limited by access constraints. Area 6C makes a positive contribution to range landscape, but largely viewed from middle distances and beyond. Surreal quality introduced by vehicle hulks and skeletal remains of settlements.

**Area 7:** Strong contrast to open landscapes of the plateau.

**Areas 8/9/10** Positive contribution of valleys to range landscape, contrasting with surrounding plateau. Recreational value limited by access constraints.

## ***Section 4 - Objectives***

### **Overall objective**

4.1 To maintain and enhance the landscape character of Castlemartin Range and its landscape character types, including the many individual qualities and features which contribute positively to that character, wherever compatible with the primary use of the Range and interests of other component plans.

### **Secondary Objectives**

4.2 To ensure that proposals for future development, management and use of the Range respect its landscape character and special qualities.

4.3 To take appropriate opportunities to protect and enhance valuable landscape features and characteristics of the site.

4.4 To tackle or provide mitigation where appropriate for features which detract from the quality of the Range landscape.

- 4.5 To restore where appropriate degraded areas/features of existing or potential value to the Range landscape.
- 4.6 To promote awareness and understanding of the special landscape qualities of the site.

## ***Section 5 – Analysis of current achievements in meeting objectives***

### Objective 4.2

- 5.1 SPRRAG oversees and monitors management of Range, and its impact on conservation and interface with recreation interests.
- 5.2 National Park Authority/CCW/MoD Range liaison enables exchange of views on management and development of site.
- 5.3 'Shadow' planning procedures in place to consider landscape impact of new development proposals.

### Objective 4.3

- 5.4 Low intensity management of much of the grassland area within the Range favourable to impact on landscape.
- 5.5 Concentration of main building requirements away from prominent coastal strip minimises adverse visual impact when viewed from coast to west and east of the Range.
- 5.6 Conservation by MoD/NPA of important historic buildings within Training Centre – St Govans Chapel, Flimston Farmhouse and Chapel, Brownslade buildings, Primaston and limekiln near Frainslake.
- 5.7 Preserved tanks at site entrance provide powerful symbols of Range purpose and pedigree.

### Objective 4.4

- 5.8 Car park siting and construction using concrete cellular blocks designed to minimise visual impact on coastal landscape.
- 5.9 Current management regime does not fully take into account impact of signs, fences, ancillary buildings, etc on aesthetic quality of the Range.

### Objective 4.5

- 5.10 Repair and renovation of traditional buildings within Range, also providing sound new uses.

### Objective 4.6

- 5.11 Guided walk programme highlights special landscape qualities of the Range.
- 5.12 Limited interpretation information provided through information boards: seasonal Ranger service, jointly funded by NPA, MoD and NT provides information and guidance to visitors.
- 5.13 St Govans Chapel restored and opened to public by NPA.

Note: all points are relevant in relation to the overall objective 4.1

## ***Section 6 – Constraints in meeting objectives and likely interactions with other component plans***

- 6.1 Overall constraint: military training needs are primary concern of MoD, and other interests will necessarily be subordinate to those needs, subject to meeting statutory requirements. Financial constraints may affect ability to carry out enhancement, mitigation works, etc.

### Likely interactions

- 6.2 Military plan: Intensification of use/further development of Range (buildings, other infrastructure and land management) have potential to detract from landscape quality or limit scope for landscape enhancement. Conversely, interests can coincide – as in restoration of traditional buildings to provide 'stone barns' or in provision of new hedgerbanks to provide cover for training purposes.
- 6.3 Nature Conservation Plan: interests largely coincide rather than conflict with landscape interests. Impact of new fencing lines required in association with any new grazing régimes would need careful attention. Special biodiversity qualities of Range are also major elements of its landscape quality.
- 6.4 Archaeology Plan: interests largely coincide rather than conflict with landscape interests, archaeological and historic landscape features and character forming major elements of the Range's landscape quality.
- 6.5 Recreation Plan: 'hardware' associated with recreation provision can detract from fine detail of landscape quality, as can wear and tear associated with cliff climbing use. Landscape protection, enhancement and interpretation achieved by the plan will serve to enhance quality of general recreational experience.
- 6.6 Estate Management Plan: cost implications of landscape enhancement measures.



## **Section 7 – Prescriptions for meeting objectives**

Objective 4.2 - To ensure that proposals for future development, management and use of the Range respect its landscape character and special qualities

7.1 Proposals for new or replacement buildings and structures should:

- consider their effects on the landscape character types and features identified within this plan, and
- optimise impact on the landscape through careful attention to
  - i) siting
  - ii) relationships with existing development
  - iii) design
  - iv) materials
  - v) finishes and other colour schemes
  - vi) landscaping

*Responsibility: MoD in discussion with NPA*

7.2 Protect coastal lands from further building development

*Responsibility: MoD in discussion with NPA*

7.3 Prepare development and design brief for new building developments, including identification of future development needs and preferred sitings.

*Responsibility: MoD in discussion with NPA*

7.4 Prepare brief for maintenance and landscaping of existing ancillary buildings and structures (including sentry posts and barriers) and for provision of new or replacement ancillary buildings/structures.

*Responsibility: MoD in discussion with NPA*

Objective 4.3 - To take appropriate opportunities to protect and enhance valuable landscape features and characteristics of the site

7.5 Prepare and implement management schemes for all woodland areas, including assessment of scope for further planting.

*Responsibility: MoD in discussion with NPA, CCW, NT*

- 7.6 Review grazing régimes in accordance with nature conservation component plan recommendations (including scrub clearance where appropriate), reflecting historic field pattern wherever possible in deciding fencing lines.

*Responsibility: MoD/SPRRAG*

- 7.7 Review management of wetland habitats in accordance with nature conservation component plan recommendations.

*Responsibility: MoD/SPRRAG*

- 7.8 Maintain character of traditional 'verandahed' single storey buildings within Merrion Camp.

*Responsibility: MoD*

- 7.9 Maintain existing tank and other military vehicle hulks as distinctive features in the landscape.

*Responsibility: MoD*

- 7.10 Review management of archaeological and historic landscape features in accordance with archaeology component management plan.

*Responsibility: MoD/SPRRAG*

- 7.11 Retain Centurion and Conqueror tanks as distinctive entrance features at Merrion Camp.

*Responsibility: MoD*

- 7.12 Assess condition of all historic and traditional buildings within the Range, prepare schemes as appropriate for their maintenance, rehabilitation and appropriate future use, taking account of their landscape, historic and nature conservation value.

*Responsibility: MoD in discussion with NPA, CCW, Cambria Archaeology*

Objective 4.4 – To tackle or provide mitigation where appropriate for features which detract from the quality of the Range landscape.

- 7.13 Review appearance and condition of National Park car parks at Stack Rocks and St Govans.

*Responsibility: NPA in discussion with MoD*

- 7.14 Prepare and implement landscaping programme for Merrion Camp and tank park, including structural planting scheme for the main camp and

consideration of 'wilding' of substantial areas of close-mown grass. Consider in relation also to proposal 7.3 (design brief for new building development) and preferred locations for any significant new building needs.

*Responsibility: MoD in discussion with NPA*

7.15 Extend hedgerow planting along highway boundary, Merrion Camp

*Responsibility: MoD in discussion with NPA*

7.16 Review signing provision, with view to removal of redundant signs, preparation of design, etc guidance for new and replacement signage.

*Responsibility: MoD/NPA*

Objective 4.5 - To restore where appropriate degraded areas/features of existing or potential value to the Range landscape.

7.17 Consider scope for dealing with wear and tear to cliff-top vegetation arising from cliff climbing activity, including care for sensitively sited permanent belay point.

*Responsibility: SPPRAG*

7.18 Carry out hedgerow/hedgebank condition survey; prepare and implement programme of rehabilitation and enhancement planting.

*Responsibility: MoD in discussion with SPRRAG*

7.19 Consider scope for hedgerow planting to recreate elements of the traditional pattern of field boundaries, co-ordinated with review of grazing units.

*Responsibility: MoD in discussion with SPRRAG*

7.20 Consider scope for clearance and environmental improvement scheme at holding area, Castle Lady Valley.

*Responsibility: MoD in discussion with NPA*

Objective 4.6 – To promote awareness and understanding of the special landscape qualities of the Range

7.21 Prepare interpretative guides to the Range focussing on military use in its historic, landscape, nature conservation, land management and community context: consider scope for introductory and saleable publications.

## **Section 8 - Conclusion**

- 8.1 Castlemartin Range occupies a landscape of the highest visual quality and conservation interest. It has rare and special qualities which to a large extent are a product of the use of the Range as a military range, and of an ancillary agricultural use far removed from the pressures of modern farming which would surely otherwise have been its fate. There is of course a cost to this, in terms of noise, disturbance and limited access to the coast, together with the large building complexes which detract from rather than enhance the overall landscape quality of the area.
- 8.2 Great care will be needed to ensure that any future development required is sited and designed to minimise further adverse impact, and efforts should be made in the future management and maintenance of buildings, structures and land as appropriate to provide protection, mitigation and enhancement for the landscape and its special qualities. To a large extent the interests of landscape coincide with other conservation interests.
- 8.3 Positive management should not however fall prey to the temptation to over-manicure. One of the main attributes of the Range is its wild, uncultivated character, although the public perception of this is softened to some extent by a farmland fringe which provides a buffer between the active training land and the farmland beyond. A subtle balance should be sought to achieve a management blend integrating operational and other needs, respecting the more ecologically sensitive coastal fringe landscapes to the south and west, restoring something of the traditional landscape pattern of hedges and lanes in the centre, with a transition to the more typical farmed landscape to the north.

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## INTEGRATED LAND MANAGEMENT PLAN

### MILITARY USE COMPONENT MANAGEMENT PLAN

#### CASTLEMARTIN RANGE

##### GENERAL

1. This document is the Military Use Component Management Plan (CMP) and forms part of the overall report for the Castlemartin ILMP. For convenience the same committee sat in combined meetings for Castlemartin, Royal Artillery Range Manorbier and Penally Training Camp, but separate reports are produced for each establishment.

2. CMP Committee

RLO Castlemartin Range (Chairman)	Maj T E A Watts
Commandant RAR Manorbier	Maj (Retd) J B W Warburton
Acting Commandant Penally	Maj (Retd) J B W Warburton
PCNP	Mrs C Milner
CCW	Dr D H Worrall
PCC	Mr A Williams
EA	Mr M Jenkins
DEO	Mr M Mellors
Cambrian Archaeology	Mr R Jones
WTWW, BSBI	Mr S B Evans
RNLO Castlemartin Helicopter Range	Lt Cdr (RN Retd) T C Peake

##### SECTION 1 - DESCRIPTION

3. Castlemartin Range is an Army firing range and training area to the SW of Pembroke. It employs 4 military and up to 140 civilian personnel, making it important to the local economy and the second biggest employer in South Pembs. The Commandant chairs the Dyfed Joint Service Sub-nodal Security Committee, a key factor in emergency planning.

4. Ranges (See map at Annex A ). The total area, including ranges and barracks, covers 2389 ha of the coastal region. It is 10km long and 1-3 km wide. For ease of reference the range area is divided by the Stack Rocks Road into Range West and Range East.

4.1 Armoured Fighting Vehicle (AFV) Ranges. (Mainly in Range West). These are gunnery ranges for tanks, reconnaissance vehicles and infantry combat vehicles. The 3 main AFV ranges consist of concrete hard standings and hardcore tracks leading from them. Static firing by up to 16 vehicles takes place on the hard standings. The tracks are for fire and movement exercises called battleruns. There are 2 further battleruns for light AFVs, but these have neither hard standings nor hardcore tracks, as the routes are partly optional. Targets are mostly wood/hessian screens representing enemy vehicles. They are exposed to the firing vehicles by electric elevating mechanisms placed in pits. A number of moving targets are propelled along rails or pulled on wooden sledges by wires. Some tank hulks are also used as targets. The maximum number of troops using the Range West complex at any one time could be one major unit of tanks, reconnaissance vehicles or armoured infantry, ie some 400 troops and up to 60 AFVs.

4.2 Small Arms (SA) Ranges. (Mainly in Range East). There are SA ranges and field firing areas (FFA) for various hand held, support and other types of weapons used by dismounted troops and others. Weapons systems include rifles, machine guns, mortars, anti-tank missiles, grenades etc. There is one formally structured SA range, the Electric Target Range (ETR) of 12 lanes and 600m from firing point to target. This is a standard type of installation for individual shooting skills. Dismounted troops carry out live firing exercises with tactical movement at up to Company level (approx 100 personnel) in the FFAs. Targets are operated on the same principle as on the AFV ranges, but on a smaller scale. The number of troops using Range East at any one time seldom exceeds 300.

4.3 Helicopter Range. A helicopter air-to-ground machine gun range sponsored by the Royal Navy is situated in Range East at Newton.

4.4 Other Ranges. Superimposed on the AFV and SA ranges and FFAs are un-defined ranges for various weapons systems, including: Multi-Launch Rocket System, anti-tank and anti-aircraft missiles, air-launched munitions from fast jets or helicopters, target drones for air defence training, artillery systems in the direct fire role etc. All of these have operated at Castlemartin in the past and will do so again.

4.5 Usage Rates. The range usage from 1999 to 1999 are shown at Annex B. In terms of man-firing days (FFA Range East) and vehicle-firing days (AFV Range West) the pattern established in 1997 and continued with some increase is in round figures:

Man-Firing Days : 10000  
Vehicle-Firing Days: 2000

## 5. Danger Areas

5.1 Land Danger Area. The whole of the range area forward of the firing points is a potential ammunition impact area and is called the Land Danger Area. It should be noted that the historical definition, now obsolete, of the Land Danger Area referred to the old mortar impact area in the Burrows (Grid square 8997) where much unexploded ordnance (UXO) is still present. The positioning of targets on any given range takes account of the following technical and safety factors:

5.1.1 The desired distance from gun to target, based on weapon ranges, trajectories and types of ammunition.

5.1.2 The visibility of the targets from the firing points.

5.1.3 The positioning of the firing points such that the direction of fire is safe.

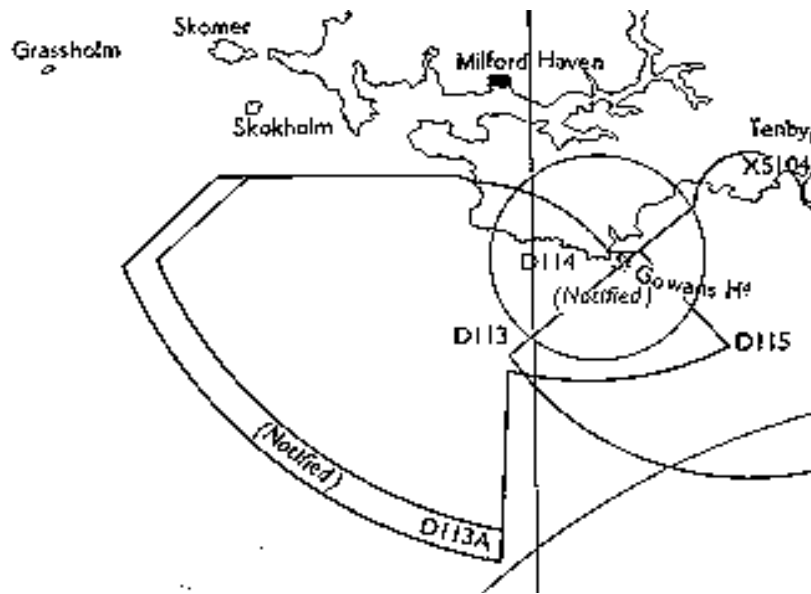
5.1.4 Arranging the direction of fire so that maximum use can be made of the real estate within the limits of the safety templates.

5.1.5 Distribution of the targets in a way that satisfies the training criteria and is technically operable.

In addition, efforts are made to keep target concentrations away from the SSSI. These constraints limit the areas available for targets which are shown at Annex A.

5.2 Sea Danger Area. The main direction of fire is towards the sea, and the Sea Danger Area for the land ranges of Castlemartin is designated D113, while that for the RN Helicopter

range is D114. D113 has a permanent flying restriction on weekdays of no overflying below 15000ft. D114 is subject to separate NOTAMs.



6. Dry Training Areas (DTA). The entire range can be used as a DTA, but when live firing is in progress only those areas out of the danger templates are used. The real estate offers possibilities for non-firing exercises and other forms of tactical and adventurous training. There are 2 building complexes, Trenorgan Farm and the Laundry at Brownslade Farm, which have been refurbished for use as tactical field accommodation in that context. Dry training typically consists of tactical exercises or “mock battles” using blank ammunition, but can include various other activities such as navigation exercises, fitness training or manoeuvres involving vehicles, helicopters and vessels for amphibious beach landings and cliff assaults. Use of the foreshore is restricted to certain times of the year. No digging is allowed and tracked vehicles must stay on the tracks.

7. Other Training Facilities. Other facilities outside the Camp include an assault course, vehicle compound with AFV hangars and a workshop, tank washdown and ammunition bunkers.

#### 8. Camp Accommodation

8.1 Merrion Camp. This is the main camp and houses the headquarters, stores and accommodation for 600.

8.2 Meadows Camp. This is outside and adjacent to Merrion Camp and is used as overspill accommodation for 95 persons in buildings or up to 300 in tents. Use of the tented area is rare and has little environmental impact. Trees have been planted and grass banks built for aesthetic reasons, as per the Planning Agreement.

9. Military Organisation and Use. Castlemartin Range is under direct command of HQ ATE. Local administration and licensing of the ranges is done by HQ 160 (Wales) Brigade.

10. Usage Charter, Byelaws, Firing Times. Castlemartin Range has planning clearance for AFV live firing for 44 weeks of the year as agreed by PCNPA in Apr 95. Dry training takes place throughout the



year. It is the only training facility in UK where AFV units regularly practise their annual live firing exercises under realistic training conditions. Firing times, are dictated by the military requirement at the time. However in the Notes to the Byelaws under the heading Facilities for Fishermen, timings are given as:

Weekdays:	0900 - 1700
Night firing:	2 non-consecutive nights per week (not Fridays or weekends) 1900 - 2359
No firing:	Weekends, public holidays

It should be noted that the notes to the byelaws are for information only and are not part of the byelaws.

11. LTAR Restructuring. The Army's Land Training Areas and Ranges (LTAR) have been reorganised. Since 1 April 1999 Castlemartin Range, Penally Training Camp and RAR Manorbier are now incorporated into a new structure called Army Training Estate Pembrokeshire (ATE P). It is managed by a Headquarter element found from the existing staff of Castlemartin. This HQ will be responsible for overall policy management, budgetary control and user bookings. A number of delegates feel that the case for a dedicated ILMP implementation officer deserves careful consideration. The dedicated implementation officer has not been included in the ATE P HQ. However a DE representative has been appointed at ATE P HQ who will take part responsibility for this. The implementation of the ILMP will proceed in conjunction with the SPRRAG.

12. Geographical Implications. Castlemartin lies within the Pembrokeshire Coast National Park which is the planning authority for the range area. The Pembrokeshire Coast Path, which is a National Trail, runs through it from Trevalen, via Stack Rocks to the B4319 towards Castlemartin village. It, and the land on the seaward side of it, are open to the public at all times when there is no live firing. Otherwise the public is denied access to the remainder of Castlemartin Range for reasons of safety (UXO throughout the area) and conservation concerns of SPRRAG. However, many people with a particular access requirement to Range West can obtain it through the annual briefing process.

12.1 A number of walkers, climbers, fishermen, surfers and others requiring special access to Range West and the remainder of Range East are given permission to enter.

12.2 Under the byelaws fishing boats are allowed to transit through the Sea Danger Area when firing is in progress, but are not allowed to loiter.

12.3 The Coastal strip is a Site of Special Scientific Interest and has been put forward within the Limestone Seacliffs of South Wales as a candidate for status as a Special Area of Conservation under the European Habitats Directive. The cliffs and dunes are designated a Special Protection Area under the Wild Birds Directive for choughs and peregrines.

13. Grazing. Sections of the estate are let to farmers all the year round and to shepherds and cattlemen in winter and early spring. This is an important aspect of conservation as it keeps the tall vegetation under control, allowing rare plants to grow and reducing the risk of range fires in summer. The grazing is thus of benefit to the animals and to the Range, and is vital to conservation.

14. Active Conservation Measures. The Range undertakes conservation measures, including: beach cleaning; removal of unexploded ammunition and other debris; consideration for breeding barn owls and hibernacula for bats; fencing off areas for cattle and sheep to protect orchids and establish hay meadows; vital repairs to ancient monuments and buildings, subject to funding; reduction of unsightly signs and

structures; and voluntary restrictions of target areas and noise nuisance. The South Pembrokeshire Range Recording and Advisory Group (SPRRAG) is a forum for discussion and implementation of conservation measures, and comprises representatives of local statutory environmental and conservation bodies. It is chaired by the Commander of ATE P.

## SECTION 2 - OBJECTIVES

15. Overall Objective. To provide the maximum facilities for military use, ie live firing ranges, dry training areas and accommodation to units of the Armed Forces and NATO allies in a way that is economic and consistent with the demands of conservation/agricultural use and public access. Specific objectives, which form part of the overall objectives, are essentially the projects under consideration for the next 5 years that can be identified now. Once the full implications of SDR are evident new projects are certain to arise. Objectives are divided into Primary and Secondary ones according to the likely levels of cost and work involved and on the degree to which they will affect other matters.

16. Primary Objectives (PO). They are listed in no particular order of importance, and the number given is merely for reference.

16.1 PO1: New Control Towers for Range 2. The existing tower at Range 2 needs to be replaced with larger structures to house new target control equipment as part of a range modernisation and automation project. They will be sited close to the existing buildings which will then be demolished. The new tower at Range 2 will follow when funds are available. Aesthetic design will be given due importance.

16.2 PO2: Radars. The present radar system is obsolete and is due to be replaced in 2000. Options include the possibility of rebuilding or resiting the existing buildings or replacing them with smaller ones but more of them. Plans will be influenced by conservation, landscape and archaeological considerations.

16.3 PO3: Training Fleet. It is possible that a training fleet of tanks and other AFVs will be permanently stationed at Castlemartin. These would be available for use by visiting units, and would reduce the need for many of them to bring their own heavy vehicles. If implemented, the local roads would benefit from a reduction of military convoys. There may need to be some modifications to the Tank Park and the vehicle hangars, eg additional security fences, hangar doors, and possibly the building of one more tank hangar.

16.4 PO4: Weekend Firing.

16.4.1 At present little weekend firing takes place at Castlemartin, and any which does is restricted to within the boundaries of the Land Danger Area. This is part of a self-imposed restriction in the context of allowing public access, and there has been only limited military requirement for weekend firing in the past.

16.4.2 It is, however, an aspiration of HQ ATE that some weekend firing be allowed to take place on the ETR in the future. This would take on far greater significance if the future of Penally Range, which currently operates at weekends, were to be threatened.

16.4.3 Weekend firing would need agreement by local authorities as it has implications for public access to the land and sea danger areas. The number of weekends would be subject to negotiation, but a starting point might be the 44 weeks currently used on the Range.

16.4.4 If weekend firing were allowed a diversionary path would be made available for walkers to go round the back of the ETR, leaving the Coast Path and rejoining it outside

the danger template (see map). The route could take in some interesting features (eg the Sunken Forest), and could include some other attractions such as a tank hulk or a recreational obstacle course. This could create a very acceptable alternative route. The main coastal feature missing from the diversion would be the Devil's Cauldron.

16.4.5 Most members of the CMP held reservations about weekend firing, with concerns ranging from conservation to public access. The Range Commandant is confident that public access should be affected very little and that conservation could benefit.

16.4.6 The weekend firing issue is one of the most important questions addressed by the ILMP, but one on which a decision cannot be made at this stage. The view of CCW is that its wide-ranging implications may place it more appropriately on the agenda of the Strategic Environmental Appraisal (SEA). However, the Range Commandant doubts whether this issue would be seen as a strategic one.

16.5 PO 5: Anti-Tank Missile. It is possible that the next generation medium range anti-tank missile, will fire at Castlemartin. The TRIGAT programme has been disbanded and new proposals are currently being staffed. What ever the out come there may be a requirement for a specialised moving target system, but as far as is currently known any additional environmental penalties will be negligible.

16.6 PO6: Expanded Use Post Strategic Defence Review (SDR). As the SDR plans are implemented over the next 5 years or so the list of potential users will be increased by 1 armoured, 1 reconnaissance and 1 armoured infantry regiment. There could also be some live firing requirement by the NBC Regiment and the Apache helicopter units to be created by SDR. The Navy Helicopter Range could see more activity as the future joint helicopter units come into being and as helicopters become increasingly armed with more sophisticated weapons. There is therefore likely to be an increase in use following the SDR implementation. However, the theoretical increase will probably be mitigated by the proliferation of simulators in preference to live ammunition, by changes in the training schedules, and by other commitments on the part of user units. Usage is unlikely to exceed the agreed 44 weeks of AFV live firing, but if it does this may need renegotiation.

16.7 PO7: Additional Accommodation. It is very likely that at some point in the future additional accommodation will be required at Castlemartin. The reasons for this are:

16.7.1 Until recently accommodation space has been just adequate for the number of personnel using the available facilities. With the building of SA ranges etc, those facilities have greatly increased in number and scope, attracting more demand by users. The existing accommodation is now insufficient, thus limiting the Range's full potential. Furthermore, user units now comprise a diversity of personnel: males, females, adults, juveniles, officers, NCOs, civilians etc. Many of these different groups require separate quarters, and the existing buildings lack the versatility to accommodate them. The requirement is now growing for at least one new barrack block similar to the existing ones. The most suitable site is the South West corner of Merion Camp or the Meadows Camp.

16.7.2 If Penally Gallery Range should close as a result of local pressure or some other reason, and if is considered that money should not be spent on maintaining the accommodation for the sole remaining use of troops at Manorbier, then former users of the Gallery Range would have to come to Castlemartin. These (mainly) weekend soldiers (TA, cadets etc of up to battalion strength, ie 500 mixed personnel) would be best accommodated in the Meadows Camp. The hutted accommodation, currently for 95 personnel, would have to be expanded accordingly.

16.8 PO8: Security Cameras. A number of cases have occurred in recent years of persons

entering the range area and committing criminal acts, eg killing peregrine falcons, stealing fossils from the cliffs, poaching game, stealing metal and other attractive items, vandalising equipment, breaking into cars parked in the public car parks. It is considered that strategically placed surveillance cameras might enable identification of culprits culprits and act as a deterrent. They might have also have seen and possibly helped to prevent a recent apparent suicide. Advice and funding will need to be sought, but current ideas are based on cameras positioned mainly on existing buildings at key points on or near the coast, approach roads and car parks.

## 17. Secondary Objectives (SO)

17.1 SO1: Navy Range Target System. There is a requirement for 1000 metre electronic target system for the RN helicopter range at Newton. This will comprise a 30 metre bank and a small ditch to house the hardware components. Danger templates will need to be checked. A possible site was under discussion with CCW, but this is now no longer suitable. An alternative site has implications for the Range East radar site. The future of the RN Range is under review but the need to provide helicopter targetry at Castlemartin remains.

17.2 SO2: Sea Danger Area (SDA). The present shape of Sea Danger Area D113 shows the south east sector cut out. This was done to avoid the St Govans Light Ship which was manned at the time. The Light Ship has now been replaced by an unmanned buoy, so there is no reason why the full extent of the Danger Area cannot be used. If that sector were re-incorporated a number of benefits would arise:

17.2.1 Greater flexibility in the angles of fire and thus room to manoeuvre

17.2.2 Possible reduction of impact areas within the SSSI, cSAC and SPA.

17.2.3 More flexibility for movement of vessels within the SDA

17.3 SO3: HVM Training. The possibility is being considered of using the overlap of the Castlemartin and Manorbier SDAs to carry out joint live or dry exercises with the High Velocity Missile (HVM). This might involve the launching of missiles from one location and target drones from the other. The idea is under consideration and safety procedures are being studied.

## SECTION 3 - ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES

18. The tables below show the breakdown of the Objectives into the detailed facilities and the degree to which these have been achieved.

### 18.1 Overall Objective

<b>Provision of Facilities</b>	<b>Achievements</b>
Live firing ranges for all direct fire AFV units	5 AFV gunnery ranges for the following priority units: 2 armoured regiments 2 armoured reconnaissance regiments 1 TA reconnaissance regiment every 2 years 2 armoured infantry battalions Recce platoons of 6 infantry battalions Helicopters of all 3 Services Replacement tower at Range 4
Small arms ranges and field firing facilities for all units	1 electric target range 7 field firing areas 1 demolition range
Dry training areas, other training and sports facilities for all units	1 assault course 1 gymnasium Classrooms, briefing/conference rooms Sports fields, tennis/squash courts
Accommodation	Barrack accommodation in Merrion Camp for 600 all ranks. Transit accommodation for 95 and area for tented accommodation for 300 in Meadows Camp. Field accommodation in Trenorgan Farm for 100 and in Brownslade Laundry for 30.

### 18.2 Primary Objectives

<b>Primary Objective</b>	<b>Achievement</b>
PO1: New Range Tower	Range 2 tower awaits funding
PO2: Radars	Statement of Requirement placed. Due in service Dec 2000
PO3: Training Fleet	Feasibility study carried out. Awaiting decision
PO4: Weekend Firing	ILMP/SPRRAG discussions only
PO5: Anti-tank Missile	Project under review by MOD
PO6: Expanded Use post SDR	Planning calculations indicate that known increases can be accommodated within existing time and space parameters
PO7: Additional Accommodation	Outline plans already exist for the building of more barrack blocks to cater for short and long term additional numbers
PO8: Security Cameras	Preliminary inquiries indicate a valid requirement as well as technical and cost feasibility

### 18.3 Secondary Objectives

Secondary Objective	Achievement
SO1: RN Target System	Subject now awaiting decision on RN Range
SO2: Sea Danger Area	Submission not yet made
SO3: HVM Training	Feasibility studies under way

#### SECTION 4 - CONSTRAINTS IN MEETING OBJECTIVES AND LIKELY INTERACTION WITH OTHER CMPS

19. Overall Objective. The following constraints impinge on the Overall Objective.

##### 19.1 Noise.

19.1.1 Gunfire can cause annoyance to local residents, especially from larger calibre weapons and under certain meteorological conditions. The restrictions of firing times are in part designed to mitigate the worst effects of the noise nuisance. Gunfire noise has been greatly reduced since the departure of the German Army.

19.1.2 A number of independent tests have been carried out in recent years following local complaints. All have concluded that noise levels outside the range area are well below the recognised acceptable limit of 130dB below which no harm to humans or structural damage to property can result.

19.1.3 On firing days the Range Office receives met-based acoustic forecasts of noise levels within a 5 mile radius. If the 130dB threshold is likely to be exceeded, which very rarely happens, then firing is suspended.

19.1.4 This threshold is a self-imposed one, based on MOD recommendations and on industrial practice. There is no statutory limit on permitted noise levels. The notes to the Byelaws under the heading Facilities to Fishermen take account of the noise factor by noting the firing times and days as given in Para 10.

##### 19.2 Ammunition Pollution .

19.2.1 Land Pollution. Ammunition fired from AFVs may contain high explosives (HE) or an inert substitute. HE rounds from the larger calibre guns are confined to certain areas in order to minimise damage to the surrounding land. In all cases note is taken of any rounds that fail to explode so that they can be destroyed later. Apart from grenades, no HE rounds of ammunition are fired on Range East. Unexploded grenades are destroyed.

19.2.2 Sea Pollution. Although targets are based on dry land, some rounds enter the sea through ricochets etc. A theoretical estimate of current pollution rates carried out on 23 April 1998 concludes that probably over 1000 main armament rounds enter the sea annually, but that less than 1% contain HE and are a residual hazard. Moreover, the distribution of such debris is mainly in areas of the sea bed not normally used by fishermen. The figures are based on current rather than the much heavier historical usage rates of ammunition. Only a sub-littoral survey would be able to verify these assessments, but even those results would show only the accumulated level of contamination rather than the annual rate.

20. Summary of Constraints to Overall Objective

<b>Constraint</b>	<b>Implications</b>
Limit of 44 weeks licence	Not achieved at present, but future increase in user base may demand an extension of licence period. Unlikely in next 5 years
No weekend firing	Places severe limitation on ability to meet needs of certain units, eg TA, cadets
Noise	Limits night firing and noisy dry exercises at night
Conservation aspects	Placing of targets and impact areas restricted by considerations of SSSI. Freedom of action in range development curtailed by need for planning applications.
Ammunition Pollution of Sea	Explosive-headed rounds are no longer fired at targets placed where there is a possibility of their entering the sea
Grazing	Sufficient importance is attached to grazing that some constraints are placed on firing programmes to allow shepherding and removal of sheep. Considerable cost and effort go into the placing of fences and cattle grids to safeguard the livestock.
Conservation	In some cases, such as the recent refurbishment of archaeological sites of interest, firing has been stopped to allow work to proceed. In all cases the terms of the MOU on areas of international importance and the Declaration of Intent between MOD and CCW will be respected.

## 21. Constraints to Primary and Secondary Objectives

<b>Objective</b>	<b>Constraint</b>	<b>Interaction with Other CMPs</b>
PO1: New Range Tower	Funding, Planning	Landscape, Archaeology
PO2: Radars	Funding, Technical agreement	Landscape, Archaeology
PO3: Training Fleet	High level decision awaited. Planning for Tank Park building alterations	Landscape
PO4: Weekend Firing on ETR	Planning procedures. Public access.	Access and Recreation, Conservation
PO5: Anti-Tank Missile	Planning. Range space	Possibly Conservation and Landscape
PO6: Use Post SDR	If usage levels tend to exceed 44 weeks then agreement on firing limits to be re-negotiated	Access and Recreation, Conservation

PO8: Security	Technical problems. Funding	Possibly Landscape
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Cameras		
SO1: RN Target System	CCW agreement. Safety checks	Landscape, Archaeology, Conservation
SO2: Sea Danger Area	Fishing, Marine traffic	Conservation, Access
SO3: HVM Training	Safety procedures.	Nil

## SECTION 5 - PRESCRIPTION FOR MEETING OBJECTIVES

23. Plans for meeting currently unachieved objectives are set out below

<b>Primary Objective</b>	<b>Prescription</b>
PO1: New Range Tower	Planning application to be submitted when funds and plans are available
PO2: Radars	Planning application to be submitted if alterations to buildings needed
PO3: Training Fleet	Await decision
PO4: Weekend Firing	Submit NOPB to PCNPA
PO5: Anti-Tank Missile	Await future plans, otherwise base contingency plans on existing equipment
PO6: Expanded Use Post SDR	Monitor deployment and training plans as they develop, and anticipate any additional facilities requirements
PO7: Additional Accommodation	Prepare submissions for planning consent, but study future trends to avoid nugatory expenditure
PO8: Security Cameras	Start action for technical advice and funding submissions
<b>Secondary Objective</b>	<b>Prescription</b>
SO1: RN Target System	Site to be negotiated with CCW
SO2: Sea Danger Area	Application to be submitted
SO3: HVM Training	Await results of studies

## CONCLUSION

24. Castlemartin Range is the only UK facility for annual unit AFV and helicopter live firing. This is vital to the British Armed Services and in part to our NATO allies. The Range is an increasingly valuable



asset for many other types of training. It is also very important to the local economy, and the military presence has a role in emergency planning.

25. The nature of military use necessarily involves some environmental impact, most of which is positive. The deconfliction process of the ILMP for current and future equipment will minimise the negative aspects, while allowing Castlemartin Range to continue providing maximum facilities for military use compatible with environmental considerations and to meet the desire for safe public access.

26. Future use will continue on present lines with evolutionary changes. The 44 weeks licensed usage is likely to be more closely approached, but unlikely to be exceeded.

Annex A: Map

Annex B: Range Usage Figures

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## SECTION 1: SITE DESCRIPTION

### 1.1 BACKGROUND INFORMATION

#### 1.1.1 Status of the Site

The Castlemartin Range occupies an area of some 2,381 ha, and lies within the Pembrokeshire Coast National Park (PCNP).

The Range area encompasses the *Castlemartin Cliffs and Dunes Site of Special Scientific Interest* (SSSI). Only a small part of the SSSI being just outside the Range at Freshwater West. A large part of the Range lies outside land presently designated as SSSI.

The Castlemartin Cliffs and Dunes SSSI is incorporated within the *Castlemartin Coast Special Protection Area* (SPA<sup>1</sup>), which also includes part of *Stackpole* SSSI to the east and *Broomhill Burrows* SSSI to the west.

Part of the Castlemartin Cliffs and Dunes SSSI are included a composite candidate *Special Area of Conservation*, known as the *Limestone Sea Cliffs of SouthWest Wales* candidate SAC<sup>2</sup>. This covers approximately 17 kms of the Castlemartin coast between Frainslake and Stackpole Quay and a section of the South Gower coast in Glamorgan.

Section 1.4 and Appendix 4 (SSSI, SPA and SAC maps and descriptions) provide more details.

The Castlemartin Range contains a wealth of “*nationally*” and “*internationally*” important nature conservation (biological and geological) “*features*”. In addition, the area supports many conservation features of UK or local “*biodiversity*” importance. (See Box below, Section 1.4 and the glossary for further explanation).

**Primary Features** are features (habitats, species and/or geology) for which the SSSI has been selected as being of national or international importance.

**Unconfirmed Primary Features** are features (habitats, species and/or geology) which, with further investigation, may prove to be of national importance and may be worthy of SSSI status.

**Secondary Features** are those other features of nature conservation importance which will all be of local significance, whilst some will be of national importance even though not qualifying as Primary Features.

The habitats and species that form part of the **UK Biodiversity Action Plan**<sup>3</sup> or form part of the **Pembrokeshire Local Biodiversity Action Plan**, and occur within the land covered by this ILMP, have been identified and recognised as part of the preparation of this plan.

#### 1.1.2 Location

Castlemartin Range is located on the southern coast of Pembrokeshire ca. 7 km south-west of the town of Pembroke. It is bounded by the small rural communities of Bosherton and Stackpole to the east, St Twynells, Warren and Castlemartin to the north and by sea to the west and south. It can be reached by road on the B4319 or the B4320 from Pembroke. The Range is more or less divided into two halves (known as Range East and Range West) bisected by the Stack Rocks road, which runs

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<sup>1</sup> See Glossary

<sup>2</sup> See Glossary

<sup>3</sup> See Glossary

from approximately OS Grid Reference SR932971 to the Stack Rocks car park at SR925945. The eastern part of Range East can also be reached by a road through Bosherton to Newton and on to St Govan's (head and chapel) car park.

### **1.1.3 Climate**

The climate is in general mild and maritime, influenced predominantly by south to south-westerly winds.

### **1.1.4 Geology/geomorphology**

The bulk of the range area consists of a dissected limestone plateau (40 to 50 metres OD) bounded by sea cliffs and, to the north, by an east-west ridge of Old Red Sandstone. The south facing slopes at the western end of this ridge are also within the range. On the Carboniferous Limestone, dry valleys open westwards to Frainslake Sands and Bluck's Pool and eastwards towards the Bosherton Lakes. There are extensive areas of wind-blown sand at Brownslade Burrows, situated at the western end of the Range. Geological and geomorphological features of the range area are described more fully in later sections of this plan (See section 1.2.3).

Three nationally important Geological Conservation Review (GCR) sites and several regionally important geological (RIGS) sites have been confirmed within the Range (See section 1.4.4).

### **1.1.5 Soils and Land use**

The soils of this area have not been mapped by the Soil Survey of England & Wales. The following types have been observed:

- Rendzinas developed directly on limestone bedrock;
- Acid brown earths in areas with clay-rich substrates, with associated gleying in waterlogged areas;
- Sandy loams on stabilised dunes and areas of wind-blown sand / loess;
- Peat in waterlogged valley bottoms.

The development of soil types has been complicated by a patchy coverage of glacial debris, often dominated by stony red clays derived from the adjacent Old Red Sandstone outcrop. In addition, there are extensive areas of orange or white clay which were probably derived by in-situ weathering of muddy limestones or calcareous shales under warm humid conditions (eg. The Flimston Clays). It is probable that, when a survey is carried out, soil conservation areas and representative profiles will be identified.

Apart from a brief period between 1939 and 1947, when it was used by the Army, the coastal area was used for traditional agricultural practices whilst inland there was much arable, until its requisition by the Ministry of Defence in 1938. The coastal strip of cliff-top grassland, heath and dunes (within the Castlemartin Cliffs and Dunes SSSI) although grazed, is largely unimproved and semi-natural although corn was planted right up to the cliff edge in the region of Mount Sion Down (B Goodman pers com.).

### **1.1.6 Hydrology/hydro-geology**

The limestone cliffs and the dunes are free draining, but springs seepages and streams provide a more constant surface and near surface water supply within parts of the Brownslade and Linney dunes and Frainslake valley. Numerous seasonal runnels or wadis (small streams) are a special feature of the dune slopes above this valley. This relatively high water table is crucial for the maintenance of a range of wetland communities, that include dune slacks, semi-permanent standing open water bodies, swamp and mire communities. The Frainslake valley has a small central stream which is partially blocked by a derelict artificial dam at its point of issue to Frainslake beach.

To the east of Brownslade and Linney dunes, a considerable amount of surface water drains mostly underground - south towards the coast or eastward towards Bosherton. It is thought that a significant amount of the spring-fed water source for the nationally important Bosherton Lakes (within the Stackpole SSSI) originates from within a catchment which extends for a few kilometres westwards into the Range. (See Appendix 9 for more details).

## 1.2 NATURE CONSERVATION FEATURES

### 1.2.1 General Summary

- The Castlemartin Range comprises a large number of different vegetation types which reflect both the diversity of substrata and the other environmental conditions present at the site, including the influence of salt spray, hydrology and management practices.
- The site is of considerable conservation interest due to the large, unfragmented tracts of semi-natural sea-cliff crevice, maritime grassland, heathland, sand dune habitat and unimproved neutral grassland present.
- These represent an exceptionally valuable biodiversity resource for Pembrokeshire.

The exposed limestone sea-cliffs of the Castlemartin Range are of the highest importance in Europe for maritime vegetation. Salt-laden, south-westerly winds have long maintained open conditions on the flat, marine erosion surface above the 30 - 50 metre high cliffs. The limited agricultural use of the area since the 2nd World War has ensured that reclamation has not truncated the wide and continuous zones of sea-cliff vegetation that reflect different levels of salt in the soil. The tops of the most exposed headlands, such as Linney Head, are sparsely vegetated. Only thrift, golden-samphire, rock samphire, rock sea-lavender and sea aster can grow in the crevices.

Back from the cliff edge, species-rich maritime grassland fronts a zone of maritime heath, before gorse scrub develops in the most sheltered sections. There is a long tradition of rough grazing on these cliff "Downs" and the practice of winter grazing by sheep and cattle continues. Spring squill is especially abundant and there are large populations of green-winged orchids in the cliff grassland and heath, along with two gentians - the field gentian and autumn gentian.

Numerous rare plants occur, associated with the long continuity of open conditions on the cliffs, include three "Red Data Book"<sup>4</sup> species: the woody perennial goldilocks aster; the small restharrow; and the aptly-named rock sea-lavender. Other nationally scarce cliff plants include the hoary rock-rose, at its only known locality in West Wales, the curved hard-grass and the pale dog-violet.

The sea-cliffs in Range East support the largest concentration of breeding seabirds on the Pembrokeshire mainland, including large and easily viewable colonies of guillemots, razorbills and kittiwakes at Stack Rocks. Other cliff-nesting species of local significance include raven, buzzard and kestrel, peregrine, swift and house martin. Rare breeding birds include 12 - 15 pairs of chough, at one of its main breeding locations in West Wales (representing at least 4% of the UK population). Coastal grassland, heath and dunes support important populations of ground nesting birds including skylark, wheatear, plus a few pairs of ringed plovers and lapwings at one of their few remaining breeding localities in Pembrokeshire.

Greater and lesser horseshoe bats are known to feed regularly over the grassland. The coastal caves support one of the most important greater horseshoe bat winter roosts (hibernacula) in the UK. Over 100 bats often occur in one cave alone.

At the western end of the Range, lies the large calcareous dune system Linney and Brownslade Burrows, which are amongst the least disturbed dune systems in West Wales. Extensive dune meadows behind the seaward high dunes are particularly valuable.

The short, flower-rich grassland of the dunes, heath and cliff-tops provide important habitat for several notable invertebrates, including the silver-studded blue butterfly. The rare soil lichen, *Fulgensia*

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<sup>4</sup> See Glossary

*fulgens* (often referred to as scrambled egg lichen) grows on open stony areas in the dunes and on the cliffs.

The dunes have an extensive natural transition to swamp, fen and mire in the Frainslake valley. In the wetter parts of the dunes, there is a large population of marsh helleborine orchid along with several different species of marsh orchid. The dune slacks grade into rich fen vegetation in places, with much blunt-flowered rush, lesser pond-sedge and bulrush. Adder's-tongue and variegated horsetail are locally abundant in the dune slacks. The scarce blue-tailed damselfly and the hairy dragonfly breed in the vicinity, whilst in the old quarried damp dune slacks there is a small population of a scarce liverwort, petalwort.

The exposed limestone foreshore plant and animal communities are characteristic of fully exposed shore communities on limestone, and are amongst the finest in Britain, whilst the strand-line at Frainslake has Pembrokeshire's largest known colony of the notable strand-line beetle *Nebria complanata*.

Much of the inland area of the Range is dominated by un-improved neutral grassland communities (which occupy more than 60% of the entire site). Because this grassland has not been intensively managed or improved since the 1940s it has developed into relatively diverse communities, with considerable conservation value. Different management regimes, together with localised disturbance and excavation, have produced considerable floristic and structural variation.

These extensive areas of often quite rank, neutral grassland provide important hunting grounds for barn owls, which breed within the Range. The tall herb, nectar-rich grasslands have also recently been confirmed to be of considerable significance for one of the largest populations of shrill carder bees in the UK.

Areas of winter-grazed neutral grassland and dune grassland, are of considerable local importance for populations of wintering or passage birds, notably waders. In winter, for example, more than 1,000 lapwings may occur mixed with large numbers of golden plovers.

Patches of woodland and scrub occupy significant areas of the more sheltered inland sections, providing important structural diversity to the vegetation and also suitable habitat for a number of small passerine bird species (such as whitethroat, linnet and stonechat). However, without some management to maintain a patchwork of different ages, scrub will continue to encroach into some of the diverse grassland and heathland communities.



## 1.2.2 BIOLOGICAL FEATURES

### 1.2.2.1 Primary Features

Twenty SSSI “**primary features**” have been identified to be of “**national**” or “**international importance**” within the Castlemartin Range.

Recent survey work has revealed three other features (neutral grassland, shrill carder bee and lapwing) which, with further investigation, may prove to be of national importance and may be worthy of SSSI status. In the case of lapwing this will necessitate the breeding population of this locality to be assessed against the current decline of the national population. For the purpose of this plan these features have been treated separately (in section 1.2.2.2) as “**unconfirmed primary features**”.

#### Maritime Cliff, Ledge & Crevice Communities

**C.B. P1**

- The Maritime cliff, ledge and crevice communities form a component part of the *Limestone Sea cliffs of south west Wales candidate SAC*, and also an important component of the *Castlemartin Coast SPA* for chough.
  - A UK Biodiversity Habitat Action Plan<sup>5</sup> exists for this habitat, entitled Maritime Cliff and Slope.  
( See section 1.4.3).
  - A (Pembrokeshire) Local Biodiversity Habitat Action Plan is to be prepared for maritime cliff and slope. (See Section 1.4.3).
- 
- The Maritime cliff, ledge and crevice communities form a composite “climax” vegetation community, maintained by very exposed conditions. Distribution and extent, community diversity and condition being directly dependent on natural geomorphological processes and climatic conditions.
  - The section of the candidate SAC within Castlemartin Cliffs and Dunes SSSI includes hard calcareous cliffs, with warm south-facing slopes supporting a sequence of important species-rich plant communities. In crevices, on ledges, on rock platforms and at the top of the most salt-drenched cliff, characteristic maritime communities of thrift, golden samphire, rock samphire, curved hard grass and buck’shorn plantain occur, plus a rare Stackpole sea lavender endemic to the Castlemartin coast (See Primary Feature CB.P10).
  - Cliff, ledge and crevice communities grade into maritime grassland (Primary Feature CB.P2), coastal calcareous heath (Primary Feature CB.P3) and sand dunes (Primary Feature CB.P4), which support a rich assortment of rare species. These include small restharrow (Primary Feature CB.P9), goldilocks aster (Primary Feature CB.P11) and the rare soil lichen *Fulgensia fulgens* (Primary Feature CB.P12).

- The main National Vegetation Classification (NVC)<sup>6</sup> communities identified, are a community complex of :  
MC1 Maritime rock crevice community  
MC6 Seabird cliff community

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<sup>5</sup> See Glossary

<sup>6</sup> See Glossary

- Maritime grassland forms a component part of the *Limestone Sea cliffs of south west Wales candidate SAC*, and also an important component of the *Castlemartin Coast SPA* for crough.
- UK Biodiversity Habitat Action Plans exist for maritime cliff and slope for lowland calcareous grassland. (See section 1.4.3)
- Local Biodiversity Habitat Action Plans are to be prepared for calcareous grassland and maritime cliff and slope. (See Section 1.4.3).

- The coastal zone occupies a continuous, narrow strip along the cliff-tops with an area, estimated by ITE, of about 140 ha. Few sites around the UK contain such a large number of distinct maritime vegetation communities. The area comprises excellent examples of 7 distinct maritime communities which encompass 23 sub-communities described by the National Vegetation Classification (NVC).
- The vegetation complex is characteristically open and grazed, with a rich mixture of herbs in a red fescue-dominated natural grassland, intrinsically linked to low nutrient inputs and to related climatic conditions. Open “therophytic”<sup>7</sup> communities (MC5) probably extend more into adjacent red fescue - thrift (MC8) grassland during long periods of drought, but retreat to more exposed, well-drained core areas in a wet season. Coastal calcareous grassland also holds important populations of “thermophilous”<sup>8</sup> insects such as ants and butterflies, or insects associated with open soils, grass roots or dung such as various crane fly and beetle larvae.
- The most abundant communities are the red fescue-Yorkshire fog (MC9) and the red fescue-plantain species (MC10) maritime grasslands, which occupy a broad zone on the cliff-top plateau. The zonation between these communities, and the inland heaths and grassland is particularly well developed and laterally extensive. Some of these communities have a restricted national distribution, and are similarly local in Pembrokeshire.

- The main NVC communities identified, are a community complex of :
  - MC5 Maritime therophyte community
  - MC8 red fescue - thrift maritime grassland
  - MC9 red fescue - Yorkshire fog maritime grassland
  - MC10 red fescue - sea plantain maritime grassland
  - MC11 red fescue - wild carrot maritime grassland
- *NB Rodwell (Ed) in British Plant Communities Vol 3, recognises a calcareous grassland community (CG1f sheeps fescue carline - thistle - spring squill grassland) as being present, confined to the Carboniferous Limestone cliffs along the south Wales coast, from St Govan’s Head to the Gower.*

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<sup>7</sup> See Glossary

<sup>8</sup> See Glossary

### iii. Calcareous heath

**C.B. P3**

- Calcareous heath is a scarce vegetation type in Britain but is frequent at Castlemartin, where it forms a component part of the *Limestone Sea cliffs of south west Wales candidate SAC*, as well as an important component of the *Castlemartin Coast SPA* for crough.
  - Two NVC communities associated with (lowland) calcareous heath (H7 and H8) also form a component of the UK Biodiversity Habitat maritime cliff and slope. UK Biodiversity Action Plans exist for lowland heathland and for maritime cliff and slope. ( See Section 1.4.3).
  - Local Biodiversity Habitat Action Plans are to be prepared for lowland heath and maritime cliff and slope. (See Section 1.4.3).
- 
- 1940s aerial photographs show a large expanse of heath along the Castlemartin coast, with elements of heather and gorse being fairly widespread. More recent aerial photographs (1983 and 1992) plus, a heathland NVC survey of Pembrokeshire in 1995/96, confirm the extent and high quality of this community complex, as well as interesting transitions with maritime grassland communities.
  - Heathland communities form an important element of the vegetation (estimated by ITE to be some 136ha). These communities are restricted in occurrence to a narrow coastal fringe on the cliff-top plateau. They probably represent areas which have not suffered from past cultivation or other agricultural improvement. Subtle differences in soil type, hydrology, salt exposure and management have produced considerable floristic and structural variation. Large patches of heathland occur at Mount Sion Down and Flimston Down. Nine homogeneous (sub) -communities, and 18 mosaics with other vegetation types have been recorded. The most abundant community is a heather (ling)-spring squill (H7community). This grades through grassland communities into well developed heather - western gorse heath (H8) (supporting abundant pale violet and colonies of dark green fritillary butterflies) with transitions inland into neutral grassland and to calcareous scrub.
- 
- The main NVC communities identified include, are a community complex of :  

H7	Heather - spring squill heath	
H8	Heather - western gorse heath	
H7/H8		common bent-lesser knapweed variant

### iv. Sand Dune Communities

**CB.P4**

- The coastal sand dune communities at Castlemartin form an important component of the *Castlemartin Coast SPA* for crough.
- A UK Biodiversity Habitat Action Plan exists for coastal sand dunes. (See section 1.4.3).
- A Local Biodiversity Habitat Action Plan is to be prepared for coastal sand dunes. (See Section 1.4.3).

- The Brownslade and Linney Burrows dune system, estimated by ITE to be about 190 ha in extent, is the largest intact dune system in Pembrokeshire. Unlike a number of other dune systems in the region most of the inland components are virtually free from agricultural reclamation, although at least 10% of the dunes have been quarried in the past for sand.
- The dune complex demonstrates a fairly complete sequence from foredunes, through to fixed dune grassland. The most recent survey (Huckbody, et al.,1992) shows the dunes to be largely dominated by fixed (SD8) and semi-fixed (SD7) communities; fringed on the sea-ward edge by narrow bands of mobile dune (SD6) with small blow-out patches of bare sand (SD10) and small patches of fore-dune(SD4) (supporting the nationally scarce sea kale) and strandline (SD2) communities at Frainslake and Bluckspool.
- There are also important natural exposures of limestone and seepages over clay, as well as quarried exposures, in close juxtaposition with dune-slack communities (SD17) (some derived from quarry floors) and swamp communities. The sloping dune slacks contain impressive populations of marsh helleborine and the nationally scarce variegated horse tail, together with a small population of the rare liverwort petalwort and numerous invertebrates, including two species of ground-hopper and the lesser cockroach. (See Donovan, in prep).

Barrett (1885) quotes "*the marshes formed along the rivulets and slope, produce Epipactis palustris*" (marsh helleborine).

NB An indication that this habitat feature was present before sand quarrying activities commenced.

Several recently created pools in the abandoned quarried areas provide further diversity, supporting interesting aquatic plant and insect communities - notably fen pondweed, stoneworts and several species of dragonfly.

- The area is predominantly wind-blown sand over limestone, with an open structure, including small, but significant, patches of sheeps fescue - mouse-ear hawkweed - wild thyme calcareous grassland (CG7) which support a rare soil lichen *Fulgensia fulgens* (scrambled egg lichen).
- The communities that persist in the dunes have developed in a mild maritime climate aided or affected by natural geomorphological processes, rabbit grazing pressures, (augmented by sheep and cattle grazing), military activities and sand extraction.
- Although fresh sand supply is probably now very limited, the dunes are still possibly being periodically fed by small amounts of sand, judging by the tall steep-sloping nature of the fore-dunes at Frainslake. But natural sand-movements and blow-outs are probably not currently as active as the nearby more trampled and disturbed Freshwater West dunes.

- The main NVC communities identified include, are a community complex of :  
SD2 sea sandwort - sea rocket strandline community  
SD4 sea-couch fore-dune community  
SD6 marram grass mobile dune community  
SD7 marram grass - red fescue semi-fixed dune community  
SD8 red fescue - ladies bedstraw fixed dune grassland community  
SD10 sand sedge blow-out dune community  
SD17 silverweed - common sedge dune slack community  
CG7 mouse-ear-hawkweed - wild thyme calcareous grassland community  
[ A small area of SD18 sea-buckthorn dune scrub is present but should be eradicated]

## v. Swamp Communities

CB. P5

- A UK Biodiversity Action Plan exists for fen marsh and swamp. (See Section 1.4.3).
- A Local Biodiversity Habitat Action Plan is to be prepared for fen marsh and swamp. (See Section 1.4.3).

- A small area of the lesser pond sedge swamp community (S7) occurs, in the Frainslake valley within Brownslade and Linney Burrows. The close juxtaposition of swamp and sand dune communities is noteworthy, as it provides an interesting sequence with the dune grassland including an unusual transition with fixed dune grassland (SD8).
- The swamp community also provides locally important cover for otters and wetland birds, such as water rail, sedge warbler, grasshopper warbler and reed bunting - some of which may breed in small numbers - and also invertebrates. Barn Owls and occasionally other birds of prey (Eg migrant harriers) have been recorded hunting over the swamp and adjacent communities.

- The main NVC community identified is :  
  
S7 lesser pond sedge swamp plus transitions with sand-dune communities

## vi. Littoral habitats and communities of marine biological importance

CB. P6

- A Local Biodiversity Habitat Action Plan is to be prepared for Inter-tidal habitats. (See Section 1.4.3).

The Castlemartin coastline exhibits a classic Ballantine Grade 3<sup>9</sup> exposed rocky shore community, with rock-boring piddock biotypes and a number of algal communities. The exposed shore communities on limestone, and are amongst the finest in Britain.

## vii. An assemblage of nationally scarce vascular plants

CB. P7

- The flora of the Castlemartin Range is outstanding and diverse. (See Evans & Rhind, 1992. Sanctuary Number 21. Pages 20 to 22. The Castlemartin coast is considered to be a "key locality" in the UK for rare and scarce plants (*Coasts and seas of the United Kingdom, Region 12*. JNCC 1995).

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<sup>9</sup> See Glossary

Ten **nationally scarce** plants have been recorded, reflecting the range of high quality open habitats of great antiquity which are primary features in their own right. These species are:

Fen pondweed	Rock Sea Lavender
Sea-Kale	Sea Hard-grass
Variegated Horsetail	Hoary Rock-rose
Portland Spurge	Chaffweed
Golden Samphire	Pale heath violet

- A UK Biodiversity Action Plan exists for endemic rock sea lavender taxa. (See Section 1.4.3).
- Local Biodiversity Species Action Plans are to be prepared for the endemic rock sea lavender taxa in Pembrokeshire and also for pale heath violet. (See Section 1.4.3).

- Fen pondweed grows in a clear spring-fed pool, excavated during the early 1990s, within Brownslade and Linney Burrows.
- Approximately 12 plants of sea kale have been recorded, in three locations at the north end of Buckspool in the fore-dunes (NVC SD4).
- Both of these nationally scarce plants are potentially vulnerable to physical disturbance or habitat pollution. The former species from military training activities and the latter from any clearance operations following marine pollution.
- Variegated horsetail is quite plentiful within the older vegetated damp dune slacks in the burrows.
- Portland spurge is somewhat localised within the fixed and semi-fixed dunes and along parts of the coast where it is generally confined to exposed rock crevices, coastal slopes and cliff-top grassland.
- Golden samphire and endemic<sup>10</sup> species of rock sea lavender are typically associated with crevices and narrow ledges on both the precipitous limestone rock faces and the cliff top, within the MC1 community. Both are generally widespread where such open and exposed conditions prevail.
- Small populations of the delicate annual sea hard-grass occur locally in Range East and Range West along open exposed subsoil terraces and in hollows on the abrupt seaward edge of the maritime grassland.
- Hoary rock-rose, at its only west Wales location, is confined to a single population on a limestone pavement east of Saddle Head.
- Small patches of chaffweed occur within a small expanse of disturbed damp loess soil near St Govan's chapel.
- Pale violet occurs within the heath zone - typically in heathy runnels amongst western gorse and heather stands - with scattered and sometimes abundant populations in both Range East and Range West. This species is known to benefit from patch burning of heath.

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<sup>10</sup>See Glossary

- The three species included in this assemblage have important regional breeding populations along the Castlemartin coastline.
  - Two species (guillemot and razorbill) are “*Amber-listed*”<sup>11</sup> by the JNCC<sup>12</sup> (*List of Birds of Conservation importance in Great Britain*).
  - All three species are candidates for Local Biodiversity Action Plans. (See Section 1.4.3).
- 
- Guillemots nest in several colonies along the coast where there are suitably sheltered ledges but their main concentration, the largest and probably most easily viewable mainland colony in south Wales, is centred around Stack Rocks (Elegug Stacks). Their population has increased steadily over the last twenty years (about 9,000 individuals were recorded along the Range Coast in summer 1999).
  - A smaller razorbill population is spread more widely along the coast, between Broadhaven and Blucks pool. The main concentration, however, being at the Elegug Stacks and Flimston. The population is also probably still slowly expanding - in 1999 about 900 individuals were recorded.
  - A small kittiwake breeding population is presently confined to the Elegug Stacks/Flimston area. Although it is the largest mainland kittiwake colony in Pembrokeshire, the population is currently in decline. Having increased steadily, to around 530 nesting pairs by the late 1980s, the population had slumped to about 200 pairs by 1999. Overall breeding success in 1999 was, however, by far the highest recorded since 1992, which gives hope for a possible stemming of the decline.
  - Seabirds are potentially vulnerable to a number of environmental problems. These include disturbance from recreational activities on cliffs and on the water, effects of weather, changes in availability of food, fishing net entanglement and marine pollution. As an example of the latter, the west Wales population of guillemots had been expanding by about 8% per annum up to 1995. Oil, from the *Sea Empress* spill in February 1996, caused a decline of about 10-15% along the Castlemartin coast that summer. Numbers, however, have since recovered. (See Portman & Haycock, RJ 1996. Sanctuary Number 25. Pages 38-39).

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<sup>11</sup>See Glossary

<sup>12</sup>See Glossary

#### ix. Small restharrow

CB.P9

- **Nationally rare.** Red Data List *Vulnerable*. Protected under Schedule 8 of the Wildlife and Countryside Act 1981 (As Amended).
- A Local Biodiversity Species Action Plan is to be prepared for Small restharrow. (See Section 1.4.3).

- Small restharrow occurs in a naturally unstable, open, south-facing coastal slope in the New Quay valley. This annual species has only fairly recently been discovered growing within the Castlemartin Range area (Jones 1991). Flowering is somewhat erratic. The population is very small and is potentially vulnerable to disturbance.
- Maintenance of open conditions in the New Quay valley (free of physical disturbance) and at similar south-facing slopes where other populations may occur, is important.

#### x. Stackpole sea lavender *Limonium parvum*

CB.P10

- **Nationally Rare.** Red Data List *vulnerable*.
- The Stackpole sea lavender *Limonium parvum* is included in a group of endemic sea lavenders with a UK Biodiversity Action Plan. (See Section 1.4.3).
- A Local Biodiversity Species Action Plan is to be prepared for the endemic rock sea lavender taxa in Pembrokeshire. (See Section 1.4.3).

- This is one of a group of sea lavender species found nowhere except in South Pembrokeshire on the limestone coastline. There are presently only two known populations of this particular species (*Limonium parvum*) within the UK, one is within nearby Stackpole SSSI and the other is within the Castlemartin Range.
- These plants are restricted to a exposed rocky, terraced, limestone slope near Newton Down, and around blow-holes east of Mewsford Point on Crickmail Down. Specimens thought to be this species also occur below the small restharrow population at New Quay.
- Maintenance of the population should be catered for through natural geomorphological processes. However there should be a presumption against increasing disturbance pressures to the localities where it grows, above that which currently exists.



#### xi. Goldilocks aster

CB.P11

- **Nationally Rare.** UK Red Data List *Near threatened*.
- A Local Biodiversity Species Action Plan is to be prepared for Goldilocks aster. (See Section 1.4.3).

- This nationally rare woody perennial plant grows in a prostrate form in coastal calcareous grassland and heath at Castlemartin, and probably requires open conditions influenced by the present grazing regime. To what extent this is an adaptation to its grazed environment, over time, is not known. Castlemartin Range holds the largest UK population.
- Goldilocks aster may be vulnerable to soil disturbance, eg from military and other activities, including excessive trampling. A population in Range West, near Pen-y-holt bay (which has upwards of 3,000 - 4,000 flowering spikes distributed over about 14 patches) is much stronger than the scattered populations in Range East between St Govan's Chapel and Saddle Head.

#### xii. A soil lichen (Scrambled egg lichen) *Fulgensia fulgens*

CB.P12

- **Nationally Rare.** Near threatened.
- A Local Biodiversity Species Action Plan is to be prepared for scrambled egg lichen. (See Section 1.4.3).

- This soil lichen grows on smooth compacted surface soils in which the moss *Trichostomum crispulum* is often dominant. Within the Castlemartin Range it is limited to a few small, vulnerable and widely separated locations: in the Brownslade/Linney dunes (supporting the strongest population), on cliff-edges near Buliber Down and above Flimston Bay.
- Presence of suitable open/bare stony loess or sandy soils (typically of the CG7 type) influenced by beneficial rabbit and sheep grazing, should provide suitable conditions for it to continue to prosper or expand. The presence of a healthy rabbit population in the dunes, levels of disturbance to the substrate, including trampling and military activities are all considered to be important management issues.

#### xiii. A liverwort (Petalwort) *Petalophyllum ralphsii*

CB.P13

- **"Vulnerable"**. UK BAP List 1. Protected by the Wildlife and Countryside Act 1981(As Amended) listed on Schedule 8; on Schedule I of Bern convention; Appendix II of EC Habitats Directive.
- Petalwort has a UK Biodiversity Action Plan and is a candidate for a Local Biodiversity Species Action Plan. (See Section 1.4.3).

- The only population of petalwort, found so far, grows in a very small patch of moist sandy soil, close to an area with seepages and a high winter water table. This species, re-discovered in 1998 is in one of the older quarried dune-slacks in Brownslade burrows. It was last recorded in this dune system (location unknown) almost 50 years ago. The area is grazed by rabbits, occasionally by cattle and perhaps more regularly in winter and spring by sheep.
- Open patches of very short, damp turf with bare areas, on very slightly raised ground within an otherwise flat SD17 dune slack, with fairly high winter water table, appear to be important. Occasional disturbance and dunging by cattle may also be beneficial.

- In an absence of grazing, coarsening of the slack floor vegetation and development of low scrub (typically creeping willow) may render the area unsuitable for petalwort. A lowered water table and drought would also probably have a significant impact on its extent or condition.

#### xiv. Chough

**CB.P14**

- |   |
|---|
| <ul style="list-style-type: none"> <li>• <b>“Vulnerable”</b>. <i>Red-listed</i> in JNCC <i>Birds of Conservation importance in Great Britain</i>. Protected under Schedule 1 and Part 2 of the Wildlife and Countryside Act (As Amended); Annex 1 of EC Birds Directive; Appendix II of the Berne Convention.</li> <li>• A Pembrokeshire conservation strategy exists for the chough, and a Local Biodiversity Species Action Plan is being drafted. (See Section 1.4.3).</li> <li>• Coastal habitats within the Range are included within the <i>Castlemartin Coast SPA</i>, established in 1995 in recognition of the international importance of the chough population.</li> </ul> |
|---|
- The Castlemartin Coast SPA (including parts of *Stackpole and Broomhill Burrows SSSI*) is a c. 20 kilometre linear strip of outstanding maritime habitats containing exposed limestone sea-cliffs, bare headlands, short-sward grasslands, maritime and calcareous heaths and dune systems.
  - The SPA qualifies, under Article 4.1 of EC Directive 79/409/EEC on the Conservation of Wild Birds, by supporting > 1% of the British chough population. During the last five years the SPA has supported between 12 and 16 pairs (> 4% of the British population).
  - This exceptionally high breeding density indicates that the limestone cliffs support an abundance of safe nest sites and that the cliff-top habitats and their management are well suited to producing high densities of accessible invertebrates. Flocks of young and sub-adult chough often reach 30 or more birds. They feed along the entire Range coast, though the dunes provide important feeding areas, especially in late summer and in winter during periods of hard weather.
  - Choughs utilise their c. 2 cm long, down-curved bill to great effect, probing into short-cropped grassland to a depth of about 1 to 1.5 cms. They will also dig or chisel out slightly deeper holes into turf roots in search of favoured prey - including crane-fly larvae (leather-jackets), various beetle larvae, ants and their larvae.
  - Micro-habitats with clumped prey (e.g. yellow ant hills) can be significant at certain times of the year. Populations of yellow ants occur at very high density along much of the Castlemartin coastline where they are associated with un-disturbed semi-natural grassland communities.
  - Choughs also sometimes feed slightly inland from the coast, into open heath (H8) or neutral grassland (MG5) communities (beyond the SPA/SSSI). These areas have recently become more important in winter and potentially could be used more frequently, as there are indications that the chough population might still be expanding.
  - The breeding population utilises many sea-cliff crevices, between approximately 10 and 30 metres above high water, for nesting. These appear to be quite sheltered and undisturbed sites, ranging from small vertical or horizontal cracks to large cave like water-worn tubes. They will also utilise large cracks or holes under arches. Most nest sites are used year after year, though in some territories alternatives exist but these are usually less than 100 metres apart.

- The chough population is vulnerable to human disturbance from recreational pressures, including activities associated with climbing and walking. Choughs breeding and feeding around the heavily used “honeypot” area of St Govan’s Head and St Govan’s Chapel are especially at risk. Choughs are also vulnerable to predation e.g. from peregrines (especially young birds) and could also be disturbed by hunting pursuits within the Range (including shooting and falconry). Minimising disturbance within the designated SPA should therefore be a priority.
- For further information on the Castlemartin Range chough population see Haycock & Donovan, (1994). Sanctuary Number 23. Pages 10-11.

#### xv. Peregrine

**CB.P15**

- **Amber-listed** in JNCC *Birds of Conservation importance in Great Britain*. Protected under Schedule 1 and Part 2 of the WCA, 1981 (As Amended); Annex 1 of EC Birds Directive; Appendix II of the Berne Convention; Annex 1 of CITES.
- The peregrine is a candidate for a Local Biodiversity Species Action Plan. (See Section 1.4.3).

- The UK has internationally important populations of peregrines. Following a post 2nd World War crash in their populations in the UK, due to pesticides, persecution by falconers etc, numbers have now recovered to pre-war levels.
- Their populations & productivity have been monitored annually in Pembrokeshire for > 20 years. The Castlemartin Range supports an important part of the local peregrine population - a maximum of 3 pairs have nested along the coast, during this period.
- The Carboniferous Limestone sea cliffs provide several sheltered nesting ledges & crevices, plus dis-used raven nests which peregrines will use in the absence of other suitable structures. More than 10 alternative eyries are known to have been occupied between 1978 and 1999.
- Minimising human disturbance is also a key issue for this species. Despite legal protection, peregrines still suffer from persecution. For example, two breeding females have been killed at nests within the Range area during the last 5 years (one shot, the other poisoned).

#### xvi. Greater horseshoe bat

**CB.P16**

- **Nationally Rare**. Protected under Schedule 2 of the Conservation (Natural Habitats etc) Regulations, 1994 (Regulation 38); Schedule 5 of the Wildlife and Countryside Act 1981, (As Amended); listed on Appendix II of the Bonn Convention (included in the Convention’s Agreement on the Conservation of Bats in Europe); Appendix II of the Bern Convention (Recommendation 36 on the Conservation of Underground Habitats); Annex II of the EC Habitats Directive.
- A UK Biodiversity Action Plan exists for the greater horseshoe bat, and it is a candidate for a Local Biodiversity Species Action Plan. ( See Section 1.4.3)
- The Castlemartin Coast sea-caves have been included in the “Limestone Sea-cliffs of south west Wales candidate SAC” on account of their importance as hibernacula for greater horseshoe bats.

- The greater horseshoe bat is nationally rare, with a restricted breeding range centred on south-west Britain. The UK holds internationally important breeding populations, including a population in Pembrokeshire spread over two breeding (nursery) roosts. One of these roosts, within the adjacent National Trust Stackpole Estate, is close to the Castlemartin Range.
- Greater horseshoe bats regularly roost within sea-caves along the coast which are important hibernacula. More than 100 individuals often occupy one particular cave in winter. This currently represents about 25% of the west Wales population of these bats. The full extent of potential hibernacula available and their use by horseshoe or other bats, is still not known.
- Radio-tracking has shown that adult bats from a nearby breeding site at Stackpole, will feed within or close to the MOD Ranges and will also occupy roosts in the Range area near Lyserry, Trenorgan and Brownslade. They may feed more widely throughout the area but the numbers generally involved, patterns of seasonal use, or the range of habitats that are important are not completely understood.
- Continued maintenance of undisturbed roost sites and sheltered feeding habitats, supporting well structured flight lines and abundant sources of insect prey are important considerations. Opportunities for extending sheltered feeding corridors, through planting clumps or strips of woodland and thickening up hedgerows, should benefit these bats. (Also see Haycock, 1999. Sanctuary number 28, p. 43.)

#### **xvii. Hairy Dragonfly**

**CB.P17**

- |   |
|---|
| <ul style="list-style-type: none"> <li>• <b>Nationally scarce</b></li> <li>• The hairy dragonfly is a candidate for a Local Biodiversity Species Action Plan. (See Section 1.4.3).</li> </ul> |
|---|

- Hairy dragonflies emerge early in the summer and breed in unpolluted and undisturbed, shallow but well-vegetated pools. When on the wing adults are probably wide ranging, and have been seen well away from wetland within Castlemartin Range.
- Its breeding distribution and extent are still not known, but it has been recorded in potentially suitable swampy pools at Frainslake and at newly excavated pools in the quarried dunes at Brownslade.

#### **xviii. Scarce blue-tailed damselfly**

**CB.P18**

- |   |
|---|
| <ul style="list-style-type: none"> <li>• <b>Nationally scarce.</b></li> <li>• The scarce blue-tail damselfly is a candidate for a Local Biodiversity Species Action Plan. (See Section 1.4.3).</li> </ul> |
|---|

- The scarce blue-tail damselfly has scattered populations throughout Pembrokeshire and west Wales, where it breeds in small, partially vegetated, marshy pools in areas usually grazed by animals such as cattle, ponies or sheep. Males are great wanderers and frequently visit newly created pools.
- The most suitable habitat, where it has been recorded, is at Frainslake and recently excavated stonewort-dominated dune-slack pools, natural seepages and streams in the dunes at Brownslade.

## xix. Silver-studded blue butterfly

CB.P19

- **Nationally scarce.** Published UK BAP List 2.
- It has a UK Biodiversity Action Plan and is a candidate for a Local Biodiversity Species Action Plan. ( See Section 1.4.3).

- Silver-studded blue butterflies occur along the more sheltered zones of coastal limestone heath and dunes.
- The undoubted importance of Castlemartin's dune habitat for this species was recognised well over one hundred years ago, when Barrett (1885) made the following interesting remarks:

- there were "*hundreds of sheep and thousands of rabbits*" and "*in the extensive sand warren in the deeper valleys of these sandhills* (he was referring to Brownslade) *silver-studded blue butterflies were found in plenty, plus brown argus & dark green fritillaries*".

- Although recorded in the 1940s (Smith pers com) there had been few certain records of its presence until 1990 when it was confirmed within the Brownslade and Linney Burrows (Lang, Donovan and Evans, 1990).
- In 1999 peak counts of over 500 adults were recorded within approximately 32 populations or sub-populations, confirmed between Brownslade and Linney Burrows and New Quay, within the extensive areas of dune/calcareous grassland, coastal calcareous grassland and heath (Smith, in prep).
- These butterflies undoubtedly benefit from extensive areas of grazed calcareous, herb-rich grassland and heath with associated ant populations. The areas in which silver-studded blue butterflies occur are fairly sheltered but are grazed year round by rabbits and in winter also by sheep and cattle.

## xx. A Strand-line beetle *Nebria complanata*

CB.P20

- **Nationally scarce.**
- The strand-line beetle is a candidate for a Local Biodiversity Species Action Plan. ( See Section 1.4.3).

- This gregarious and predatory ground beetle is dependent for day-time shelter on a regular supply of undisturbed drift-wood, and artificial materials (including as plastic) on sandy beaches near the strandline.
- Frainslake beach and fore-dunes supports an important and quite large population due to the presence of a largely undisturbed strandline habitat. Over 300 adult beetles have been counted there. (See Donovan, 1998. Sanctuary Number 27. Pages 40-41 for further details). Potentially good habitat also occurs at Bluckspool, although there is no evidence, so far, of a population there.
- The strand-line beetle population at Frainslake may be strong but is vulnerable if:
  - stranded materials (wood and plastics etc) are moved;
  - its habitat at the top of the beach is disturbed.
  - its habitat is polluted (eg by oil)

### 1.2.2.2 UNCONFIRMED PRIMARY FEATURES

#### i. Neutral grassland

**CB. UP 1**

- A UK Biodiversity Habitat Statement exists for neutral grassland. (See section 1.4.3)
- Neutral and improved grasslands are candidates for Local Biodiversity Habitat Action Plans. (See Section 1.4.3).

*(The following summary is largely based on the ITE vegetation survey of Castlemartin Range Report, 1999).*

- Neutral (mesotrophic<sup>13</sup>) grassland communities occupy much of the inland sections of Castlemartin Range. This large, unfragmented area of relatively diverse unimproved grassland is of considerable conservation value, even though much has developed on land which was arable before the war. It will continue to improve floristically if managed sympathetically.
- Different management regimes, together with localised disturbance and excavation have produced considerable floristic and structural variation within these communities. A total of 20 homogeneous NVC communities have been recorded, together with three unknown 'variants', and 65 mosaics with other vegetation types. These account for most of the vegetation cover of the site (estimated by ITE to be some 1,472ha; 62% of the Range area).
- The majority of these communities (15) are classified as un-improved neutral grassland - dominated by variable amounts and mosaics of "rank" false oat grassland (MG1 and sub-communities) which occupies large tracts of the inland section of Range West and the extreme east of Range East, and moderately diverse crested dogs-tail - black knapweed grassland (MG5 and sub-communities) which occupies much of the inland plateau of Range East and some of the coastal sections of Range West.
- Pockets of short, open neutral grassland communities, such as the ladies bedstraw sub-community of the crested dogs-tail-black knapweed grassland (MG5b), are scattered throughout the Ranges. These provide important habitat for a range of thermophilous invertebrate species.
- The extensive unimproved permanent pasture with much tall herbs and scattered banks and hedges account for large numbers of great green bush crickets evident in late summer through much of the Range.
- Similarly, the rank neutral grasslands are likely to support large populations of small mammals, which in turn support a population of barn owls, known to breed at the site.
- The extensive areas of tall herb/nectar-rich grasslands have also recently been found to support possibly one of the largest populations of the shrill carder bee in Britain. (This is a UK priority BAP species and an unconfirmed Primary feature, see below).
- Large areas of grassland on the northern edge of the Range have been improved for agriculture. The resultant, species-poor perennial rye-grass-crested dog's tail (MG6) grassland and re-seeded perennial rye-grass leys (MG7) were estimated by ITE to account for a total of 220ha. These two grasslands, although generally of low conservation interest do often provide important feeding and roosting habitat for winter flocks of lapwings, golden plovers, thrushes and starlings.

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<sup>13</sup> See Glossary

The main NVC communities identified by ITE, were :

MG1	false oat grassland (plus sub-communities and mosaics)
MG5	crested dogs-tail - black knapweed grassland (plus sub-communities and mosaics)
MG6	perennial rye-grass-crested dog's tail grassland (plus sub-communities and mosaics)
MG7	re-seeded perennial rye-grass ley grassland (plus sub-communities and mosaics)
MG10	Yorkshire fog - soft rush pasture (pus sub-communities and mosaics)
MG11	red fescue - creeping bent (fioren) - silverweed grassland (pus sub-communities and mosaics)
MG13	creeping bent - marsh foxtail grassland

## ii. Shrill carder bee

## CB. UP 2

- **Nationally scarce.** UK BAP List 1.
- The shrill carder bee has a UK Biodiversity Action Plan, and is also a candidate for a Local Biodiversity Species Action Plan. ( See Section 1.4.3).

- There are a few scattered historical locations of shrill carder bees in Pembrokeshire, but presently they are only known to occur in the Castlemartin Range where it appears to be surviving well. Castlemartin Range may hold one of the largest populations of this species in the UK!
- Shrill carder bee nests are built at or just below ground level in the litter layer. The worker bees are active between May and September feeding on nectar from a wide range of flowers but vetches, clover and red bartsia may be important. Only the queen survives the winter, establishing a new nest and colony from eggs in the following spring.
- The shrill carder bee, and another UK BAP bee species (the brown-banded carder bee) both occur in apparently good numbers within large expanses of nectar-rich un-improved neutral grassland in Range West and Range East. An August 1999 survey has provided preliminary information on its distribution.
- Neutral grassland habitat in which shrill carder bees have so far been found have minimal management interference in summer, i.e.:
  - the grasslands are not fertilised;
  - are not treated with herbicides or pesticides;
  - are not grazed much in the period mid May to September;
  - are not cut in period May to September.

- A once common species, now declining over much of Britain. Included in a Joint Nature Conservation Committee (JNCC) list of ***“Birds of conservation importance in Great Britain”***.
- The lapwing is a candidate for a Local Biodiversity Species Action Plan. ( See Section 1.4.3).

- The Castlemartin Range area and dunes at Brownslade Burrows form part of a continuum of habitat important now, and even more so historically, for breeding lapwings.
- Much larger breeding populations were known in the area 60 - 70 years ago. As observed by a visiting naturalist Bertram Lloyd, who recorded the following about lapwings in his unpublished journals of 1929 and 1930.

- **22nd May 1929**  
*“Many pairs along the cliff hinterland by Linney Head, etc (locally “the downs”), where they nest freely. About 35 pairs seen today on “Burrows” and “Downs”.*
- **29th April 1930**  
*“Many on the Burrows at Freshwater West and on the cliff hinterland at Linney Head. On 29th we saw many pairs on the heathy (narrow fringe) behind the cliffs near St Gowan’s - about 30 pairs in one big field patch near St Gowan’s Head.”*  
  
*“This district - including Freshwater West Burrows, Linney Head and the cliffs - is probably **the most notable piece of Lapwing country in Pembrokeshire**, for though there is magnificent ground elsewhere for the birds, it appears not to be much used”.*  
  
*“On Castle Martin Burrows - a wide sheet of Dunes - there must be more than 50 pairs, but the species is curiously scantily distributed in many parts of Pembs.”*

- Presently the Castlemartin Range area provides one of only a few sites in Pembrokeshire where lapwings still maintain a foothold and try to breed each year. Between 3 and 7 pairs have been recorded during the last few years.
- The Brownslade and Linney dunes are still key areas for breeding lapwings, together with areas of enclosed neutral grassland in Range East, along the Longstone Road near the Electric Target Range.
- Grazing and predator management and control of recreational activities, to support suitable breeding and feeding habitat, and safe areas to rear young are important considerations for lapwings.



### 1.2.2.3 SECONDARY FEATURES

#### i. Breeding birds assemblage

CB. S1

- Thirty species, representing the wide range of habitats within the Range area, have been identified for inclusion in the breeding birds assemblage.
- Twenty-three of these have been recommended by the JNCC as being of “*Conservation importance in Great Britain*”.
- Several species are also candidates for Local Biodiversity Species Action Plans. ( See Section 1.4.3).

- **i) “Red-listed” species** These are common species (originally identified by the RSPB et al in a publication entitled “*Birds of Conservation Concern*”) for which the JNCC report in their Birds of Conservation importance in Great Britain as having undergone:

A >50% decline in the breeding population or range in the previous 25 years (up to 1997).

- For these species the JNCC recommends that, where appropriate, Species Action Plans should be prepared to ensure effective conservation.

- Six red-listed species breed at Castlemartin including :
- Skylark, song thrush, spotted flycatcher, linnet , bullfinch, reed bunting;
- All six species are candidates for Local Biodiversity Species Action Plans. ( See Section 1.4.3).

- **ii) “Birds of Conservation importance in GB”**. Species defined by the JNCC as:
  - recently declining (>25% but <49%);
  - historically declining (>50%) but common;
  - internationally important, localised and “unfavourable conservation status in Europe.”
- The JNCC recommends that their populations are monitored and, where appropriate, Species Action Plans are prepared to ensure effective conservation.

- Seventeen amber-listed species breed at Castlemartin including:
- \* Barn owl, blackbird, dunnoek, goldfinch, grasshopper warbler, green woodpecker, herring gull, kestrel, marsh tit, oystercatcher, puffin, ringed plover, shag, shelduck, starling, stonechat, swallow.
- *Barn owl is protected: Schedule 9, WCA 1981(As Amended).*
- Barn owl, green woodpecker, kestrel, puffin and stonechat are candidates for Local Biodiversity Species Action Plans. ( See Section 1.4.3).

- **iii) Species with locally important breeding populations.** Several additional species in the Range area have, in a Pembrokeshire context, fairly significant or localised breeding populations, reflecting the large areas of unimproved high quality breeding and feeding habitat. Two are candidates for local Biodiversity Species Action Plans.

- These include seven species:
  - Lesser black-backed gull, swift, house martin, wheatear, sedge warbler, whitethroat, yellowhammer.
  - Lesser black-backed gull and yellowhammer are candidates for Local Biodiversity Species Action Plans. ( See Section 1.4.3).

## ii. Migratory and wintering waders and gulls assemblage

**CB. S2**

- The Castlemartin Range supports locally important populations of several migratory and wintering waders and gulls.
- Some species (eg lesser black-backed gull and whimbrel) may occur in numbers considered to be of **national importance**.

- Peak numbers of most species occur between September and March; whilst others, such as whimbrel (on northward spring migration) numbers peak between April and June.
- The species considered for inclusion in this assemblage are:

Mean Peak counts (Measured over 5 years)	
* Oystercatcher	- 125+
* Ringed Plover	- 40+
* Grey Plover	- 100+
* Golden Plover	- 500+
* Lapwing	- 1,000+
* Dunlin	- 100+
** Bar-tailed Godwit	- 30+
* Curlew	- 125+
** Whimbrel	- 100+
* Lesser black-backed Gull	- 400+
* based on peak counts	(September to March)
** based on peak counts	(April to June)

## iii. Butterfly assemblage

**CB. S3**

- In a report by Butterfly Conservation (Joy and Bourn, 1998) the Castlemartin Coast (including Castlemartin Range and Stackpole SSSI) was highlighted as a **“key”** butterfly area within Wales.
- Six “local” species, regarded by Butterfly Conservation as requiring Action Plans in Wales, occur within the Range.

- The six species included in the assemblage, together with their associated habitats and food-plants are shown in the box below.
- These require a network of suitable habitat at varying stages of development to ensure sustainable populations. Several species have declining populations in the UK. All require

sympathetic management to encourage and strengthen existing colonies, or encourage further population expansion.

- Maintenance of the food plants in suitable habitats for the larval stages of the targeted species is an important consideration.

Species	Habitat	Main food-plants
Dingy Skipper	Sheltered coastal grassland and heath	Bird's-foot and greater bird's-foot trefoil
Brown Argus	Sheltered coastal calcareous grassland, downland and heath	Storks-bill and similar species
Small Pearl-bordered Fritillary	Damp woodland, damp grassland, also calcareous & coastal grassland	Common dog-violet and marsh violet
Silver-washed Fritillary	Woodland & associated rides/glades	Common dog-violet
Dark Green Fritillary	Calcareous downland, coastal dunes & grassland and bracken	Violet species
Grayling	Sparsely vegetated coastal grassland dunes, scree slopes and heath	grasses including: bents, hair-grass, fescues, annual meadow grass & marram grass

#### iv. Dragonfly assemblage

**CB. S4**

- Some 14 species of dragonfly, excluding hairy dragonfly and scarce blue-tailed damselfly which are Primary features, have confirmed breeding, or probable breeding, populations within the Range.

- These species include:

Large Red Damselfly Blue-tailed Damselfly Common Blue Damselfly Azure Damselfly Emerald Damselfly Banded Demoiselle Golden-ringed Dragonfly	Southern Hawker Migrant Hawker Emperor Dragonfly Broad-bodied Chaser Four-spotted Chaser Black-tailed Skimmer Common Darter
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- They inhabit small areas of freshwater habitats (see pages, streams and pools). Several new pools, excavated during the last ten years in the Brownslade-Linney Burrows, have significantly increased the amount of suitable habitat for dragonflies. (See Ellis, 1996. Sanctuary Number 25. Page 5 for further details).

## v. Lesser horseshoe bat

**CB. S5**

- **Vulnerable** - according to 1996 IUCN Red list of Threatened Animals. Within Britain, confined to south west England and Wales.
  - Protected under Schedule 2 of the Conservation (Natural Habitats etc) Regulations, 1994 (Regulation 38); Schedule 5 of the Wildlife and Countryside Act 1981, (As Amended); listed on Appendix II of the Bonn Convention (included in the Convention's Agreement on the Conservation of Bats in Europe); Appendix II of the Bern Convention (Recommendation 36 on the Conservation of Underground Habitats); Annex II and IV of the EC Habitats Directive.
  - A UK Biodiversity Action Plan exists for the lesser horseshoe bat, and it is a candidate for a Local Biodiversity Species Action Plan. ( See Section 1.4.3)
- Small numbers of lesser horseshoe bats are known to visit the Castlemartin ranges but no breeding roosts have been confirmed, though some structures possess potentially suitable sites.
  - Lesser horseshoe bats, or signs of their occupation, have been recorded in four roosts; all are associated with old farm dwellings or cottages. Small sheltered roost crevices in walls, chimneys and old bread ovens appear to be most favoured. Potentially important feeding habitat (e.g. wooded valleys contiguous with invertebrate-rich grassland) is limited to the northern inland parts of the Range.

## vi. Grey Seal

**CB. S6**

- Confined to the north Atlantic, the majority are around the coasts of the British Isles. Protected in the UK under the Seals Act 1970; EC Habitats and Species Directive Annex IIa; Bern Convention, Appendix III.
  - The grey seal is a candidate for a Local Biodiversity Species Action Plan. ( See Section 1.4.3).
- Grey seals can be seen anywhere off the Castlemartin coast all year round. During the autumn small numbers of cows pup on favoured undisturbed beaches. Those currently known to be used are between Flimston and the Green Bridge of Wales and occasionally Hobbyhorse Bay. Up to a dozen or more pups have been born each season, between September and November, during the past few years.
  - Occasionally stray pups from other breeding areas turn up along the Castlemartin coast, eg Frainslake/Furzenips area. Some of these probably arrive after storms, as a result of having been washed off their natal beaches.

## vii. European otter

**CB. S7**

- **Endangered.** Protected under Schedule 5 of the Wildlife and Countryside Act 1981 (As Amended); under the EC Habitats Directive Annex IIa, IIIa; Bern Convention Appendix II.
- The European otter is a candidate for a Local Biodiversity Species Action Plan. ( See Section 1.4.3).

- The otter population is presently quite strong in south Pembrokeshire, with breeding populations close to the Range.
- Otters (so far only single animals) are occasionally recorded in the Frainslake valley, where there is suitable lying up cover and food, notably eels and other fish species. They may also be attracted to feed in the coastal intertidal zone near Frainslake beach, as this area is relatively undisturbed, but this is still unconfirmed.

#### viii. Badger

**CB. S8**

- |  |
|--|
| <ul style="list-style-type: none"> <li>• Common in West Wales, but because of persecution it is protected: Schedule 5 of the Wildlife and Countryside Act 1981 (As Amended); and the Badgers Act, 1992.</li> </ul> |
|--|
- Badgers are considered to be widespread within the Range. The population has increased over the years, there being about 20 setts known at this time from Bosherton to Brownslade. Some seem to be well populated by the number of entrances/exits in use. Twenty-three setts have been identified. A number have been in use for some 30 years (1969-1999).
  - Setts are generally located where there is the presence of good cover, well drained easily dug soil, absence of disturbance and plentiful and varied food supply nearby.

#### ix. Brown hare

**CB. S9**

- |   |
|---|
| <ul style="list-style-type: none"> <li>• Widespread throughout the lowlands of Britain, but probably declining in some regions; <b>rare in Pembrokeshire</b>. Hares have some protection under the Ground Game Act (1880) and the Hare Protection Act (1911).</li> <li>• The brown hare has a UK Biodiversity Action Plan, and is also a candidate for a Local Biodiversity Species Action Plan. ( See Section 1.4.3).</li> </ul> |
|---|
- In the 19th century hares were once abundant on kept estates in south Pembrokeshire. Hares have been recorded in previous years at Castlemartin but had died out by the mid to late of the 20th Century. Sixty-one hares were introduced in 4 groups between 23rd April 1994 and 4th February 1996 in an attempt to reintroduce them to the ranges.
  - Game plots are maintained to ensure there is cover in the spring, when the much of the remainder of the Range is grazed tight by sheep and cattle. Large areas of unimproved neutral grassland and managed game-crops provide a wide range of food sources - free from herbicides, pesticides and artificial fertilisers.
  - Numbers of hares surviving within the Range are not known but are thought to be small. Many may have moved into agricultural land to the north-west of the Range.

### 1.2.3 GEOLOGICAL FEATURES

#### 1.2.3.1 Primary Features

##### Background information

The primary geological features (listed in the box below) were confirmed by the Geological Conservation Review<sup>14</sup> (GCR) Unit of the Nature Conservancy Council (NCC, 1990; Ellis *et al.*, 1996). as follows:

GCR No.	GCR SITE NAME	GCR BLOCK	DATE NOTIFIED
1666	Freshwater West (South)	Variscan Structures	15.07.87
1759	Blucks Pool - Bullslaughter Bay	Dinantian of England & Wales	15.07.87
1913	South Pembroke Cliffs	Coastal Geomorphology	15.07.87

These sites were notified in March 1993 by inclusion in the Castlemartin Cliffs & Dunes SSSI which has joint biological/geological interest.

The three GCR sites cover the cliff sections extending from:

- Freshwater West (SR 883 998) to Bullslaughter Bay (SR 942 940);
- and from The Castle (SR 954 935) to St Govan\_s Chapel (SR 967 930).
- The total length of coastline covered is c. 12 km.
- The seaward limit is at low water mark.

Detailed documentation for each of these sites has been drawn up by CCW's Area Earth Scientist (S. Howells) and includes archive photography, technical report and site management plan.

Recent survey work has revealed one other feature (Tertiary Clays [The Flimston Clay]) which, with further investigation, may prove to be of national importance and therefore worthy of SSSI status. For the purpose of this plan this has been treated separately (in section 1.2.3.2) as an unconfirmed Geological Primary Feature.

#### i. Freshwater West (South); GCR 1666, Variscan Structures

**CG. P1**

Feature	GCR no.	Location	Type
Variscan Structures	1666	Freshwater West to Frainslake Sands	exposures in cliffs and foreshore

- The cliff section and associated foreshore between Freshwater West (SR 883 998) and Frainslake Sands (SS 889 985) provides exposures of rocks that were affected by folding and faulting during the Variscan Orogeny (c. 290 million years ago). The following sub-features can be identified:
- a) the northern termination of the Flimston Fault, an major structural feature which is an extension of the Sticklepath Fault of Devon.
- b) an assemblage of minor structures including faults, shear planes, tension gashes, joints, cleavage planes and veins affecting the \_Old Red Sandstone\_ rocks lying on the southern limb of the Freshwater West Anticline.

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<sup>14</sup> See Glossary

## ii. Blucks Pool to Bullslaughter Bay; GCR 1759, Dinantian of England & Wales CG. P2

Feature	GCR no.	Location	Type
Carboniferous Limestone	1759	Bluck's Pool to Bullslaughter Bay	exposures in cliffs and foreshore

The cliff section and associated foreshore from the south side of Frainslake Sands (SR 890 976) to Bullslaughter Bay (SR 942 940) provides exposures of a sequence of folded beds (c.1800m thick) belonging to the Dinantian Series (commonly referred to as the Carboniferous Limestone) and including the following stratigraphic units, each of which displays distinctive sedimentological characteristics.

Bullslaughter Limestone Formation  
Crickmail Limestone Formation  
Stackpole Limestone Formation  
Pen-y-holt Limestone Formation  
Hobby Horse Bay Limestone  
Linney Head Beds  
Berry Slade Limestone Formation  
Blucks Pool Limestone Formation  
Lower Limestone Shales Formation

- This is the thickest sequence of Carboniferous Limestone in Wales and represents an offshore ramp facies. The internationally recognised boundary stratotype for the Arundian Stage of the Dinantian Series occurs at the base of the Pen-y-Holt Limestone Formation on the east side of Hobby Horse Bay (SR 886 957). The site also includes, within the Berry Slade Limestone Formation, an unusual development of dolomitised carbonate mud mounds formed chiefly from crinoid debris and algal mucellage. These dolomite reefs are exposed between Blucks Pool (SR 890 971) and Linney Head (SR 883 957).
- The limestones are generally richly fossiliferous but at certain horizons the diversity and quality of preservation is exceptional (see Section 2.2). The fossils provide the basis for establishing the stratigraphic position of the lithological units and they are also important for studies of taxonomy, palaeoecology and evolution.

## iii. South Pembroke Cliffs; GCR 1913, Coastal Geomorphology

CG. P3

Feature	GCR no.	Location	Type
Coastal Geomorphology	1913	The Wash to Bullslaughter Bay The Castle to St Govan's Chapel	coastal landforms and processes

The cliffs and associated foreshore extending from The Wash (SR 922 944) to Mewsford Point (SR 941 940) and from The Castle (SR 954 935) to St Govans Chapel (SR 967 930) include a wide variety of coastal landforms, including embayments, headlands, cliff profiles, caves, blowholes, geos, arches, stacks, stumps and wave-cut platforms. The complexity of this coastline partly reflects the retreat of the coastline into an area of relict karstic landforms including sink holes, cave systems and limestone pavement.

- The processes (eg. weathering, erosion, mass movement, transport, deposition) that are currently actively reshaping this landscape are an integral part of the interest.

### 1.2.3.2 Unconfirmed Primary Features

#### I. Tertiary Clays (The Flimston Clay)

**CG. UP 1**

Feature	Grade	Location	Type
Tertiary Clays (The Flimston Clay)	1 GCR/RIGS	Flimston area	clay pits and undisturbed superficial deposits

**Tertiary Clays** - the supposed Tertiary Clays of the Flimston area are by far the best of only two such examples in Wales. They have yet to be studied although some preliminary geophysical investigations (Howells, 1998) have been undertaken.

### 1.2.3.3 Secondary Features

The secondary features (box below) have been identified and graded by CCW's Area Earth Scientist (S. Howells) and reviewed by RRAG and the Nature Conservation Group of the ILMP. The quality of the data available for these sites generally falls well below the standard of that prepared for the primary features.

Feature	Potential Designation	Grade	Location	Type
Old Red Sandstone	1	RIGS	Freshwater West to Frainslake Sands	exposures in cliffs and foreshore
Variscan Structures	1	RIGS	Bluck's Pool to Bullslaughter Bay	exposures in cliffs and foreshore
Karst Landforms & Cave Deposits	1	RIGS	Castlemartin Range and adjacent areas	landforms and cave systems (Including speleothems and cave deposits)
Surface Drainage & the Carboniferous Limestone Aquifer	1	RIGS	Castlemartin Range and adjacent areas	hydrological / hydro-geological processes
Coastal Geomorphology	2	RIGS	Bluck's Pool to The Wash	coastal landforms and processes
Frainslake - Brownslade dune system	3	RIGS	Great Furzenip (south side of headland)	exposures in cliffs and foreshore
Carboniferous Limestone		mapping	Castlemartin Range	inland exposures including quarries
'Submerged Forest'			Frainslake Sands (south side)	foreshore exposures



## **I. Old Red Sandstone**

**CG. S 1**

- A complete sequence of the Old Red Sandstone of South Pembrokeshire, as described by Williams *et al.* (1982), can be seen in exposures in the cliffs and foreshore between Freshwater West and Frainslake Sands. These exposures provide an opportunity to study lateral variability in the ORS, when compared with the section between Freshwater East and Skrinkle Haven. This is also the type locality for the Freshwater West Formation of the ORS.

## **ii. Variscan Structures**

**CG. S 2**

- Exposures in the cliffs and foreshore between Bluck's Pool and Bullslaughter Bay provide an opportunity to study folding and faulting produced during the Variscan Orogeny at the end of the Carboniferous Period. Highlights include:
  - the landfall of the regionally important Flimston Fault at Flimston Bay
  - the Bullslaughter Bay Syncline, at Bullslaughter Bay and on the E side of Flimston Bay
  - spectacular folding at Pen-y-Holt Bay, particularly at the Cabin Door
  - a multiphase reverse fault extending from the Wash to Pen-y-Holt Bay.

## **iii. Karst and caves**

**CG. S 3**

- The whole of the Carboniferous Limestone outcrop of the Bosherton Frainslake area provides examples of karst features, including many cave systems (probably with associated speleothems and 'cave earths') which have yet to be explored and documented. Highlights of the currently known features include:
  - dolines, including the tree-filled example known as 'the sunken forest'
  - St Govan's Cave
  - dry valleys
  - small remnants of limestone pavement, formerly exploited for 'babaloobie' stones

## **iv. Surface drainage and the Carboniferous Limestone aquifer**

**CG. S 4**

- Although this area is currently only exploited for private water supplies (domestic and agricultural), either by boreholes (at Merrion Camp, and formerly at Frainslake) or directly from (in some cases seasonal) streams and ponds, there may be a future need for public use of this resource. Probably the main concern at this time is that at least half of the area influenced by the MOD activities is critical to water replenishment and quality at the Bosherton Lakes (part of Stackpole National Nature Reserve). The bulk of the replenishment is directly from the limestone aquifer but with important contribution from Sampson Stream, which receives effluent from the MOD sewage treatment works. (See Appendix 9 for further details).

## **v. Coastal Geomorphology**

**CG. S 5**

- The cliffs and foreshore between Bluck's Pool and The Wash provide an opportunity to study a variety of landforms, with many contrasts with the adjacent South Pembroke Cliffs GCR site (see above). Highlights include:
  - vertical cliffs, geos and caves in the Linney Head area
  - vertical cliffs, stacks and wave-cut platform at Pen-y-Holt Bay
  - cliffs with rounded profile at Bulliber Down
  - overhanging cliffs and gully at the Wash

**vi. Frainslake - Brownslade dune system****CG. S 6**

- This includes cemented supralittoral and dune sands with small-scale palaeokarstic features exposed at the north end of Frainslake Sands (SR 889 985). The unconformity between these sands and the underlying Old Red Sandstone is also of interest.

**Vii. Carboniferous Limestone****CG. S 7**

- Natural exposures and quarries in the inland areas of the range will be vital to the success of any revision of the geological maps and survey memoirs for this area, which has not been surveyed since 1910.

**viii. Submerged forest****CG. S 8**

- Remnants of woodland and peat drowned by the post-glacial rise in sea level can usually be seen at Frainslake Sands, particularly at the southern end of the beach.

### 1.3. PAST AND PRESENT MANAGEMENT

- **Past management**

With fertile clay soils over Limestone within the Range area, the land was extensively farmed for several hundred years. The Manor of Castlemartin was one of the most important land holdings of the Earls of Pembroke in Medieval times, and in 1600 was described by George Owen as *“the chiefest corn land in Pembrokeshire”*.

In the eighteenth and nineteenth centuries, Brownslade Farm, in the west of the Range area, was regarded as an important “Model Farm” and featured prominently in the Agricultural Revolution of that period. This included the drainage of nearby Castlemartin Corse (out-with and to the north of the Range land-holding) and livestock breeding developments, including innovations such as *“Castlemartin black”* cattle.

Up until 1948 the land was all part of the Cawdor Estate. However, at the start of the 2nd World War, the Army occupied much of the area from 1939 to 1945 for training purposes. This included extensive utilisation of many parts of the Cawdor land-holding on the Castlemartin peninsula by armoured fighting vehicles and mortar ranges during the 1940s/50s (notably within the Brownslade and Linney Burrows dune system).

Between 1945 and 1951 the land was once more managed by Cawdor Estate agricultural tenants, but was purchased by the Ministry of Defence (MOD) in 1948, as an Army Training Range at the start of the Korean War.

Due to military occupation of the area during the 2nd World War, and the subsequent purchase, very little agricultural reclamation or development (including use of fertilisers, herbicides or pesticides or alteration to buildings) has occurred within the Range area during the last 60 years.

- **Current management**

The Castlemartin Range is primarily used by UK based British Armoured Reconnaissance and Armoured Infantry battalions. The MOD have a barracks and H/Q, based at Merrion. Between 1961 and 1996 the Range was also used by Tank Battalions of the German Army as part of a reciprocal arrangement for British Units using Ranges in Germany. The Range is now widely used for Small Arms live firing and for Dry Training. At the eastern end of the Range, the Royal Navy lease part of the land as a separate training area, for mainly helicopter based activities.

Two small sections on the coast, with high conservation, historic, landscape and recreational value, are leased from the MOD by the Pembrokeshire Coast National Park Authority. This includes a car park near the Elegug Stacks a small section of heath, cliff-top grassland and cliff-land as far as mean high water; St Govan’s chapel plus car park (including adjacent cliff-land and steps down to the Chapel). PCNP also lease a small area of land at Flimston, including the derelict Farmhouse and buildings (See Appendix 11). The foreshore is owned by the Crown.

The long-established tradition of utilising the coastal downland as rough grazing for sheep and cattle continues. Within the Brownslade and Linney dunes this is augmented by an important semi-natural rabbit population, introduced in the Middle Ages. The bulk of the grazing occurs between approximately mid November and early May, when about 12,000 sheep are brought to Castlemartin from hill-land by Preseli graziers, a practice which first commenced in the early 1950s. Up to several hundred cattle also regularly graze the Ranges, particularly in autumn/early winter, but in the eastern part of the Range they are present most of the year.

A large tract of dunes within Brownslade and Linney Burrows were being commercially quarried for sand by a private contractor, under the terms of a licence from the MOD. These activities were beginning to impinge upon internationally important SSSI nature conservation features. By 1996 agreement was reached to cease quarrying activities.

Present conservation management is aided by a Range Recording and Advisory Group (RRAG). Membership includes officers/personnel from MOD, CCW, PCNP, Cambria Archaeology, National Trust and Wildlife Trust West Wales.

## **1.4 NATURE CONSERVATION LEGISLATION**

### **1.4.1 INTERNATIONAL LEGISLATION**

#### **1.4.1.1 EC Birds Directive**

In 1979 the European Union took its first steps to protect habitats and species with the introduction of the Bird's Directive (Directive 79/409/EEC on the conservation of wild birds). The Birds Directive protects all wild birds and requires Member States to designate Special Protection Areas (SPAs) for rare and migratory bird species.

In recognition of the fact that migratory birds travel many thousands of miles and are dependant on a number of stopping places, an international network of protected sites has been established.

#### **1.4.1.2 EC Habitats Directive**

In May 1992 the European Union adopted the Habitats Directive (Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora). The Habitats Directive aims to maintain the rich diversity of Europe's wildlife by protecting a series of vulnerable habitats, species and plants - to promote the maintenance of biodiversity taking account of economic, social; cultural and regional requirements.

Each Member State must compile a list of areas, Special Areas of Conservation (SACs) containing the habitat types and species listed in the Directive. The Habitats Directive has been implemented in Great Britain by the Conservation (Natural Habitats) Regulations 1994. The Regulations build on existing domestic law (on land, SACs are selected from areas which are already designated as Sites of Special Scientific Interest) adding duties for all statutory authorities to act in accordance with the Directive. This includes Government Ministers and Departments including the Ministry of Defence, local authorities and statutory undertakers.

#### **1.4.1.3 Natura 2000**

Special Protection Areas and Special Areas of Conservation in Wales are identified by CCW in conjunction with the UK Joint Nature Conservation Committee. SPAs are designated by the Secretary of State for Wales. SACs have been chosen by the UK Government and a list of sites has been forwarded to the European Union.

SPAs, together with SACs, will contribute to a European Union network of protected sites to be known as "Natura 2000" (a requirement of the European Directive).

The intention is to give the Natura 2000 series strong protection. In the UK, this will be achieved through the SSSI system. On land, CCW will continue to support SPA and SAC land management for the benefit of wildlife, and will place a high priority on encouraging land owners and occupiers to work in partnership, where appropriate, preparing management plans specifically designed for the site or integrated with other plans (as in the case with the ILMP) to maintain the SAC and SPA in prime condition.

At sea, the Directive will provide a major new opportunity for protecting the most valuable parts of our marine natural heritage, through the designation of marine SAC. The seas and coastal waters around Wales are an exceedingly rich habitat for a wealth of plants and animals.

A plan or project affecting a SAC or SPA will only be granted consent if there are no alternative solutions and it must be carried out for imperative reasons of over-riding public interest. Even then environmental compensation measures must be taken to ensure that the overall coherence of Natura 2000 is protected.

## 1.4.2

## UK LEGISLATION

In UK legislation, the National Parks and Access to the Countryside Act 1949, and the Wildlife and Countryside Act 1981 (As Amended) are key domestic statutory instruments in securing the protection and enhancement of Wales' natural heritage. The Government's nature conservation policies have been implemented mainly through the latter act, which provides for the protection of endangered species of animals and plants and for the protection and management of important habitats. It does this through a series of Sites of Special Scientific Interest (SSSIs) supplemented by special protection for named species (listed in schedules).

### 1.4.2.1 Sites of Special Scientific Interest (SSSI)

SSSI is the term used to denote an area of land or water (not including areas of sea below Mean Low Water Mark) of special interest by virtue of the wildlife habitats, plants and animals, geological or physiographical features that it sustains.

*Primary features* are features (habitats and species, geological and geomorphological structures) for which the SSSI has been selected as being of national or international importance.

*Secondary features* are those other features of nature conservation importance which will all be of local significance, whilst some may be of national importance even though not qualifying as primary features.

SSSI cover over 10% of the land area of Wales and in Pembrokeshire range from tracts of upland such as Mynydd Preseli; woodlands, as found in the Gwaun Valley; sea cliff grasslands like those of Castlemartin and islands like Skomer, Skokholm and Ramsey. Most are in private ownership, although some are owned and managed by local wildlife trusts or other conservation bodies, and nearly all of these sites could not be protected or maintained without the co-operation of the individual landowner or occupier.

In Wales SSSI are notified by the Countryside Council for Wales the statutory organisation for countryside matters. Notification of a site as an SSSI under the Wildlife & Countryside Act 1981 forms a statutory process, and CCW must notify any owner and occupier about the exact location and the features of special interest of the SSSI.

- Owners and occupiers must give CCW four months' notice in writing if they intend to carry out, or cause or permit to be carried out, any operation listed in the notification by CCW as likely to damage the special interest of the site.
- Owners and occupiers must specify the nature of the operation and the land on which it is to be carried out. This notice should be sent to the address given on the notification documents, in this case the local office at Haverfordwest.

The purpose of the period of notice is to give time for CCW to consider the implications of the proposal and to discuss any modifications which would avoid damage to the wildlife or geological interest of the site, for example changing the nature, timing or extent of the operation. Where damage is unavoidable, CCW will not normally consent to the proposal but may wish to offer the owner or occupier a management agreement which will protect the special interest.

There are two statutory exemptions to this legal requirement: if the operation is an emergency (in which case CCW must be informed as soon as practicable) or if it is authorised by a planning permission granted on application to the local planning authority.

Owners and occupiers should advise their employees and any contractors of the existence of SSSI to avoid them damaging the site unknowingly.

#### 1.4.2.2 Scheduled Species

The principle enactments in the United Kingdom national law for the protection of wildlife are the Wildlife and Countryside Act 1981 (as amended) and the Conservation of (Natural Habitats) Regulations 1994.

Part I of the Wildlife and Countryside Act 1981 provides statutory protection for wildlife, with specific provisions for the protection of birds, animals and plants. The approach taken by the 1981 Act is to establish blanket criminal offences for interfering with specified wildlife subject to a list of exceptions and defences covering certain situations. In many instances these exceptions are only acceptable where a licence is obtained from the appropriate authority.

The strongest provisions of the 1981 Act relate to the protection of wild birds as well as other animals and plants specifically listed in the appropriate schedules to the Act. These are "scheduled species" to which specific reference is made in the plan.

<b>BIRDS</b>	It is an offence under Section 1 of the Act to intentionally: a) kill, injure or take a bird; b) take, damage or destroy a nest that is being used; c) take or destroy any eggs.
<b>PLANTS</b>	It is an offence, under Section 13, to intentionally pick (including seed collecting), uproot or destroy any wild plant listed in Schedule 8. For other plants (not in Schedule 8), it is an offence for any unauthorised person to uproot them.
<b>OTHER ANIMALS</b>	It is an offence, under Section 9, to kill, injure or take any wild animal listed in Schedule 5, or to damage, destroy or obstruct access to any structure or place used for shelter or protection by scheduled species.
<b>INTRODUCTIONS</b>	It is an offence under Section 14 to release or allow to escape, any wild animal of a kind not ordinarily resident or regularly visiting Great Britain, or any animal Listed in Schedule 9. These are mainly non-native species. It is also an offence to plant or cause to grow any wild plant listed in Schedule 9.

Certain species are given protection over and above that provided by the above measures.

<b>BATS</b>	All bats are included in Schedule 5 of the 1981 Act, and it is accordingly an offence to disturb them in a place of shelter or to interfere with such a place.
<b>BADGERS</b>	It is an offence under the Badgers Act 1973 Section 1 to wilfully kill, injure or take a badger, or to be in possession of a dead badger or badger products.  The Badgers Act 1991 amended the 1973 Act to cover damage, obstruction or disturbance of a badger sett, and makes it an offence for a dog to enter a sett. The Protection of Badgers Act 1992 consolidates the 1973 and 1991 Acts.
<b>BIRDS</b>	A number of birds are listed under Schedule 1 of the Act, and it is an offence to kill, take or disturb whilst nesting or in the nest any of the listed species. It is also an offence to take eggs or anything derived from these species. This also applies to those birds listed in Schedule 2 during the close season.
<b>SEALS</b>	It is an offence to kill, injure or take a seal during the close season (Conservation of Seals Act 1970) which for grey seals is September to December.

#### 1.4.3 BIODIVERSITY

The United Kingdom is one of 150 Nations which committed themselves to the prescriptions of sustainability and the conservation of biological diversity (biodiversity), following the 1992 Earth summit in Rio. In response to its international commitment to the conservation of biodiversity, the UK Government set up the UK Biodiversity Steering Group, which published the UK Biodiversity Action Plan (UK BAP) in 1994. The UK BAP sets national objectives and targets for the conservation of individual habitats and species, and identifies actions that are required to meet those targets. It also provides the strategic framework for local biodiversity action in the UK. Costed UK Action Plans have been produced/are being produced for key habitats and species that have been given priority in a national context.

Local Biodiversity Action Plans (LBAPs) are the principal mechanism by which the UK BAP can be put into effect at the local level. The Pembrokeshire LBAP provides the framework for local action that will contribute to the delivery of national targets for key habitats and species, and that will deliver targets for habitats and species of local importance but which do not feature in the UK BAP. The production and implementation of the Pembrokeshire LBAP is being coordinated by the Pembrokeshire Biodiversity Partnership, comprising (amongst others) Pembrokeshire County Council (PCC), Countryside Council for Wales (CCW), Environment Agency Wales (EA), National Trust (NT), Pembrokeshire Coast National Park (PCNP), Royal Society for the Protection of Birds (RSPB), Wildlife Trust west Wales (WTWW), Forestry Commission (FC), Country Land-owners Association (CLA), Farmers Union of Wales (FUW) and National Farmers Union (NFU). The partnership will work closely with other areas of the public and private sector, eg the Ministry of Defence (MOD); industry, to achieve the objectives of the LBAP. Initiatives such as the ILMPs for military training areas are a crucial part of Action for Biodiversity at local and national levels.

The habitats and species for which a UK Action Plan and/or a Local Action Plan, have been or will be prepared, and which occur within the land covered by this ILMP, have been identified in the preparation of this plan. The objectives and targets set in the ILMP reflect UK and local BAP targets for the habitats and species concerned. It should be noted that some of these habitats and species, whilst having been labelled as secondary features still warrant special treatment.

The MOD has committed itself to support the UK Biodiversity Action Plan, as stated within the Government's response to the Biodiversity Steering Group's report. It has agreed to attempt to meet obligations of the official actions placed on upon it, as identified in the individual species and habitat action plans, within the constraints of both the operational needs and the financial restrictions of the estate.

#### 1.4.4 GEOLOGICAL CONSERVATION

Areas identified during the *Geological Conservation Review*, which was carried out under the direction of the Nature Conservancy Council (NCC 1990; Ellis *et al.*, 1996) as a review of the current state of knowledge of the "KEY" Earth Science Sites in Great Britain, are at least nationally, and sometimes internationally, important. They are referred to as GCR sites and are covered by the legislation which applies to Sites of Special Scientific Interest (SSSI). There are three overlapping GCR sites within the Castlemartin Range (see Section 1.2.3.1 and primary feature objectives for CG.P1, CG.P2 and CG.P3).

A lower tier of geological interest is covered by *Regionally Important Geological Sites* (RIGS). The evaluation of potential RIGS within Pembrokeshire is currently underway, and CCW's Area Earth Scientist has listed and assessed the importance of secondary features within Castlemartin Range (see Section 1.2.3.3). These sites will be considered in the management plan for Pembrokeshire Coast National Park and the Unitary Development Plan for Pembrokeshire. Even those exposures of rock or unconsolidated sediments which do not merit RIGS status should not be dismissed as worthless, since it is now c. 100 years since the Geological Survey mapped the area, and any revision will be heavily dependant on the availability of suitable exposures.

The issue of access to geological sites is considered in Appendix 10. As a general principle provisions for access are desirable, provided that this can be achieved **without detriment to geological or biological features**.

#### **1.4.5                    DECLARATION OF INTENT BETWEEN MOD AND CCW**

A “Declaration of Intent” has been signed between the MOD and CCW . This is an agreement that, within the constraints of national defence requirements, full account will be taken of landscape and wildlife conservation, access and recreation opportunities within the defence estate.

#### **1.4.6                    MEMORANDUM OF UNDERSTANDING, BETWEEN THE MOD AND THE DEPARTMENT OF THE ENVIRONMENT, TRANSPORT AND THE REGIONS (DETR)**

As a result of a significant number of MOD Sites of Special Scientific Interest (SSSI) being chosen as candidate Special Areas of Conservation (cSAC) the MOD has negotiated a Memorandum of Understanding (MOU) with the then Department of the Environment (now DETR). This was signed at ministerial level and details five practical measures.

- I.        Joint management plans agreed between the MOD and Statutory Bodies documenting the types of MOD activities to be carried out on the SAC.
- ii.      MOD will call upon relevant Statutory Body for advice in responding to questions or representations from outside bodies in relation to SACs. MOD may call upon the Statutory Body to explain conservation issues directly.
- iii.     MOD and the relevant Department (DOE etc) will liaise on the Governments collective position, if a challenge to MOD’s activities on an SAC leads to reference to the European Commission or Courts. In such case the DOE will take the lead in representing the MOD’s position.
- iv.      The relevant Department will advise MOD in cases where a MOD plan or project has to proceed on grounds of overriding public interest.
- v.       MOD can appoint independent environmental consultants (ie in addition to the Statutory Bodies) to undertake a fuller assessment to judge whether an MOD project will adversely affect the integrity of the site.



TABLE 1:

TABLE

CASTLEMARTIN RANGE - ILMP NATURE CONSERVATION COMPONENT - SUMMARY

CODE	FEATURE	INTERNATIONAL DESIGNATION		UK LEGISLATION							UK BIODIVERSITY			LOCAL BIODIVERSITY
		SPA	cSAC	SSSI	SCHEDULED SPECIES	RED DATA LIST/JNCC LISTED SPECIES	NATIONALLY SCARCE SPECIES	LOCALLY NOTABLE SPECIES	GCR	RIGS	LISTED HABITAT	PRIORITY SPECIES	UK PLAN/ STATEMENT PREPARED	INCLUDED IN DRAFT LBAP
CB. P1	Maritime Cliff crevice communities		✓	✓							✓		✓ (maritime cliff & slope)	✓ (maritime cliff & slope)
CB. P2	Maritime Grassland		✓	✓							✓		✓ (maritime cliff & slope & calcareous grassland)	✓ (maritime cliff & slope & calcareous grassland)
CB. P3	Calcareous heath		✓	✓							✓		✓ (lowland heath & maritime cliff & slope)	✓ (lowland heath & maritime cliff & slope)
CB. P4	Sand dune habitats			✓							✓		✓	✓
CB. P6	Swamp communities			✓							✓ (part)		✓ (part)	✓
CB. P6	Intertidal habitats & communities			✓										✓
CB. P7	Nationally scarce vascular plants assemblage			✓			✓							
CB. P8	Seabird population (guillemot, razorbill, kittiwake)			✓				✓						✓
CB. P9	Small Restharrow			✓	✓	✓								✓
CB. P10	Stackpole sea lavender			✓		✓						✓	✓ (endemic spp)	✓
CB. P11	Goldilocks aster			✓		✓								✓
CB. P12	Scrambled egg lichen			✓		✓								✓
CB. P13	Petalwort			✓			✓					✓	✓	✓
CB. P14	Chough	✓		✓	✓	✓								✓
CB. P15	Peregrine			✓	✓									✓
CB. P16	Greater Horseshoe Bat		✓	✓	✓	✓						✓	✓	✓
CB. P17	Hairy Dragonfly			✓			✓							✓
CB. P18	Scarce blue-tailed damselfly			✓			✓							✓
CB. P19	Silver-studded blue butterfly			✓			✓					✓	✓	✓
CB. P20	A Strandline beetle			✓			✓							✓
CB. UP1	Neutral grassland			(✓)							✓		✓	✓
CB. UP2	Shrill Carder Bee			(✓)			✓					✓	✓	✓

CODE	FEATURE	INTERNATIONAL DESIGNATION		UK LEGISLATION							UK BIODIVERSITY			LOCAL BIODIVERSITY
		SPA	cSAC	SSSI	SCHEDULED SPECIES	RED DATA LIST/JNCC LISTED SPECIES	NATIONALLY SCARCE SPECIES	LOCALLY NOTABLE SPECIES	GCR	RIGS	LISTED HABITAT	PRIORITY SPECIES	UK PLAN/ STATEMENT PREPARED	INCLUDED IN DRAFT LBAP
CB. UP3	Lapwing							✓						✓
CB. S1	Breeding birds assemblage				✓ (Barn owl)	✓(Some)		✓				✓(Some)	✓(Some)	✓(Some)
CB. S2	Migratory waders & gulls assemblage							✓						✓ (LBB Gull)
CB. S3	Butterflies assemblage							✓						
CB. S4	Dragonfly assemblage							✓(one)						
CB. S5	Lesser horseshoe bat				✓		✓					✓	✓	✓
CB. S6	Grey seal				✓ (close season only)		✓							✓
CB. S7	European otter				✓			✓				✓	✓	✓
CB. S8	Badger				✓									
CB. S9	Brown hare							✓					✓	✓
CG. P1	Freshwater West (south) Variscan Structures			✓					✓					
CG. P2	Blucks Pool - Bullslaughter Bay Dinantian of England & Wales			✓					✓					
CG. P3	South Pembroke Cliffs Coastal Geomorphology			✓					✓					
CG. UP1	Tertiary Clays (The Flimston Clay)								(✓)	✓				
CG. S1	Old Red Sandstone									✓				
CG. S2	Variscan Structures									✓				
CG. S3	Karst Landforms & Cave Deposits									✓				
CG. S4	Surface Drainage & the Limestone Aquifer									✓				
CG. S5	Coastal Geomorphology									✓				
CG. S6	Frainslake - Brownslade dune system									✓				
CG. S7	Carboniferous Limestone													
CG. S8	'Submerged Forest'													

Codes:

C = Castlemartin      B = Biological Feature      G = Geological Feature  
P1 = Primary feature 1      UP1 = unconfirmed Primary feature  
S1 = Secondary feature 1      12th January 2000

## SECTION 2: OBJECTIVES

### 2.1 Primary & Unconfirmed Primary Features

To ensure that all primary and unconfirmed primary nature conservation features at Castlemartin Range are in **FAVOURABLE CONDITION**.

More detailed and precise objectives for each of the primary and unconfirmed primary features in turn are listed in Appendices 1 and 2. It is not practical to tabulate or otherwise summarise the information.

### 2.2 Secondary Features

To ensure that all secondary features which are subject to UK or Local Biodiversity Action Plans, and those which are listed in the various Schedules of the Wildlife and Countryside Act 1981 (As Amended) are in **FAVOURABLE CONDITION**.

To ensure that other secondary features not subject to the above are in favourable condition where possible.

More detailed and precise objectives for each of the secondary features in turn are listed in Appendix 3. It is not practical to tabulate or otherwise summarise the information.

## SECTION 3: ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES

THIS SECTION SHOULD BE READ IN CONJUNCTION WITH SECTION 4 TO IDENTIFY THE LINKS BETWEEN CONDITION OF A FEATURE AND THE FACTORS WHICH INFLUENCE IT.

### 3.1 PRIMARY & UNCONFIRMED PRIMARY FEATURES

- At the time of writing this plan it is considered that 18 out of 27 confirmed and unconfirmed primary SSSI features are in favourable condition<sup>18</sup>, based on survey or monitoring, mostly undertaken during the last few years. See the box below and table 2.
- The condition of the first five features (terrestrial vegetation communities) listed in the box is largely based on examination of NVC survey quadrat data. Whilst a good deal of this information has been collected during the last 2 to 5 years, it is recognised that some sources of original data are now more than five years old. A programme of monitoring is thought desirable to be sure that these features are maintaining favourable condition status.
- Most of the species assemblage/single species features have been more regularly monitored. There is quite good recent data for most rare or scarce plants, chough, seabirds, peregrine, greater horseshoe bat, silver-studded blue and strandline beetle, for example.
- Primary and unconfirmed Primary Features - currently considered to be in Favourable Maintained Condition:

Feature	Survey/monitoring History
Maritime cliff crevice communities	Part 1987, (Cooper); part 1995 (Wallace and Prosser; part 1998 (ITE)
Maritime grassland	Part 1987, (Cooper); part 1995 (Wallace and Prosser; part 1998 (ITE)
Calcareous heath	Part 1995 (Wallace and Prosser; part 1998 (ITE)
Sand dune habitats	Part 1991 (Huckbody et al); part 1998 (ITE)
Swamp communities	Part 1991 (Huckbody et al); part 1998 (ITE)
Maritime littoral habitats & communities	CCW Phase 1 survey, 1997
Nationally scarce vascular plants	Part post-Sea Empress (Evans 1998; part CCW and SPRRAG 1996 to 1999)
Seabird population	Colonies and study-plots counted annually since 1978 (CCW & SPRRAG)
Stackpole sea-lavender	August 1999 - checked by <i>Limonium</i> experts & CCW staff
Goldilocks aster	Part post Sea Empress (Evans 1998; part CCW & SPRRAG 1996 to 1999)
Chough	Breeding & non-breeding population annually since 1978 (CCW & SPRRAG)
Peregrine	Breeding population annually since 1978 (CCW and SPRRAG)
Greater horseshoe bat	Hibernacula in Range East sea-caves annually by CCW & local bat workers
Silver-studded blue butterfly	Since 1996 (SPRRAG); population surveyed in 1999 (CCW contractor)
Strandline beetle <i>Nebria complanata</i>	Annually since 1997 by SPRRAG members
Variscan Structures at Freshwater West	Archive B&W photography 1991- detailed description 1992 (CCW)
Dinantion (Blucks Pool to Bullslaughter Bay)	Archive B&W photography 1991- detailed description in pro.1998 - (CCW)
Geomorphology (Wash to St Govan's Chapel)	Archive B&W photography 1991- detailed description 1997 (CCW)

<sup>18</sup> See Glossary

- Of the remaining nine primary or unconfirmed primary features, four are considered to be in an unfavourable condition and five in an unknown condition (see box below).

Feature	Condition	Comments
Small retharrow	Unfavourable no change	Recorded by CCW in 1999. The population is very small, and vulnerable. The stature of the flowering plants has not attained the vigour of nearby apparently healthy populations at Stackpole SSSI.
Scrambled egg lichen <i>Fulgensia fulgens</i>	Unfavourable declining	Appears to have declined in extent and possibly in distribution in the western most part of its Range at Brownslade Burrows. It has maintained healthy populations elsewhere. There are also concerns over recent declines in an associated rabbit population in the dunes.
Lapwing	Unfavourable declining	The small population is still trying to breed each year, but is only just hanging on. Without help it is likely to remain in a fairly parlous state.
Tertiary clays of Flimston area	Unfavourable declining	Affected by either developing scrub, which is obscuring the feature, or have been damaged by the deposition of extraneous waste materials
Hairy dragonfly	Unknown	Insufficient surveillance or monitoring information. Further work is needed to determine condition.
Scarce blue-tailed damselfly	Unknown	Insufficient surveillance or monitoring information. Further work is needed to determine condition.
Petalwort	Unknown	Insufficient surveillance or monitoring information. Further work is needed to determine condition.
Neutral grassland	Unknown	Still some uncertainty about the NVC communities involved, their overall distribution, extent & quality - in relation to scrub & other features.
Shrill carder bee	Unknown	A large population was only discovered in 1999. Further research is needed to determine population distribution, extent and trends.

### 3.2 SECONDARY FEATURES

- Of the 17 secondary features 11 of these are considered to be in a favourable maintained condition, based on the most recent information available. (See the box below and Table 2).
- Secondary Features - considered to be in Favourable Maintained Condition:**

Feature	Survey/monitoring History
Migratory Waders & gulls assemblage	Counted annually since 1996 for WeBS (SPRRAG & MOD staff)
Butterfly assemblage	1995 -1999: <i>Butterflies for New Millennium Atlas</i> records (CCW & SPRRAG)
Dragonfly assemblage	Annual casual recording of assemblage species presence by SPRRAG
Grey seal	Pup estimates since 1984; annually since 1996 (SPRRAG & MOD staff)
European otter	Annual casual recording of presence by SPRRAG and MOD staff
Badger	Setts have been mapped in last 5 years by MOD staff
Old Red Sandstone rocks at Great Furzenip	Described Williams <i>et al.</i> , 1982
Variscan Structures Blucks Pool to the Wash	Not yet documented (preliminary observations by CCW Area Earth Scientist)
Coastal geomorphology Blucks pool to Wash	Not yet documented (preliminary observations by CCW Area Earth Scientist)
Frainslake - Brownslade dune system	Not yet documented (preliminary observations by CCW Area Earth Scientist)
Submerged Forest	Not yet documented (preliminary observations by CCW Area Earth Scientist)

- Of the remaining six secondary features, three are considered to be in an unfavourable condition and three in an unknown condition (see box below).

Feature	Condition	Comments
Brown hare	Unfavourable no change	Its population is very small (and may in fact be declining). Its future may very much be interdependent on habitat quality outside the range.
Karst Landforms & Cave Deposits	Unfavourable declining	Not yet documented (preliminary observations by CCW Area Earth Scientist). Affected by either developing scrub, which is obscuring the feature, or have been damaged by the dumping of extraneous waste materials
Carboniferous Limestone rocks (inland exposures)	Unfavourable declining	Not yet documented (preliminary observations by CCW Area Earth Scientist). Affected by either developing scrub, which is obscuring the feature, or have been damaged by the deposition of extraneous waste materials
Breeding bird assemblage	Unknown	Some species have been better recorded than others. Further work is needed to determine distribution, extent and population size.
Lesser horseshoe bats	Unknown	There has been no recent surveillance - though access to at least one potential roost has been lost at Trenorgan.
Limestone Aquifer	Unknown	There are insufficient data to determine water quality baseline or trends. Further work is needed to determine condition.

**TABLE TWO, WHICH FOLLOWS, SUMMARISES THE CONTENTS OF EACH OF THE FEATURES APPENDICES. PLEASE REFER TO THESE APPENDICES WHEN INTERPRETING THE INDIVIDUAL LINES/COLUMNS OF THE TABLE.**

TABLE 2:

## CASTLEMARIN RANGE - ILMP NATURE CONSERVATION COMPONENT

## ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES

CODE	FEATURE	FAVOURABLE MAINTAINED	UNFAVOURABLE NO CHANGE	UNFAVOURABLE DECLINING	UNKNOWN
CB. P1	Maritime cliff crevice communities	—			
CB. P2	Maritime grassland	—			
CB. P3	Calcareous heath	—			
CB. P4	Sand dune habitats	—			
CB. P5	Swamp communities	—			
CB. P6	Maritime littoral habitats & communities	—			
CB. P7	Nationally scarce vascular plants	—			
CB. P8	Seabird population	—			
CB. P9	Small retharrow		—		
CB. P10	Stackpole sea-lavender	—			
CB. P11	Goldilocks aster	—			
CB. P12	Scrambled egg lichen			—	
CB. P13	Petalwort	—			—
CB. P14	Chough				
CB. P15	Peregrine				
CB. P16	Greater horseshoe bat				
CB. P17	Hairy dragonfly				—
CB. P18	Scarce blue-tailed damselfly				—
CB. P19	Silver-studded blue butterfly				
CB. P20	Strandline beetle				
CG. P1	Variscan structures at Freshwater West	—			
CG. P2	Carboniferous Limestone (Dinarian) rocks (Blucks Pool to Bullslaughter Bay)	—			
CG. P3	Coastal geomorphology between the Wash & St Govan's Chapel	—			
<b>Totals for Primary Features</b>		<b>18</b>	<b>1</b>	<b>1</b>	<b>3</b>
CB. UP.1	Neutral grassland				—
CB. UP.2	Shrill carder bee				—
CB. UP.3	Lapwing			—	
CG. UP1	Tertiary clays of the Flimston area			—	
<b>Totals for Unconfirmed Primary Features</b>				<b>2</b>	<b>2</b>

CODE	FEATURE	FAVOURABLE MAINTAINED	UNFAVOURABLE NO CHANGE	UNFAVOURABLE DECLINING	UNKNOWN
CB. S1	Breeding bird assemblage				–
CB. S2	Migratory Waders & gulls assemblage	–			
CB. S3	Butterfly assemblage	–			
CB. S4	Dragonfly assemblage	–			
CB. S5	Lesser horseshoe bat				–
CB. S6	Grey seal	–			
CB. S7	European otter	–			
CB. S8	Badger	–			
CB. S9	Brown hare		–		
CG. S1	Old red sandstone rocks Freshwater west to Frainslake sands	–			
CG. S2	Variscan structures Blucks pool to the Wash	–			
CG. S3	Karst landforms incl. cave systems			–	
CG. S4	Surface drainage and the carboniferous limestone aquifer				–
CG. S5	Coastal geomorphology Blucks pool to the Wash	–			
CG. S6	Frainslake - Brownslade dunes	–			
CG. S7	Carboniferous limestone (Dinantian) rocks inland areas			–	
CG. S8	Submerged forest	–			
<b>Totals for Secondary Features</b>		<b>11</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>TOTALS FOR ALL FEATURES</b>		<b>29</b>	<b>2</b>	<b>5</b>	<b>8</b>

Codes: C = Castlemartin  
G = Geological Feature  
B = Biological Feature  
P1 = Primary feature 1  
UP1 = unconfirmed Primary feature 1  
S1 = Secondary feature 1



## SECTION 4: FACTORS AFFECTING THE OBJECTIVES

- *TABLE THREE, WHICH FOLLOWS, SUMMARISES THE CONTENTS OF EACH OF THE FEATURES APPENDICES. PLEASE REFER TO THESE APPENDICES WHEN INTERPRETING THE INDIVIDUAL LINES/COLUMNS OF THE TABLE. IT SHOULD ALSO BE NOTED THAT WHERE PLUS AND MINUS SIGNS ARE SHOWN IN TABLE 3 THIS MEANS THAT BOTH POSITIVE AND NEGATIVE IMPACTS ARE POSSIBLE.*

### 4.1 BACKGROUND

- An attempt has been made to categorise the factors which influence the features, either positively, negatively, or in combination by ILMP subjects (ie Military Use, Agricultural and Estate management, Access and Recreation, Natural processes and other factors and Archaeology). It is hoped that this will assist in the deconflicting process. Full details are in Appendix 1 but Table 3 and the following text summarises the situation.
- **Military Use** - activities which are directly related to the military, eg any type of military training.
- **Estate Management and Agriculture** - operations which are indirectly linked to the use of the range for Military purposes such as mowing in some areas, or linked to agricultural or sporting use of the land eg grazing, management for game, woodland management, scrub control etc.
- **Access and Recreation** - recreational activities which occur/ or have the potential to occur on the Castlemartin Range, and general access to the ranges.
- **Natural Factors and other processes** - covers natural factors such as climate and water table, pollution, and the ecological/geological requirements for the feature, and also activities/processes which do not fit into any of the above categories.
- **Archaeology** - covers any Scheduled Ancient Monuments, other archaeological sites and the historic landscape of the site.
- **Landscape** - Whilst this is unlikely to influence the nature conservation features directly, indirect impact may be possible through a desire to remove or dispose of eyesores.

### 4.2 PRIMARY & UNCONFIRMED PRIMARY FEATURES

- **Military use** - is generally seen as beneficial, mainly because of the resulting lack of intensive farming and also, the restrictions it imposes on access and recreation in certain areas and at certain times which is thought to benefit many features. However military activities potentially cause disturbance to conservation features (eg use of helicopters and increased dry training in summer near breeding birds in the special protection area) and possible erosion, or despoliation of large areas or deposition of potentially harmful extraneous litter.
- **Estate Management and Agriculture** - many of the primary feature habitats, communities and species require assistance from current or traditional estate/land management practices - notably grazing, and scrub control etc. Balanced against this are the potentially destructive forces of more intensive management, or use of modern agri-chemicals which, if they were used, could be extremely damaging to a number of features.
- **Access and Recreation** - disturbance to primary features, from current or future developing access and recreational activities, is seen as an important issue. Already very many different/wide-ranging activities occur, in an area, which has high landscape/scenic/physical appeal - and is served by three car parks. These provide access to the Pembrokeshire coast national trail, which passes through Range East.
- A managed approach to control access to the ranges (driven largely by military training purposes) is seen as being beneficial to several nature conservation features - especially

during the busy summer months when the area receives more intensive visitor pressure, including use by army cadets.

- Potentially negative factors largely arise from “popular activities” such as, for example, cliff climbing and caving.
- The appointment of a “Castlemartin coast/South Pembrokeshire Seasonal Ranger” is seen as being highly beneficial - for maintaining an important interface and link between the legally protected, statutory nature conservation, features and the numerous and potentially increasing access and recreational activities.
- **Natural Factors and other processes** - a large number of features are finally balanced between the positive effects of natural processes (for example, beneficial effects of natural erosion processes; the large size of the area - which enables it to support and sustain a considerable amount of biodiversity in a wide range of niches) and the potentially negative aspects of naturally destructive forces (including weather or potentially longer term climatic changes).
- The potential impacts of marine pollution are also seen as at least short to medium term threats to several coastal features.
- **Archaeology** - these factors are generally likely to be beneficial to nature conservation features where grazing, for example, probably adequately maintains both interests/features. However, archaeological excavation and maintenance of historically important structures could particularly damage a few of the more fragile communities and species.

#### **4.3 SECONDARY FEATURES**

- In respect of access and recreation, agricultural/estate management and natural factors, the situation is generally similar to primary features. However, military factors appear to be a much more of a negative issue for several features. This mainly stems from potential problems in gaining access to geological features - where access for research/study is considered to be an important aspect of ensuring that feature condition is being maintained. Archaeology, on the other hand, is seen to be mostly beneficial, (or to have no significant positive or negative effect either way) to many of the secondary features.
- *THIS SECTION SHOULD BE READ IN CONJUNCTION WITH SECTION 3 TO IDENTIFY THE LINKS BETWEEN CONDITION OF A FEATURE AND THE FACTORS WHICH INFLUENCE IT.*

**TABLE 3: CASTLEMARTIN RANGE - ILMP NATURE CONSERVATION COMPONENT - FACTORS AFFECTING OBJECTIVES**

THIS TABLE SUMMARISES THE CONTENTS OF EACH OF THE FEATURES APPENDICES. PLEASE REFER TO THESE APPENDICES WHEN INTERPRETING THE INDIVIDUAL LINES/COLUMNS OF THE TABLE. IT SHOULD ALSO BE NOTED THAT WHERE PLUS AND MINUS SIGNS ARE SHOWN THIS MEANS THAT BOTH POSITIVE AND NEGATIVE IMPACTS ARE POSSIBLE.

CODE	FEATURE	MILITARY USE	AGRICULTURE AND ESTATE MANAGEMENT	ACCESS AND RECREATION	NATURAL FACTORS AND OTHER PROCESSES	ARCHAEOLOGY
CB. P1	Maritime cliff & crevice communities	-		+/-	+/-	
CB. P2	Maritime grassland	+/-	+/-	+/-	+/-	+/-
CB. P3	Calcareous heath	+/-	+/-		+/-	+/-
CB. P4	Sand dune habitats	+/-	+/-	-	+/-	+/-
CB. P5	Swamp communities	+/-	+/-		+/-	
CB. P6	Maritime littoral communities	-		-	+/-	
CB. P7	Vascular Plants assemblage	+/-	+/-	+/-	+/-	+/-
CB. P8	Seabird population	+/-		+/-	-	
CB. P9	Small restharrow	+/-	+/-	-	+/	
CB. P10	Stackpole sea-lavender	+/-		-	+/-	
CB. P11	Goldilocks aster	+/-	+/-	-	+/-	-
CB. P12	Scrambled egg lichen	+/-	+/-	-	+/-	-
CB. P13	Petalwort	+/-	+/-	-	+/-	-
CB. P14	Chough	+/-	+/-	+/-	+/-	+/-
CB. P15	Peregrine	+/-	+/-	+/-	+/-	
CB. P16	Greater horseshoe bat	+/-	+/-	+/-	+/-	+/-
CB. P17	Hairy Dragonfly	+/-	+/-	-	+/-	
CB. P18	Scarce blue-tailed damselfly	+/-	+/-	-	+/-	
CB. P19	Silver-studded blue butterfly	+/-	+/-	-	+/-	+/-
CB. P20	Strandline beetle	+/-	-	+/-	+/-	
CG. P1	Freshwater West (south) Variscan structures	-		+	+/-	+
CG. P2	Dinantion Rocks between Blucks Pool - Bullslaughter Bay	+/-		+	+/-	+

CODE	FEATURE	MILITARY USE	AGRICULTURE AND ESTATE MANAGEMENT	ACCESS AND RECREATION	NATURAL FACTORS AND OTHER PROCESSES	ARCHAEOLOGY
CG. P3	Coastal geomorphology Wash to St Govan's Chapel	-	-	+	+/-	+
CB.UP 1	Neutral grassland	+/-	+/-		+/-	
CB.UP 2	Shrill carder bee	+/-	+/-		+/-	
CB.UP 3	Lapwing	+/-	+/-	-	+/-	
GG.UP 1	Tertiary Clays of the Flimston area	-	+/-	+	-	+
CB. S1	Assemblage of key breeding landbirds	+/-	+/-	-	+/-	
CB. S2	Assemblage of migratory coastal waders & gulls	+/-	+/-	-	+/-	
CB. S3	Assemblage of local butterflies	+/-	+/-	-	+/-	+
CB. S4	Dragonfly assemblage	+/-	+/-	-	+/-	
CB. S5	Lesser horseshoe bat	+/-	+/-	-	+/-	+/-
CB. S6	Atlantic grey seal	+/-		+/-	+/-	
CB. S7	European otter	+/-	+/-	-	+/-	
CB. S8	Badger	+/-	+/-	-	+/-	-
CB. S9	Brown hare	+/-	+/-	-	+/-	
CG. S1	ORS Freshwater West - Frainslake	-		+	+/-	
CG. S2	Variscan structures - Blucks Pool to the Wash	-		+	+/-	
CG. S3	Karst landforms & cave systems	-	+/-	+/-	-	
CG. S4	Surface drainage & limestone aquifer	+/-	+/-	+	+/-	
CG. S5	Coastal geomorphology - Blucks pool to the Wash	-		+	+/-	
CG. S6	Frainslake - Brownslade dune system	-		+	+/-	
CG. S7	Dinantian rocks in the inland areas of the Range	-	+	+/-	-	
CG. S8	Submerged forest	-		+	-	

Codes: C = Castlemartin  
G = Geological Feature  
B = Biological Feature  
P.1 = Primary feature 1  
UP.1 = Unconfirmed Primary feature 1  
S.1 = Secondary feature 1

- = Possible/actual negative impact  
+=Possible/actual positive impact  
+/- =Both positive & negative impacts

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## SECTION 5: PRESCRIPTIONS FOR MEETING OBJECTIVES

- **TABLE 4, WHICH FOLLOWS, SUMMARISES THE CONTENTS OF EACH OF THE FEATURES APPENDICES. PLEASE REFER TO THESE APPENDICES WHEN INTERPRETING THE INDIVIDUAL LINES/COLUMNS OF THE TABLE.**
- This is a crucial part of the whole plan process. The actions required to conserve the nature conservation features are listed. The details will need careful consideration and regular review before and during the implementation process under the aegis of the South Pembrokeshire Ranges Recording and Advisory Group (SPRRAG).
- Outline action plans are included in Appendix 1, for each feature in turn. Full project specification and associated monitoring and management specifications have not been presented at this stage of the ILMP process.
- Table 4 attempts to summarise the many prescriptions. All the features identified in the plan will require monitoring - eg population size, extent of population, occurrence of indicator species etc (details will be presented once project specifications have been produced).
- Some 23 broad management prescriptions are tabulated, most of which are considered important to maintain the 44 primary and secondary nature conservation features identified in this plan. Prominent among these is a need to maintain a range of existing practices, including for example, maintenance of seasonal mixed grazing, but several feature objectives show a need to consider and possibly reduce the use of anthelmintics in the grazing stock.
- Maintenance of the continuation of certain natural processes is also considered important for many features - including ensuring continued high water quality and minimising potential impacts of various forms of pollution. Prevention of the use of herbicides, and fertilisers, excessive erosion and build up of extraneous litter materials are considered to be significant in this regard.
- Allowing some natural vegetation structural development to take place will benefit a few important features, but conversely other features will also require a need to control competing vegetation growth (succession). Several features rely on allowing various natural geomorphological processes to continue. Whilst others need some help and human interference, including maintenance or construction of certain artificial situations and conditions. A small number of features may also require a measure of protection from predators.
- The objectives highlight a significant requirement to minimise or prevent disturbance to many of the features from various forms of human activities (including military and civilian activities, and visitor recreational pressures). The range of potentially disturbing activities involved is probably as large and diverse as the number of nature conservation features identified in the plan. However, they include the effects to the features in question from trampling/erosion; disturbance from physical human presence (eg walkers and climbers); potential pressures from various military and civilian vehicles and personnel; and disturbance from low-flying aircraft including helicopters.
- A high quality geographical information system (GIS) is needed to reduce the likelihood of damage or disturbance to key features, especially those that are highly localised.
- Maintenance of good communication, ie liaison between all parties, is viewed as vital. This is because of the wealth and complexity of the nature conservation features, the large size of the Range and the complexity of its training, access and recreation provision. Not forgetting its exceedingly important role in sustaining habitats, communities and species in a wider ("international", "national" and "local") biodiversity context.

TABLE 4.		CASTLEMARTIN RANGE – ILMP NATURE CONSERVATION COMPONENT PRESCRIPTIONS FOR MEETING OBJECTIVES											
CODE	FEATURE	MONITOR FEATURE	MONITOR HUMAN IMPACT & PREVENT DISTURBANCE	MONITOR & PREVENT EXCESSIVE EROSION	MONITOR & PREVENT EXCESSIVE LITTER	MONITOR & PREVENT POLLUTION MONITOR	PREVENT FERTILIZER/ HERBICIDE USE PREVENT	PREVENT DISTURBANCE FROM AIRCRAFT	CONTROL USE OF MILITARY & CIVILIAN VEHICLES	CONTROL SCRUB GROWTH CONTROL	CONTROL OF BURNING CONTROL	CONTROL INVASIVE PLANT SPECIES	CONTROL GROUND PREDATORS CONTROL
CB.P1	Maritime Cliff-crevice communities	Y	Y	Y	Y							Y	
CB.P2	Maritime grassland	Y		Y	Y		Y		Y	Y		Y	
CB.P3	Calcareous heath	Y		Y	Y		Y		Y	Y	Y	Y	
CB.P4	Sand dune habitats	Y	Y	Y	Y	Y	Y		Y	Y		Y	
CB.P	Swamp communities	Y			Y	Y	Y		Y	Y		Y	
CB.P	Maritime Littoral habitats	Y			Y	Y							
CB.P 7	Vascular plants assemblage	Y	Y	Y	Y	Y	Y		Y	Y		Y	
CB.P 8	Seabird population	Y	Y			Y		Y					
CB.P 9	Small retharrow	Y	Y	Y	Y		Y						
CB.P10	Stackpole sea-lavender	Y	Y		Y		Y						
CB.P11	Goldilocks aster	Y	Y	Y	Y		Y		Y				
CB.P12	Scrambled egg lichen	Y	Y	Y	Y		Y		Y				
CB.P13	Petalwort	Y	Y	Y	Y		Y		Y	Y		Y	
CB.P14	Chough	Y	Y					Y	Y	Y	Y		
CB.P15	Peregrine	Y	Y					Y					
CB.P16	Greater horseshoe bat	Y	Y			Y	Y						
CB.P17	Hairy dragonfly	Y	Y			Y	Y		Y			Y	
CB.P18	Scarce blue-tailed damselfly	Y	Y			Y	Y		Y			Y	
CB.P19	Silver-studded blue butterfly	Y		Y	Y				Y	Y	Y	Y	
CB.P20	A Strandline beetle	Y	Y			Y			Y				
CG.P1	Freshwater west (south) Variscan structures	Y				Y							
CG.P2	Blucks Pool – Bullslaughter Bay Dinantian	Y	Y			Y							
CG.P3	South Pembroke Cliffs Coastal geomorphology	Y				Y	Y						
CB.UP1	Neutral grassland	Y			Y		Y			Y		Y	
CB.UP2	Shrill carder bee	Y								Y			
CB.UP3	Lapwing	Y	Y						Y				Y
CG.UP1	Tertiary clays of the Flimsion area	Y			Y					Y			
CB.S1	Breeding birds assemblage	Y	Y					Y	Y		Y		Y
CB.S2	Assemblage of migratory waders/gulls	Y	Y			Y	Y	Y	Y				
CB.S3	Assemblage of local butterflies	Y		Y			Y			Y			
CB.S4	Dragonfly assemblage	Y	Y			Y			Y			Y	
CB.S5	Lesser horseshoe bat	Y	Y										
CB.S6	Grey seal	Y	Y			Y		Y	Y				
CB.S7	European Otter	Y	Y			Y							
CB.S8	Badger	Y	Y				Y		Y				
CB.S9	Brown hare	Y	Y						Y	Y			Y
CG.S1	Old red sandstone Fresh west – Frainslake	Y				Y							
CG.S2	Variscan structures Blucks pool – the wash	Y				Y							
CG.S3	Karst landforms	Y	Y		Y				Y	Y			
CG.S4	Surface drainage & limestone aquifer	Y			Y	Y	Y						
CG.S5	Coastal geomorphology Blucks Pool-The wash	Y				Y							
CG.S6	Frainslake – Brownslade dune system	Y				Y			Y	Y			
CG.S7	Inland Dinantian rocks	Y								Y			
CG.S8	Submerged forest	Y				Y			Y				

TABLE 4.		CASTLEMARTIN RANGE – ILMP NATURE CONSERVATION COMPONENT PRESCRIPTIONS FOR MEETING OBJECTIVES											
CODE	FEATURE	CONTROL USE OF ANTHLMINTICS CONTROL	MAINTAIN MIXED GRAZING RABBITS	MAINTAIN HIGH WATER QUALITY	MAINTAIN NATURAL EROSION PROCESSES	MAINTAIN PATCHES OF BARE GROUND MAINTAIN	MAINTAIN WOODLAND & SHRUB COVER	MAINTAIN MOWING REGIME MAINTAIN	MAINTAIN PROVIDE ARTIFICIAL SITES	MAINTAIN STRANDLINE DEBRIS MAINTAIN	MAINTAIN FODDER CROPS COVER	MAINTAIN TEMPORARY EXCLOSURES MAINTAIN	MAINTAIN LIASON & OBTAIN CONSENTS
CB.P1	Maritime Cliff-crevice communities				Y								Y
CB.P2	Maritime grassland		Y									Y	Y
CB.P3	Calcareous heath		Y			Y							Y
CB.P4	Sand dune habitats		Y	Y	Y								Y
CB.P	Swamp communities		Y	Y									Y
CB.P	Maritime Littoral habitats			Y	Y								Y
CB.P 7	Vascular plants assemblage		Y	Y		Y							Y
CB.P 8	Seabird population												Y
CB.P 9	Small retharrow		Y		Y								Y
CB.P10	Stackpole sea-lavender				Y								Y
CB.P11	Goldilocks aster		Y										Y
CB.P12	Scrambled egg lichen		Y		Y	Y							Y
CB.P13	Petalwort		Y			Y							Y
CB.P14	Chough	Y	Y			Y			Y				Y
CB.P15	Peregrine												Y
CB.P16	Greater horseshoe bat	Y	Y				Y		Y				Y
CB.P17	Hairy dragonfly			Y									Y
CB.P18	Scarce blue-tailed damselfly		Y	Y									Y
CB.P19	Silver-studded blue butterfly		Y			Y							Y
CB.P20	A Strandline beetle									Y			Y
CG.P1	Freshwater west (south) Variscan structures			Y	Y								Y
CG.P2	Blucks Pool – Bullslaughter Bay Dinantian			Y	Y								Y
CG.P3	South Pembroke Cliffs Coastal geomorphology			Y	Y								Y
CB.UP1	Neutral grassland		Y					Y					Y
CB.UP2	Shrill carder bee		Y										Y
CB.UP3	Lapwing	Y	Y			Y					Y		Y
CG.UP1	Tertiary clays of the Flimsion area												Y
CB.S1	Breeding birds assemblage	Y	Y				Y		Y				Y
CB.S2	Assemblage of migratory waders/gulls	Y	Y										Y
CB.S3	Assemblage of local butterflies		Y			Y	Y	Y					Y
CB.S4	Dragonfly assemblage		Y	Y									Y
CB.S5	Lesser horseshoe bat	Y	Y				Y		Y				Y
CB.S6	Grey seal												Y
CB.S7	European Otter			Y			Y						Y
CB.S8	Badger						Y						Y
CB.S9	Brown hare		Y					Y			Y		Y
CG.S1	Old red sandstone Fresh west – Frainslake				Y								Y
CG.S2	Variscan structures Blucks pool – the wash				Y								Y
CG.S3	Karst landforms		Y	Y									Y
CG.S4	Surface drainage & limestone aquifer			Y									Y
CG.S5	Coastal geomorphology Blucks Pool-The wash				Y								Y
CG.S6	Frainslake – Brownslade dune system		Y		Y								Y
CG.S7	Inland Dinantian rocks												Y
CG.S8	Submerged forest												Y





## **SECTION 3 CONFLICT RESOLUTION**

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### **3.0 INTRODUCTION**

This section deals with the integration of the objectives contained in the individual component management plans and is the process used to resolve conflicting objectives for the management of Castlemartin. Integration of future proposals or changes in management and the integrated plan for day to day management of the Range can be found at Section 4 of this plan, with the detailed integration of individual prescriptions in the action plan, which is separate to this ILMP document.

### **3.1 INTEGRATION PROCESS FOR COMPONENT MANAGEMENT PLAN OBJECTIVES**

- 3.1.1 Baseline data to provide the information required for the integration of the management objectives for Castlemartin Range is contained in:
- Survey data gathered by SPRRAG and statutory bodies, already held at Castlemartin; and new survey data gathered by the MoD consultants, RPS Clouston, in support of the ILMP.
  - The individual component management plans at section 2 of this document.
- 3.1.2 The component plans at section 2 of the ILMP include primary objectives for management and additionally, some contain secondary objectives. All of the objectives reflect the ideal management requirements for each different land use interest of the Range. The Access and Recreation strategic objectives also deal with some of the bigger issues to be raised through the ILMP process in relation to that interest. The objectives arise from the established management practices on the Range, and the MoD statutory responsibilities relating to access, conservation, archaeology and estate management (including Town and Country Planning). The objectives have been set within the overall framework of the MoD's Commitment to National Parks, the Memorandum of Understanding and the Declaration of Intent with the Countryside Council for Wales and the Strategy for the Defence Estate.

### **3.2 RESOLUTION OF OBJECTIVES IN COMPONENT MANAGEMENT PLANS**

The following tables deal with the interactions between individual component plan objectives and the other interests of the Range. The action required to resolve any issues arising from the CMP interaction are noted. These actions will be included and prioritised within the ILMP Action Plan.

### 3.2.1 MILITARY TRAINING

OBJECTIVE	INTERACTION WITH OTHER CMPS	ACTION TO RESOLVE CONFLICT
Overall Objective: To provide maximum facilities for military use...in a way that is economic & consistent with the demands of conservation, agricultural use and public access.	Estate Management, nature conservation & landscape: Gunfire noise can cause nuisance for local residents, nature conservation & tranquillity. Ammunition may include HE, causing a pollution risk.	Any proposed increases in the firing times beyond 44 weeks of AFV firing, 20 weeks of helicopter firing or firing at weekends or public holidays to meet the demands of military training would be submitted as an NoPD. Within the approved use, there will always be a variance year on year of both the amount of use and the timing of that use. Noise levels will continue to be within legal limits or levels set by the MoD. Complaints over noise & vibration will continue to be handled by the Commandant of Castlemartin Range & claims for compensation by Defence Estates. Surface rounds will, where practical, be removed from the Range area. Ammunition containing a High Explosive projectile will continue to be limited to Range West.
MTPO1: Replacement range tower for Range 2	Landscape: Replacement infrastructure could have adverse impact.  Nature conservation: Potential loss of habitat through replacement infrastructure. Potential disturbance to sensitive species.  Archaeology: Potential impact on remains beneath building 'footprint'.	Evaluate requirement for EIA to accompany NoPD. Ensure the landscape and nature conservation interests are taken into account when siting and designing the tower.  Carry out evaluation exercise of area of proposed devt. Undertake necessary mitigation measures.
MTPO2: Replacement radars for obsolete system	Landscape: As above (PO1)  Nature conservation: As above (PO1)  Archaeology: As above (PO1)	As above (PO1)  As above (PO1)  As above (PO1)

MTPO3: Training fleet permanently stationed at Castlemartin	Landscape, nature conservation & archaeology: As above (PO1) All the infrastructure envisaged would be on already existing concrete foundations.	As above (PO1)
MTPO4: Aspiration to undertake weekend firing on ETR	Access & Recreation: More limited opportunities for access to land & sea danger areas.  Nature Conservation: Additional disturbance to sensitive species through military training although reduced public access may reduce disturbance.	Carry out assessment of alternatives for both the use of the ETR and for public access as part of EIA to accompany NoPD. Assessment of alternative public access routes must take into account potential impacts on the nature conservation, archaeological & landscape resources.  Assess impact of noise as part of EIA to accompany NoPD and consider setting up monitoring programme for sensitive species. Assess impact of potential access routes on sensitive species.
MTPO5: Potential introduction of Anti-tank missile at Castlemartin	Nature Conservation: Potential loss of habitat through additional infrastructure. Potential disturbance to sensitive species.  Archaeology: Potential impact on remains beneath building 'footprint'.  Landscape: Additional infrastructure could have adverse impact.  Access & Recreation: Increased levels of military activity may reduce access opportunities to the Range	Assess impact of infrastructure on sensitive habitats & species prior to submission of NoPD.  As above (PO1)  Carry out assessment of alternatives & take landscape into account in siting & design of infrastructure.  Assess impact of introduction of anti-tank missile on access opportunities. Consider actions to mitigate any negative impact.
MTPO6: Use post-SDR  Increased helicopter activity	Access & Recreation: Limit opportunities for access.  Nature Conservation: Potential impact on sensitive habitats & species. Potential impact of helicopter activity on breeding birds.  Access & Recreation: Increased levels of helicopter activity may reduce access opportunities to the Range.	As above (PO4)  Seek to confine use to within currently agreed limits.  Assess impact of increased helicopter activity on access opportunities. Consider actions to mitigate any

	<p>Helicopter use can be less predictable and therefore reduce the notice period available for public access.</p> <p>Local communities: Potentially increased number of flights may be of concern to local community</p>	<p>negative impact.</p> <p>Assess impact of increased number of flights in terms of noise / disturbance to local community.</p>
MTPO7: Future additional accommodation req'mts	<p>Archaeology: Potential impact on remains beneath building 'footprint' and related infrastructure - such as the provision of services.</p> <p>Landscape: Additional infrastructure could have adverse impact.</p> <p>Nature conservation: Sensitive habitats and species could be disturbed or lost through infrastructure devt.</p>	<p>As above (PO1)</p> <p>As above (PO5)</p> <p>As above (PO5)</p>
MTPO8: Security Cameras for prevention of criminal acts. These may also be needed in connection with the radar Installations to cover the Sea Danger Area D113. (MTP 02)	<p>Landscape: Potential to be visually intrusive.</p> <p>Nature Conservation: Beneficial for the protection of scheduled species</p>	<p>Assess benefits against possible landscape intrusion. Ensure the landscape is taken into account when siting the cameras.</p>
MTSO1: RN Target System Req'mt for 1000m electronic target system.	<p>Landscape: Impact of infrastructure could be adverse.</p> <p>Archaeology: Infrastructure could impact on underlying archaeology</p> <p>Nature Conservation: Sensitive habitats and species could be disturbed or lost through infrastructure devt.</p>	<p>As above (PO5)</p> <p>As above (PO1)</p> <p>As above (PO5)</p>
MTSO2: Increase Sea Danger Area at St Govans Light Ship	<p>Nature Conservation: Potentially adverse impact of ordnance on the sea bed within area of SAC.</p> <p>Access &amp; Recreation: Potential to limit access to sea area.</p>	<p>Assess req'mt for EIA to establish potential impacts. If EIA req'd, military justification for change to be included.</p> <p>Assess impact of proposals through access survey to ensure users are consulted. Assess access alternatives.</p>
MTSO3: Overlap of SDAs for HMV Training	<p>Access &amp; Recreation: Potential to limit access to sea area.</p>	<p>Assess impact of proposals through access survey. Assess access alternatives. Consult users</p>

### 3.3.2 ARCHAEOLOGY

OBJECTIVE	INTERACTION WITH OTHER CMPS	ACTION TO RESOLVE CONFLICT
AR Overall objective: Conserve, manage & enhance the historic environment.	<p>Estate management &amp; Military Training:</p> <p>(i) Potential costs of management to req'd standard.</p> <p>(ii) Potential time delays &amp; costs of evaluation / excavation as mitigation for devt.</p> <p>(iii) May instigate need for re-siting of structures.</p> <p>Nature Conservation: Potential damage to sensitive species &amp; habitats through evaluation / excavation.</p>	<p>Assess financial commitment and implement on prioritised rolling programme.</p> <p>Build potential costs into devt. plans.</p> <p>Build in time and cost element for re-siting structures.</p> <p>Balance nature conservation &amp; archaeological interests if req'mt for archaeological excavation arises.</p>
ARPO1: Conserve & enhance the condition & appearance of sites & monuments and maintain relict buildings.	<p>As above for Estate Management. (i)</p> <p>Nature Conservation: Potential impact on sensitive species &amp; habitats</p>	<p>As above for Estate Management. (i)</p> <p>Take nature conservation interests into account when planning conservation &amp; enhancement of archaeological features.</p>
ARO2: Protect buried archaeological resources from erosion / destruction	As above for Estate Management (ii)	As above for Estate Management. (ii)
ARPO3: Protect & enhance relict & working features contributing to Historic Landscape areas.	As above for Estate Management (i)	As above for Estate Management (ii)
ARPO4: Promote historic environment resource through access & interpretation.	<p>Military training: Req'mt to close danger areas limits increased access to archaeological sites</p> <p>Nature Conservation: Increased access to archaeological sites may have negative effect on sensitive species &amp; habitats.</p> <p>Estate Management: As above for Estate Management &amp; Military Training (i).</p> <p>Landscape: Positive interaction with historic resource.</p>	<p>Assess potential for increasing access to archaeological sites, outside of firing times.</p> <p>Assess impact on important features that could sustain 'damage' from increased access to certain sites.</p> <p>Identify sites that could be accessed without compromising the Nature Conservation features.</p> <p>As for Estate Management &amp; Military Training (i)</p>

### 3.3.3 NATURE CONSERVATION

OBJECTIVE	INTERACTION WITH OTHER CMPS	ACTION TO RESOLVE CONFLICT
<p>NCPO1: Ensure that all primary and unconfirmed primary nature conservation features are in Favourable Condition.</p> <p>(For detailed management req'mts of habitats &amp; species, see Appendix 1-3 of component plan)</p>	<p>Military training: Generally beneficial due to restrictions imposed on agriculture and public access &amp; recreation. Potentially some disturbance through noise, erosion, despoliation &amp; extraneous litter. Also potential disturbance from further infrastructure development.</p> <p>Estate Management: Req'd for the maintenance of sensitive habitats &amp; species. Grazing also important for maintenance of landscape. Potential destruction through intensive mg'mt or chemical use.</p> <p>Access &amp; Recreation: Disturbance seen to be important issue. Current managed approach seen as beneficial for N.C. Potentially negative factors arise from popular activities. Concern that over protective approach unnecessarily restricts access activities.</p> <p>Natural Factors &amp; other processes: Fine balance between positive and negative effects. Potential impact of marine pollution in short – medium term.</p> <p>Archaeology &amp; landscape: Generally beneficial impacts with some management techniques beneficial to nature conservation, landscape &amp; archaeology.</p> <p>Preferred management could be in conflict with mg'mt of archaeological remains &amp; historic buildings</p> <p>Potential threat from archaeological excavation &amp; maintenance of important structures.</p>	<p>Monitor effect of disturbance through continual assessment of Favourable Condition.</p> <p>Investigate production of farm plans to regulate management of agricultural land for benefit of Nature Conservation. (Link to RES).</p> <p>As above for 'military training'. Also continue appointment of 'Seasonal Ranger'.</p> <p>As above for 'military training'.</p> <p>Ensure protection of archaeological &amp; historic remains where intrusive mg'mt techniques are req'd.</p> <p>Balance nature conservation &amp; archaeological interests if req'mt for archaeological excavation arises.</p>

<p>NCPO2: Ensure that all secondary features including UK and / or Local Biodiversity Action Plans &amp; W&amp;C species scheduled in 1981 Act are in Favourable Condition.</p>	<p>As above (PO1). Military training: Appear to have more negative effect than for primary features.</p> <p>Archaeology: Seen to be mostly beneficial. Preferred management could be in conflict with mg'mt of archaeological remains &amp; historic buildings</p>	<p>Assess potential for better access to secondary features of geological importance for condition monitoring purposes.</p> <p>Ensure protection of archaeological &amp; historic remains where intrusive mg'mt techniques are req'd.</p>
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### 3.3.4 LANDSCAPE

OBJECTIVE	INTERACTION WITH OTHER CMPS	ACTION TO RESOLVE CONFLICT
LSOverall objective: Maintain & enhance the landscape character of the Range & its landscape character types...wherever compatible with the military training use & interests of other components.	Military training: subordination of other interests	Evaluate requirement for EIA to accompany NoPD. Ensure l'scape is taken into account in the siting and design of military infrastructure.
LSSO1: Ensure future proposals respect l'scape	Military training: Potential for intensification of use / further development to detract from l'scape quality.	As above (overall objective).
LSSO2: Protect & enhance valuable l'scape	<p>Nature Conservation &amp; Estate Mg'mt: Impact of new fencing lines for grazing regime.</p> <p>Access &amp; Recreation: 'Hardware' associated with recreation can detract from l'scape.</p>	<p>Ensure consultation process regarding siting of fence lines includes l'scape aspect.</p> <p>Minimise further impacts through mg'mt, education &amp; best practice. Limit any signage to car park &amp; main access points.</p>
LSSO3: Tackle / mitigate feature which detract from l'scape quality	<p>Military training: Req'mt for features.</p> <p>Estate Management: Resources, incl. cost of removal.</p>	<p>Re-assess req'mt in light of l'scape issues. Mitigate where possible through removal of redundant features where they are not of heritage interest.</p> <p>Prioritise features that need removal or mitigation. Tackle on rolling programme.</p>
LSSO4: Restore degraded areas / features e.g. hedges	<p>Estate Management: Resources, incl. cost of restoration.</p> <p>Military training: Positive in terms of provision of cover for training.</p> <p>Nature conservation: Positive in terms of providing habitat.</p>	<p>Identify &amp; prioritise features that need restoration. Tackle on rolling programme.</p> <p>As above (Est mg'mt)</p> <p>As above</p>
LSSO5: Promote awareness & understanding of l'scape quality	Positive interaction	

### 3.3.5 ACCESS & RECREATION

OBJECTIVE	INTERACTION WITH OTHER CMPS	ACTION TO RESOLVE CONFLICT
ACSI1: Reduce firing during holiday period	<p>Military training: Req'mt to maximise use of the training estate &amp; best use of available Ranges. Used intensively by TA &amp; Cadets during summer months.</p> <p>Nature conservation: potential disturbance to sensitive species &amp; habitats by increased access.</p>	<p>Address through independent access study &amp; address potential to adjust firing periods, taking into account use by TA &amp; Cadets during the summer months.</p> <p>Assessment of likely disturbance may assist with decision above.</p>
ACSI2: An independent review of opening Range West.	<p>Military training: Additional access opportunities at Range West would restrict training use.</p> <p>Landscape: Information / interpretation boards may adversely impact on landscape.</p> <p>Archaeology: Potential disturbance to archaeological remains through increased access.</p> <p>Nature conservation: Potential disturbance to sensitive species &amp; habitats by increased access</p>	<p>Independent review (by RPS Clouston) of access to entire Army Training Estate commissioned Autumn 2000. Issue to be raised as part of review.</p> <p>Impacts on landscape to be taken account of as part of review. Limit any signage to car parks &amp; main accesses.</p> <p>Assessment of likely impacts on archaeological resource req'd as part of review</p> <p>Assessment of potential impacts of altering access arrangements req'd.</p>
ACSI3: Co-ordination of closed periods between Castlemartin, Manorbier & Penally	Military training: Potentially reduced availability for training	Independent study req'd to examine potential for joint closedown periods.
ACSI4: Access option range East. (Potential req'mt to extend firing at Range East, if Penally decommissioned).	<p>Military training: Additional range use would be req'd if Penally was decommissioned.</p> <p>Nature conservation: Potential benefit of less disturbance to sensitive species &amp; habitats through reduced access.</p>	<p>Carry out option study of potential sites in Pembrokeshire, that additional firing could take place, as part of EIA to accompany NoPD (if applicable) for extended use of Range East. Mod would be advised by PCNPA as to level of assessment required.</p> <p>Positive aspect of this to be taken into account in option study.</p>
ACSI5: Access option Range West	Military training: Health & safety risk of allowing access to ranges with UXO. Annual briefing req'd to reduce risk level.	Re-assess issue through access/ military working group. Including: req'mt for all individuals to be briefed;

		<p>assess viability of system of total numbers allowed access per day; produce written rationale to explain different access arrangements; explore possibility of National Park guide being available to escort long distance walkers through Range West.</p> <p>Nature conservation: Likely that sensitive species &amp; habitats benefit from reduced access. Increased access may lead to loss of some special qualities.</p> <p>Assess benefits of mitigating increased access to Range West through reducing access opportunities to range East.</p>
ACPO1: Maximise opportunities for access, enjoyment & appreciation of the Ranges.	<p>Military training: Access not possible during military live firing exercises or where UXO risk exists.</p> <p>Nature Conservation: Potential for access to cause disturbance to sensitive species &amp; habitats.</p> <p>Archaeology: Potential for access to cause 'damage' to SAMs or listed buildings.</p>	<p>Increase availability of information relating to access opportunities and investigate advertising unexpected range closure through such initiatives as the 24-hr phone line. (Website?)</p> <p>Assess likely impacts of increased access on sensitive species &amp; habitats.</p> <p>Assess risk of 'damage' to sites through increased access. Produce sensitivity list &amp; identify methods of protection.</p>
ACSO1: Provide access for wide range of groups, while actively avoiding conflict with other interests.	As above (PO1)	As above (PO1)
ACSO2: Promote understanding & support for special qualities & management of the Range.	<p>Military training, Nature Conservation &amp; archaeology interests could benefit from better PR with visitors.</p> <p>Landscape: Potential visual intrusion</p>	<p>Investigate production of site leaflets, interpretation boards, guides for land &amp; sea ranges. Provide environmental education opportunities for cadets using the range.</p> <p>Landscape to be taken into account in siting and design of PR initiatives.</p>
ACSO3: Make optimum use of non-firing times to provide safe access to land & sea.	<p>Military training: Firing period difficult to predict due to operational demands, weather etc.</p> <p>Co-ordination of firing times difficult due to differing range demands.</p>	<p>As above (PO1)</p> <p>Assess opportunities to better manage use of helicopter range.</p> <p>Joint military command of Ranges should improve opportunities.</p> <p>Maintain range useage information to provide historical records of use –</p>

30 Mar 2001

		GP22 should assist. Assess viability of checkpoint for Range East to increase access opportunities.
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### 3.3.5 ESTATE MANAGEMENT

OBJECTIVE	INTERACTION WITH OTHER CMPS	ACTION TO RESOLVE CONFLICT
EMPO1: Maintain a balance between the military use, agriculture & nature conservation interests on the Range.	Nature conservation: Grazing is an essential management tool for the maintenance of sensitive species & habitats on the Range. Under and over-grazing requires flexible management.	The introduction of farm plans for the management of grazing for the maintenance of the nature conservation interest would tackle the issue of under and over-grazing. (REES target). Liaise with tenants & licencees regarding stocking densities.
EMPO2: Maintain the presence & economic viability of the lettings	<p>Access &amp; Recreation: Provision of access by agreement with agricultural tenants.</p> <p>Archaeology: Potential damage from agricultural operations</p> <p>Landscape: Significant changes in agricultural practices may have a dramatic impact.</p> <p>Military training: Firing programmes can disrupt stock management.</p> <p>Nature conservation: As above (PO1)</p>	<p>Continue to provide occasional access by agreement.</p> <p>Ensure that a DE archaeologist, or Cambria Archaeology are consulted prior to potentially damaging operations in sensitive areas.</p> <p>Ensure that landscape factors are taken into account when proposals to alter agricultural practise are discussed.</p> <p>Agricultural tenants are given as much notice as possible regarding the firing programme, to ease problems of stock management.</p> <p>The introduction of farm plans and the completion of Habitat &amp; Species Action Plans (HAPs &amp; SAPs) will provide a structure for maintaining the balance.</p>
EMPO3: Safeguard the welfare of stock on the Range.	<p>Access &amp; Recreation: Disturbance by humans &amp; dogs can cause distress to sheep, particularly at lambing time.</p> <p>Archaeology: Potential for un-fenced archaeological excavations to trap stock.</p> <p>Landscape: Grazing contributes to landscape features. Newly erected stock fencing can have adverse impact.</p>	<p>Avoid access to areas where stock are penned at sensitive times.</p> <p>Ensure that excavations are fenced when stock are present.</p> <p>Ensure consultation process re:siting of fence lines includes l'scape aspect.</p>

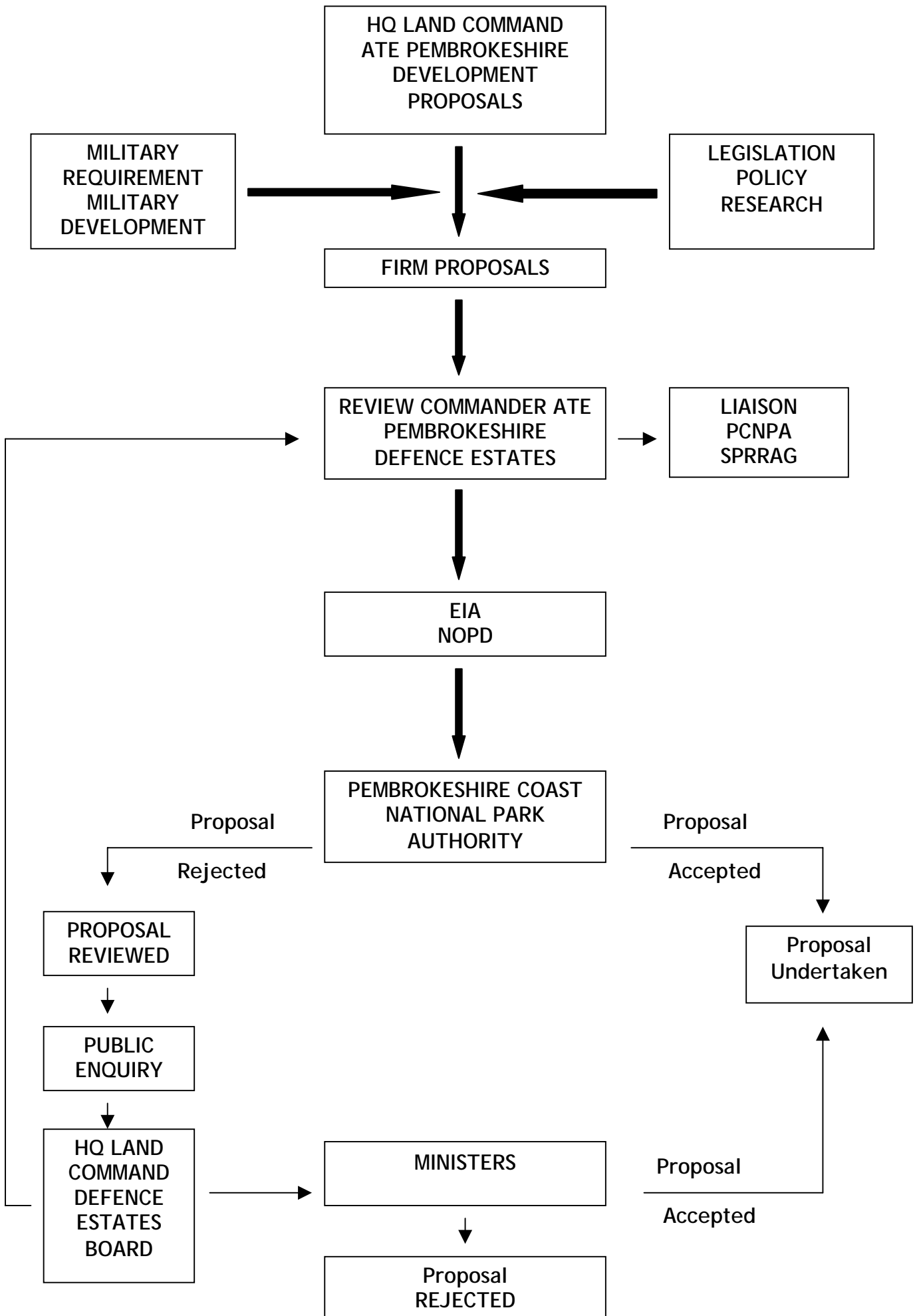
	<p>Military training: live firing presents a potential threat to stock welfare. Necessity to move stock from live firing areas close to lambing can cause stress.</p> <p>Nature conservation: controlled grazing can impinge on quality &amp; quantity of grazing available.</p>	<p>Provide tenants with as much notice as possible regarding live firing programmes.</p> <p>Ensure tenant is involved in discussions regarding req'mts for grazing to maintain the sensitive species &amp; habitats.</p>
EMPO4: Control invasive species	<p>Archaeology: root systems of Japanese knotweed &amp; sea buckthorn can cause physical damage to old structures &amp; sites.</p> <p>Landscape: Sea buckthorn can have adverse impact on landscape.</p> <p>Military training: Sea buckthorn &amp; Japanese knotweed can prevent free movement &amp; eliminate lines of sight for weaponry &amp; safety.</p> <p>Nature conservation: Presence of invasive species can adversely affect the integrity of nationally and internationally sensitive species.</p>	<p>Identify structures and sites of concern &amp; produce a prioritised rolling programme of clearance.</p> <p>Identify priority areas for rolling programme of clearance.</p> <p>As above (landscape)</p> <p>As above (landscape &amp; military training)</p>
EMPO5: Promote commercial & licensed use of the Range	<p>Access &amp; recreation: Licensed use of the Range is managed within the constraints of the other land uses at Castlemartin.</p> <p>Game shooting is generally sited away from main areas of public access &amp; takes place in the winter months when recreational demand is low.</p> <p>Archaeology: Potential erosion to sensitive sites. Some sites are valued for filming purposes.</p> <p>Landscape: Despite the short duration of licensed lettings, permanent physical &amp; env'tal damage can occur.</p> <p>Military training: Commercial</p>	<p>While the promotion of commercial &amp; licensed use of the Range is important it must continue to be managed within the constraints and sensitivities of the other land uses.</p> <p>Ensure that sensitive sites are adequately protected to prevent erosion from human use.</p> <p>Ensure that licensed users are adequately briefed to be aware of the potential for damage to occur &amp; that licences address any issues.</p>

	<p>&amp; licensed use fits around military use of the Range.</p> <p>Nature conservation: Commercial &amp; licensed use have the potential to cause damage to sensitive features. Game shooting can cause disturbance to non-quarry species.</p>	As above (landscape)
EMPO6: Provide & manage woodland for military training whilst being compatible with other interests.	<p>Archaeology: Potential for damage to sites as a result of tree root growth. Possibility of obscuring Medieval field structures.</p> <p>Landscape: Insensitively sited planting of additional woodland would not be in keeping with local landscape.</p> <p>Military training: Woodland on the Range provides essential cover for military activity.</p> <p>Nature conservation: New planting may lead to loss of sensitive species &amp; habitats.</p>	<p>Assess sites with potential for damage and remove trees if necessary. Avoid future tree planting in sensitive sites.</p> <p>Assess landscape implications in terms of siting and design of any proposed new plantations.</p> <p>Ensure that woodland is managed and maintained for military training through a management programme that takes into account the other land uses.</p> <p>Assess impact of any proposed new planting on the nature conservation interest of the site.</p>
EMPO7: Maintain the quality of the natural surface & ground water.	<p>Landscape: Physical features such as Frainslake &amp; Chapel marshes are important landscape features.</p> <p>Military training: Use of hydrocarbons in military vehicles is potential source of contamination.</p> <p>Nature conservation: Contamination of water quality could have dramatic effect on aquatic environment on and off the Range.</p>	<p>Ensure that the surface &amp; ground water landscape features are retained when management proposals that may affect them are considered.</p> <p>Risk of contamination should be assessed and appropriate management measures put in place, including a review of standing orders, to minimise risk.</p> <p>Monitor water quality of boreholes on the range</p>
EMPO8: Assess marine pollution & plan to clear up third party spillages	<p>Access &amp; recreation: Would be curtailed in the event of a pollution incident</p> <p>Landscape: Pollution and the destruction it causes is visually intrusive</p> <p>Military training:</p>	<p>Complete marine survey and analyse results</p> <p>Agree strategy for access with emergency planners</p>

	<p>Key operational training could cause a delay in access being permitted.</p> <p>Nature Conservation: When an incidence occurs time is of the essence to start the clean up process to restrict the damage</p>	<p>Agree strategy for access with emergency planners</p> <p>Agree strategy for access with emergency planners</p>
EMPO9: Ensure noise levels remain within legal limits	<p>Access &amp; recreation: This is strictly controlled during live firing times for visitor safety purposes.</p> <p>Landscape: Noise &amp; tranquillity are important factors in peoples' perception of the Pembrokeshire landscape</p> <p>Archaeology: Legal noise limits prevent damage to building structures.</p> <p>Nature conservation: Potential affect on nesting sea birds.</p>	<p>Monitor noise levels to ensure that legal limits are maintained.</p> <p>Continue to monitor bird numbers to assess impact of factors affecting breeding, incl. noise.</p>
EMPO10: Endeavour to keep training area clear of litter & debris.	<p>Access &amp; recreation: Litter &amp; debris affects the public enjoyment of the Range, although access significantly contributes to the amount of litter found on the Range.</p> <p>Archaeology: Former military debris sometimes found in vicinity of monuments.</p> <p>Landscape: Remains of military, agricultural &amp; domestic debris in blowholes is detrimental &amp; degrading to landscape features.</p>	<p>Promote awareness of the effect of litter in scenic environment. Assess req'mt for provision of litter bins. <b>Prioritise areas to be cleared of military debris and produce rolling programme of removal.</b></p> <p>Prioritise areas to be cleared of military debris and produce rolling programme.</p> <p>As above (archaeology)</p>



# ILMP INTEGRATION PROCESS



## 4.0 INTEGRATION PROCESS

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### 4.1 CURRENT MANAGEMENT

4.1.1 The day to day management of Castlemartin Range is undertaken by a local team comprising the Army Training Estate staff and the Defence Estates Land Agent. This management team is **advised** by the South Pembrokeshire Range Recording and Advisory Group (SPRRAG) who provide **detailed** advice **and information to MoD on many aspects of conservation - landscape, archaeology as well as nature conservation.**

4.1.2 To be completed further to consultation with SPRRAG.

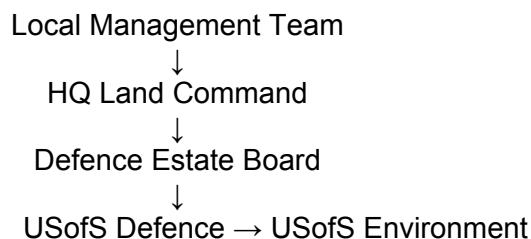
**To include:     Future role of SPRRAG  
                         Future role of Management Implementation Team**

4.1.3 The priorities for the use of the MoD Army Estate at the national level are laid down in the Army General Administrative Instruction Volume 1 Chapter 16: -

1. The Army training requirement.
2. Public Safety
3. Conservation and land management, including economic factors.
4. Access

There are often local issues that require these priorities to be re-assessed to meet agreed targets or resolve local management issues.

4.1.4 There are issues which cannot be managed locally and need to be elevated to a higher level for a decision. The process would be as follows:



### 4.2 INTEGRATION OF ILMP OBJECTIVES & PRESCRIPTIONS

4.2.1 The integration of objectives and prescriptions stated in the ILMP will be dealt with in the work plan. An example of the table that will be used for the integration process follows at 4.2.2. The table links the individual ILMP objectives to the overarching RES objectives, by RES reference number. The prescriptions to achieve the ILMP objectives, as identified in the ILMP annexes, are stated, together with the potential interactions between the prescriptions and the other land and sea interests of the Range. The prescriptions are then given a priority according to defined criteria, they are given a timescale for implementation and a comments box is provided to note the rationale for not taking any prescriptions forward, or note the impact of not undertaking a prescription, or to identify synergies between actions - for example those that could be implemented by the same person at the same time for efficiency.

## WORK PLAN - INTEGRATION TABLE GUIDELINES

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**Column 1:** The serial number of the RES objective which relates to the ILMP objective in column 2.

**Column 2:** The ILMP objective, taken from the individual component plans and from section 3 of the ILMP.

**Column 3:** The prescriptions identified in the annexes of the ILMP, required to achieve the ILMP objectives.

**Column 4:** Any interactions identified between prescriptions and other land and sea interests.

**Column 5:** Priority to achieve the prescription. Priority designated by Component Plan Chair, according to the following criteria:

A     Urgent            Where non-action will lead to actual danger to life & limb or failure to meet statutory responsibilities with threat of legal action.

B     Essential        Where non-action will lead to failure to meet statutory responsibilities or failure to meet UK targets such as RES objectives.

C     Important        Where non-action will have less impact than categories A & B, but will lead to inability to achieve objective.

D     Desirable        Useful action for the benefit of the training estate, but objective can still be achieved without it.

This column will feed into the work plan.

**Column 6:** Timescale within which the prescription should be achieved. This will assist with production of the work plan and with the annual review process. The time allocation is: year 1; years 2-3 or years 4-5.

**Column 7:** Some prescriptions may not 'survive' the integration process. This column identifies those prescriptions that will be taken forward to the work plan, and those that will not.

**Column 8:** Comments can be noted in this column, including the rationale for not taking certain prescriptions forward or the synergies between prescriptions, which may enable actions to be undertaken at the same time by the same person for better efficiency. The notes will assist in the preparation of the work plan.

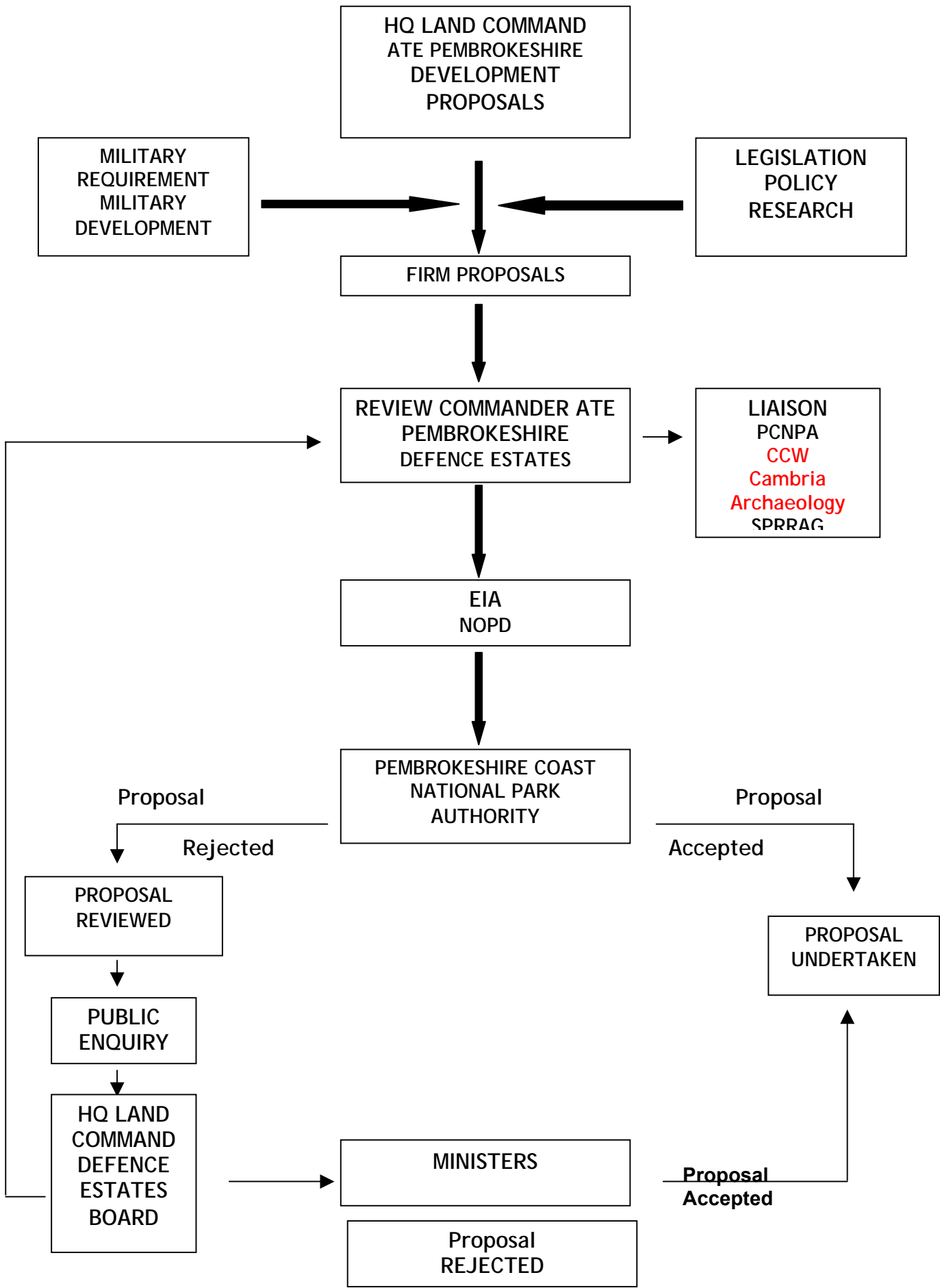
RES OBJ	Plan Objective ARCHAEOLOGY - AR	Prescription	Potential interaction with other land & sea interests	Priority A, B C, D	Timescale			Take Forward to Action Plan?		Rationale / Synergies between actions.
					1	2/3	4/5	Y	N	
'G' Aim	AROverall objective: Conserve, manage & enhance the historic environment.	Organise access to curatorial arch. advice & make provision for prepn. of briefs & specs for contractual arch. work & monitoring its performance.		B	*	*	*			
		Maintain liaison with PCNP conservation officers inside & outside SPRRAG.		B	*	*	*			
		Maintain liaison between MoD Cons staff & archaeological curator to transfer information about arch conservation across MoD ranges.		B	*	*	*			
G3/ G4	ARPO1: Conserve & enhance the condition & appearance of sites & monuments and maintain relict buildings.	Draw up mg'mt plan for promontory Iron Age Forts & Castle Lady Valley Forts	Cadw for SAMs	B	*					Estate Management & Nature Conservation
		Produce action plan for consolidation & repair	Cadw for SAMs	C		*				
		Prioritise Pricaston for consolidation & repair. Seek LBC & grant aid.	PCNP & Cadw	B	*					Nature conservation
		Produce Ranges historic environment mg'mt layer for GIS, with database.	Cambria Archaeology Regional Sites & Monuments Record	B	*					
G3	ARPO2: Protect buried archaeological resources from erosion / destruction	With arch, advisor, list earth- moving / digging activities in current or future military activity, not requiring P/P:	Military Training & Estate Management							
		a) causing/ likely to cause damage b) identify poss modifications to prevent damage		A B	*	*	*			

		c) Mitigation through observation / monitoring d) Research through military operations		A/B ?	* * * ?		
G3/ G6	ARPO3: Protect & enhance relict & working features contributing to Historic Landscape areas	Consider re-use of historic field boundaries as part of farming system	Estate Management	C	* * *		Estate Management
		Consider use of relict lanes & tracks for new footpaths		D	* * *		Ref access CMP
		Direct new planting for ecological gain to reinstate & reinforce underlying l'scape patterns where poss.	Nature Conservation, Estate Management & Landscape	C	* * *		Ref l'scape CMP
G10	ARPO4: Promote historic environment resource through access & interpretation.	Draw up research agenda for arch & historic env'mt to: a) Underpin & inform objectives of briefs & specs req'd for future mitigation for devt. b) Raise profile of historic env'mt to stimulate academic interest & projects		B	*		
		Consider provision of site interpretation with PCNP & other MoD Ranges.		C	* * *		Nature Conservation & Access and Recreation
		Seek opportunities to conserve & promote military archaeology, to set standards for others in South Pembrokeshire		C	* * *		Nature Conservation & Access and Recreation

### 4.3 INTEGRATION OF FUTURE PROPOSALS (Figure 4.3)

- 4.3.1 This ILMP has been written according to the current management and military training requirements of Castlemartin Range. A process therefore needs to be in place to integrate future management issues or revisions to the training requirement, where the timing does not coincide with the annual review process (section 5.0). Examples of this include changes in policy, legislation or the outcomes of the Strategic Defence Review (SDR), which will potentially bring additional armoured, reconnaissance and infantry regiments, plus more helicopter training to Castlemartin. **The recommendations** of the Strategic Environmental Appraisal of the SDR proposals, such as the proposal to base a training fleet of tanks and other AFVs at Castlemartin permanently to reduce road convoys have been included in the ILMP. Development of the Rural Estate Strategy, for example the introduction of nationally consistent monitoring strategies, will need to be integrated into the implementation of the ILMP **at the review stage. (To be linked to para 4.1.2, when agreed)**
- 4.3.2 Figure 4.3, below, sets out the process through which future proposals should flow. This is especially useful in circumstances requiring planning clearance under Welsh Office Circular 37/84 procedures and ensures that full consultation is undertaken with all interested parties. The ILMP process will inform all decisions relating to such proposals through **linking** proposals to the ILMP management objectives.

ILMP INTEGRATION PROCESS



## WORK PLAN - INTEGRATION TABLE GUIDELINES

---

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**Column 3:** The prescriptions identified in the annexes of the ILMP, required to achieve the ILMP objectives.

**Column 4:** Any interactions identified between prescriptions and other land and sea interests.

**Column 5:** Priority to achieve the prescription. Priority designated by Component Plan Chair, according to the following criteria:

A     Urgent            Where non-action will lead to actual danger to life & limb or failure to meet statutory responsibilities with threat of legal action.

B     Essential        Where non-action will lead to failure to meet statutory responsibilities or failure to meet UK targets such as RES objectives.

C     Important        Where non-action will have less impact than categories A & B, but will lead to inability to achieve objective.

D     Desirable        Useful action for the benefit of the training estate, but objective can still be achieved without it.

This column will feed into the work plan.

**Column 6:** Timescale within which the prescription should be achieved. This will assist with production of the work plan and with the annual review process. The time allocation is: year 1; years 2-3 or years 4-5.

**Column 7:** Some prescriptions may not 'survive' the integration process. This column identifies those prescriptions that will be taken forward to the work plan, and those that will not.

**Column 8:** Comments can be noted in this column, including the rational for not taking certain prescriptions forward or the synergies between prescriptions, which may enable actions to be undertaken at the same time by the same person for better efficiency. The notes will assist in the preparation of the work plan.



RES OBJ	Plan Objective MILITARY TRAINING - MT	Prescription	Potential interaction with other land and sea interests	Priority: A, B C, D	Timescale (year)			Take Forward to Action Plan?		Rationale / Synergies between actions
					1	2/3	4/5	Y	N	
	MTPO1: Replacement range towers for Range 2	Carry out process identified in section 3	Dealt with by section 3	C			*	Y		No change of site envisaged, but if alternative site is required EIA process will resolve potential conflict
	MTPO2: Replacement radars for obsolete system	Initiate development process through NoPD	Dealt with by section 3	A	*			Y		Radars to be replaced on existing sites.
	MTPO3: Training fleet permanently stationed at Castlemartin		Dealt with by section 3	D			*(earliest)	Y		
	MTPO4: Aspiration to undertake weekend firing on ETR	Carry out process identified in section 3	Dealt with by section 3	D			*	Y		EIA process will resolve potential conflict
	MTPO5: Potential introduction of Anti-tank missile at Castlemartin		Dealt with by section 3	C			*	Y		Use of existing infrastructure & target area outside SSSI
	MTPO6: Use post-SDR	Carry out process identified in section 3	Dealt with by section 3	C			*	Y		EIA process will resolve potential conflict
	MTPO7: Future additional accommodation req'mts	Carry out process identified in section 3	Dealt with by section 3	C			*	Y		EIA process will resolve potential conflict
	MTPO8: Security Cameras for prevention of criminal acts	Carry out process identified in section 3	Dealt with by section 3	C			*	Y		Important security issue

	MTSO1: RN Target System Req'mt for 1000m electronic target system.	Carry out process identified in section 3	Dealt with by section 3	C	*	Y	EIA process will resolve potential conflict
	MTSO2: Increase Sea Danger Area at St Govans Light Ship	Carry out process identified in section 3	Dealt with by section 3	D	Unknown	Not take forward until military req'mts change	Is increased area required? Access issue will be informed through independent access study (RPS 2000)
	MTSO3: Overlap of SDAs for HMV Training	Carry out process identified in section 3	Dealt with by section 3	C	*	Y	

RES OBJ	Plan Objective ARCHAEOLOGY - AR	Prescription	Potential interaction with other land & sea interests	Priority A, B C, D	Timescale			Take Forward to Action Plan?		Rationale / Synergies between actions.
					1	2/3	4/5	Y	N	
'G' Aim	AROverall objective: Conserve, manage & enhance the historic environment.	Organise access to curatorial arch. advice & make provision for prepn. of briefs & specs for contractual arch. work & monitoring its performance.		B	*	*	*			
		Maintain liaison with PCNP conservation officers inside & outside SPRRAG.		B	*	*	*			
		Maintain liaison between MoD Cons staff & archaeological curator to transfer information about arch conservation across MoD ranges.		B	*	*	*			
G3/ G4	ARPO1: Conserve & enhance the condition & appearance of sites & monuments and maintain relict buildings.	Draw up mg'mt plan for promontory Iron Age Forts & Castle Lady Valley Forts	Cadw for SAMs	B	*					Estate Management & Nature Conservation
		Produce action plan for consolidation & repair	Cadw for SAMs	C		*				
		Prioritise Pricaston for consolidation & repair. Seek LBC & grant aid.	PCNP & Cadw	B	*					Nature conservation
		Produce Ranges historic environment mg'mt layer for GIS, with database.	Cambria Archaeology Regional Sites & Monuments Record	B	*					
G3	ARPO2: Protect buried archaeological resources from erosion / destruction	With arch, advisor, list earth- moving / digging activities in current or future military activity, not requiring P/P: a) causing/ likely to cause damage b) identify poss modifications	Military Training & Estate Management	A	*	*	*			
				B	*	*	*			

		c) to prevent damage Mitigation through observation / monitoring d) Research through military operations		A/B ?	* * * ?		
G3/ G6	ARPO3: Protect & enhance relict & working features contributing to Historic Landscape areas	Consider re-use of historic field boundaries as part of farming system	Estate Management	C	* * *		Estate Management
		Consider use of relict lanes & tracks for new footpaths		D	* * *		Ref access CMP
		Direct new planting for ecological gain to reinstate & reinforce underlying l'scape patterns where poss.	Nature Conservation, Estate Management & Landscape	C	* * *		Ref l'scape CMP
G10	ARPO4: Promote historic environment resource through access & interpretation.	Draw up research agenda for arch & historic env'mt to: a) Underpin & inform objectives of briefs & specs req'd for future mitigation for devt. b) Raise profile of historic env'mt to stimulate academic interest & projects		B	*		
		Consider provision of site interpretation with PCNP & other MoD Ranges.		C	* * *		Nature Conservation & Access and Recreation
		Seek opportunities to conserve & promote military archaeology, to set standards for others in South Pembrokeshire		C	* * *		Nature Conservation & Access and Recreation

RES OBJ	Plan Objective NATURE CONSERVATION - NC	Prescription	Potential interaction with other land & sea interests	Priority A,B C,D	Timescale (year)			Take Forward to Action Plan?		Rationale / Synergies between actions
					1	2/3	4/5	Y	N	
'F' Aim/ F1	NCPO1: Ensure that all primary and unconfirmed primary statutory nature conservation features :  CB.P1 to CB.P20; CG.P1 to CG.P3; CB.UP1 to CB.UP3; CG.UP1  are in Favourable Condition.  (For detailed management req'mts of habitats & species, see Appendix 1-3 of component plan)	1. Monitor features CB.P1 to CB.P20; CG.P1 to CG.P3; CB.UP1 to CB.UP3; CG.UP1	MT (firing programme);	A	?			Y		Statutory requirement. Applies to all features. Utilisation of agreed "Common Standards" methods/protocols. Must ensure all appropriate personnel are fully briefed.
		2. Monitor/measure access/ recreation activities & disturbance to features	AR (physical damage);							Monitor factor - link to 1. above. Castlemartin Ranger service important
		3. Monitor & prevent excessive erosion	MT (firing programme);							Monitor factor - link to 1. above. Utilise existing series of fixed photo- points (student project). Periodically review to inform actions
		3. Monitor & prevent excessive build up of extraneous litter	MT (physical damage); AR (physical damage); LS (damage/change); EM (physical damage);							Monitor factor - link to in 1. & 2, above; periodically review to inform actions
		4. Monitor & prevent excessive human-induced erosion	MT (physical damage); AC (physical damage); EM (physical damage); LS (damage/change);							Monitor factor - link to 1., 2, & 3. above; periodically review to inform actions
		5. Monitor & prevent pollution	MT (firing programme); MT (physical damage); EM (physical damage);							Legal requirements? Ensure statutory pollution contingency plans cover clean-up/monitoring protocols, adequate to protect/maintain features. Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions

		6. Prevent fertilizer & herbicide use	EM (physical damage);				Attempt to reduce use, eg in let land; review relevant consents/agreements
		7. Prevent disturbance from aircraft	MT (physical damage);				Linked to monitoring of statutory features. Maintain GIS/database; periodically review seasonal locations & protocols to maintain best practice
		8. Prevent recreational disturbance to features, through a controlled access policy	MT (firing programme); AC (physical damage);				Maintain & review seasonal access restrictions (eg climbing) Castlemartin Ranger service very important
		9. Control use of military & civilian vehicles	MT (firing programme); AC (physical damage); EM (physical damage);				Maintain locations on GIS. Include in feature/factor monitoring programmes; periodically review to inform actions
		10. Control accidental burning	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		11. Manage/control coastal scrub vegetation	MT (firing programme); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in feature/factor monitoring programmes; identify scale and rotations; periodically review to inform actions
		12. Control invasive alien plant species	MT (firing programme); AR (physical damage); EM (physical damage); LS (damage/change);				Include in feature/factor monitoring programmes; periodically review to inform actions
		13. Control ground predators to protect ground-nesting birds	EM (physical damage); AC (physical damage);				Include in feature/factor monitoring programmes; periodically review to inform actions

		14. Control use of anthelmintics - to maximise potential food invertebrates in dung: for chough, lapwings & horseshoe bats	EM (physical damage);				Attempt to reduce use, eg in let land; review relevant consents/agreements. Periodically review to inform actions
		15. Maintain controlled mixed grazing regime	MT (firing programme); AR (physical damage); EM (physical damage); LS (damage/change);				Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		16. Maintain rabbit population	MT (firing programme); MT (physical damage); AR (physical damage); EM (physical damage);				Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		17. Maintain high water quality	MT (physical damage); EM (physical damage);				Include in feature/factor monitoring programmes; utilise bore-hole data & link to catchment monitoring offsite, involve E/A etc. Periodically review to inform actions
		18. Maintain natural erosion processes	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		19. Maintain patches of bare ground	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		20. Maintain woodland & shrub cover for selected target species of fauna	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in feature/factor monitoring programmes; identify scale and rotations; periodically review to inform actions

		21. Maintain mowing regime for selected target habitats & species	MT (firing programme); MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in feature/factor monitoring programmes; identify scale and rotations; periodically review to inform actions
		22. Maintain/provide artificial sites for selected target species	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in monitoring programmes; priority bat roosts & bird nest sites; periodically review to inform actions
		23. Maintain strandline debris for selected target species	MT (physical damage); AC (physical damage); EM (physical damage);				Strandline beetle is main concern. Minimise disturbance to strandline material. Maintain locations on GIS; periodically review to inform actions
		24. Maintain fodder crops for selected target species	AR (physical damage); LS (damage/change); NC (physical damage);				Maintain locations on GIS. Include in feature/factor monitoring programmes; identify scale and rotations; periodically review to inform actions
		25. Maintain temporary exclosures for target vegetation/plant species	MT (firing programme); EM (physical damage); LS (damage/change); AC (physical damage);				Maintain locations on GIS. Include in feature/factor monitoring programmes; temporary fencing (in May) at one location only; periodically review to inform actions
		26. Maintain liaison with statutory & non-statutory bodies	MT; AR; LS; AC; EM;				Maintain formal links – through ILMP working group/SPRRAG
		27. Obtain necessary SSSI consents/licenses from CCW	MT; AR; LS; AC; EM;				Refer to CCW SSSI notification pack; maintain formal links with CCW officers & ILMP working group/SPRRAG



'F' Aim/ F1	NCPO2: Ensure that all secondary features subject to UK or Local Biodiversity Action Plans & those scheduled in 1981 Act :  CB.S1 to CB.S9; CG.S1 to CG.S8;  are in Favourable Condition.  (For detailed management req'mts of habitats & species, see Appendix 1-3 of component plan)	1. Monitor features CB.S1 to CB.S9; CG.S1 to CG.S8	MT (firing programme);	C			Links to Local biodiversity Action Plans. Applies to all features. Utilisation of agreed "Common Standards" methods/protocols. Must ensure all appropriate personnel are fully briefed.
		2. Monitor/measure access/ recreation activities & disturbance to features	AR (physical damage);				Monitor factor - link to 1. above. Castlemartin Ranger service important
		3. Monitor & prevent excessive erosion	MT (firing programme);				Monitor factor - link to 1. above. Utilise existing series of fixed photo- points (student project). Periodically review to inform actions
		3. Monitor & prevent excessive build up of extraneous litter	MT (physical damage); AR (physical damage); LS (damage/change); EM (physical damage);				Monitor factor - link to in 1. & 2, above; periodically review to inform actions
		4. Monitor & prevent excessive human-induced erosion	MT (physical damage); AC (physical damage); EM (physical damage); LS (damage/change);				Monitor factor - link to 1., 2, & 3. above; periodically review to inform actions
		5. Monitor & prevent pollution	MT (firing programme); MT (physical damage); EM (physical damage);				Ensure statutory pollution contingency plans cover clean- up/monitoring protocols, adequate to protect/maintain features. Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		6. Prevent fertilizer & herbicide use	EM (physical damage);				Attempt to reduce use, eg in let land; review relevant consents/agreements
		7. Prevent disturbance from aircraft	MT (physical damage);				Maintain GIS/database; periodically review seasonal locations & protocols to maintain best practice

		8. Prevent recreational disturbance to features, through a controlled access policy	MT (firing programme); AC (physical damage);				Maintain & review seasonal access restrictions (eg climbing) Castlemartin Ranger service important
		9. Control use of military & civilian vehicles	MT (firing programme); AC (physical damage); EM (physical damage);				Maintain locations on GIS. Include in feature/factor monitoring programmes; periodically review to inform actions
		10. Control accidental burning	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		11. Manage/control coastal scrub vegetation	MT (firing programme); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in feature/factor monitoring programmes; identify scale and rotations; periodically review to inform actions
		12. Control invasive alien plant species	MT (firing programme); AR (physical damage); EM (physical damage); LS (damage/change);				Include in feature/factor monitoring programmes; periodically review to inform actions
		13. Control ground predators to protect ground-nesting birds	EM (physical damage); AC (physical damage);				Include in feature/factor monitoring programmes; periodically review to inform actions
		14. Control use of anthelmintics - to maximise potential food invertebrates in dung: for cough, lapwings & horseshoe bats	EM (physical damage);				Attempt to reduce use, eg in let land; review relevant consents/agreements. Periodically review to inform actions
		15. Maintain controlled mixed grazing regime	MT (firing programme); AR (physical damage); EM (physical damage); LS (damage/change);				Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions

		16. Maintain rabbit population	MT (firing programme); MT (physical damage); AR (physical damage); EM (physical damage);				Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		17. Maintain high water quality	MT (physical damage); EM (physical damage);				Include in feature/factor monitoring programmes; utilise bore-hole data & link to catchment monitoring offsite, involve E/A etc. Periodically review to inform actions
		18. Maintain natural erosion processes	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		19. Maintain patches of bare ground	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Include in feature/factor monitoring programmes; maintain records; periodically review to inform actions
		20. Maintain woodland & shrub cover for selected target species of fauna	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in feature/factor monitoring programmes; identify scale and rotations; periodically review to inform actions
		21. Maintain mowing regime for selected target habitats & species	MT (firing programme); MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in feature/factor monitoring programmes; identify scale and rotations; periodically review to inform actions
		22. Maintain/provide artificial sites for selected target species	MT (physical damage); AR (physical damage); EM (physical damage); LS (damage/change);				Maintain locations on GIS. Include in monitoring programmes; priority bat roosts & bird nest sites; periodically review to inform actions

		23. Maintain fodder crops for selected target species	AR (physical damage); LS (damage/change); NC (physical damage);				Maintain locations on GIS. Include in feature/factor monitoring programmes; identify scale and rotations; periodically review to inform actions
		24. Maintain liaison with statutory & non-statutory bodies	MT; AR; LS; AC; EM;				Maintain formal links - through ILMP working group/SPRRAG
		25. Obtain necessary SSSI consents/licenses from CCW	MT; AR; LS; AC; EM;				Refer to CCW SSSI notification pack; maintain formal links with CCW officers & ILMP working group/SPRRAG

Res. Obj	Plan Objective LANDSCAPE	Prescription	Potential Interaction with other land and sea interests	Priority	Timescale	Take forward to Action Plan	Rationale / Synergies between action
'E' Aim E4	LSS 01 Ensure future development respects landscape	1. Take landscape considerations into account in preparing and appraising development schemes	Military Training Estate Management Archaeology Nature Conservation Balancing landscape with other considerations	B	1-5	Y	Essential part of the framework for preparing and considering development schemes: NOPD and EIA
		2. Protect coastal lands from further building development	Military Training Estate Management Constraint on location of further built elements in landscape	C	1-5	Y	Consideration in preparing development schemes: NOPD and EIA
		3. Prepare development and design brief for new building developments	Military Training Estate Management Archaeology Nature Conservation Recreation Brief offers potential to ensure all interests taken into account in siting and design of schemes	C	1-5	Y	Provides a sound basis for preparation and consideration of schemes: NOPD and EIA
		4. Prepare maintenance and landscaping brief for existing ancillary buildings and structures	Military Training Estate Management Balancing landscape with operational and management considerations	C	2-3	Y	Audit of visual impact of ancillary buildings/structures, and scope for mitigation

Res. Obj	Plan Objective LANDSCAPE	Prescription	Potential Interaction with other land and sea interests	Priority	Timescale	Take forward to Action Plan	Rationale / Synergies between action
E6	LSS 02 Protect and enhance valuable landscape elements	1. Prepare and implement management schemes for all woodland areas	Military Training Estate Management Archaeology Nature Conservation Recreation Generally positive interaction with all other interests	C/D	2-3  4-5	Y	'Driven' by estate management:  potential for Coed Cymru advice and assistance
		2. Reflect historic field pattern wherever possible in reviewing grazing regimes/deciding fence lines	Military Training Estate Management Archaeology Nature Conservation Generally positive interaction with other interests	D	1-5	Y	'Driven' by estate management and nature conservation
		3. Review management of wetland habitats	Estate Management Archaeology Nature Conservation Generally positive interaction with other interests	C	2-3	Y	'Driven' by estate management and nature conservation

Res. Obj	Plan Objective LANDSCAPE	Prescription	Potential Interaction with other land and sea interests	Priority	Timescale	Take forward to Action Plan	Rationale / Synergies between action
	LSS 02 (continued)	4. Maintain character of traditional 'bungalow' buildings within Merrion Camp	Estate Management	D	1-5	Y	Take note of contribution to character of the camp in considering future of buildings
		5. Maintain existing tank and other military vehicle hulks as distinctive features in the landscape	Military Training Estate Management	D	1-5	Y	Take note of contribution to character of the ranges in considering disposal
		6. Review management of archaeological and historic landscape features	Military Training Estate Management Archaeology Nature Conservation	B	1-5	Y	'Driven' by archaeology
		7. Retain Centurion and Conqueror tanks as distinctive entrance features	Estate Management	C	1-5	Y	

		8. Prepare schemes for rehabilitation/maintenance and future use of all historic and traditional buildings within the Range	Military Training Estate Management Archaeology Nature Conservation Generally positive interaction with other interests	B/C	1  2-5+	Y	Initial appraisal/ prioritisation  Detailed appraisal/ commencement of implementation Potential for involvement of NPA Building Conservation Officer
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Res. Obj	Plan Objective LANDSCAPE	Prescription	Potential Interaction with other land and sea interests	Priority	Timescale	Take forward to Action Plan	Rationale / Synergies between action
E5	LSS 03 Tackle or provide mitigation for features which detract from quality of the Range landscape	1. Review appearance and condition of NPA car parks at Stack Rocks and St Govans	Recreation Archaeology	D	4-5	Y	'Driven' by NPA
		2. Prepare landscaping programme for Merrion Camp and tank park	Estate Management Archaeology Nature Conservation	C	2-3	Y	Include consideration of future building development needs in preparation of programme
		3. Extend hedgerow planting along highway boundary, Merrion Camp	Estate Management	C	2-3	Y	Component of LSS 03.2 above
		4. Review signing provision, with view to removal of redundant signs; and design guidance for new and replacement signs	Estate Management Recreation	C	1  2-5	Y	Initial appraisal  Design guidance/ programme of removal/replacement



Res. Obj	Plan Objective LANDSCAPE	Prescription	Potential Interaction with other land and sea interests	Priority	Timescale	Take forward to Action Plan	Rationale / Synergies between action
E6	LSS 04 Restore degraded areas/features of existing or potential value to Range landscape	1. Consider measures to minimise wear and tear to cliff top vegetation from recreational activities; including provision of permanent belay points	Nature Conservation Recreation	C	2-3	Y	
		2. Carry out hedgerow/hedgebank condition survey and rehabilitation/enhancement programme	Military Training Estate Management Nature Conservation Archaeology Generally positive interaction with other interests	C	1 2-5	Y	Limited survey  Rehabilitation/ enhancement programme
		3. Consider scope for hedgerow planting to recreate elements of traditional field pattern	Military Training Estate Management Nature Conservation Archaeology Generally positive interaction with other interests	C	2-3	Y	
		4. Consider scope for clearance and enhancement scheme at 1) vehicle holding area, Castle Lady valley 2) blowholes	Nature Conservation Estate Management	C	1 2-5	Y	Initial appraisal  Clearance/ rehabilitation programmes

<b>Res. Obj</b>	<b>Plan Objective LANDSCAPE</b>	<b>Prescription</b>	<b>Potential Interaction with other land and sea interests</b>	<b>Priority</b>	<b>Timescale</b>	<b>Take forward to Action Plan</b>	<b>Rationale / Synergies between action</b>
E2	LSS 05 Promote awareness and understanding of the special landscape qualities of the Range	1. Prepare interpretation guides on military and landscape interests	Recreation Nature Conservation Archaeology	C	2-3  4-5	Y	Introductory leaflet  Fuller guide

RES OBJ	Plan Objective ACCESS & RECREATION - AC	Prescription	Potential interaction with other land and sea interests	Priority: A, B C, D	Timescale			Take Forward to Action Plan?		Rationale / Synergies between actions
					1	2/3	4/5	Y	N	
'D' Aim	ACPO1: Maximise opportunities for access, enjoyment & appreciation of the Ranges.	a) Range East Coast Maintain access to Range East coastal strip in non-firing times especially at weekends. Increase summer access especially in summer holidays. Alter by-law/range notification to encompass whole strip of Range East not just Coast Path.	Mil  Mil/NC	B  D D	1  2 2					
		b) Legally define Coast Path from Broad Haven South to St Govan's		D	2					
		c) Maintain existing leases to National Park at St Govan's and Stack Rocks. Provide and improve car parks, access and interpretation.		A	On.					
		d) Maintain current programme of climbing liaison and build closer contacts with other users.		A	On.					

		e) Maintain and develop joint ranger role on Castlemartin.		B	On.		
		f) Provide annual statistics to show number of days/nights fired (and access closed) and accuracy of times predicted against actual firing.		D	On.		
		g) Maintain present caving access arrangements with Cambrian Caving Council. Meet periodically to review arrangement.	NC AR	B	2		
		h) Seek funding for Castlemartin interpretation leaflet to explain special features and management.	AR NC	D	3		
		i) Long term review location of car parks	NC/AR/MT	D	4		

		Range East Inland & Range West j) Develop with National Park a guided inland walk on Range East. (Would require EOD clearance)	MT/NC	D	3		
		k) If successful develop a circular walk on Range East that is available for unguided access. (Would require participants to be briefed under present arrangements)	NC/MT	D	4		
		l) Address access issues on Range West by following through one of the options in para.1.5. Explore potential of making a guide available at Stack Rocks every weekend day in July/August to gather a group of long distance walkers and escort through range west.	MT/NC/EM	B	2		

		m) Within present access regime:	MT/NC	D	3		
		• Review existing programme of Range West access – linear and return walks, minibus tours and other visiting groups	NC	B	1		
		• Ensure that guided walks (in bird breeding season) stick to the defined route.	NC/MT	C	1		
		• Amend present blanket climbing restriction to end on 1 <sup>st</sup> August rather than 16 <sup>th</sup> August.	All	C	On.		
		• Any proposals for changes in access from present arrangements should be discussed with users before being implemented. At same time changes must also be considered by SPRRAG.					
		<b>N.B. Changes to access regime will mean prescriptions change</b>					

		Marine n) Co-ordinate firing information for Castlemartin, Manorbier, Penally (and if possible Pendine) and distribute a single, easily interpreted sheet of information fortnightly giving detail for the month ahead. (App. 7)		D	2		
		o) Publicise a phone number with a recorded message giving a daily update for all ranges in S Pembs of firing times and areas.		C	1		
		p) With Penally and Manorbier co-ordinate a predictable no-firing period (or periods) to maximise public access benefit e.g. No firing on Sundays or in August. (Not a present practicable for Penally/Manorbier.)	MT	C	2		

		q) Review size of sea danger area for firing. Can information show the restricted areas more clearly? (App 7)	MT	D	2		
		r) Clarify by-law interpretation to clearly allow boats on passage through range and publicise this arrangement.		C	3		
		s) Request chart publishers to show the range on main charts. (PEXA chart is not available locally except on order.)		C	2		
		t) Provide annual statistics information to show number of days/nights fired, times of week/year and accuracy of times predicted against actual firing.		B	2		



		u) Using the expected "Range Open" days for the sea danger areas (Manorbier and Castlemartin) seek to promote guided boat trips along south coast with special emphasis on Range East and West. If done in late July/August there is little potential for conservation conflict and this would give significant access to view Range West for all.		D	2		
D1/ D2/ D9	<b>To provide access for a wide range of activities, (including specialist recreation), that draws on the special qualities of the range and actively avoids conflicts with conservation and other user groups</b>	Prescriptions from 5.1.3 meet this objective as well					
		a) Maintain Range East Coast Path (Stack Rocks to St Govans) as a bridleway	MT/EM/NC	A	1		
		b) Create Coast Path to St Govans to Trevallen (and thence to Broad Haven South) as Right of Way – Preferred option is bridleway.	MT/EM/NC	B	2		

	<b>other user groups</b>	c) Review and formalise arrangements for access to Range West. (Depends on decisions at para. 1.5.4)	MT/EM/NC	C	2		
		d) In enhancement of leased car parks seek opportunities to further improve disabled access.	NC/LA	B	2		
		e) For events, apply best practice principles to not only avoid damage but to promote principles of good management and appropriate siting and activities.		B	On.		
		f) BMC to provide belay boulders at appropriate places in Range West. (Subject to MoD/CCW/PCNP agreements confirmed by SPRAGG.)	NC/MT/EM/LA/AR	D	3		

D5/ D8		g) For all minor activities and events, need to establish a consistent and rigorous approach. Consider numbers of people benefiting from an access opportunity, degree to which this opportunity uses the special quality of the range, any impacts on the special qualities of the site, on other users' enjoyment and on the overall management ethos being put forward.	NC/AR/EM/MT	B	On.		
D3/ D4	<b>To promote understanding and support for the special qualities of the Range and of the need for management</b>	a) Seek joint funding for site specific leaflet for Castlemartin.	AR/LA/NC	D	3		
		b) Maintain Ranger presence during spring/summer. In light of the prescriptions in the ILMP, examine the potential to develop a jointly funded post to assist with implementation of ILMP, user briefings and environmental education. To work across all 3 South Pembs. Ranges.	NC/MT	B	On.		

	c) Seek funding for joint enhancement of PCNP car parks including interpretation and viewing. Review potential for wider interpretation of area with NT.	LA/NC/AR	D	3		
	d) Continue to produce and distribute free climbing leaflet.	NC	B	On.		
	e) Improve clarity, content and distribution of firing information.	MT	C	On.		
	f) Provide information for users on reverse of firing information sheets that are distributed App. 7	MT	C	On.		
	g) Consider guaranteed access days across whole of South Pembrokeshire and promote interpretative boat trips (possible joint venture with RNLI).	MT	D	3		
	h) Inform Consultees of progress of ILMP and make Executive summary document widely available.		B	On.		
	i) Make whole plan available on Internet and publicise.		B	1		

		j) Provide annual liaison meeting for users – a) Range West land users, b) Marine commercial users, c) Marine recreation users. Meet annually initially on an experimental basis to launch ILMP. Continue if found useful.	All	B	1		
	<b>To make optimum use of non-firing times and information to provide as much land and sea access as is consistent with safety, range use and conservation priorities</b>	a) Ideally to minimise firing in July/August and allocate predictable 'firing free' periods for Castlemartin and Manorbier to allow for planned access.	MT	C	On.		
		b) Establish a 24-hour answer phone giving firing details updated morning and evening.		B	1		
		c) Explore potential of increasing use of checkpoints between Stack Rocks and St Govan's to increase chances to reach coast when only part of Range E is in use (e.g. at each of the main fence lines).	MT/EM/LA	C	2		

		d) Review list of information outlets for firing times and distribute to commercial fishermen.		D	On.		
		e) Co-ordinate firing time information between 3 ranges. Could allow for more frequent distribution at same cost.	MT	D	On.		
		f) Review format of firing notice and opportunity to provide information (cf. Appendix 7)	MT	D	2		
		g) Explore placing firing information on the Internet and publicising.		D	2		
		h) Provide statistics to show level of use each year against recent past use, example, e.g. "Days St Govan's car park open 9 – 5".		C	2		
		i) Provide annually table showing days of expected firing against days actually used and monitor trends.		C	2		

		j) Formally review requirement for dry training – see also para 3.1 and publish plans for future levels of use.	MT	C	2		
		k) Continue to keep Castlemartin free of live firing at weekends and Bank Holidays – this greatly assists the development of use of the area both land and sea.	MT	C	On.		
		l) Establish user meeting for a) Range West land areas, b) marine commercial users, c) marine recreational users. Meet annually initially on an experimental basis to launch ILMP. Continue if found useful.	MT	C	1		
		m) Offer range information on Castlemartin Range to chart publishers to improve information for marine users.		D	2		





		Monitor firing programme in relation to lambing period.					
-	EMPO4: Control invasive species	Survey the extent of species.	AC (Hinder access) AR (Physical Damage) LS (negative Impact) MT (Prevent free Movement)	B	*		See NCP 01(12)
		Formulate control programme					
		Ensure tenants fulfil letting agreements					See EMP 02
-	EMPO5: Promote commercial & casual use of the Range	Monitor casual Range usage to avoid over use etc.	AR (Sensitive approach) AC (Much opp. for Conflict) LS (Need for constraint) MT (No op. for conflict) NC (physical Damage)	C	*		Monitor Casual Use, and vermin control
		Prior liaison with SPRAGG re. Range Usage conflict. Review nos. and type of quarry shot.					
-	EMPO6: Provide & manage woodland for military training	Future planting when there is a military/conservation requirement.	AR (Limited Physical Damage) LS (Visual impact) MT (Excessive growth a hindrance) NC (No new Planting)	C	*		Liaise with SRAAG wherever future planting is considered.
		All woodland managed in accordance with ILMP process.					
		SPRAGG to be consulted prior to new planting					
-	EMPO7: Maintain the quality of the natural surface & ground water.	Promptly report all pollution incidents	AC (Conflict Pollution/Access) MT (Conflict Training /Access)	B	*		Review Range standing orders Monitor ground water
		Adhere to range standing orders					

		Monitor groundwater samples.	NC (Prompt clean up essential) LS (Conflict Pollution/view)				
	EM08 Assess Marine Pollution and plan to clear up spillage's	Complete Marine Survey and analyse results		B	*		Analyse results of marine survey.
		Agree strategy for access with emergency planners					Agree strategy.
C3	EMPO9: Ensure noise levels remain within legal limits	Weather forecasts made prior to training	AC (Limited interaction) AR (Limited interaction) NC (Helicopter noise)	B	*		
		Investigate all noise complaints					Investigate claims within seven days.
E5	EMPO10: Endeavour to keep training area clear of litter & debris.	Promote the proper disposal of litter	AC (Incl. Public Access -Inc Litter) AR (Sites currently protected with military firing) LS (Blowholes) MT (Limited conflict.)	B	*		Review standing orders see EMP07
		Review clean up policy and waste management					Review waste management policy.

## 5.0 Roles & Responsibilities, Monitor and Review

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### 5.1 ROLES & RESPONSIBILITIES

#### 5.1.1 Commander ATE Pembrokeshire and Defence Estates

The Commander ATE has the responsibility to ensure the training area is managed to meet the military training needs of the establishments under his command. It is also the Commander's responsibility to fulfil MOD's other statutory requirements especially to the environment and to integrate the demands of others with an interest (economic and social) in the training area. The Commander reports to the Commander Army Training Estate, HQ ATE, Training Support Command (Land), based at Warminster.

The mechanism to deliver the above outputs is the Integrated Land Management Plan and it is the ATE Commander who has the responsibility to ensure the ILMP is implemented. DE, the Management Implementation Team, SPRRAG and others support the Commander to help deliver the agreed projects.

The role of Defence Estates is to act as an adviser to the Commander and to ensure that the implementation of the ILMP is managed effectively. Defence Estates will facilitate the ILMP process by providing the relevant support that is required to the Management Implementation Team (MIT), SPRRAG and other meetings that implement the ILMP. Defence Estates will also organise and run the projects that are not being undertaken by the established implementation organisations and structures.

The ILMP is the mechanism to deliver the Rural Elements of the Estate Strategy (REES) and the effective delivery of the ILMP is supported by the budgets that have been made available to the REES primarily for environmental projects. The REES funding system is therefore one of the key aspects dictating the timing of meetings to manage ILMP projects.

#### 5.1.2 ILMP Management Implementation Team (MIT)

MoD will encourage the statutory bodies to send representatives to the MIT and to be able to advise on issues relevant to their statutory remit. The statutory bodies represented will be those whose input is effectively required to consider the mainstream issues of managing the estate on a day to day basis. Other statutory bodies will be invited to attend meetings if a specific issue is to be discussed where their input is required e.g. The Environment Agency.

The organisations representing the 'components' listed below are those providing advice at present to the MIT. The organisations representing the 'components' of the ILMP are open to change if agreed with the relevant statutory bodies and MoD.

The MIT at present comprises the Chairs of the ILMP Component Management Plans:

Commandant	ATE Pembrokeshire (Chairman)
Estate Adviser (Wales)	Defence Estates
Development Control Office	Cambria Archaeology
(Archaeology)	
Team Leader Pembroke	Countryside Council for Wales
(Nature Conservation)	
Recreation Management Officer	Pembrokeshire Coast National Park Authority
(Access and Recreation)	
Head of Conservation Services	Pembrokeshire Coast National Park Authority
(Landscape)	
Estate Adviser (Pembrokeshire)	Defence Estates (Secretary to MIT)

Subject to the make-up of organisations represented on the MIT it would be expected that there to be a representative from each of the statutory bodies unless responsibility for representation is delegated by that body, e.g. Cambria Archaeology for CADW.

Specialist support can also be called upon as necessary, for example members of SPRRAG or the DE Training Estate Environmental Support Team, supplemented by consultants.

Outstanding projects will be identified by the MIT and directed to the Estate Adviser to undertake with appropriate support.

The MIT is responsible for the management of: (i) the ILMP process and (ii) compliance monitoring for meeting the objectives set out in the ILMP document. The MIT is responsible for the management of projects within the ILMP to achieve the agreed objectives. SPRRAG in conjunction with the Estate Adviser supplemented by other support, such as consultants, will feed information from the tasks that they have agreed to undertake, to the MIT for an assessment to be made of results against the objectives. This information will be fed through the Commander ATE Pembrokeshire to the Rural Elements of the Estate Strategy Team for the Annual Stewardship Report.

MIT, as an output from their meetings, will produce an assessment of the outcome of the projects to ensure that they are completed to a satisfactory level of quality and fulfil the initial objective. Where projects are not completed the MIT will assess the potential to finish the task with the present resources and assess the circumstances under which the project was not completed. Where targets have not been fully completed and where the project is unlikely to be completed, MIT will make recommendations to investigate alternative methods to fulfil the project.

Meetings: The MIT will meet in February and September each year to fit in with MoD's financial bidding timetable. The February meeting will take place after the SPRRAG meeting (5.1.3 below) and the purpose will be to re-distribute tasks in the work plan that have not been allocated to SPRRAG members or other delivery mechanisms. The project management by a member of the MIT, of tasks that have been allocated to SPRRAG members, should also be agreed.

The September meeting will also take place after the SPRRAG meeting (5.1.3 below) to collate the results of work by the MIT, SPRRAG members and other support staff to prepare the report for the Rural Estate Strategy Annual Stewardship Report. The meeting will also provide the opportunity to assist the Commander ATE Pembrokeshire with the preparation of the RES bid for the following financial year.

The annual review of the ILMP document will take place at the September meeting. The review process is described below (5.3).

If necessary extra meetings can be called if it is found that issues cannot be dealt with by meetings or liaison with key members over specific problems.

#### 5.1.3 South Pembrokeshire Range Recording Advisory Group (SPRRAG)

SPRRAG is the ATE Pembrokeshire Conservation Group. The role of MoD Conservation Groups is detailed in Joint Services Publication 362, chapter 5 annex B (copy in appendix).

The role of SPRRAG in the delivery of the ILMP is not covered by the JSP, so it is identified here.

The members of SPRRAG comprise representatives from statutory and non-governmental bodies and individual specialists.

The output of the ILMP is a series of actions that are required to meet objectives for the management of the Range. The objectives for management have been agreed with the ILMP Project Implementation Team, some of whom are also members of SPRRAG. In addition to their existing recording and monitoring activities, SPRRAG members are invited to undertake and fulfil projects identified in the ILMP Action Plan. Members of SPRRAG, as a first step, will identify those projects that they feel cannot be undertaken by the group, but will produce an initial outline for such projects where there is the expertise within the group. The projects that cannot be undertaken by SPRRAG members will be actioned by other appropriate bodies or through consultancy support, depending on financial resources.

Many of the objectives in the ILMP form part of larger projects that cover issues both in and outside of ATE Pembrokeshire. As many of these projects include key members from SPRRAG they are therefore in a position to act and advise from the wider perspective on many of the projects.

Projects that are being undertaken by SPRRAG (as agreed in the ILMP programme) will be planned by the appropriate group members undertaking the project and implemented with the resources made available (e.g. REES funds).

SPRRAG members do not have a responsibility to undertake ILMP projects, but the MIT will support SPRRAG members to do so in the first instance.

As the MIT meet only twice a year SPRRAG projects will be monitored by the respective sub-group members of the projects and reported to the respective representative on the MIT. Any shortfalls in reaching targets or where advice is to be given should be relayed to the Estate Adviser to enable that person to assess and explore options for support measures or to take appropriate steps to successfully achieve targets. For example where timing of meetings does not allow appropriate issues to be discussed in time e.g.

climbing/conservation issues there must be this back-up mechanism to ensure that actions are implemented. This could be a formal meeting if required.

Meetings: SPRRAG will meet in February and early September each year. The February meeting will provide SPRRAG members with the opportunity to volunteer for projects in the ILMP Work Plan, which will have been sent to them in advance of the meeting and to highlight potential issues that could inhibit delivery of projects. At the September meeting, SPRRAG members will feed the project results back to the Management Implementation Team (MIT) for assessment and inclusion in the annual report for the Rural Elements of the Estate Strategy and Annual Stewardship Report. Meetings of SPRRAG will also ensure that strategic and policy issues that arise are passed onto MIT to be fed back to MoD.

## **5.2 MONITORING**

- 5.2.1 As identified above, the MIT are responsible for monitoring both the ILMP process and compliance monitoring against the objectives of the ILMP. The ILMP document will be updated through the annual review process identified below. (5.3).
- 5.2.2 One element of the Rural Estate Strategy for the Defence Estate, is to identify methods of monitoring key components of the ILMP e.g. the nature conservation and archaeological interest of the MOD estate. Various studies, such as the use of satellite imagery for monitoring vegetation communities, are underway. The results of such studies will be implemented across the Army Training Estate, including Castlemartin, at a future review date. This standardised monitoring for MOD purposes may have limited direct application at a local level. To ensure opportunities are not missed to enhance ILMP projects in ATE Pembrokeshire, MOD monitoring methodologies will be discussed with members of MIT/ SPRRAG.
- 5.2.3 There is also a requirement to gather information on the type and levels of training activity undertaken on the estate to provide context for the monitoring of nature conservation and archaeological features. Simple indicators, such as the number of days that public paths are open, will provide basic trends and it is anticipated that in the longer term, the Army's range booking system, currently being developed by MoD, should provide a means for collating military training data.

## **5.3 REVIEW**

- 5.3.1 The ILMP is designed to be reviewed and updated through a two-stage process and is ring bound for this purpose. The ILMP work plan will be reviewed annually in early September, following the SPRRAG meeting (to meet the Army financial bidding for REES funds in September / October). The report on projects from the MIT meeting will inform the following years programme. The review will be based on the work plan element of the ILMP, as detailed below.  
The second stage of the process will be a periodic (5-year) review of the entire ILMP document, which will provide an opportunity to assess each element of the plan and ensure it accurately reflects current objectives and targets for the management of the Range.

5.3.2 The DE Estate Adviser will initiate the annual review process by prompting each of the members of the MIT to ask members of the component e.g. archaeology plan teams, SPRRAG or other specialists or advisers to up-date their final reports. This letter will request a list of new proposals either complete or outline projects for the coming year. It will be circulated annually at the beginning of August for responses to be returned by the September MIT meeting. The responses will be considered and agreed at a meeting of the Management Implementation Team. The amendments will then be distributed to all ILMP holders by the end of October.

5.3.3 The annual review process should report on:

- 1) The projects within the work plan that have been achieved
- 2) The results of monitoring, as detailed at 5.2 above
- 3) The projects which have not been achieved with the reason for not achieving them.
- 4) New projects which need to be added to the work plan for the following 5 years, for example, military developments, biodiversity targets, or changes in policy / legislation that affect the management of the Ranges.

5.3.4 The periodic (5-year) review should address:

- 1) Baseline information collated in the ILMP, should be reviewed and any required revisions should be identified and added to the work plan to be actioned (for example, re-survey work)
- 2) The relevance of the objectives, identified in the component plans and taken through to the conflict resolution and integration phases of the plan
- 3) An update of the prescriptions, identified for the achievement of the objectives.
- 4) A revised work plan to take account of the above 3 items.

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# APPENDIX 1

## PRIMARY FEATURES

### BACKGROUND

The following pages comprise a series of management plans, one for each of the primary features of Castlemartin Range. There is a summary of outline prescriptions and proposed actions for each feature at the end of each plan. Full descriptions of each proposed project will be produced as and when appropriate.

Primary features are those which meet the SSSI selection criteria and are therefore considered to be of national or international importance. The primary features of the Range are therefore those for which the SSSI portion of the Castlemartin Range have been selected. However it should be pointed out that some primary features are also partially dependent upon parts of the Range outside the SSSI - important examples include greater horseshoe bat and chough (for feeding and/or roosting purposes). Another primary feature (silver-studded blue butterfly) has recently been proven to have established sub-populations just outside the SSSI boundary within the Range.

Several primary or unconfirmed primary features at nearby Stackpole NNR/SSSI are dependent on supplies of naturally high water quality (low in nutrients and other pollutant sources) from a catchment which includes a significant area of the Castlemartin Range. This includes both the Merriem Stream (which rises on the northern periphery of the Castlemartin Range) and the Limestone aquifer (See Appendix 9).

It should be noted that where species listed in the various Schedules of the Wildlife and Countryside Act 1981 (as amended) occur on the Range, they may still not meet the SSSI selection criteria and are therefore listed as secondary features and covered in Appendix 3.

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**FEATURE: MARITIME CLIFF & ASSOCIATED LEDGE & CREVICE COMMUNITIES**

**OBJECTIVE:** To maintain Maritime cliff and associated ledge and crevice communities (NVC MC1 and MC6) within the *Limestone sea cliffs of South-west Wales* candidate Special Area of Conservation (SAC) in favourable condition, where:-

<b>Distribution of maritime cliff &amp; crevice communities:</b>	<p>A crevice community (MC1) should be fairly widespread along exposed rocky, rock-clitter dominated, coastal cliff-tops and bevelled cliffs between Broadhaven (SR977935) and Berry Slade (SR884970).</p> <p>A seabird cliff community component (MC6) should occur between Broadhaven and Green Bridge of Wales, with extensive patches on Elegug Stacks and bays between Green Bridge of Wales and Flimston Bay; plus Buckspool Down; Newton Down and near New Quay.</p>
<b>Community Diversity &amp; Structural condition:</b>	Community diversity and structural condition, shown by selected indicator species, should meet the requirements of the statutory designations set in the SSSI Management Plan.

<b>FACTORS - A summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Currently no significant factors are thought to apply.	A potential for localised excessive erosion of community types caused by intensive military use, or deposition of extraneous materials.
<b>2. Agriculture and Estate Management</b>	
Currently no significant factors are thought to apply.	Over-grazing could be damaging on cliff-tops and into accessible crevice zones.
<b>3. Access and Recreation</b>	
A Coastal footpath, part of Pembrokeshire Coast "National Trail", provides excellent opportunities to view the feature, and causes minimal impact to it.	Increased pressure for wider ranging outdoor activity - eg from orienteering/coast-steering and cliff-climbing - could pose potential threats to components of the community complex, by trampling/erosion.
<b>4. Natural Processes and other Factors</b>	
<p>Natural geomorphological processes &amp; climatic conditions provide open conditions &amp;, in so doing, determine the community types present &amp; their extent.</p> <p>Seabird guano &amp; disturbance by seabirds at breeding colonies underpins seabird vegetation community MC6. Their numbers are presently stable or increasing.</p>	<p>The introduction or spread of highly invasive alien plants such as Hottentot fig could pose a threat to maritime cliff and crevice communities.</p> <p>Oil spills, and nutrient enrichment could pose potential threats to components of the community complex. Seabird numbers can be affected by natural factors (eg food supply) and by oil pollution which could, potentially, affect the extent of the MC6 community.</p>

<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the maritime cliff and associated ledge and crevice communities were considered to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The maritime cliff, ledge and crevice communities form a composite "climax" vegetation community, maintained by very exposed conditions. Distribution and extent, community diversity and condition being directly dependent on natural geomorphological processes and climatic conditions.

Grazing activity is insignificant and, although not necessary to maintain the community, is thought unlikely to be harmful.

Occasional used rounds of mainly metallic litter, from MOD tank-firing activities, occur along the beveled cliffs, cliff -slopes and ledges. The impact this has on the vegetation communities is probably minimal at present but requires occasional review.

Public pressure is minimal at present, due to the inaccessible nature of most of the cliff ledge and crevice communities. Regular large scale group activities such as coast-steering and cliff scrambling/climbing (including "gardening" by individual climbers) could cause erosion and should be prevented.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through MOD staff implementing access restrictions.
- 2. Through the Range Recording and Advisory Group (SPRRAG);
- 3. Repeating a programme of photographing of potential coastal erosion zones, from fixed points established along the Range coast by MOD staff.
- 3. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 4. Providing copies of relevant information to the CCW and the County Botanical Recorder.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor maritime cliff crevice vegetation communities.
2. Monitor coastal erosion by fixed point photography.
3. Prevent excessive build up of extraneous litter on cliff crevice/seabird cliff communities.
4. Prevent excessive human-induced erosion to cliff crevice/seabird cliff communities.
5. Prevent/control invasive alien plant species such as Hottentot fig.
6. Maintain controlled public access policy.
7. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
8. Obtain all necessary SSSI consents/licenses from CCW.

**FEATURE: MARITIME GRASSLAND****OBJECTIVE:**

To maintain maritime grassland communities (NVC MC5, MC8, MC9, MC10 & MC11) within the *Limestone sea cliffs of South-west Wales* candidate SAC in favourable condition, where:-

<b>Extent of maritime grassland:</b>	Maritime grassland should extend over about 140 ha, approximately its current extent.
<b>Community Diversity &amp; Structural condition:</b>	Community diversity and structural condition, shown by selected indicator species, should meet the requirements of the statutory designations set in the SSSI Management Plan.

<b>FACTORS - A summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
MOD use has resulted in a lack of intensification of farming on the site, therefore preventing intensification of use of herbicides and pesticides.	Excessive erosion caused by military activities - e.g. changes in target, bunker, road or radar locations - and associated build up of extraneous materials, could potentially cause localised damage.
<b>2. Agricultural and Estate Management</b>	
Community complex condition is being maintained by grazing - through winter sheep & cattle grazing & to a lesser extent by rabbits.  Several other features benefit through grazing this grassland, e.g. vascular plants assemblage & choughs.  The current practice of reducing grazing pressure on the green-winged orchid population on Chapel Point, near St Govan's Head, by temporary exclosure, has been beneficial in seasons when needed.	Changes in grazing pressure: Over-grazing (e.g. by sheep) causes localised enrichment & loss of floristic diversity - including, e.g., damage to green-winged orchids.  Under-grazing also leads to nutrient build-up & succession which is also undesirable. Both may also impoverish the condition of vascular plants in the community complex.  Use of fertilisers or herbicides would be damaging to the vegetation communities.
<b>3. Access and Recreation</b>	
A small amount of trampling may benefit some low-growing plants, needing open conditions often associated with pathways.	Increases in access pressure could scar/erode parts of the feature - ie honey pot zones between St Govan's Head & Huntsman's Leap.
<b>4. Natural Processes and other Factors</b>	
A mild but very windy maritime climate maintains natural grassland development	Potential threats from: changes in climate; air-borne pollutants; decline in rabbits; spread of invasive species (eg Tor Grass) which may be unpalatable to grazing stock and could detrimentally affect community diversity.  Several hectares of maritime grassland identified by the 1998 ITE survey lie outside the

	SSSI.
<b>5. Archaeological Management</b>	
Potential requirements to maintain archaeological features free of damage should be beneficial.	Archaeological excavation could cause temporary localised damage.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the maritime grassland was considered to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The vegetation complex requires regular grazing to maintain its extent, community diversity and condition, intrinsically linked to low nutrient inputs and related to climatic conditions.

Sheep grazing is currently fairly intensive along the Castlemartin coast during the period December to early May, this may cause localised enrichment, associated with over-grazing and dunging. Presence and potential spread of species such as spear thistle or creeping thistle should be recorded.

Conversely a lack of grazing, due to requirements to remove stock from active parts of the range during the bulk of the growing season could, in some wetter years or locations lead to under-grazing and a more "tussocky" and less botanically diverse communities.

An associated build up of litter and nutrients, could allow scrub to invade in less exposed parts and could, potentially, be a greater management problem to deal with, as well as affecting other special "features" requiring open, or very short swards (e.g. choughs which often feed on clumped populations of insects such as ants or on insect larvae associated with open soils, grass roots or dung).

A mixed sheep and cattle regime is better than just sheep alone, to provide structural variation and remove rank vegetation. The precise timing and type of grazing stock will require some seasonal flexibility and occasional "fine tuning" to ensure that the overall condition of the vegetation is maintained.

There will need to be a watchful eye of the grazing impacts on rare, scarce or local grassland species of importance in the SSSI. A typical example is the large population of green-winged orchids near St Govan's Chapel and Stennis Ford which will benefit from a short period of exclusion from grazing pressure when flowering in late April/early May.

Tor Grass, identified in Range West by ITE botanists in 1998 could, potentially, spread further into the coastal grassland and its presence should be recorded, with a view to considering eradication of the species if it appears to threaten maritime grassland or related features.

Several hectares of maritime grassland were recorded outside the SSSI (candidate SAC) boundary (ITE NVC survey, 1998). Further investigation is needed to assess the quality of these previously unidentified grassland areas in relation to a review of the SSSI boundary.

Regular surveillance of the vegetation communities should be undertaken over at least six yearly intervals to ascertain current vegetation condition - including fixed point photography to record gross changes. More detailed monitoring of selected areas should be undertaken at least every ten years.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and the County Botanical Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor maritime grassland vegetation communities.
2. Maintain a controlled mixed grazing regime.
3. Prevent overgrazing of green-winged orchids in spring (consider temporary stock enclosure).
4. Prevent use of fertilisers or herbicides.
5. Prevent excessive build up of extraneous litter on coastal grassland.
6. Prevent excessive human induced coastal erosion of calcareous grassland.
7. Prevent/control colonisation by tor-grass and other potentially invasive plants.
8. Control vehicles along coast to existing tracks.
9. Manage/control spread of coastal scrub vegetation.
10. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
11. Obtain all necessary SSSI consents/licenses from CCW.



**FEATURE: CALCAREOUS HEATH****OBJECTIVE:**

To maintain calcareous heath communities (NVC H7, variant H7/H8 and H8) within the *Limestone sea cliffs of South-west Wales* candidate SAC in favourable condition, where:-

<b>Extent of calcareous heath:</b>	Calcareous heath should extend over at least 138 ha, approximately its current extent.
<b>Community Diversity &amp; Structural condition:</b>	Community diversity and structural condition, shown by selected indicator species, should meet the requirements of the statutory designations set in the SSSI Management Plan.

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
<p>MOD use has resulted in a lack of intensification of farming on the site, therefore preventing intensification of use of herbicides and pesticides.</p> <p>Some scrapes, e.g. for targetry, on the periphery of the SSSI have benefitted heath colonisation.</p> <p>Occasional accidental small patch burns due to military activities may benefit structural diversity and maintain heath communities.</p> <p>Occasional cutting of stands of over-mature heath and scrub, eg for infantry access, may benefit structural diversity and maintain heath communities.</p>	<p>Military development at St Govan's Head in the 1940s has slightly reduced its extent there.</p> <p>Excessive erosion by military activities - e.g. changes in target, bunker, road or radar locations - and associated build up of extraneous materials, could potentially cause localised damage.</p> <p>Excessive heath burns could be damaging over a long-term period, leading to reduction in heath &amp; an increase in grass or bracken dominance and would favour the spread of tor-grass.</p> <p>Excessive cutting or mowing of heath could reduce its overall structural diversity and quality.</p>
<b>2. Agriculture and Estate Management</b>	
Existing land tenure enables suitable grazing management to benefit the feature through sheep and cattle grazing, cutting or occasional sporadic localised burning.	Changes in management practices (e.g. over-grazing, -cutting, -burning or use of fertilisers) could cause damage to ericaceous growth; under-grazing could eventually allow over-mature gorse/scrub dominance and a loss of species diversity.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.
<b>4. Natural Processes &amp; Other Factors</b>	
<p>There is extensive calcareous heath within the SSSI - a scarce community in Britain but frequent at Castlemartin.</p> <p>50% of heather samples were regenerating or</p>	<p>Potential threats from: changes in climate; air-borne pollutants or spread of invasive tor-grass; which could detrimentally affect community diversity.</p>

building in 1995.	
<b>5. Archaeological Management</b>	
Potential requirements to maintain archaeological monuments free of damage from military, agricultural, recreational or natural factors (eg scrub encroachment) could benefit the feature.	Archaeological excavation could cause temporary localised damage.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the calcareous heath was considered to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

1940s aerial photographs show a large expanse of calcareous heath along the Castlemartin coast, with elements of heather and gorse being fairly widespread. More recent aerial photographs (1983 and 1992) plus NVC survey work in Pembrokeshire in 1995/96 confirm the extent and high quality of this community complex, as well as transitions with maritime grassland communities.

Several hectares of calcareous heath (including H7 plus mosaics of H7/H8 and H7/scrub) were mapped outside the SSSI (candidate SAC) boundary (ITE NVC survey, 1998). Further investigation is needed to assess the quality of these previously unidentified areas of heath in relation to a review of the SSSI boundary.

The current management practices of grazing by cattle and sheep (especially concentrated into the winter period) and some scrub/mature heath cutting or burning (including occasional accidental summer burns from military activities) of small patches appears not to be damaging, and probably is beneficial.

A reduction in grazing will probably lead to a more uniform gorse-dominated community, giving way to scrub in ungrazed sheltered areas. Whereas over-grazing, -cutting or -burning could produce a fragmentation of heath, increase inland extent of grassland communities.

Tor Grass, identified in Range West by ITE botanists in 1998, could, potentially, spread into the calcareous heathland and its presence should be recorded, with a view to considering eradication of the species if it appears to threaten heathland or related features.

The pock-marking of vegetation in the west of the SSSI, where live tank-rounds are fired, causes localised erosion of grassland and heath communities. However, providing there is no intensification of existing practices, such activities may also create suitable open conditions necessary for seedling herbs and regenerating ericaceous species.

Management should aim to maintain the current extent of heathland, with no fragmentation of distribution of heath communities within the site as a whole. The inland edge of the heath should be maintained in as natural state as possible.

Approximately one third of the heath should be younger than five years old and continue to support scarce plants, and insects such as silver-studded blue butterfly populations.

A controlled grazing regime should provide the best means of maintaining the heath community complex. Monitoring of its vigour will be required periodically, perhaps at least one year in six.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and the County Botanical Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor calcareous heath vegetation condition.
2. Monitor/control accidental burning.
3. Prevent excessive build up of extraneous litter on calcareous heathland.
4. Prevent excessive human induced erosion disturbance to calcareous heathland.
5. Prevent use of fertilisers or herbicides.
6. Prevent/control colonisation by tor-grass and other potentially invasive plants.
7. Maintain a controlled mixed grazing regime.
8. Manage/control spread of scrub vegetation.
9. Maintain patches of bare ground for seed propagation.
10. Control vehicles along coast to existing tracks.
11. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
12. Obtain all necessary SSSI consents/licenses from CCW.

NB

*Coastal grassland occurs in close juxtaposition with sand dune (SD) and cliff crevice (MC1 and MC6) communities and forms part of a community transition in some areas - due to the presence of aeolian sand from the old perched dune system. MC9 and MC11/CG1f occupied the greatest extent - when last assessed in 1987].*

The maximum ; or a total equivalent to at least 50% of the previous total summer SPA population, based on a five year rolling average.

**FEATURE: SAND DUNE HABITATS****OBJECTIVE:**

To maintain sand dune habitats (comprising NVC SD2, SD4, SD6, SD7, SD8, SD10, SD17 & CG7 communities) in favourable condition, where:-

<b>Extent of sand dune habitats:</b>	The community complex should extend over not less than 190 ha, (estimated by ITE to be its current extent) confirmed every six years.
<b>Community Diversity &amp; Structural condition:</b>	Community diversity and structural condition, shown by selected indicator species, should meet the requirements of the statutory designations set in the SSSI Management Plan.

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive</b>	<b>Negative</b>
<b>1. Military Use</b>	
Military use has significantly reduced the probability of the dunes & nearby beaches becoming major honey-pot recreation areas. MOD presence has also prevented attempts to reclaim land for agriculture, therefore preventing intensification of use of herbicides and pesticides.	Potentially excessive erosion, by military activities & associated build up of extraneous materials, could cause damage. Vehicle use and vehicle associated pollution in wet areas could also be very damaging.
<b>2. Agricultural and Estate Management</b>	
Community complex condition is maintained by grazing and by light military activities. Grazing is being achieved through rabbits, sheep & cattle;  Past sand quarrying has created elements of diversification within the dune communities. Including scraped areas for insects, certain plants (eg lichens and liverworts) and ground-nesting birds (eg ringed plovers); pools dug on the floor of old quarried zones have benefited invertebrate, bird and plant diversity.	Some 10% of the dunes have been quarried. Over exploitation of the sand-dune complex down to basal clay or bed-rock is a major threat to the dune system and the features it supports.  Potential changes in grazing pressure: i) Under-grazing allows undesirable succession; ii) Overgrazing or disturbance may cause erosion of lichen or dune slack communities; iii) Control of rabbit numbers may conflict with maintenance of dune features. iv) Potential nutrient enrichment, derived from the feeding hay/silage to any out wintered livestock.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Potential use of quarried areas for recreational activities could cause disturbance to or erosion of dune communities and associated features.
<b>4. Natural processes and other Factors</b>	
There are important rabbit populations in the dunes.  There is quite a high winter water table, in sloping quarried areas favouring creation and	The rabbit population is likely to suffer from episodic disease out-breaks. A lessening of grazing pressure would give rise to denser vegetation and a less diverse habitat.

maintenance of dune slacks and standing freshwater communities.	Fresh sand supply to the dune system is now very limited or non-existent, making it more or less a "fossilised system".  A potential colonisation by invasive scrub in the absence of grazing or other management, plus the introduction or spread of non-native highly invasive species such as Australian swamp cypress, tor-grass, winter heliotrope and Japanese knotweed.
<b>5. Archaeological Management</b>	
Requirements to maintain archaeological monuments free of damage should be beneficial.	Archaeological excavation could cause temporary localised damage.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the sand dune habitats were considered to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Some surface scarification or small-scale sand-extraction may maintain open conditions required for some associated features. However, large scale removal of sand from what is generally a "fossilised dune system", with insufficient new sand coming in to replenish that which was being lost will, potentially, significantly damage the system.

Within the sand dune complex dune slack community is a relatively scarce habitat, as it is within other dune systems in West Wales. Through careful selective management of the former quarrying areas, where there is a suitable water table, dune slack communities should be allowed to double in area. The wet and dry valley floors, and communities they support, should be allowed to develop naturally, as free as possible from damage and pollution, including potential build up of extraneous materials.

Too few sand dune systems in southern Britain continue to be grazed. As a result, many are becoming overgrown by bracken and scrub. It is vital for rabbit and livestock grazing to continue.

Creeping willow scrub was not a significant dune-slack component in the 1991 NVC survey. However patches of willow may be expected to develop over time, but should not be allowed to dominate any dune slacks. Any patches should be small, with a total coverage of no more than 1 - 2 hectares as an upper limit. It will be important, therefore, that subsequent successional changes are monitored - eg by fixed point photography and supplementary species recording.

Attempts have been made during the last decade to clear sea buckthorn from the dunes; however scattered plants were still evident at approximately SR 894972 in 1991 and reconfirmed in summer 1998. Colonisation or recolonisation of the dunes by sea buckthorn should not be tolerated; careful monitoring will be required, as a high priority, to ensure that the eradication programme is complete within the next five years.

Other patches of scrub (eg blackthorn) have been mapped as mainly small discrete patches. These areas should be monitored, with a need to ensure that they do not spread beyond their current extent.

Recent surveys have shown that bracken is presently relatively insignificant in the dune grassland overall. Its potential spread in extent and distribution is considered undesirable, but there is insufficient information about its current extent which requires mapping.

Other invasive plants which could be a potential problem in this habitat are Australian swamp cypress, tor-grass, winter heliotrope and Japanese knotweed.

The dunes support "small fragile" areas of open calcareous grassland supporting good populations of the rare soil lichen *Fulgensia fulgens* (Scrambled Egg lichen) (see Feature CB. P12). These areas will require monitoring and continued protection from potential impacts of military activities.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and the County Botanical Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor sand dune communities.
2. Prevent excessive build up of extraneous litter on sand dune habitats.
3. Prevent excessive human induced erosion and disturbance to sand dune habitats.
4. Prevent disturbance to dune & calcareous lichen heath communities, from vehicles.
5. Prevent use of fertilisers or herbicides.
6. Maintain a rabbit population and surveillance of rabbit numbers.
7. Maintain a controlled mixed grazing regime.
8. Manage/control spread of coastal scrub vegetation and other potentially invasive plants.
9. Maintain a series of unpolluted dune slack pools.
10. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
11. Obtain all necessary SSSI consents/licenses from CCW.

**FEATURE: SWAMP COMMUNITY****OBJECTIVE:**

To maintain a swamp community (NVC S7) in favourable condition, where:

<b>Distribution of swamp:</b>	Should be within the shallow valley bisecting Linney and Brownslade Burrows, immediately downstream of Frainslake pool dam, and in the back of Brownslade Burrows. Other areas of swamp may also develop within or close to dune slack pools in previously quarried dunes.
<b>Community Extent, Diversity &amp; Structural Condition:</b>	Community extent, diversity and structural condition, shown by selected indicator species, should meet the requirements of the statutory designations set in the SSSI Management Plan.

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
MOD use has resulted in a lack of intensification of farming on the site, therefore preventing intensification of use of herbicides and pesticides.	Excessive build up of extraneous materials, could potentially cause localised damage. Vehicular incursion could cause damage to the vegetation and its transition to dune.
<b>2. Agriculture and Estate Management</b>	
Swamp and edge transition community are maintained by existing grazing regime - sheep and cattle.  Raising seasonal levels of Frainslake stream-levels may prolong/extend swamp communities; maintaining water levels may also help to reduce potential scrub succession.	Changes in grazing patterns could induce succession and a reduction in its extent.  Extensive alterations to existing dam at Frainslake stream outlet might, if water level was reduced lead to a loss of swamp communities; or if raised flood and also partially reduce (temporarily) swamp extent.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.
<b>4. Natural Processes and other Factors</b>	
Semi-natural community, unpolluted, with an interesting transition to dune communities.  Provides good cover and feeding/breeding habitat for other primary or secondary features - e.g. otters, breeding wintering and passage wetland birds and invertebrates.	Only small areas exist in the site (see NVC map), dependent on unpolluted water supply from Frainslake pool and natural artesian sources. Eutrophication is a potential problem.  Prolonged periods of drought could induce succession and a reduction in the extent of the feature through increases in scrub if ungrazed.  The areas of swamp are too small to support a large wetland fauna. The introduction or spread of non-native highly invasive species such as Australian swamp cypress, water fern and Policeman's helmet.
<b>5. Archaeological Management</b>	

Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.
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**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the swamp community was probably in a **FAVOURABLE MAINTAINED** condition.

**SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The swamp community is physically constrained and therefore should maintain its current extent.

Its close juxtaposition with sand dune communities is noteworthy, as it provides an interesting sequence with the dune communities including an unusual transition with fixed dune communities. Vehicular use could cause long-term damage, especially in the transition zone.

The habitat may be nutrient enriched but should be further prevented from becoming over-enriched by phosphates.

The extent of open water should not be increased although the area should not be permitted to go through successional change to scrub.

Maintenance of grazing by sheep and cattle will be important, to maintain the feature and its intricate edge transition zone.

The swamp community also provides locally important cover for otters and wetland birds, such as water rail, sedge warbler, grasshopper warbler and reed bunting - some of which may breed in small numbers - and also invertebrates. Resident barn Owls and, once, a migrant marsh harrier have been recorded hunting over the swamp community.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and County Botanical Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor swamp community.
2. Prevent excessive build up of extraneous litter within the swamp community.
3. Maintain water levels and quality.
4. Maintain a controlled mixed grazing regime.
5. Prevent use of fertilisers or herbicides.
6. Prevent vehicular use within swamp & its dune transition zone.
7. Manage/control spread of willow scrub vegetation.
8. Prevent/control introduction of non-native potentially invasive species.
9. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
10. Obtain all necessary SSSI consents/licenses from CCW.



## CASTLEMARTIN RANGE - PRIMARY FEATURE OBJECTIVES

CB. P6

### FEATURE: LITTORAL HABITATS & COMMUNITIES OF MARINE BIOLOGICAL IMPORTANCE

#### OBJECTIVE:

To maintain Littoral habitats and communities in favourable condition, where:-

<b>Community Diversity:</b>	<ul style="list-style-type: none"> <li>The zonation identified by a Phase 1 intertidal survey remains the same along a fixed transect*</li> <li>Species diversity and abundance along fixed transects should remain the same*</li> </ul> <p>(* Monitoring should occur at the same time of year in order to avoid seasonal variation)</p> <p><i>A CCW Phase 2 survey may further refine the above objective.</i></p>
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<b>FACTORS - a summary of the most important factors which influence, or may influence the feature:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Currently no significant factors are thought to apply.	An excessive build up of extraneous materials, could potentially cause localised damage. In one sea-cave in Range West there is a considerable quantity of old rubbish from the Range.
<b>2. Agriculture and Estate Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Increase in coastal zone access from large group activities such as coast-steering, diving, fishing could potentially cause localised damage from trampling pressure.
<b>4. Natural Processes and other Factors</b>	
<p>Natural geomorphological processes dictate the community condition.</p> <p>MOD byelaws permit access to deal with pollution incidents in an emergency.</p>	<p>Storms can have a direct but probably short term impact on the intertidal communities.</p> <p>Oil shoreline pollution and response could cause temporary or longer term damage.</p> <p>Longer term changes in climate could cause longer term changes in community diversity.</p>

	The introduction of or spread of alien species could cause changes in community diversity.
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply	Archaeological investigation of sea-caves could potentially cause trampling or erosion damage.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the littoral habitats and communities were considered to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The littoral habitats and communities around the Castlemartin coast are mainly confined to inaccessible beaches, caves and arches, rock ledges and platforms at the base of the 30-35 metre high Carboniferous limestone cliffs. A baseline Phase 1 survey was undertaken in 1997.

The littoral habitats and the communities they support are probably relatively stable, although subjected to extremes of tide, weather and natural processes of erosion.

Careful surveillance for the spread of non-native species such as Japanese seaweed *Sargassum muticum* should be undertaken.

Parts of the littoral habitats/community zone could subject to changes or become damaged due to increases in recreational or educational developments, e.g. possibly from coast-steering, caving, climbing or field study activities. Maintenance of liaison with relevant groups (via for example, the Pembrokeshire Outdoor Charter Group) would be beneficial.

The habitats and communities are potentially vulnerable to pollution - notably by oil. Information from a phase 1 survey (See Appendix 8) and a programme of planned coastal/marine phase 2 survey should, hopefully:

- further establish the habitat and associated community condition;
- refine knowledge concerning any special considerations for management and monitoring during a pollution incident.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Maintaining liaison with Access/Recreation groups;
- 3. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Undertake Phase 2 Intertidal survey (CCW).
2. Monitor the littoral habitats and communities.
3. Maintain biotope/community/species records for SPRRAG/Site Database/GIS.
4. Prevent excessive build up of extraneous litter on beaches/in sea-caves in

intertidal zones.

5. Ensure marine pollution contingency plans cover clean-up/monitoring protocols, adequate to protect/maintain the feature.
6. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
7. Obtain all necessary SSSI consents/licenses from CCW.

## CASTLEMARTIN RANGE - PRIMARY FEATURE OBJECTIVES

CB. P7

**FEATURE:** **NATIONALLY SCARCE VASCULAR PLANTS** (excluding goldilocks aster, Stackpole sea lavender and small restharrow which are primary features in their own right).

**OBJECTIVE:**

To maintain an assemblage of nationally scarce vascular plants in favourable condition, where:

<b>Species composition:</b>	The assemblage should contain populations of the following ten nationally scarce species: Variegated Horsetail; Chaffweed; Fen Pondweed; Golden Samphire; Hoary Rock-rose; Pale Violet; Portland Spurge; Sea Hard-grass; Sea-Kale; Sea Lavender (endemic species, other than Stackpole sea lavender);
<b>Distribution &amp; number of populations in the assemblage:</b>	Distribution and number of populations of the selected species, should meet the requirements of the statutory designations set out in the SSSI Management Plan.

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Scrapes created by military activities may have helped maintain open conditions required by some species (eg chaffweed) and contributed therefore to maintaining their populations. MOD use has resulted in a lack of intensification of farming on the site, therefore preventing intensification of use of herbicides & pesticides.	Excessive erosion, changes in target, bunker, road or radar location and the build up of extraneous materials, could potentially, cause localised damage. Pollution of freshwater habitats from military activities could pose a threat to at least one assemblage species.
<b>2. Agriculture and Estate Management</b>	
Current grazing management practices maintain the components of the feature.	Construction of and changes to fences and changes in grazing patterns could pose a potential threat to the plant communities, or their distribution and overall extent.
<b>3. Access and Recreation</b>	
Some species may benefit from open conditions created by trampling.	Heavy human-induced cliff-top erosion could potentially damage populations of some

	species.
<b>4. Natural Processes and other Factors</b>	
Wide range of habitat niches - open grazed dune grassland, freshwater seepages and pools, coastal grassland, heath and rock crevice communities are especially rich.  MOD byelaws permit access to deal with pollution incidents in an emergency.	Nutrient enrichment and natural succession pose potential threats to this diversity.  Oil pollution and oil clean-up operations are potential threats to some assemblage species.  Potentially invasive alien plants - eg sea buckthorn, tor-grass, Australian swamp cypress, Hottentot fig etc.
<b>5. Archaeological Management</b>	
Potential requirements to maintain archaeological monuments free of damage should benefit the feature.	No significant factors probably apply unless excavations were being planned affecting primary feature habitats.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the assemblage of rare and scarce plants was in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The selected nationally scarce species depend on the variety and extent of high quality habitats, including community complex mosaics, for which the site was also notified.

Maintenance of the quality of the overall habitat structure, aided by a grazing regime at the levels should ensure that the assemblage of scarce or rare plants is maintained.

Two nationally scarce species sea-kale and fen pondweed are potentially vulnerable to pollution and physical disturbance from oil clean-up.

Minimising the risk of pollution or associated disturbance at these locations should help to maintain populations of these plants.

Opportunity to increase or expand populations of individual species would need to be the subject of further study. In particular the single population of hoary rockrose and sea-kale at their only locations in West Wales, are especially vulnerable. Their small populations must be regarded as being at its lowest limit of acceptable change.

All targeted species identified in the assemblage should be monitored frequently and known to be present, flowering and seeding, during a rolling six-year planning period.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and County Botanical Recorder.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor vascular plants assemblage.
2. Maintain rare species proforma for SPRRAG/Site Database/GIS.

3. Maintain a controlled mixed grazing regime.
4. Maintain patches of bare ground for seed propagation.
5. Prevent pollution of watercourses and pools, and use of fertilisers or herbicides.
6. Prevent excessive build up of extraneous litter and pollution in dune slack pools.
7. Prevent excessive human-induced erosion.
8. Prevent introduction of non-native invasive species.
9. Manage spread of scrub vegetation.
10. Ensure marine pollution contingency plans cover clean-up/monitoring protocols, adequate to protect/maintain those elements of the feature associated with the shoreline.
11. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
12. Obtain all necessary SSSI consents/licenses from CCW.

# CASTLEMARTIN RANGE - PRIMARY FEATURE OBJECTIVES

CB. P8

## FEATURE: SEABIRD POPULATION

### OBJECTIVE:

To maintain the seabird population in favourable condition, where:

<b>Species composition &amp; colony distribution:</b>	Should include populations of: <b>Guillemot;</b> <b>Razorbill;</b> <b>Kittiwake;</b> breeding throughout the range of suitable coastal cliff ledge and cliff crevice habitats.		
<b>Population size of selected species:</b> (averaged over 6 years)	<b>Guillemot</b> <b>Razorbill</b> <b>Kittiwake</b>	<b>Whole colony</b> >7000 individuals >700 individuals >250 occupied nests	<b>Study Plots</b> >1,700 individuals >300 individuals >175 occupied nests

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature:</b>	
<b>Positive factor</b>	<b>Negative factor</b>
<b>1. Military Use</b>	
Seasonal air exclusion zones have previously been drawn up for RAF low flying aircraft. Military use also potentially prevents disturbance from recreation activities during periods when access to the coast is prohibited.	Potential disturbance from military activities, including low-flying aircraft, offshore boating activities, cliff-climbing training or other changes in training activities near the seabird colonies.
<b>2. Agriculture and Estate Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.
<b>3. Access and Recreation</b>	
Good liaison with MOD, BMC, PCNP, CCW, WTWW, NT etc has produced "model" vol. climbing restrictions in breeding season.  The Pembrokeshire Coast "National Trail", provides excellent opportunities to view the "feature" and to increase visitor awareness.	Potential further developments of recreational activities (e.g. coasteering and water-based disturbance) or intensification of existing activities increasing levels of disturbance to cliff-nesting birds.

<b>4. Natural processes &amp; Other factors</b>	
<p>Sheltered cliff-ledges and crevices, supporting seabird sub-colonies, are numerous in the eastern section of the Range (between Green Bridge of Wales and Broadhaven).</p> <p>MOD byelaws permit access to deal with pollution incidents in an emergency.</p>	<p>Natural geomorphological processes, weathering, rock-falls etc, limits the amount of suitable habitat. Also the structure of the cliffs - ledges, crevices etc.</p> <p>Pollution of the sea and on shore potential impact on seabirds . Seabirds are also at risk offshore from fishery activities out-with the Range coastline - e.g. fishing nets.</p>
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.



### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the seabird colonies were generally in a **FAVOURABLE MAINTAINED** condition, though kittiwakes were in significant decline and close to the lowest limit of acceptable change.

### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Maintenance of high quality breeding habitat, free from human disturbance, such as climbing or military disturbance, is probably the most important factor. Since about 1979 seasonal voluntary climbing restrictions have been successfully employed, by agreement with the MOD/PCNP/CCW/BMC. It will be important that climbing restrictions remain in force, are adhered to by climbers and regularly reviewed.

The recently created post of a seasonal summer ranger, dedicated to access/recreational issues, fulfills a very important role along the Castlemartin coast in providing information to climbers and general visitors to the area, thus helping to minimise potential disturbance to coastal nesting birds.

Low flying aircraft, along the coast can also greatly disrupt the breeding seabirds, causing them to leave their nesting ledges in a mass panic. As well as causing a major disruption to the behaviour of the auks and kittiwakes, such hiatus events may allow access to unattended eggs or young by predatory gulls, ravens or jackdaws, resident on the periphery of the colony. Such problems should be avoidable, provided there is an agreed policy to minimise low flying exercises at the critical season within about 1 kms of the sensitive coastal zones.

The most important means of protecting breeding seabird colonies will be via the following different mechanisms, several of which are already in place:

- 1. Through MOD staff implementing access restrictions and Range byelaws;
- 2. Maintaining seasonal voluntary climbing restrictions (1st March to 31st July (Auks); 1st March to 15th August (kittiwakes); and undertaking annual reviews of their effectiveness.
- 3. By maintaining and strengthening links with local climbers, the British Mountaineering Council (BMC) and other access orientated organisations (e.g. - via annual climbing liaison meetings);
- 4. By direct on-site contact with visitors to the Ranges, through wardening - e.g., via a "dedicated" Castlemartin coast seasonal Ranger;
- 5. Through well managed integrated conservation and access arrangements - e.g. a well-briefed guided walks/talks programme (providing potential for access to "sensitive areas" and a protocol/code of conduct to minimise disturbance to cliff-nesting birds);
- 6. Through a mechanism of information boards, leaflets and cliff-top markers.
- 7. By adopting and implementing a policy of no low flying aircraft or helicopters including surveillance during oiling incidents within 1 kms of the seabird colonies between 1st March and 15th August.
- 8. Collecting & compiling breeding data from 1 - 7 above for the Site Database/GIS and SPRAG.
- 9. Providing copies of relevant information to the CCW, JNCC (Seabird Colony Register) and the County Bird Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the seabird colonies.
2. Monitor access/recreation activities & levels of disturbance to seabird colonies.
3. Maintain seabird colony count records for Seabird Colony Register; SPRRAG & Site Database/GIS.
4. Prevent recreational disturbance to breeding seabirds, through a controlled access policy.
5. Prevent disturbance to breeding seabirds from military activities including low-flying aircraft.
6. Ensure marine pollution contingency plans cover clean-up/monitoring protocols, adequate to protect/maintain the feature.
7. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
8. Obtain all necessary SSSI consents/licenses from CCW.

**FEATURE: SMALL RESTHARROW**
**OBJECTIVE:**

To maintain a small restharrow population in favourable condition, where:

<b>Distribution of small restharrow population:</b>	There should be at least one population, on the south facing limestone cliff slope Near New Quay at SR975932.
<b>Population size and Extent:</b>	Population size and extent, should meet the requirements of the statutory designations set in the SSSI Management Plan.

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Military use has probably prevented more intensive use of the area for recreation and agriculture.	Potential build up of extraneous debris could affect growing conditions. Fixed point markers (earth anchors etc) should not be placed in cliff crevice zone where small restharrow occurs.
<b>2. Agriculture and Estate Management</b>	
Small rest harrow requires open warm sites. Natural exposure augmented by grazing may keep suitable areas open.	Over-grazing could, potentially, lead to loss of flowering or seeding plants. Under-grazing could potentially lead to a loss of open habitat required by this annual species.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	The population is restricted to a small site - potentially vulnerable to disturbance.  Potential further developments of recreational activities - e.g. nearby proximity of fixed aids for Tyrolean traverse.
<b>4. Natural Processes and other Factors</b>	
Open terraced limestone cliffs with southerly aspect exist in several places. Natural exposure augmented by grazing may keep such areas open and free of scrub.	Natural geomorphological processes, limits the amount of suitable habitat.  Pollution of the coast could potentially affect the only known population.
<b>4. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

## **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

Although a single small population was still present in 1999, this population remains potentially vulnerable, plants were noticeably less vigorous and robust than those at nearby Stackpole NNR.

On the basis of caution, the condition of the feature was therefore considered to be **UNFAVOURABLE NO CHANGE**, rather than FAVOURABLE MAINTAINED. Further monitoring is needed.

## **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Small Restharrow occurs in a naturally unstable, open, south-facing coastal slope in the New Quay valley. The population was discovered as recently as 1991. It is very small and may be sub-optimal.

The lower limit for the feature should therefore, ideally, include the presence of at least one other viable population.

Maintenance of suitable open conditions in the New Quay valley, or other south-facing slopes, free of physical disturbance but grazed, by rabbits and/or sheep, may help determine the limits.

The flowering population should be monitored annually - in June/July - to compare its size and flowering/seeding performance with that of two nearby populations at Stackpole.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and the County Botanical Recorder.

### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the small restharrow population
2. Maintain rare spp proforma records for SPRRAG and the Site Database/GIS.
2. Maintain a controlled mixed grazing regime.
3. Prevent excessive build up of extraneous litter and pollution.
4. Prevent excessive human-induced erosion.
5. Prevent disturbance from recreation activities at small restharrow site
6. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
7. Obtain all necessary SSSI consents/licenses from CCW.

## CASTLEMARTIN RANGE - PRIMARY FEATURE OBJECTIVES

CB. P10

### FEATURE: STACKPOLE SEA LAVENDER

#### OBJECTIVE:

To maintain the Stackpole sea lavender populations in favourable condition, where:

<b>Distribution of Stackpole sea lavender:</b>	There should be at least three extant populations: centred around: Crickmail Down (SR946939 & 949938); Newton Down (SR966928) and New Quay (SR975932).
<b>Population size and Extent:</b>	Population size and extent, should meet the requirements of the statutory designations set in the SSSI Management Plan.

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Currently no significant factors are thought to apply.	Potential build up of extraneous debris could affect growing conditions.
<b>2. Estate Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Potential large scale developments of recreational activities - including cliff-climbing, abseiling, coaststeering.
<b>4. Natural processes &amp; Other factors</b>	
An endemic species, found only at Stackpole and Castlemartin.  Natural open conditions brought about by geomorphological processes should sustain the population.	Lack of knowledge of sea lavender taxonomy and autecology.
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:

In 1999 the Stackpole sea lavender population was probably in a **FAVOURABLE MAINTAINED** condition, though further observations are needed.

#### SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:

Stackpole sea lavender is one of a group of rock sea lavender species confined to the South Pembrokeshire limestone coastline. There are only presently only four known populations of this species within the UK, one at Saddle Point within nearby Stackpole NNR/SSSI (where it was first recorded) and three within the Castlemartin Range.

The small populations of Stackpole sea lavender are restricted to south-west facing exposed rocky, terraced, limestone slopes near Newton Down and New Quay and around blow-holes east of Mewsford Point near Crickmail Down.

Maintenance of these populations should be catered for through natural geomorphological processes. However there should be a presumption against introducing or increasing disturbance pressures above that which currently exists.

Further research into the rock sea-lavender group is required along the Castlemartin peninsula coastline.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and the County Botanical Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the Stackpole sea lavender populations.
2. Maintain rare spp proforma records for SPRRAG and the Site Database/GIS.
3. Prevent a build-up of extraneous litter on cliff-slope and crevice communities.
4. Prevent disturbance from recreation activities.
5. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
6. Obtain all necessary SSSI consents/licenses from CCW.

# CASTLEMARTIN RANGE - PRIMARY FEATURE OBJECTIVES

CB. P11

## FEATURE: GOLDBLOCKS ASTER

### OBJECTIVE:

To maintain the goldilocks aster populations in favourable condition, where:

<b>Distribution of goldilocks aster:</b>	<p>Populations should occur in at least five locations:</p> <p><u>Range East:</u></p> <table> <tr> <td>1. Near St Govan's Chapel</td><td>SR967928</td></tr> <tr> <td>2. East side of Newton Head</td><td>SR965928</td></tr> <tr> <td>3. East of Stennis Ford</td><td>SR964929</td></tr> <tr> <td>4. West side of Huntsman's Leap</td><td>SR961929</td></tr> </table> <p><u>Range West:</u></p> <table> <tr> <td>5. Pen-y-holt Bay to Bulliber Down</td><td>SR900954-902953</td></tr> </table>	1. Near St Govan's Chapel	SR967928	2. East side of Newton Head	SR965928	3. East of Stennis Ford	SR964929	4. West side of Huntsman's Leap	SR961929	5. Pen-y-holt Bay to Bulliber Down	SR900954-902953
1. Near St Govan's Chapel	SR967928										
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3. East of Stennis Ford	SR964929										
4. West side of Huntsman's Leap	SR961929										
5. Pen-y-holt Bay to Bulliber Down	SR900954-902953										
<b>Population size and Extent:</b>	Population size and extent, should meet the requirements of the statutory designations set in the SSSI Management Plan.										

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
MOD use has resulted in a lack of intensification of farming on the site, therefore preventing intensification of use of herbicides & pesticides. Reduction in agricultural and recreational activities (potential trampling and grazing pressure) due to military use may be beneficial.	<p>Goldilocks aster may be vulnerable to soil disturbance, eg from military vehicles and other activities, including excessive trampling.</p> <p>Changes in target, bunker, road or radar locations and a build up of extraneous debris could potentially affect growing conditions.</p>
<b>2. Estate Management</b>	
Current seasonal grazing practices notably in Range west (which minimise grazing in summer and autumn) may be beneficial.	<p>Goldilocks aster may be vulnerable to soil disturbance, eg excessive trampling by cattle and sheep and construction of and changes to fences.</p> <p>Overgrazing could severely reduce its ability to maintain its population extent.</p>
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Excessive trampling by walkers; permanent or temporary climbing belay points on cliff-tops could potentially damage populations.
<b>4. Natural processes &amp; Other factors</b>	
It grows in a prostrate form and probably requires open conditions influenced by the	To what extent this is an adaptation to its grazed environment, over time, is not

present grazing regime.  There are at least five scattered populations - including a very strong population in Range West - in 1999 this population had at least 3,000 to 4,000 flowering spikes.	known.  Invasive alien species, such as tor-grass, could be a threat.
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Excavations could seriously damage populations

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

Although the known populations were all present over the last five years, the populations in Range East are small and vulnerable. In 1999 the largest population in Range West was probably stable although here too there were signs of disturbance due to a narrow cattle and sheep path which has cut through at least 2 of patches in winter 1998/99. Here some plants appeared to be slightly flattened and bruised compared with others nearby. The feature is still considered to be in a **FAVOURABLE MAINTAINED** condition but it is verging on UNFAVOURABLE DECLINING. Further monitoring is needed.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

This nationally rare woody perennial plant grows in a prostrate form in coastal calcareous grassland and probably requires open conditions influenced by the present grazing regime. To what extent this is an adaptation to its grazed environment, over time, is not known. More information is required to determine its eco-typic variation.

Goldilocks Aster may be vulnerable to soil disturbance, eg from military and other activities including excessive grazing/trampling. The population in Range West is much stronger than the scattered populations in Range East. The lower limit should, therefore, be not less than the population distribution, extent and size, when the SSSI was notified. Future research may help to determine an upper limit.

**Further monitoring is needed to determine whether all populations are attaining favourable condition.**

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and the County Botanical Recorder.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the goldilocks aster populations.
3. Research growth-form of goldilocks aster.
3. Maintain rare spp proforma records for SPRRAG and the Site Database/GIS.
4. Maintain a controlled mixed grazing regime.
5. Minimise potential impacts of turf/soil erosion impacts & trampling
6. Control use of vehicles to existing tracks.
7. Prevent a build-up of extraneous litter.
8. Prevent disturbance from recreation activities.
9. Prevent use of fertilisers or herbicides.
10. Maintain liaison with appropriate statutory & non-statutory organisations through



- |     |  |
|-----|--|
| 11. | SPRRAG.<br>Obtain all necessary SSSI consents/licenses from CCW. |
|-----|--|

**FEATURE:** SCRAMBLED EGG LICHEN *Fulgensia fulgens*

**OBJECTIVE:**

To maintain populations of *Fulgensia fulgens* in favourable condition, where:

<b>Number of populations &amp; their distribution:</b>	<p><i>Fulgensia fulgens</i> should be present in at least 6 locations (5 in Range West, 1 in Range East) including at least 4 populations in Brownslade &amp; Linney Burrows:</p> <p>Site 1              Grid Ref SR8902098610 (centre)</p> <p>Site 2              Grid Ref SR8931098360 (centre)</p> <p>Site 3              Grid Ref SR8965097940 (centre)</p> <p>Site 4              Grid Ref SR8932097760 (centre)</p> <p>One population on sea-cliff/eroded loess and grassland edge near Cabin Door Bay:</p> <p>Site 5              Grid Ref SR9022095300 to SR9013095410</p> <p>One population on sea-cliff/eroded loess and grassland edge above Flimston Bay:</p> <p>Site 6              Grid Ref SR9331094580 (centre)</p>
<b>Population size and Extent:</b>	Population size and extent, should meet the requirements of the statutory designations set in the SSSI Management Plan.

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
MOD use has resulted in a lack of intensification of farming on the site, therefore preventing intensification of use of herbicides & pesticides, and potential destruction of the habitat, upon which this lichen depends. There are agreed out-of bounds restrictions at the main dune site, Linney Burrows, to prevent potential impacts of Military activities.	<p>Potential erosion, should these access restrictions fail. A build up of extraneous debris could affect growing conditions.</p> <p>Not all the lichen sites are protected by such measures.</p>
<b>2. Agriculture and Estate Management</b>	
Grazing is essential to maintain open communities. This is being attained by rabbits augmented in winter by sheep.	<p>Excessive trampling, dunging and over-grazing by cattle or sheep, construction of or changes to fences, could significantly erode soil lichen communities.</p> <p>Succession and scrub invasion could threaten the open soil communities if grazing declines.</p>
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	The two cliff-top populations are potentially vulnerable to any heavy trampling by

to apply.	walkers etc, or by installation of temporary of permanent markers/belay points etc.
<b>4. Natural processes &amp; Other factors</b>	
<p>Open base-rich shallow soils, low in nutrients, provide suitable growing conditions.</p> <p>Naturally high rabbit numbers occur in the dunes - rabbits are important contributors to maintaining open suitable soil-lichen conditions.</p> <p>Natural open conditions brought about by geomorphological processes may sustain the population.</p>	<p>Some patches of scrambled egg lichen at the west of its known distribution may be smaller now than when first found 20 years ago.</p> <p>Changes in soil nutrient status - enrichment &amp; acidification could render growing conditions unsuitable.</p> <p>A decline in the rabbit population, due to disease or control measures, could significantly reduce the areas of habitat suitable for soil lichens.</p> <p>Natural coastal erosion may threaten two small cliff-top populations. Potentially invasive tor-grass could also be a possible threat.</p>
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Excavations in dunes or on cliff-edges could destroy the populations.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

All populations were present in 1999, but there were signs of decline in extent in the Brownslade Burrows, although the main population there was still strong. The feature was therefore considered to be **UNFAVOURABLE DECLINING**, rather than in favourable MAINTAINED condition. Further monitoring is needed.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

*Fulgensia fulgens* grows on smooth compacted surface soils in which the moss *Trichostomum crispulum* is often dominant. It is limited to a few small vulnerable and widely separated locations - in the Brownslade/Linney dunes (supporting the strongest population), on cliff-edges near Bulliber Down and above Flimston Bay.

- **The present patches must form the lowest permissible limit for favourable conservation status.**

Presence of suitable open/bare stony loess or sandy soils, influenced by beneficial rabbit and sheep grazing, may provide suitable conditions for future expansion in range. The levels of disturbance to the substrate, including trampling, military activities, and atmospheric pollution may determine the limits.

Regular monitoring of its population size and condition will be needed - ideally in tandem with similar work at Stackpole, presently the only other known site for this species in South Pembrokeshire.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and the County Botanical Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor scrambled egg lichen populations.
2. Maintain rare spp proforma records for Site Database/GIS and SPRRAG.
3. Maintain a controlled mixed grazing regime.
4. Maintain surveillance of rabbit population.
5. Maintain patches of bare ground to encourage propagation.
6. Minimise potential impacts of soil erosion/impacts & trampling.
7. Prevent damage from military/civilian activities (including vehicles).
8. Prevent a build-up of extraneous litter.
9. Prevent use of fertilisers or herbicides.
10. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
11. Obtain all necessary SSSI consents/licenses from CCW.

**FEATURE: PETALWORT (A LIVERWORT) *Petalophyllum ralfsii*****OBJECTIVE:**

To maintain the liverwort *Petalophyllum ralfsii* in favourable condition, where:

<b>No. of populations &amp; their distribution:</b>	<i>Petalophyllum ralfsii</i> should be present within at least one dune slack within Brownslade or Linney Burrows (Grid Reference SR8974098020).
<b>Population size and Extent:</b>	Population size and extent, should meet the requirements of the statutory designations set in the SSSI Management Plan.

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
MOD use has resulted in a lack of intensification of farming on the site, therefore preventing intensification of use of herbicides & pesticides, and potential destruction of the habitat, upon which this liverwort depends.	Erosion from use of heavy machinery or vehicles could, potentially, eradicate the only known population. A build up of extraneous debris could affect growing conditions.
<b>2. Agriculture and Estate Management</b>	
Sands quarrying, now ceased, may have provided suitable conditions for the species to expand.  Grazing is probably essential - cattle and sheep are present in winter and the area has a long historical association with rabbits.	Sand quarrying may, inadvertently, have destroyed some former populations/locations?  Potentially insufficient year round grazing disturbance? Excessive trampling, dunging and over-grazing by cattle or sheep could possibly damage the population. Succession and scrub invasion could threaten the open soil communities if grazing declines.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Changes in recreation activities in the dunes and damp dune slacks could be damaging
<b>4. Natural processes &amp; Other factors</b>	
Open moist shallow soils, prone to winter flooding, provide potentially suitable growing conditions.  Naturally high rabbit numbers occur in the dunes - rabbits are important contributors to maintaining open suitable conditions.  Natural open conditions brought about by geomorphological processes may sustain the population.	There are few recent records to determine its actual distribution - a survey is needed.  Changes in soil nutrient status - enrichment & acidification could render growing conditions unsuitable.  A decline in the rabbit population, due to disease or control measures, or invasive alien species such as sea buckthorn and Australian swamp cypress could significantly reduce the areas of habitat suitable for this species to grow in.
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Excavations in dune slacks could potentially destroy the populations.

## **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

**UNKNOWN in 1999.** Further research/survey/monitoring are required to establish condition.

## **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The only small population of petalwort, so far discovered, grows in very small patches, on moist sandy soils, close to an area with seepages and a high winter water table. This dune slack population, re-discovered in 1998, is in one of the older quarried slacks. The area is grazed by rabbits, occasionally by cattle and perhaps more regularly in winter and spring by sheep.

Open patches of very short, damp turf with bare areas, on very slightly raised ground within an otherwise flat SD17 dune slack, with fairly high winter water table, appear to be important. Occasional disturbance and dunging by cattle may also be beneficial. In an absence of grazing, coarsening of the slack floor vegetation and development of low scrub (e.g. typically creeping willow) may render the area unsuitable for petalwort. Lowered water table and drought would also probably have a significant impact on its extent or condition.

It should be noted that similar habitat to the area in which it was re-discovered, occurs extensively within Brownslade and Linney Burrows. Other areas within the SD17 community and former sand-quarried zones may still hold populations? Unfortunately, there has been insufficient time, since discovery, to determine population distribution, and determine its full extent or trends. A proper systematic survey of the area, at a time when this tiny plant may most likely be visible, (between approximately October and May), is needed within the next couple of years.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG.
- 3. Providing copies of relevant information to the CCW and the County Botanical Recorder.

### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Survey dune slacks for possible presence of more petalwort populations.
2. Monitor petalwort population.
3. Maintain rare spp proforma records for SPRRAG and Site Database/GIS.
4. Maintain a controlled mixed grazing regime.
5. Maintain surveillance of rabbit population.
6. Maintain patches of bare ground to encourage propagation.
7. Minimise potential impacts of soil erosion/impacts & trampling.
8. Prevent damage from military/civilian activities (including vehicles).
9. Prevent excessive build up of extraneous litter in dune slacks.
10. Prevent use of fertilisers or herbicides.
11. Manage/control spread of potentially invasive scrub vegetation.
12. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
13. Obtain all necessary SSSI consents/licenses from CCW.



**FEATURE: CHOUGH****OBJECTIVE:**

To maintain the *Castlemartin Coast SPA* chough population in a favourable condition, where:

<b>Chough breeding population</b>	During a six year period, the average number of summer territory-holding pairs in the population should be: <ul style="list-style-type: none"> <li>not less than 12 pairs per annum;</li> <li>of which at least 10 pairs should have attempted to breed.</li> </ul>
<b>Breeding success/ productivity, population structure and extent:</b>	During a six year period the average number of young fledged in the population per annum should be: <ul style="list-style-type: none"> <li>at least 26;</li> <li>&amp; number fledged per territory should be not less than 2.</li> </ul> <p>Population structure and extent, should meet the requirements of the statutory designation set in the SSSI Management Plan.</p>

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Feeding habitat may be augmented by occasional disturbance & erosion, caused for example, by tank-rounds impacting cliff-top grasslands & heath. MOD use has resulted in a lack of intensification of farming on the site.	Changes in the intensity of military activities, including changes in targets, bunkers, roads or radar installations. Potential military impacts near nest sites causing disturbance - effects not known and not easy to monitor!
Current MOD access policy and byelaws help to minimise potential disturbance from recreational activities, and illegal acts.	A reduction in military use, leading to increased access, could increase potential pressure from recreation activities near or within chough territories.
<b>2. Agriculture and Estate Management</b>	
Presence of extensive high quality invertebrate-rich habitats, with open short turf (<1 cm) and abundant rock/soil interfaces, and dunes is associated with grazing by rabbits, sheep and, cattle.	Changes in land use, such as a reduction or removal of grazing (sheep and cattle) construction of or changes to fences, and a demise of the rabbit population would lead to a loss of open feeding areas needed by choughs.
	Sheep and cattle have to be dosed against parasites - the chemicals used for stock-treatment may harm chough food.
<b>3. Access and Recreation</b>	
The Pembrokeshire Coast "National Trail" through Range East, provides excellent opportunities to view the feature and to increase visitor awareness.	Changes in levels of use or patterns of coastal recreational activities, such as:
There is good liaison between representatives of statutory and non-statutory organisations - e.g. BMC/PCNP/MOD/CCW/WTWW.	A potential for regular disturbance by large groups of walkers on the cliff-tops away from footpaths;
A seasonal Ranger post has benefitted on-site communications with visitors to minimise potential disturbance to cliff-nesting birds.	Infringements by climbers of agreed seasonal restrictions; sporting activities, including shooting or falconry.
	Potential disturbance to feeding chough by



	visitors & dogs - through a proliferation of formal or informal foot-paths;
<b>4. Natural Processes and other Factors</b>	
<p>The presence of high quality sheltered &amp; undisturbed nesting crevices in sea cliffs.</p> <p>Nest materials - including e.g. gorse &amp; heather and dock, grasses &amp; sheep wool are all widely available within/near cough nesting territories.</p> <p>Naturally high rabbit numbers occur in the dunes - rabbits are important contributors to maintaining open short turf invertebrate-rich feeding areas.</p> <p>Castlemartin-bred choughs also use other coastal MOD Ranges (Manorbier &amp; Penally).</p>	<p>Natural geomorphological processes, rock-falls etc, may limit availability of suitable nesting or roosting sites. Two sites are known to have been lost to rock-falls since 1993.</p> <p>A decline in the rabbit population could have a potentially significant impact on cough feeding areas.</p> <p>Potential demise of social structure - due to disturbance, disease or habitat degradation. Lack of suitable nearby communal roost(s). Also including possible damage or disturbance on other MOD land used by choughs.</p>
<b>5. Archaeological Management</b>	
Maintenance of open grassland and earth banks on coastal ancient monuments sites is highly beneficial to feeding choughs.	Excavations could cause potential, if only temporary, disturbance to feeding choughs and could affect certain breeding territories .

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999, 15 territories were occupied, breeding was attempted at 13 territories (the highest numbers for >10 years); productivity was just under 3 young fledged per occupied territory. The cough population was therefore considered to be in **favourable MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

##### **Maintaining suitable feeding habitat:**

- Maintenance of large areas of high quality feeding habitat, rich in soil invertebrates, will be extremely important. This will need to include mainly short turf (c, <2 cms) with open patches of bare ground including soil/rock interfaces, soil/vegetation interfaces, in sea-cliff and coastal grassland, coastal heath and sand-dunes.
- Maintenance of a comprehensive grazing management policy will be needed - including sheep and cattle grazing, to provide the range of habitat and micro-habitat patterns required, as well as dung for invertebrates.
- Minimising the use of chemicals and insecticides -with a presumption against using harmful anthelmintics such as ivermectin-type products with grazing stock in cough feeding areas.
- Maintenance of a semi-natural rabbit population in the extensive dune grassland, and elsewhere along the Castlemartin coastline.
- Care must also be exercised not to damage important ant-hill components through management activities - including maintenance of paths/tracks and stock-fencing.
- Minimising disturbance to feeding cough, by the activities of people and their dogs is important; as is the need to reduce the possibility of human-induced turf & soil compaction which could affect the ability for cough to locate food.

##### **Maintaining undisturbed breeding and roosting areas:**

- Minimising disturbance to the breeding cough population between 1st March and 31st July will be vital, combined with a programme of locating occupied nest sites and monitoring breeding success.
- A colour-ringing programme is currently providing useful information on productivity, population dispersal and recruitment. This should be continued, subject to regular review.

- Identified communal roosts should remain as free as possible of human disturbance.
- Consideration may need to be given to providing artificial nests, in areas where the coast is unstable or where sites have been lost to optimise potential for population expansion.
- The Pembrokeshire Coast “National Trail” runs through part of the SPA within the Range and passes many of the nest sites and feeding areas used by over half the chough population. Whilst this has not apparently caused any measurable problems to date, the development of visitor use/behaviour patterns needs to be monitored in tandem with monitoring the chough population, to ensure that legal requirements to protect chough are not compromised.
- Maintenance of liaison with statutory and non-statutory organisations will be required.
- The objective should be achievable via several different mechanisms, some already in place:
  - 1. Through MOD staff implementing access restrictions and Range byelaws;
  - 2. Maintaining seasonal voluntary climbing restrictions during the chough breeding season (1st March to 31st July) and undertaking annual reviews of the use made by choughs of restricted areas and their effectiveness.
  - 3. By maintaining and strengthening links with the British Mountaineering Council & other recreational outdoor activity organisations (eg - via annual climbing liaison meetings & Pembrokeshire Outdoor Charter);
  - 4. By direct on-site contact with visitors to the Ranges, through wardening - eg, via a “dedicated” Castlemartin coast seasonal Ranger;
  - 5. Through well managed integrated conservation and access arrangements - eg a well-briefed guided walks/talks programme (providing potential for access to “sensitive areas” and a protocol/code of conduct to minimise disturbance to cliff-nesting birds);
  - 6. Through a mechanism of information boards, leaflets or cliff-top markers.
  - 7. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);
  - 8. Collecting & compiling breeding occupancy data from 1 - 7 above and providing this for the Site Database/GIS and SPRRAG.
  - 9. Providing copies of relevant information to the CCW, JNCC (SPA reporting), the Pembrokeshire Chough Study Group and County Bird Recorder.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the chough breeding population and breeding success.
2. Monitor the chough autumn/winter feeding/roosting population.
3. Research chough productivity, dispersal and recruitment by colour-ringing.
4. Research interactions between recreation and military activities and chough behaviour.
5. Maintain records of breeding & roosting sites & chough sightings for SPRRAG, Site Database/GIS & Pembrokeshire Chough study Group.
6. Prevent disturbance to breeding/roosting choughs, through a controlled access policy.
7. Minimise impacts of military activities near chough territories, feeding and roosting areas.
8. Maintain grazing regime to provide suitable feeding habitat diversity (including open short turf/bare patches/loose soil etc).
9. Minimise use of anthelmintics - to maximise potential food invertebrates in animal dung.
10. Consider provision of artificial nest sites.
11. Maintain liaison through SPRRAG and Cliff Climbing Liaison Group.
12. Obtain all necessary SSSI consents/licenses from CCW.



**FEATURE: PEREGRINE****OBJECTIVE:**

To maintain the peregrine population in favourable condition, and contribute towards maintaining the Pembrokeshire peregrine population at favourable conservation status, where:-

<b>Peregrine breeding population</b>	During a long term average (ie 6 years) should be at least one breeding pair per annum;
<b>Breeding success/productivity:</b>	During a long term average (about 6 years) this should be at least 2 young fledged per pair.

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Current MOD access policy and byelaws help to minimise potential disturbance from recreational activities, and illegal acts.	Potential military impacts near nest sites - effects not known and not easy to monitor!
<b>2. Agriculture and Estate Management</b>	
The Castlemartin Ranges provide a potentially very large and secure area for peregrines to hunt over associated with coastal grassland, heath, dune, meadow and scrub, supporting large populations of bird prey species.	Peregrines may take local racing pigeons, although the extent that these are cliff-dwelling feral pigeons, hybridised with or having replaced the wild rock doves, is not known. They may possibly take ground game.
<b>3. Access and Recreation</b>	
<p>The Pembrokeshire Coast "National Trail", provides excellent opportunities to view the feature and to increase visitor awareness.</p> <p>Good liaison between representative statutory and non-statutory organisations has produced well established vol. climbing restrictions in the breeding season.</p> <p>A seasonal Ranger post has benefitted on-site communications with visitors to minimise potential disturbance to cliff-nesting birds.</p>	Potential changes in levels of use or patterns of coastal recreational activities, such as regular disturbance by large groups of walkers on the cliff-tops away from footpaths; disturbance to cliff-nesting birds from below cliff-top activities - e.g. cliff-climbing, coast-steering, or water-based activities.
<b>4. Natural processes &amp; Other factors</b>	
<p>Following post 2nd World War crash in their populations in the UK, peregrine numbers have recovered to pre-war levels. There are good baseline data for the Castlemartin coast.</p> <p>The limestone sea cliffs provide a range of sheltered nesting sites. At least 10 alternative eyries have been used over the last 20 years.</p>	<p>Peregrines have suffered from persecution in the Range during the past few years. Persecution is still a threat - a small minority of mainly pigeon fanciers regard peregrines as a threat to their sport.</p> <p>Natural geomorphological and geological processes (including rock-falls) may determine and limit the availability of suitable nesting sites.</p>
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

Despite the fact that 2 adult females were deliberately and illegally destroyed at the nest in 2 of the last 6 years the peregrine population has continued to breed within expected limits, and is therefore considered to be in a **FAVOURABLE MAINTAINED** condition. The balance could easily be turned the other way if further incidents occur.

### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Minimising disturbance to the breeding peregrine population between February and August will be the most important consideration, combined with a programme of locating occupied eyries and monitoring breeding success. Maintenance of liaison with a number of statutory and non-statutory organisations will also be important. The objective should be achievable, via several different mechanisms already in place:

- 1. Through MOD staff implementing access restrictions and Range byelaws;
- 2. Maintaining seasonal voluntary climbing restrictions during the peregrine breeding season (February to August) and undertaking annual reviews of the use made by peregrines of restricted areas and their effectiveness.
- 3. By maintaining and strengthening links with the British Mountaineering Council (BMC) and other access orientated organisations (eg - via annual climbing liaison meetings);
- 4. By direct on-site contact with visitors to the Ranges, through wardening - eg, via a “dedicated” Castlemartin coast seasonal Ranger;
- 5. Through well managed integrated conservation and access arrangements; eg a well-briefed guided walks/talks programme (providing potential for access to “sensitive areas” and a protocol/code of conduct to minimise disturbance to cliff-nesting birds);
- 6. Through a mechanism of information boards, leaflets and cliff-top markers.
- 7. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);
- 8. Collecting & compiling breeding occupancy data, & providing these for 1-7 above. Providing copies of relevant information to the CCW, PORC and the County Bird Recorder.

### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the peregrine breeding population, site occupancy and breeding success.
2. Maintain site occupancy records for SPRRAG and Site Database/GIS .
3. Prevent recreation disturbance to breeding peregrines, through a controlled access policy.
4. Minimise impacts of military activities near Peregrine nesting sites.
5. Maintain liaison through SPRRAG and Cliff Climbing Liaison Group.
6. Obtain all necessary SSSI consents/licenses from CCW.



**FEATURE: GREATER HORSESHOE BAT****OBJECTIVE:**

To maintain the Greater Horseshoe Bat population, in favourable condition and contribute towards maintaining the *Pembrokeshire Bat sites* candidate SAC population at favourable conservation status, where:

<b>Population structure, distribution and extent:</b>	<p>The number of hibernacula/ night feeding roosts should include a minimum of four sea caves in Range East:</p> <p>Near New Quay; Near Saddle Head (Ogof Govan); Bullslaughter Bay area (two cave roosts here); [Other potential sea-cave roosts are still to be determined]</p> <p>There should be evidence of overnight roosts or night-time feeding roosts at:</p> <p>Trenorgan Flimston Pricaston Brownslade [Other potential night/feeding roosts are still to be determined]</p>
<b>Population in roosts:</b>	<p>The peak number of bats, utilising two sea-cave roosts (between November and March) should be at least 100; (over a six year average).</p> <p>Signs of their occupancy - droppings, or distinctive food remains (insect wings/wing cases) - should occur in all other known roosts.</p>

**FACTORS - a summary of the most important factors which influence or may influence the feature objective:**

<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
There are a large number of potential night feeding roosts in disused bunkers and other buildings throughout the entire Range. MOD use has resulted in a lack of intensification of farming on the site.	Potential impacts of changing military use of known roosting sites. The recent renovation of some properties as stone tents has excluded access to greater horseshoe bats in buildings at Trenorgan, for example.
<b>2. Agriculture and Estate Management</b>	
<p>There is extensive high quality grassland feeding habitat, in the Castlemartin Range, linked by sheltered wooded flight/feeding corridors, from the nursery roost at Stackpole.</p> <p>A network of small cattle-grazed enclosures at the rear of the Range, bounded by hedges and close to potentially good feeding roosts are probably quite important. Mixed sheep and cattle grazing of neutral and maritime grassland interspersed by a patchwork of heathland and scrub provides further excellent invertebrate food potential.</p> <p>Recently planted small woodland copses in sheltered valleys in Range East are also likely to benefit feeding horseshoe bats.</p>	<p>Several old traditional farm hedgerow boundaries are now very gappy and exposed, unfenced to grazed stock. These may no longer provide sufficiently sheltered flight-corridors for horseshoe bats.</p> <p>Changes of present use of buildings or block-houses could reduce roosting opportunities.</p> <p>Bat feeding and roosting opportunities around the Camp buildings are very limited. The area is generally too exposed, with insufficient shrub cover and nectar sources for insects.</p>
<b>3. Access and Recreation</b>	
Current MOD access policy and byelaws help	The sea caves, including known roost sites, are

to minimise potential disturbance from recreational activities, and illegal acts.  Some useful information about studied caves (including some known bat sites) has been supplied by cavers.	potentially vulnerable to disturbance - these are not covered by voluntary restrictions in the way climbing interests are.  Changes in current levels or patterns of coastal recreational activities - e.g. caving, coast-steering, or water-based activities.
<b>4. Natural processes &amp; Other factors</b>	
The Castlemartin Sea Caves support the largest known greater horseshoe bat hibernacula in west Wales; up to 25% or more of the nursery roost population (adults and juveniles) may be present in winter.  MOD byelaws permit access to deal with pollution incidents in an emergency.	There is insufficient information about the full extent of potentially suitable sea caves, or of the bunkers, and their use by bats.  Cave roosts are potentially vulnerable to pollution. Climatic, geomorphological and geological influences may limit roost site and hibernacula availability on the coast.
<b>5. Archaeological Management</b>	
Measures which aim to protect archaeological features in sea caves or buildings of historical interest ought to minimise disturbance to bat roosts associated with them.	Condition assessment visits, excavation of sea-cave deposits, or building conservation work where there are known roosts, could create disturbance to roosting bats or damage roosts.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

On the basis of six years hibernacula count data obtained since 1992/93, the feature is considered to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

- Further survey of potential bat roosts associated with coastal geological/geomorphological features, bat flight-lines and feeding activities are needed.
- All known hibernacula need protection from human disturbance. (It should be noted that all bats and their roosts receive legal protection under the Wildlife and Countryside Act).

Radio-tracking has also shown that adult bats will feed within or close to the MOD Range and utilise roosts, at Trenorgan and near Lyserry, plus Pricaston and near Brownslade - all out-with the Castlemartin Coast SSSI.

The objective to maintain a greater horseshoe bat population, should be achievable via several different mechanisms, some are already in place:

- 1. Continued maintenance of good structured habitats supporting flight lines to cattle-grazed pasture and unimproved mixed (sheep and cattle) grazing areas and associated abundant sources of insect prey (e.g. ephodius, cockchafer and minator beetles, grassland/woodland moths and tipulids).
- 2. Minimising the use of potentially harmful prophylactics such as ivermectin-type products on grazing stock.
- 3. Opportunities for extending sheltered feeding corridors - through planting clumps or strips of woodland and thickening up hedgerows.
- 4. By ensuring that maintenance of Range buildings/historical structures takes all bat roost-requirement potential into account using, where ever possible, opportunities to improve hibernacula and overnight feeding roosts - including such examples as disused bunkers and derelict buildings.
- 5. Managing access through MOD Range byelaws;
- 6. By maintaining and strengthening links with the cavers and outdoor physical activity centres via (eg Cambrian Caving Council and Pembrokeshire Access Charter group).



- 7. By direct on-site contact with visitors to the Ranges, through wardening - eg, via a “dedicated” Castlemartin coast seasonal Ranger;
- 8. Through a mechanism of temporary or permanent information signs, leaflets.
- 9. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);
- 10. Collecting & compiling bats roost occupancy and population data, & providing these for 1-9 above.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Survey sea caves and potential use made of them by bats.
2. Survey potential night roosts (e.g. bunkers and buildings) and use made of them by bats.
3. Monitor known bat hibernacula population, between November and March.
4. Maintain records of roost occupancy for SPRRAG and Site Database/GIS.
5. Prevent disturbance to bat roosts, from military or recreational activities.
6. Maintain and, where possible, extend sheltered feeding habitat corridors.
7. Maintain a cattle grazing regime.
8. Minimise use of anthelmintics - to maximise potential food invertebrates in animal dung.
9. Maintain and, where possible, extend/create further bat roosting & hibernacula.
10. Ensure pollution contingency plans take account of the sensitivity of sea-caves/bat hibernacula to seaborne pollution.
11. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
12. Obtain all necessary SSSI consents/licenses from CCW.

**FEATURE: HAIRY DRAGONFLY *Brachytron pratense*****OBJECTIVE:**

To maintain a hairy dragonfly population in favourable condition, where:

<b>Presence of a breeding population:</b>	Hairy dragonflies should be recorded breeding, between mid May and early July, within the Brownslade and Linney Dunes and associated wetland complex in the dune pools and adjacent Frainslake valley.
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<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Current MOD access policy and byelaws help to minimise potential disturbance from recreational activities which may damage dragonfly pools. MOD use has resulted in a lack of intensification of farming on the site, therefore preventing use of herbicides & pesticides, and potential destruction of the habitat, upon which this dragonfly depends.	Potential habitat disturbance or pollution caused by military activities near or in breeding pools.
<b>2. Agriculture and Estate Management</b>	
New pools dug in the Brownslade and Linney Burrows dunes have provided new suitable habitat for dragonflies. Hairy dragonflies may eventually colonise the more mature, vegetated pools created there.	Heavy cattle or sheep grazing or use of fertilizers could damage small vegetated pools required by hairy dragonflies and other dragonfly species.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Increased disturbance as a result of changes in access patterns of use. For example, possible damage to freshly emerging dragonflies may result if uncontrolled dogs are allowed to bathe in or dash through emergent and pool-side vegetation.
<b>4. Natural processes &amp; Other factors</b>	
A hairy dragonfly population is well established on the Castlemartin peninsula - with regular breeding at Stackpole NNR, contiguous with Castlemartin Cliffs and Dunes SSSI.	<p>There is insufficient information about the breeding population and potential breeding sites within the Range.</p> <p>Some pools may dry out in summer. Introduced fish, or alien invasive plants such as water fern and Australian swamp cypress to dragonfly pools could be damaging to dragonflies and their habitat.</p>

<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

There have been recent records of hairy dragonflies in potentially suitable habitat within the Castlemartin Range, but there are insufficient data confirming breeding. Its condition, therefore, is **UNKNOWN**.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The hairy dragonfly emerges early in the summer and breeds in unpolluted, shallow, well-vegetated pools and is therefore limited by the availability and extent of this habitat. Within the Castlemartin Range its breeding distribution is not precisely known but it has been recorded in potentially suitable swampy pools at Frainslake and at newly excavated pools in the quarried dunes at Brownslade. When on the wing adults are probably wide ranging and it has, for example, been recorded well away from wetland habitats along the Castlemartin coast. Females, for example, are known to wander well away from wetland, only coming to suitable pools when they need to lay eggs.

- Hairy dragonflies require quite well-vegetated pools in order to lay eggs and breed successfully. Some management of existing pools may be necessary over time, including occasional re-excavation of identified pools on a cyclic rotational basis.
- The new small dune slack pools at Brownslade should develop sufficient cover soon to encourage colonisation by this species.

The objective should be achievable via several different mechanisms, some are already in place:

- 1. Continued maintenance of potentially suitable dragonfly pools, free of human recreational or military disturbance and pollution. Care needs to be taken to avoid introducing fish or alien plants. The water quality of this habitat and its extent should not be allowed to diminish.
- 2. Undertaking regular surveillance between late May and late June to determine the breeding distribution and extent of the population.
- 3. Managing access through dragonfly breeding habitat through briefings and MOD Range byelaws;
- 4. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the hairy dragonfly breeding population, its distribution and extent.
2. Maintain dragonfly records for SPRRAG and Site Database/GIS.
3. Maintain or increase areas of well-vegetated standing fresh water breeding habitat.
4. Prevent disturbance (including vehicular use and dogs) of dragonfly breeding pools.
5. Prevent pollution of dragonfly breeding pools.
6. Prevent establishment of alien invasive plants and fish species.
7. Prevent use of fertilisers or herbicides.

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|----|---|
| 8. | Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG. |
| 9. | Obtain all necessary SSSI consents/licenses from CCW.                                     |

## CASTLEMARTIN RANGE - PRIMARY FEATURE OBJECTIVES

CB. P18

**FEATURE:** SCARCE BLUE-TAILED DAMSELFLY *Ischnura pumilio*

### OBJECTIVE:

To maintain a scarce blue-tailed damselfly population in favourable condition, where:

<b>Presence of a breeding population:</b>	A populations of scarce blue-tailed damselflies should be recorded breeding, between mid July and August, within the Brownslade and Linney Dunes and associated wetland complex.
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### FACTORS - a summary of the most important factors which influence or may influence the feature objective:

Positive factors	Negative factors
<b>1. Military Use</b>	
Current MOD access policy and byelaws help to minimise potential disturbance from recreational activities which may damage dragonfly pools. MOD use has resulted in a lack of intensification of farming on the site, therefore preventing use of herbicides & pesticides, and potential destruction of the habitat, upon which this species depends.	Potential habitat disturbance or pollution caused by military activities near or in breeding pools.
<b>2. Agriculture and Estate Management</b>	
<p>New pools dug in the Brownslade and Linney Burrows dunes have provided new suitable habitat for dragonflies. The development of a network of small runnels on the floor of some of the steeper disused sand quarries is also likely to provide new habitat for this species.</p> <p>Scarce blue-tailed damselflies may benefit from an existing grazing regime, as they require small, shallow grazed pools and seepages with lightly trampled margins for breeding.</p>	Excessively heavy cattle or sheep trampling or grazing, or use of fertilizers could damage small pools required by scarce blue-tailed damselflies and other dragonfly species.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Increased disturbance as a result of changes in access patterns of use. For example, possible damage to freshly emerging damselflies may result if uncontrolled dogs are allowed to bathe in or dash through emergent and pool-side vegetation.
<b>4. Natural processes &amp; Other factors</b>	

Natural seepages, pools and streams in the Brownslade to Frainslake area are unpolluted and provide potentially suitable habitat (e.g. partially vegetated sluggish seepage streams and pools in the dune-slacks and nearby swamp) required by for breeding.	<p>There is insufficient information about the breeding population and potential breeding sites within the Range.</p> <p>Some pools may dry out in summer. Introduced fish, or alien invasive plants such as water fern and Australian swamp cypress to dragonfly pools could be damaging to dragonflies and their habitat.</p>
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

There have been recent records of scarce blue-tailed damselflies in potentially suitable habitat within the Castlemartin Range, but there are insufficient data confirming breeding. Its condition, therefore, is **UNKNOWN**.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The scarce blue-tail damselfly breeds in small, partially vegetated, marshy pools and stream-sides in areas grazed by stock. Males are great wanderers and frequently visit newly created pools.

The most suitable habitat within the Castlemartin Range, where its presence has been recorded, is at Frainslake and recently excavated stonewort-dominated dune-slack pools, natural seepages and tiny stream near the rear of the dunes at Brownslade. Other potentially suitable habitat occurs near Crickmail Down and Pricaston both out-with the SSSI on the Range.

- Maintenance of current grazing regime and grazing practices may be sufficient to retain suitable breeding habitat. Some management of existing pools and runnels may be necessary over time, including occasional re-excavation of identified pools on a cyclic rotational basis.

The objective should be achievable via several different mechanisms, some are already in place:

- 1. Continued maintenance of potentially suitable wetland habitat, free of human recreational or military disturbance and pollution. Care needs to taken to avoid introducing fish or alien plants. The water quality of this habitat and its extent should not be allowed to diminish.
- 2. Undertaking regular surveillance during July and August to determine a breeding population its distribution and extent.
- 3. Managing access through dragonfly breeding habitat through briefings and MOD Range byelaws;
- 4. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the scarce blue-tailed damselfly breeding population, its distribution and extent.
2. Maintain damselfly records for SPRRAG and Site Database/GIS.
3. Maintain or increase areas of well-vegetated standing fresh water breeding habitat.
4. Prevent disturbance (including vehicular use) of dragonfly breeding pools.

5. Prevent pollution of dragonfly breeding pools.
6. Prevent establishment of alien invasive plants and fish species.
7. Prevent use of fertilisers or herbicides.
8. Maintain a controlled mixed grazing regime.
9. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
10. Obtain all necessary SSSI consents/licenses from CCW.

**CASTLEMARTIN RANGE - PRIMARY FEATURE OBJECTIVES**  
P19

**CB**

**FEATURE: SILVER-STUDDED BLUE BUTTERFLY**

**OBJECTIVE:**

To maintain a silver-studded blue butterfly population in favourable condition, where:

<b>Population presence and distribution:</b>	Over a six year average, silver-studded blue butterflies should be confirmed between mid June & early August at a minimum of the following locations: <ol style="list-style-type: none"> <li>1. Brownslade and Linney Burrows;</li> <li>2. Linney Head to Mount Sion Down;</li> <li>3. Trevallen Down;</li> <li>4. Longstone Down;</li> <li>5. St Govan's Head to New Quay.</li> </ol>
<b>Population size and extent:</b>	Over a six year average at least 30 colonies (sub-populations) containing 20 or more butterflies (males & females), should be found between mid June and early August.  <i>NB a contract survey report to CCW, due in winter 1999/2000, may provide a better baseline of population distribution, size and extent.</i>

**FACTORS - a summary of the most important factors which influence or may influence the feature objective:**

<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
MOD use has resulted in a lack of intensification of farming on the site, therefore preventing use of herbicides & pesticides, and potential destruction of the habitat, upon which this butterfly depends. Some scrapes near bunkers etc, with short grass/heathland, provide suitably open habitat for food-plants and associated ant populations.  Occasional accidental burns may benefit the creation of suitable habitat for the species.	Severe erosion or pollution of habitat; destruction of sheltered dune and heath caused by changes in military use could be damaging.
<b>2. Agriculture and Estate Management</b>	
The present mixed grazing regime plus rabbits probably favours maintenance of the butterfly populations.	Changes in grazing patterns by rabbits and livestock and the grazing regime - e.g. the demise of rabbits. A reduction in grazing

Sand Quarrying has ceased. This may lead to a development of new short-cropped calcareous heath in excavated zones, & benefit butterflies.	<p>could lead to bracken and scrub encroachment and a loss of silver-studded blue butterfly breeding habitat.</p> <p>The dune population could be damaged by habitat erosion - e.g. over-grazing by sheep or vehicular disturbance.</p>
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Increased erosion of food/nectar plants from access activities could be damaging.
<b>4. Natural processes &amp; Other factors</b>	
Important sheltered areas of open ground near heath with bell heather probably supporting associated black ant populations are fairly well represented along the coast.	<p>Adult silver-studded blue butterflies probably do not move more than 50 metres from where they emerged. The individual sub-populations are therefore extremely vulnerable, and slow to re-expand if damaged.</p> <p>Potentially invasive tor-grass could threaten silver-studded blue butterfly habitat.</p> <p>At least 6 of the known colonies (including the largest one recorded in 1999) lie outside the present SSSI boundary.</p>
<b>5. Archaeological Management</b>	
Maintenance of open situations at/near ancient monuments or other historically important structures near the coast should be beneficial.	Large scale excavations within known colony areas could cause temporary damage. Currently no significant factors are thought to apply.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 adults were present in about 32 colonies distributed between Brownslade and Linney Burrows and New Quay. The feature is considered to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Silver-studded blue butterflies occur in closed populations or colonies, of varying size and extent, depending on the suitability of the habitat. Therefore any significant alterations to the areas in which they occur, which affects habitat quality, could significantly affect the ability of the species to survive or recolonise.

The most important considerations for maintaining healthy populations of silver-studded butterflies are considered to be as follows:

- 1. Extensive areas of sheltered open patches of calcareous, herb-rich grassland and heath, with good ant populations, need to be maintained. Grazed by rabbits, sheep and cattle.
- 2. Maintenance of a more open heath and scrub mosaic, through the occasional but rotational cutting of over-mature gorse and scrub stands, in sheltered areas, may help maintain present extent and distribution of colonies. This could facilitate colony expansion in some areas - if carefully planned.

- 3. Any works requiring further turf erosion, scraping or excavation will need to take butterfly and other conservation feature requirements into account.
- 4. Occasional accidental or controlled patch burns of gorse and other ericaceous shrubs may be beneficial, depending on the scale and providing there are no other features of interest which might suffer unacceptable damage as a consequence.
- 5. Regular surveillance will be required to assess distribution, size and extent of the butterfly colonies, by establishing a butterfly transect or transects recorded in June and July.
- 6. A 1999 survey report, when published, may establish a better baseline upon which future monitoring can be assessed. This may also require an examination of several colonies, found outside the SSSI boundary in 1999, in relation to a review of the current SSSI boundary.
- 7. Continued liaison will be essential. Information gathered from 1 - 6 should be provided to and discussed by the SPRRAG and to local and national butterfly recording schemes.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the silver-studied blue butterfly population, its distribution, size and extent.
2. Maintain butterfly records for SPRRAG and Site Database/GIS.
3. Monitor/control accidental burning.
4. Maintain a controlled mixed grazing regime.
5. Maintain surveillance of rabbit population.
6. Maintain patches of bare ground.
7. Prevent excessive build up of extraneous litter at butterfly breeding colony sites.
8. Prevent excessive human induced erosion disturbance at butterfly breeding colony sites.
9. Prevent establishment of alien invasive plants.
10. Prevent use of fertilisers or herbicides.
11. Control vehicles in dunes and along coast to existing tracks.
12. Manage/control spread of coastal scrub vegetation.
13. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
14. Obtain all necessary SSSI consents/licenses from CCW.





# CASTLEMARTIN RANGE - PRIMARY FEATURE OBJECTIVES

CB. P20

**FEATURE:** STRAND-LINE BEETLE *Nebria complanata*

## OBJECTIVE:

To maintain a stand-line beetle population in favourable condition, where:

<b>Population presence and distribution:</b>	There should be regular evidence of a strand-line beetle population, on Frainslake beach, distributed between the stream which crosses the beach and the Furzenips.
<b>Population size and extent:</b>	Strand-line beetles should maintain at least one population in the Range; with peak adult numbers along a broad belt transect in excess of 100+ individuals, during a 6 year period during May to October.

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Because this location lies within a military range the pressures of human access and recreation are minimal.	Increases in military activity on Frainslake beach could potentially be detrimental.
<b>2. Agriculture and Estate Management</b>	
Currently no significant factors are thought to apply.	Vehicular access across the beach to harvest seaweed or to remove beach debris could be damaging to strandline habitat required by the beetles.
<b>3. Access and Recreation</b>	
No "beach flag award" conditions apply; and because access is fairly low key at present, minimal amounts of woody strand line materials are removed by authorised members of the public (e.g. fishermen, surfers) or by off-duty military and civilian personnel.	Removal, burning, or general disturbance of strand-line debris, plus increased access by the public or by vehicles on Frainslake beach (including off-duty military or civilian staff) could have seriously deleterious effects on the strand line beetle population.
<b>4. Natural processes &amp; Other factors</b>	
There is a strong population of <i>Nebria complanata</i> on Frainslake beach - with no comparable population known anywhere else in Pembrokeshire.  There are usually considerable quantities of strand-line debris - including timber, plastics & other jetsam which <i>Nebria complanata</i> requires to hide under by day.  MOD byelaws permit access to deal with pollution incidents in an emergency.	Very little information on population distribution or size prior to 1997. Within the Castlemartin Range, Frainslake beach may provide the only suitable habitat for the species.  Occasionally there may be a natural lack of strand-line material present and/or beach profile may change reducing potential hiding places, or chances of beetles being seen.  There are no records of the species from Bluckspool beach. Oil pollution is a potential

Oil pollution from the <i>Sea Empress</i> and clean-up operations appear not to have damaged <i>Nebria complanata</i> populations at Frainslake.	threat. It is not known if the bulldozing & excavation of oily sand at the head of Bluckspool beach, during the <i>Sea Empress</i> clean-up, caused damage.
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

More than 300 adults were counted on 25th September 1997 by members of (SPRRAG). In 1999 it was thought that the strand line beetle was still in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The strand line beetle *Nebria complanata* appears to be dependent for cover on a regular supply of undisturbed drift-wood and similar materials deposited along the strandline on Frainslake beach and its fore-dunes. This may also extend to Bluckspool beach too, although there is no evidence, yet, of a strand line beetle population at Bluckspool.

The population at Frainslake may be strong but could become vulnerable if strandline materials are moved/ destroyed, or its habitat at the top of the beach is disturbed. In some years there may be episodes of low strandings of suitable *Nebria*-shelter debris, beach profiles may also change potentially affecting the habitat, creating difficulties in locating the beetles.

- It will be important, that stranded woody materials etc are not removed, burned or disturbed from the strandline area in order to provide shelter for the beetles.
- *Nebria complanata* appears to be present in summer and autumn. Further surveillance is required all year round to establish trends in population distribution, size and extent, as a basis for monitoring.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the strand line beetle population, its distribution, size and extent.
2. Maintain records for SPRRAG and Site Database/GIS.
3. Ensure that there is strand-line debris available by minimising disturbance.
4. Ensure Marine pollution plans recognise the requirements of the feature.
5. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
6. Obtain all necessary SSSI consents/licenses from CCW.

**FEATURE: VARISCAN STRUCTURES (FAULTS, JOINTS, CLEAVAGE, ETC) AT FRESHWATER WEST (GCR 1666)****OBJECTIVE:**

To ensure that the whole Geological Conservation Review site (GCR 1666) is maintained in favourable condition where:

existing coastal exposures of the Old Red Sandstone are not modified in any way which would damage the structural interest in these rocks, or prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
none	Access restrictions limit use of this important educational/research resource
<b>2. Agriculture and Estate Management</b>	
none	none
<b>3. Access and Recreation</b>	
A potentially excellent educational resource.	Access to make use of the resource is often impeded.
<b>4. Natural Processes and other Factors</b>	
Marine erosion is essential to maintain exposures, and often reveals new interest.  MOD byelaws permit access to deal with pollution incidents in an emergency.	Marine erosion and associated mass movement can destroy or obscure geological interest  Under certain conditions, oil spills can result in formation of very persistent tarry residues which obscure geological interest.
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered to be **FAVOURABLE MAINTAINED**.

**SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Natural processes rather than specific management for the geological features are largely responsible for maintaining the site in favourable condition.

Oil spill contingency plans should include provision for safeguarding against damage to upper intertidal and splash zone exposures by access and clean-up techniques.

There should be provision for use of this site, at least as far as Great Furzenip, without any access restriction or briefing formalities, even when firing is in progress, provided that other features are not damaged.

The objectives should be achievable through:

1. The Range Recording and Advisory Group (SPRRAG).
2. CCW/MOD liaison.
3. Liaison with educational/recreational/geological organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS**

- 1 Continue to provide geological input to SPRRAG and MOD/CCW liaison
- 2 Ensure that marine erosion (necessary for maintenance of exposures) is not impeded
- 3 Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion.
- 4 Ensure oil spill contingency plans include appropriate measures to safeguard rock exposures.
- 5 Allow access to geological exposures
6. Obtain all necessary SSSI consents/licenses from CCW.

**FEATURE: CARBONIFEROUS LIMESTONE (DINANTIAN) ROCKS BETWEEN BLUCK'S POOL AND BULLSLAUGHTER BAY (GCR 1759)**

**OBJECTIVE:**

To ensure that the whole Geological Conservation Review site (GCR 1759) is maintained in favourable condition where:

existing coastal exposures of the Carboniferous limestone are not modified in any way which would damage the sedimentological & palaeontological interest of these rocks, or prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
MOD use and presence of unexploded munitions has had an Incidental influence by limiting fossil collecting (it could be argued that it could be achieved by other means).	Access restrictions limit use of this important educational/research resource
<b>2. Agriculture and Estate Management</b>	
none	none
<b>3. Access and Recreation</b>	
A potentially excellent educational resource.	If access was easier there would be more chance of important fossils being removed
<b>4. Natural Processes and other Factors</b>	
Marine erosion is essential to maintain exposures, and often reveals new interest.  MOD byelaws permit access to deal with pollution incidents in an emergency.	Marine erosion and associated mass movement can destroy or obscure geological interest  Under certain conditions, oil spills can result in formation of very persistent tarry residues which obscure geological interest.
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

## **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered to be **FAVOURABLE MAINTAINED**.

## **SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Natural processes rather than specific management for the geological features are largely responsible for maintaining the site in favourable condition.

Where access is allowed, the collection of fossil specimens should be discouraged in favour of recording by macrophotography except in cases of genuine scientific need. Requests for permission to visit the site should be considered by SPRRAG members.

Oil spill contingency plans should include provision for safeguarding upper intertidal and splash zone exposures.

The objectives should be achievable through:

1. The Range Recording and Advisory Group (SPRRAG).
2. CCW/MOD liaison.
3. Liaison with educational/recreational/geological organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans.

### **ACTION PLAN - OUTLINE PRESCRIPTIONS**

- 1 Continue to provide geological input to SPRRAG and MOD/CCW liaison
- 2 Ensure that marine erosion (necessary for maintenance of exposures) is not impeded
- 3 Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion and fossil collecting.
- 4 Ensure oil spill contingency plans include appropriate measures to safeguard rock exposures.
- 5 Allow access to geological exposures - requests for permission to visit the site must be considered by SPRRAG members.
6. Obtain all necessary SSSI consents/licenses from CCW.

**FEATURE: COASTAL GEOMORPHOLOGY (PROCESSES AND LANDFORMS) BETWEEN THE WASH AND ST GOVAN'S CHAPEL (GCR 1913)**

**OBJECTIVE:**

To ensure that the whole Geological Conservation Review site (GCR 1913) is maintained in favourable condition where:

existing coastal processes and landforms are not modified by direct human influence, or damaged in any way which would prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
none	Access restrictions limit use of this important educational/research resource, and recent increase in access restrictions is unacceptable.
<b>2. Agriculture and Estate Management</b>	
none	Existing MOD structures are visually obtrusive and, if these facilities are not necessary or can be replaced by mobile equipment they should be demolished.
<b>3. Access and Recreation</b>	
A potentially excellent educational resource.	There would be better use of this important educational resource if access was easier .
<b>4. Natural Processes and other Factors</b>	
Marine erosion is essential to maintain exposures, and often reveals new interest.  MOD byelaws permit access to deal with pollution incidents in an emergency.	Marine erosion and associated mass movement can destroy or obscure geological interest  Under certain conditions, oil spills can result in formation of very persistent tarry residues which can obscure geological interest.
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged



## **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered to be **FAVOURABLE MAINTAINED**.

## **SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Natural processes rather than specific management for the geological features are largely responsible for maintaining the site in favourable condition.

Oil spill contingency plans should include provision for safeguarding upper intertidal and splash zone exposures.

There should be provision for use of this site without any access restriction except where a greater need for military use within the National Park can be clearly demonstrated.

The objectives should be achievable through:

1. The Range Recording and Advisory Group (SPRRAG).
2. CCW/MOD liaison.
3. Liaison with educational/recreational organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans.

### **ACTION PLAN - OUTLINE PRESCRIPTIONS**

- 1 Continue to provide geological input to SPRRAG and MOD/CCW liaison
- 2 Ensure that marine erosion (necessary for maintenance of exposures) is not impeded
- 3 Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion.
- 4 Ensure oil spill contingency plans include appropriate measures to safeguard rock exposures.
- 5 Allow access to geological exposures.
- 6 Review existing MOD structures impacting this feature.
7. Obtain all necessary SSSI consents/licenses from CCW.

# **APPENDIX 2**

## **UNCONFIRMED PRIMARY FEATURES**

### **BACKGROUND**

Four features have been classified, for the purpose of this plan, as Unconfirmed Primary features. Further survey or research are needed to confirm their status.

The following pages comprise of a series of management plans, one for each of the features. There is a summary of outline prescriptions and proposed action for each feature at the end of each plan. Full descriptions of each proposed project will be produced as and when appropriate.

It should be note that where species listed in the various Schedules of the Wildlife and Countryside Act 1981 (as amended) occur on the Range, they may still not meet the SSSI selection criteria and are therefore listed as secondary features and covered in Appendix 3.



**FEATURE: NEUTRAL GRASSLAND****OBJECTIVE:**

To maintain neutral grassland (comprising NVC MG5, MG10, MG11, & MG13 communities) in favourable condition, where:-

<b>Extent of neutral grassland and community diversity:</b>	Neutral grassland should make up about 60% of the Range vegetation (approximately its current extent) the majority of which is herb-rich MG5, shown by selected indicator species.
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<b>FACTORS - A summary of the most important factors which influence, or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
MOD use has resulted in a lack of intensification of farming on the site, therefore preventing use of herbicides & pesticides, thus allowing development and safeguarding of large areas of neutral grassland, and a conversion of former arable land to permanent pasture.  Localised disturbance and excavation have produced floristic and structural variation in the grassland.	Excessive build up of extraneous materials, could potentially cause localised damage.
<b>2. Agricultural and Estate Management</b>	
The present combination of intensive winter grazing and a much reduced summer grazing probably helps to maintain the community complex condition.  Because no fertilizers or herbicides are used large areas of neutral grassland communities survive.  The present late summer mowing for hay, of certain compartments, and scrub management is likely to be beneficial the community diversity.	Inland areas, less used for military purposes, have experienced agricultural improvement.  Changes in grazing pressure: Over-grazing (e.g. by sheep) could cause localised enrichment & loss of floristic diversity;  Under-grazing also leads to nutrient build-up and succession which are also undesirable. Both may also impoverish the condition of vascular plants in the community complex.  Use of fertilisers or herbicides would be damaging to the vegetation communities.
<b>3. Access and Recreation</b>	
A small amount of trampling may benefit some low-growing plants, needing open conditions often associated with pathways.	Increases in access pressure could scar/erode parts of the feature.
<b>4. Natural Processes and other Factors</b>	
Tall ungrazed grassland communities support good nectar sources for insects; as well as good cover and seed sources for small mammals and birds.	Without grazing or cutting neutral grassland will become overtaken by bracken and scrub, leading to losses in extent and species diversity.  Potential nutrient threats from air-borne pollutants could modify sward and deplete floristic quality. Potential spread or introduction of alien plants such as Japanese knotweed and

	winter heliotrope, assisted by the transfer of top-soil within the site.
<b>5. Archaeological Management</b>	
Requirements to maintain archaeological monuments free of damage from military, agricultural, recreational or natural factors (eg scrub encroachment) should be beneficial.	Although probably unlikely, major archaeological excavations could cause temporary localised damage.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

Further investigation is needed to confirm the quality of the NVC communities. Until this is achieved the condition of the feature is **UNKNOWN**.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

The vegetation complex requires regular grazing to maintain its extent, community diversity and condition, intrinsically linked to low nutrient inputs and related to climatic conditions.

Sheep grazing is currently fairly intensive during the period December to early May, this may cause localised enrichment, associated with over-grazing and dunging. Presence and potential spread of species such as spear thistle or creeping thistle should be recorded.

Conversely a lack of grazing, due to requirements to remove stock from active parts of the range during the bulk of the growing season could, in some years or locations, lead to under-grazing and more tussocky, high nutrient demanding and less botanically diverse communities.

An associated build up of litter and nutrients, may allow scrub to invade in less exposed parts and could, potentially, be a greater management problem to deal with. However maintenance of variable structure should be an important consideration, in order to maintain nectar sources for insects, seed and cover for small mammals and birds.

A mixed sheep and cattle regime is likely to be better than just sheep alone, to provide structural variation and remove of rank vegetation. The precise timing and type of grazing stock may require some occasional "fine tuning" to ensure that the overall condition of the vegetation is being maintained.

Continued mowing of the less grazed deeper soiled areas is essential to prevent the more diverse MG5 grassland types becoming rank MG1 grassland and will contain the spread of bracken. The locations and season of mowing rotations will need to take other conservation features into account. Including nectar sources for invertebrates such as shrill carder bees and butterflies, cover and food for bats (invertebrates) and birds (invertebrates and seed). Management of boundary scrub should help to maintain neutral grassland extent.

The objective should be achievable via several different mechanisms, some already in place:

- 1. Through the Range Recording and Advisory Group (SPRRAG);
- 2. Maintaining photographic records from fixed points, plus vertical aerial photos to record extent;
- 3. Collecting & compiling data and providing this for the Site Database/GIS and SPRRAG;
- 4. Providing copies of relevant information to the CCW and the County Botanical Recorder.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor un-improved neutral grassland vegetation communities.
2. Maintain a controlled mixed grazing regime.
3. Prevent use of fertilisers or herbicides.
4. Prevent excessive build up of extraneous litter.
5. Prevent establishment of alien invasive plants.
6. Manage/control spread of scrub vegetation.
7. Maintain grassland by cutting and removing hay
8. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.

**FEATURE: SHRILL CARDER BEE****OBJECTIVE:**

To maintain a shrill carder bee population in favourable condition, where:

<b>Population presence and distribution:</b>	<p>Shrill carder bees should be confirmed in suitable habitat, at least once every five years, between late June &amp; August, from Brownslade/Linney Road to Flimston Chapel.</p> <p><i>NB this UK BAP species was only discovered within the Castlemartin Range in August 1999. A contract survey report, due in winter 1999/2000, may provide a better record of 1999 distribution.</i></p>
<b>Population size and extent:</b>	<p><i>Further research is needed to confirm the potential or full extent of the population throughout the Range.</i></p>

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
<p>MOD use has resulted in a lack of intensification of farming on the site, therefore preventing use of herbicides &amp; pesticides, and potential destruction of a large tract of herb-rich neutral grassland, upon which this rare carder bee depends, by subsequent modern farming practices.</p> <p>Current military use of areas in which shrill carder bees have been found appears to be highly compatible with the bees requirements.</p>	<p>Changes to more intensive military use could be detrimental, but none are presently foreseen.</p>
<b>2. Agriculture and Estate Management</b>	
<p>Present management practices appear to be ideal for maintaining suitable habitat for carder bee species (ie a good range of nectar sources &amp; litter layer for protecting bee nests) due to:</p> <ol style="list-style-type: none"> <li>1. Minimal grazing (May to September) in zones so far identified supporting shrill carder bees;</li> <li>2. No grass-cutting/hay-mowing in same areas.</li> <li>3. No application of fertilisers or pesticides.</li> </ol>	<p>Changes in management, to more intensive grazing or mowing during the summer months, could remove nectar sources from key areas and shelter for the bees nests.</p> <p>Conversely a reduction in winter/spring grazing, or no management of potentially invasive scrub and bracken patches could, over time, reduce the area of suitable neutral grassland currently supporting carder bee colonies.</p>
<b>3. Access and Recreation</b>	
<p>Currently no significant factors are thought to apply.</p>	<p>Currently no significant factors are thought to apply.</p>
<b>4. Natural processes &amp; Other factors</b>	
<p>The shrill carder bee was only discovered in the Castlemartin Range (August 1999). Few population data have been obtained so far.</p> <p>The bees have access to large tracts of tall neutral grassland - with good nectar sources</p>	<p>Natural habitat succession, towards more scrubby conditions with dense bracken, could be a long-term threat.</p> <p>Badgers may dig out nests - their potential negative impact is difficult to measure.</p>

(such as vetches, clovers, red bartsia etc).	Destruction of colonies by badgers may be more severe in certain seasons?
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 a large number of shrill carder bees were found, about 100 or more, distributed between Brownslade/Linney road and Flimston. Because there is only one seasons data the condition of the feature has to be considered as **UNKNOWN**.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Areas in which shrill carder bees have so far been found have minimal management in summer. They are not fertilised; or treated with herbicides or pesticides; they are not grazed much in the period mid May to September; and not cut.

Subject to further research, the most important considerations for maintaining populations of shrill carder bees (and other carder bees) are likely to be a continuation of current management practices, ie:

- 1. Maintenance of extensive areas of neutral, herb-rich grassland and heath. Largely ungrazed and uncut between mid May and September, as at present.
- 2. Maintenance of current patterns of winter-time grazing and levels of summer mowing practices, as these appear to be suitable at the present level.
- 3. Ensuring that no fertilisers, herbicides or pesticides are used in the management of the grasslands identified to support shrill carder bees.
- 4. Ensuring that patches of scrub or bracken do not extend much beyond existing boundaries. This may require a considered programme of rotational cutting of identified patches or stands in winter, on a cyclical basis. Aerial photography or ground-based fixed-point photography may help measure habitat change.
- 5. Ensuring that movements of military vehicles, or machinery or any proposed building construction works requiring turf scraping or excavation are not undertaken without taking the habitat requirements of shrill carder bees into account.
- 6. Undertaking further research (to assess distribution, size and extent of the shrill carder bee population and its foraging behaviour) to determine ways in which the condition of the species and its habitat may be more regularly assessed.
- 7. Maintaining liaison and ensuring that information gathered from 1 - 6 is provided to the Range Dossier and the Castlemartin Range Recording and Advisory Group (SPRRAG).
- 8. Providing copies of relevant information to the local and national recording schemes.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Research shrill carder bee population distribution, size, extent & foraging behaviour.
2. Monitor the shrill carder bee population and associated habitat structure.
3. Maintain shrill carder bee records for SPRRAG and Site Database/GIS.
4. Minimise summer grazing/cutting, to benefit food plants, nectar sources & nest colony sites.
5. Manage scrub encroachment.
6. Prevent use of fertilisers or herbicides.
7. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.

## FEATURE: LAPWING

## OBJECTIVE:

To maintain a breeding lapwing population, where:

<b>Population distribution:</b>	<p>There should be regular evidence, over a long-term average (c. Six years) of breeding pairs of lapwing in at least two areas of the Range:</p> <ul style="list-style-type: none"> <li>Longstone Down Area</li> <li>Brownslade Burrows/Castlemartin/Sandpits area</li> </ul>
<b>Population size:</b>	<p>Based on a six year average, this should be a minimum of:</p> <ul style="list-style-type: none"> <li>Four pairs</li> </ul>

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Current MOD access policy and byelaws should minimise potential disturbance from recreational activities, and illegal acts. MOD use has resulted in a lack of intensification of farming on the site.	Changes to more intensive military use, including: vehicles on dunes; use of helicopters near nest sites.
<b>2. Agriculture and Estate Management</b>	
<p>Old swards, damp grassland and dune grassland provides structural diversity and probably support good invertebrate populations.</p> <p>Winter heavy grazing by large numbers of sheep and cattle may benefit feeding lapwings.</p> <p>Predator (eg fox) control probably benefits lapwings and other ground-nesting birds.</p>	<p>Overgrazing in spring, or mowing &amp; rolling of winter grazed pasture &amp; use of herbicides could damage lapwing nesting &amp; feeding areas (as they need a mixture of short turf and tussocks of cover).</p> <p>Use of anthelmintics could deplete the invertebrates associated with animal dung.</p>
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Unrestricted visitor access pressure to the dunes or inland parts of the ranges, from walkers etc would pose a threat to ground-nesting lapwings. As would disturbance by off-duty civilian and military personnel especially if accompanied by dogs.
<b>4. Natural processes &amp; Other factors</b>	
<p>Larger breeding populations were known 60 - 70 years ago.</p> <p>Presently the Range provides one of only a few sites in Pembrokeshire where lapwings still maintain a foothold and try to breed each year.</p>	<p>The lapwing population in Pembrokeshire, in common with that over much of the UK, has suffered a massive decline over the last 20 years.</p> <p>Breeding success may be hampered in most years by natural predators - eg crows or magpies.</p>
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to	Currently no significant factors are thought to



apply.	apply.
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**CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the lapwing population was at a minimum of 2 or 3 pairs, compared with 5 or 6 pairs in 1998. Four young may have fledged but on current showing the feature is still considered to be in an **UNFAVOURABLE DECLINING** condition.

**SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Minimising disturbance to the lapwing breeding population, on Castlemartin Range between end of March to late August will be an important consideration. There should be confirmation of occupancy and annual monitoring of the population, its distribution and breeding success. Research to determine the habitat requirements of lapwings along the Castlemartin peninsula, in order to try and stem their decline is also needed.

Maintenance of liaison with members of SPRRAG over potential military, agricultural or recreational developments will also be important.

The objective should be achievable, via several different mechanisms already in place:

- 1. Through MOD staff implementing access restrictions, Range byelaws and minimising potential disturbance activities by military/civilian personnel during the breeding season.
- 2. Through sympathetic land management, linked to research by partner organisations into lapwing habitat requirements.
- 3. Through the Range Recording and Advisory Group (SPRRAG);
- 4. Collecting & compiling breeding population census data, and providing these for 1-3 above;
- 5. Providing copies of relevant information to the County Ornithological Recorder(s) via the Pembrokeshire Ornithological Research Committee (PORC).

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the lapwing breeding population.
2. Maintain breeding occupancy records for SPRRAG and Site Database/GIS.
3. Research lapwing habitat management requirements.
4. Prevent disturbance to breeding lapwing population.
5. Manage ground predators to protect lapwing breeding population.
6. Maintain a mixed grazing regime and suitable crop rotation plots.
7. Minimise use of anthelmintics - to maximise potential food invertebrates in animal dung.
8. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.

**FEATURE: TERTIARY CLAYS OF THE FLIMSTON AREA****OBJECTIVE:**

To ensure that the tertiary clays of the Flimston area is maintained in favourable condition where:

the deposits are not modified in any way which would prevent scientific study or diminish their scientific value\*

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
none	Access restrictions and danger from unexploded munitions limit use of this important educational/research resource
<b>2. Agriculture and Estate Management</b>	
The current practice of sheep/cattle grazing provides some control on scrub encroachment	Tree planting and laying of pipes and/or cables would severely limit possibilities for scientific study
<b>3. Access and Recreation</b>	
A potentially excellent educational resource	There would be better use of this important educational resource if access was easier and there were no risks from munitions
<b>4. Natural Processes and other Factors</b>	
none	Vegetation growth has already severely limited possibilities for study of the clays in the disused pit and would limit possibilities for scientific study of the remaining deposits
<b>5. Archaeological Management</b>	
usually beneficial	none envisaged

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered, generally, to be **FAVOURABLE MAINTAINED** with the exception of the disused pits which are **UNFAVOURABLE DECLINING**, therefore the feature as a whole has to be considered as **UNFAVOURABLE DECLINING**.

**SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Some research work has been initiated, but more resources are required to carry out work required for a full understanding of this feature which is potentially worthy of GCR/SSSI designation.

There should be negotiations to see if it would be possible to annexe and clear unexploded ordnance from a small area (50m<sup>2</sup>) adjacent to the road with creation of an exposure which could be visited when there is no firing in progress.

The objectives should be achievable through:

1. The Range Recording and Advisory Group (SPRRAG).
2. CCW/MOD liaison.
3. Liaison with educational/recreational organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans.

**ACTION PLAN - OUTLINE PRESCRIPTIONS**

- 1 Continue to provide geological input to SPRRAG and MOD/CCW liaison.
- 2 Make provision for regular monitoring and updating/improvement of geological data.
- 3 Allow access to geological exposures - requests for permission to visit the site must be considered by SPRRAG members.

# **APPENDIX 3**

## **SECONDARY FEATURES**

### **BACKGROUND**

The following pages comprise of a series of management plans, one for each of the secondary features of the Castlemartin Range. There is a summary of outline prescriptions and proposed actions for each feature at the end of each plan. Full descriptions of each proposed project will be produced as and when appropriate.

Secondary features are those of nature conservation importance which are all of local significance, whilst some are of national importance even though not qualifying as primary features.

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**FEATURE:** BREEDING BIRDS ASSEMBLAGE (\* excluding Lapwing which is considered as a feature in its own right)

**OBJECTIVE:**

To maintain an assemblage of breeding birds of UK or local conservation concern, where:

<b>Breeding species Composition:</b>	<p>There should be evidence, gained over six years, of the following:</p> <p><b>Six UK “red-listed” species.</b> Skylark, Song thrush, Spotted flycatcher, Linnet, Bullfinch, Reed bunting;</p> <p><b>Seventeen species listed by the JNCC as of Conservation Importance</b> Barn owl, blackbird, dunnock, goldfinch, grasshopper warbler, green woodpecker, herring gull, kestrel, marsh tit, oystercatcher, puffin, ringed plover, shag, shelduck, starling, stonechat, swallow.</p> <p><b>Seven species with locally important breeding populations</b> Lesser black-backed gull, swift, house martin, wheatear, sedge warbler, whitethroat, yellowhammer.</p>																				
<b>Population size:</b>	<p>Based on six year averages, this should be:</p> <table> <tr> <td>Barn Owl</td><td>1 occupied territory</td></tr> <tr> <td>Green woodpecker</td><td>1 occupied territory</td></tr> <tr> <td>Herring gull</td><td>200 occupied nests</td></tr> <tr> <td>Kestrel</td><td>2 occupied territories</td></tr> <tr> <td>Oystercatcher</td><td>6 occupied nests</td></tr> <tr> <td>Puffin</td><td>Small numbers in two separate sites</td></tr> <tr> <td>Ringed Plover</td><td>2 occupied territories</td></tr> <tr> <td>Shag</td><td>7 occupied nests</td></tr> <tr> <td>Lesser-black-backed gull</td><td>20 occupied nests</td></tr> <tr> <td>Whitethroat</td><td>20 territories in a study area</td></tr> </table> <p><i>NB for the other 20 spp there are too few data to indicate population size.</i></p>	Barn Owl	1 occupied territory	Green woodpecker	1 occupied territory	Herring gull	200 occupied nests	Kestrel	2 occupied territories	Oystercatcher	6 occupied nests	Puffin	Small numbers in two separate sites	Ringed Plover	2 occupied territories	Shag	7 occupied nests	Lesser-black-backed gull	20 occupied nests	Whitethroat	20 territories in a study area
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Shag	7 occupied nests																				
Lesser-black-backed gull	20 occupied nests																				
Whitethroat	20 territories in a study area																				

**FACTORS - a summary of the most important factors which influence or may influence the feature objective:**

Positive factors	Negative factors
<b>1. Military Use</b>	
<p>MOD use has resulted in a lack of intensification of farming on the site, therefore preventing use of herbicides &amp; pesticides, and potential destruction of a habitat by subsequent modern farming practices.</p> <p>Current MOD access policy and byelaws should minimise potential disturbance from recreational activities, and illegal acts.</p> <p>A new barn owl loft has been installed in one of the Brownslade buildings, used as a stone tent.</p>	<p>Changes to more intensive military use may be detrimental to food &amp; breeding sites of some species, such as: vehicles on dunes; uncontrolled accidental or deliberate burning of scrub/heath; use of helicopters in some areas.</p> <p>The development of stone tents could result in a loss of access to barn owls.</p>
<b>2. Agriculture and Estate Management</b>	
<p>The Range has not been cultivated for many years. Old swards &amp; a wide range of structured habitats probably support good food sources: invertebrate populations; seasonal fruit &amp; seed.</p> <p>Rabbits graze the site especially the dunes where important concentrations occur; regular large concentration of sheep and cattle graze</p>	<p>Mowing &amp; rolling of winter grazed pasture &amp; use of herbicides could damage nesting &amp; feeding areas of ground-nesting species (Eg skylark) needing a mixture of short turf &amp; tussock cover.</p> <p>Use of anthelmintics could deplete the invertebrates associated with animal dung upon which some species may depend.</p>

the Range between December and May.  Predator (eg fox) control probably benefits lapwings and other ground-nesting birds.	which some species may depend.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Unrestricted visitor access pressure along the coast, from walkers and climbers poses a threat to some cliff and ground-nesting species. Ringed plovers are especially vulnerable to disturbance by visitors including off-duty civilian and military personnel and their dogs.
<b>4. Natural processes &amp; Other factors</b>	
<p>The Range has varying shelter &amp; exposure, including large semi-natural rock/cliff-grassland and scrub interfaces, with much open ground suited to a wide range of breeding species.</p> <p>Abundant cliff-crevices and overhanging sheltered cliff features are present for swift (almost uniquely so in Pembs.) &amp; house martin.</p> <p>A wide range of artificial sites are potentially available to species such as swallow.</p>	<p>Populations of all species are subject to natural changes due to changes in food supply, climate or predation levels etc. Many of which cannot be easily predicted or managed.</p> <p>In the context of the UK, populations of most target species appear to be in decline. There may be indications of declining green woodpecker numbers in Pembrokeshire. Populations of ringed plover, barn owl &amp; kestrel are vulnerable &amp; in low numbers.</p>
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### **CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

The selected breeding bird populations may be stable, but this can only be ascertained by future surveillance and monitoring. **CONDITION UNKNOWN.**

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Minimising disturbance to the breeding bird population, on Castlemartin Range between end of March to late August will be an important consideration. There should be confirmation of occupancy by the target species and occasional monitoring of population sizes (about once every five/six years).

The barn owl is protected under Schedule 1 of the Wildlife and Countryside Act (1981).

The objective should be achievable, via several different mechanisms already in place:

- 1. Through MOD staff implementing access restrictions, Range byelaws and minimising potential disturbance activities by military/civilian personnel within the Range.
- 2. Through the Range Recording and Advisory Group (SPRRAG);
- 3. Collecting & compiling breeding population census data, at least once every five years, & providing these for 1-2 above;
- 4. Continuing annual censussing of kestrel, ringed plover, and barn owl, and obtaining baseline data for the other 16 species, at least within sample study areas;
- 5. Providing copies of relevant information to the County Ornithological Recorder(s) via the Pembrokeshire Ornithological Research Committee (PORC).

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor selected breeding bird populations.
2. Maintain spp. census data for SPRRAG and Site Database/GIS.
3. Prevent disturbance to breeding birds.
4. Maintain breeding populations barn owls in buildings and artificial nest-sites
5. Minimise impacts of military activities on breeding birds.
6. Maintain a controlled mixed grazing regime.
7. Minimise use of anthelmintics - to maximise potential food invertebrates in animal dung.
8. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
9. Obtain all necessary consents/licenses (eg affecting barn owls) from CCW.





**FEATURE: AN ASSEMBLAGE OF MIGRATORY/WINTERING WADERS AND GULLS****OBJECTIVE:**

To maintain an assemblage of migratory/wintering waders and gulls, where:

<b>Species Composition:</b>	There should be regular evidence, gained over 5 years, of the following 10 species:  Oystercatcher, Ringed plover, Grey Plover, Golden Plover, Lapwing, Dunlin, Bar-tailed Godwit, Curlew, Whimbrel, Lesser-black backed gull.																														
<b>Population size:</b>	<div>Mean Peak counts (Measured over 5 years)</div> <table><tr><td>* Oystercatcher</td><td>-</td><td>125+</td></tr><tr><td>* Ringed Plover</td><td>-</td><td>40+</td></tr><tr><td>* Grey Plover</td><td>-</td><td>100+</td></tr><tr><td>* Golden Plover</td><td>-</td><td>500+</td></tr><tr><td>* Lapwing</td><td>-</td><td>1,000+</td></tr><tr><td>* Dunlin</td><td>-</td><td>100+</td></tr><tr><td>** Bar-tailed Godwit</td><td>-</td><td>30+</td></tr><tr><td>* Curlew</td><td>-</td><td>125+</td></tr><tr><td>** Whimbrel</td><td>-</td><td>100+</td></tr><tr><td>* Lesser black-backed Gull</td><td>-</td><td>400+</td></tr></table> <div>* based on peak counts (September to March) ** based on peak counts (April to June)</div>	* Oystercatcher	-	125+	* Ringed Plover	-	40+	* Grey Plover	-	100+	* Golden Plover	-	500+	* Lapwing	-	1,000+	* Dunlin	-	100+	** Bar-tailed Godwit	-	30+	* Curlew	-	125+	** Whimbrel	-	100+	* Lesser black-backed Gull	-	400+
* Oystercatcher	-	125+																													
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* Lapwing	-	1,000+																													
* Dunlin	-	100+																													
** Bar-tailed Godwit	-	30+																													
* Curlew	-	125+																													
** Whimbrel	-	100+																													
* Lesser black-backed Gull	-	400+																													

**FACTORS - a summary of the most important factors which influence or may influence the feature objective:**

<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Current MOD access policy and byelaws should minimise potential disturbance to resting and feeding migratory birds from recreational activities, and illegal acts. MOD use has resulted in a lack of intensification of farming on the site.	Changes to more intensive military use may be detrimental to feeding and roosting areas e.g. to Frainslake and Bluckspool beaches.
<b>2. Agriculture and Estate Management</b>	
The Range has not been cultivated for many years. Semi-natural grassland, dunes and damp neutral grassland, with grazed short swards provides good invertebrate populations.	Mowing & rolling of winter grazed pasture & use of herbicides could damage feeding areas for some species. Use of anthelmintics could deplete the invertebrates associated with animal dung upon which some species may depend.
Undisturbed beaches & rocky intertidal coast provides important feeding/roosting areas used by most species.	Vehicles on beaches or dunes could cause disturbance to feeding or roosting birds.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Increased pressure on the beaches by the public or off duty civilian or military personnel could disturb feeding and roosting species there, especially if dogs are present and particularly during cold weather spells.
	Golden Plover (flocks of which may also contain

	other wader species) have been legally shot by the Shooting Syndicate within the Range.
<b>4. Natural processes &amp; Other factors</b>	
During cold spells, the mild climate of south-west Wales provides populations of wintering species better survival conditions.  Lesser Black-backed gulls utilising Frainslake beach in autumn are probably mainly from an "internationally" important breeding population on the Pembrokeshire Islands .	Species arriving in cold weather, or after storms, may be weakened and exhausted. Winter mortality can be high in periods with locally severe weather conditions. (Linked to food availability & disturbance).  The UK breeding populations of several upland waders - golden plover, lapwing, dunlin and curlew are in trouble and in decline.
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### **CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the feature was considered to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING OBJECTIVE:**

Minimising disturbance to the roosting and feeding migratory and wintering waders and gulls, on Castlemartin Range between September and March, and species such as whimbrel on northward spring migration between April and June will be an important consideration.

There should be confirmation of occupancy by the target species and, as far as possible, annual monitoring of peak numbers.

The objective should be achievable, via several different mechanisms already in place:

- 1. Through MOD staff implementing access restrictions, Range byelaws and minimising potential disturbance activities by military/civilian personnel within the Range.
- 2. Through the Range Recording and Advisory Group (SPRRAG);
- 3. Collecting & compiling annual population census data: from monthly WeBS coverage of Frainslake and Bluckspool (September to March) & providing these for 1-2 above;
- 4. Collecting annual peak winter counts of lapwing and golden plover; and peak spring/summer counts of whimbrel and bar-tailed godwit, within specified recording areas;
- 5. Providing copies of relevant information to the County Ornithological Recorder(s) via the Pembrokeshire Ornithological Research Committee (PORC).

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Maintain surveillance of migratory wader and gull bird populations.
2. Maintain WeBS data for SPRRAG and Site Database/GIS.
3. Prevent disturbance to populations of selected roosting and feeding species.
4. Maintain a controlled mixed grazing regime.
5. Minimise use of anthelmintics - to maximise potential food invertebrates in animal dung.
6. Minimise impacts of military activities.
7. Ensure marine pollution plans recognise the requirements of the feature.
8. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.



## CASTLEMARTIN RANGE - SECONDARY FEATURE OBJECTIVES

CB. S3

**FEATURE:** **AN ASSEMBLAGE OF BUTTERFLIES** (excluding silver-studded blue butterfly which is a primary feature in its own right)

**OBJECTIVE:**

To maintain an assemblage of butterflies, where:

<b>Species Composition:</b>	Should include the following six species, confirmed in suitable breeding habitat during a five year period: Dingy Skipper - April-June & August-Sept Brown Argus - April-June & August-Sept Small Pearl-bordered Fritillary - May-August Silver-washed Fritillary - July-September Dark Green Fritillary - June-August Grayling - June-September
<b>Population distribution:</b>	Dingy Skipper - in at least four 1 km squares Brown Argus - in dune grassland in at least 2 squares Small P-b Fritillary - still to be determined Silver-washed Fritillary - still to be determined Dark Green Fritillary - in at least five coastal 1 km squares Grayling - in all coastal 1 km squares  <i>(Based on baseline data collected between 1995 and 1999 for Butterflies for the New Millennium National Butterfly Atlas project)</i>

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
MOD use has resulted in a lack of intensification of farming on the site, therefore preventing of use of herbicides & pesticides, and potential destruction of vast areas of herb-rich grassland by subsequent modern farming practices.	Changes to more intensive military use may be detrimental to continued maintenance of suitable butterfly habitat.
<b>2. Agriculture and Estate Management</b>	
<p>Natural calcareous grassland, dunes and damp neutral grassland, with grazed short swards, provide excellent nectar sources.</p> <p>The present grazing management and hay- and bracken-cutting regime adopted over part of the site, coupled with maintenance of heath, and some woodland copses, is beneficial.</p> <p>Patch burning of heathland is known to benefit pale violet <i>Viola lactea</i> and may therefore help maintain a high dark green fritillary butterfly population.</p>	<p>Changes in land-use could alter habitat so that it becomes unfavourable for butterfly colonies.</p> <p>Eg., through the advance of scrub and bracken with subsequent loss of sheltered open sward, short turf and nectar sources. Over-stocking could be equally damaging to food plants/nectar sources.</p>
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Increased erosion of habitat and key food/nectar plants from access activities could be damaging.

<b>4. Natural processes &amp; Other factors</b>	
<p>Violet species (including the nationally scarce pale violet) - food-plant of the fritillary species - are generally numerous in the Range.</p> <p>The Butterflies for the Millennium Project has provided some useful data on spp. distribution within individual one km squares on the Range.</p>	<p>The target species are considered to declining nationally.</p> <p>None of the target species have been the subject of very detailed recording effort within the Range.</p>
<b>5. Archaeological Management</b>	
<p>Maintenance of open herb-rich areas on or near monuments throughout the Range should be beneficial.</p>	<p>Currently no significant factors are thought to apply.</p>

#### **CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

All target species were recorded and their distribution mapped between 1995 and 1999 for butterflies of New Millennium atlas, based on this survey the feature appears to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING OBJECTIVE:**

The six targeted species populations are regarded as island biotypes, requiring a network of suitable habitat at varying stages of development to ensure a sustainable population. Other areas within the Range should be sympathetically managed to encourage and strengthen existing colonies or encourage further colonisation.

Maintenance of the food plants in suitable habitats for the larval stages of the targeted species will be an important consideration - all of which should be maintained over as wide an area within the Range as possible.

The objective should be achievable, via several different mechanisms, some already in place:

- By maintaining the integrity of habitat at each of the key species and continuity of current management practices.
- By confirming regular presence of each species and thereafter monitoring colonies as often as possible.
- Extending suitable habitat and management practices wherever feasible to support existing colonies. Investigating new sites within the Range and neighbouring properties.
- Maintaining the existing grazing regime.
- Ensuring that there is no change in use of key sites, without consideration of SPRRAG.
- Maintaining liaison with SPRRAG and thereby neighbouring landowners/managers.
- Collecting and compiling records by initiating annual recording programmes on site and where appropriate on other immediate properties.
- Continue to search for additional historic records and forward information to SPRRAG, the County Recorder and Butterfly Conservation.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor butterfly populations within the plan area.
2. Maintain records for SPRRAG and Site Database/GIS.
3. Maintain integrity of habitat and associated management regimes of key sites.
4. Investigate other potential key sites within the plan area, report to SPRRAG.
5. Prevent use of fertilisers and herbicides.
6. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.

**FEATURE:** **DRAGONFLY ASSEMBLAGE** (excluding Hairy Dragonfly & Scarce blue-tailed Damselfly which are primary features in their own right)

**OBJECTIVE:**

To maintain a dragonfly assemblage in favourable condition, where:

<b>Species Composition:</b>	Should include at least 10 of the following 14 species, confirmed in suitable breeding habitat during a five year period:	
	Large Red Damselfly Blue-tailed Damselfly Common Blue Damselfly Azure Damselfly Emerald Damselfly Banded Demoiselle Golden-ringed Dragonfly	Southern Hawker Migrant Hawker Emperor Dragonfly Broad-bodied Chaser Four-spotted Chaser Black-tailed Skimmer Common Darter

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Current MOD access policy and byelaws help to minimise potential disturbance from recreational activities which may damage dragonfly pools. MOD use has resulted in a lack of intensification of farming on the site, therefore preventing use of herbicides & pesticides, and potential destruction of wetland habitat.	Potential habitat disturbance or pollution caused by military activities near or in breeding pools.
<b>2. Agriculture and Estate Management</b>	
New pools dug in the Brownslade and Linney Burrows dunes have provided new suitable habitat for dragonflies.	Heavy cattle or sheep grazing or use of fertilizers could damage small vegetated pools required by dragonfly species.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Increased disturbance as a result of changes in access patterns of use. For example, possible damage to freshly emerging dragonflies may result if uncontrolled dogs are allowed to dash through emergent and pool-side vegetation.
<b>4. Natural processes &amp; Other factors</b>	
Natural seepages, pools and streams in the Brownslade to Frainslake area are unpolluted and provide a range of habitat niches required by the assemblage.  Several spp. are transient. Some will occur well away from water (e.g. golden-ringed dragonfly).	Without management, natural succession could reduce the number of suitable breeding pools for some species.  Some pools may dry out in summer. Introduced fish, or alien invasive plants such as water fern and Australian swamp cypress to dragonfly pools could be damaging to dragonflies and their habitat.

5. Archaeological Management	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

At least 10 of the 14 species have been recorded in suitable breeding habitat during the last five years. In 1999 the dragonfly assemblage is considered to be in a **FAVOURABLE MAINTAINED** condition.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

A breeding dragonfly assemblage should be maintained provided there are a range of unpolluted freshwater habitats (seepages, streams and pools) available. Pools excavated during the last ten years in the Brownslade-Linney Burrows have significantly increased the amount of suitable habitat for dragonflies.

Pools used by dragonflies should be maintained free of human recreational or military disturbance and pollution. Care needs to be taken to avoid introducing fish or alien plants. The water quality of this habitat and its extent should not be allowed to diminish.

Management of vegetation succession may occasionally be needed to maintain dragonfly breeding habitat and assemblage species diversity, providing this does not significantly damage/clash with primary features/primary feature objectives.

The objective should be achievable, via several different mechanisms, some already in place:

- 1. Through MOD staff implementing access restrictions, Range byelaws and minimising potential disturbance activities by military/civilian personnel within the Range.
- 2. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);
- 3. Collecting & compiling records of dragonfly and damselfly species (adults and nymph stages) and their locations.
- 4. Maintaining existing pools, over time, including occasional vegetation removal or re-excavation of identified pools on a cyclic rotational basis.
- 5. Mapping the locations of suitable habitat and species distribution, and providing these for 1-4 above;
- 6. Providing copies of relevant information collected from 1-5 to SPRRAG, the Site Database/GIS and the County Recorder.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Maintain surveillance of the assemblage, including recording/mapping species distribution.
2. Maintain dragonfly records for SPRRAG and Site Database/GIS.
3. Maintain or increase areas of fresh water breeding habitat.
4. Prevent disturbance (including vehicular use) of dragonfly breeding pools.
5. Prevent pollution of dragonfly breeding pools.
6. Prevent establishment of alien invasive plants and fish species.
7. Prevent use of fertilisers or herbicides.
8. Maintain a controlled mixed grazing regime.
9. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.



**FEATURE: LESSER HORSESHOE BAT****OBJECTIVE:**

To maintain a lesser horseshoe bat population in favourable condition, where:

<b>Population structure, distribution and extent:</b>	There is evidence of overnight roosts or night-time feeding roosts in old farm buildings, or disused bunkers at: <ul style="list-style-type: none"> <li>Newton</li> <li>Trenorgan</li> <li>Pricaston</li> <li>Brownsdale</li> <li>Other potential roosts (still to be determined).</li> </ul>
<b>Population in roosts:</b>	Signs of their occupancy, ie droppings, or distinctive food remains (insect wings/wing cases) should be found at known roosts.

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
There are a large number of potential night feeding roosts in disused bunkers and buildings. Current MOD access policy and byelaws help to minimise potential disturbance from recreational activities and illegal acts. MOD use has resulted in a lack of intensification of farming on the site.	Impacts of changing military use at known roosting sites. The recent renovation of some properties as stone tents has excluded access to horseshoe bats in buildings at Trenorgan, for example.
<b>2. Agriculture and Estate Management</b>	
A small network of cattle-grazed enclosures and sheltered wooded valleys and copses along the central and northern parts of the Range, provide potentially good feeding areas near roosts may be quite important.  Recently planted small woodland copses in sheltered valleys in Range East may benefit feeding horseshoe bats.	Several old farm hedgerow boundaries are now very gappy and exposed, unfenced to grazing stock. These may no longer provide sufficiently sheltered flight-corridors for the bats.  Bat feeding and roosting opportunities around the Camp buildings are very limited. The area is generally too exposed for bats, with insufficient shrub cover and nectar sources for insects.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Changes in current levels of use or patterns of recreational activities.
<b>4. Natural processes &amp; Other factors</b>	
Currently no significant factors are thought to apply.	Climatic, geomorphological and geological influences may limit roost site and hibernacula availability on the coast.
<b>5. Archaeological Management</b>	
Measures which aim to protect historical sites and buildings ought to minimise disturbance to bat roosts associated with them.	Building conservation work and condition inspections by archaeological staff, could potentially disturb roosting bats. Damage to roosts could arise from repairs undertaken for archaeological purposes.

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

There is presently insufficient information to determine whether the lesser horseshoe bats are in a FAVOURABLE MAINTAINED condition, so currently condition is **UNKNOWN**.

**SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

All bat species and their roosts are protected under Parts 1 and Part 2 of the WCA (1981) as amended.

Very little is known about the winter distribution or feeding areas used by these bats. No nursery roosts are currently known within the Range, though some structures possess potentially suitable sites.

Lesser horseshoe bats, or signs of their occupation, have only been recorded in four roosts within the Range. All are associated with old farm dwellings or cottages. Small sheltered roost crevices in walls, chimneys and old bread ovens appear to be most favoured.

The objective, to maintain a lesser horseshoe bat population, should be achievable via several different mechanisms, some are already in place:

- 1. By protecting all known hibernacula and night-time feeding roosts from human disturbance. (It should be noted that all bats and their roosts receive legal protection under the Wildlife and Countryside Act).
- 2. Through continued maintenance of good structured habitats supporting flight lines to sheltered wooded copses near insect-rich grassland.
- 3. By minimising the use of potentially harmful prophylactents such as ivermectin-type products with grazing stock.
- 4. By extending sheltered feeding corridors - through planting clumps or strips of woodland and thickening up hedgerows.
- 5. By ensuring that maintenance of Range buildings/historical structures takes bat roost potential into account.
- 6. By using, where ever possible, opportunities to improve hibernacula and overnight feeding roosts should be taken - including such examples as disused bunkers and derelict buildings.
- 7. By managing access through MOD Range byelaws;
- 8. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);
- 9. By collecting & compiling bats roost occupancy and population data, and providing these for 1-8 above.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor bat roosts and potential roosts.
2. Maintain records of bat roost occupancy for SPRRAG and Site Database/GIS.
3. Prevent disturbance to bat roosts, from military or civilian activities.
4. Maintain and, where possible, extend sheltered feeding habitat corridors.
5. Maintain a mixed grazing regime.
6. Minimise use of anthelmintics - to maximise potential food invertebrates in animal dung.
7. Maintain and, where possible, extend/create further bat roosting & hibernacula potential.
8. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
9. Obtain all necessary consents/licenses from CCW.

**FEATURE: GREY SEAL****OBJECTIVE:**

To maintain a grey seal breeding population in favourable condition, where:

<b>Breeding population:</b>	<p>During a long-term average (ie six years):</p> <ul style="list-style-type: none"> <li>at least 10 pups are born per annum, along the Range coastline.</li> </ul>
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<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
<p>Current MOD access policy &amp; byelaws helps to minimise potential disturbance from illegal activities.</p> <p>The effects of disturbance by military activities are presently thought be minimal.</p>	<p>Military use of seal breeding beaches, during autumn, is likely to cause disturbance to breeding cows and pups.</p>
<b>2. Agriculture and Estate Management</b>	
<p>Currently no significant factors are thought to apply.</p>	<p>Currently no significant factors are thought to apply.</p>
<b>3. Access and Recreation</b>	
<p>Cliff-top coastal footpath provides opportunities for visitors to see seals without disturbing them.</p> <p>A constructive protocol has been developed between conservation organisations and the RSPCA to cover public interest and concern over seals/seal pups on the coast.</p>	<p>Autumn climbing activities and public access to breeding beaches would disturb seals. Some seals may lay-up and/or breed in caves prone to disturbance (eg around St Govan's Head).</p> <p>Some (assumed to be abandoned) seal pups, found by the public and/or Range staff, may have suffered unnecessary stress when intervention to "rescue" them may have been inappropriate.</p>
<b>4. Natural processes &amp; Other factors</b>	
<p>The seal population is quite small but may be naturally expanding slowly. The full extent of breeding (especially in the numerous sea-caves) is unknown at present.</p> <p>MOD byelaws permit access to deal with pollution incidents in an emergency.</p>	<p>There are only a limited number of apparently suitably sheltered pupping beaches. Autumn storms may cause increased mortality. Seal pups washed off other breeding sites occasionally appear on the Range beaches.</p> <p>Pupping beaches are potentially vulnerable to marine pollution - notably from oil.</p>
<b>5. Archaeological Management</b>	
<p>Currently no significant factors are thought to apply.</p>	<p>Currently no significant factors are thought to apply.</p>

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 about 12 grey seal pups were recorded within their typical breeding habitat. The population of seals was therefore considered to be in a **FAVOURABLE MAINTAINED** condition.

**SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Minimising disturbance to the breeding seal population, between September and November will be the most important consideration, combined with a programme of:

- locating and recording breeding beaches;
- maintaining surveillance of pups and attendant cows.

A protocol should be developed to deal with reported possibly abandoned, sick or injured seal pups, through liaison with the RSPCA and consultation with Castlemartin Range Recording and Advisory Group.

The objective should be achievable, via several different mechanisms, some already in place:

- 1. Through MOD staff implementing access restrictions, Range byelaws and minimising potential disturbance activities by military/civilian personnel within the Range.
- 2. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);
- 3. Collecting & compiling seal/seal pup occupancy data and providing this for the Range Dossier/GIS and SPRRAG.
- 4. Providing copies of relevant information to the County Mammal Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the breeding grey seal population (number of pups born).
2. Maintain grey seal pupping beach occupancy maps/records for SPRRAG and Site Database/GIS.
3. Prevent disturbance to breeding grey seals.
4. Minimise impacts of military activities on and near pupping sites.
5. Develop a protocol to deal with reported abandoned/sick/injured seals.
6. Ensure pollution contingency plans make provision for protecting/maintaining the feature.
7. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.

# CASTLEMARTIN RANGE - SECONDARY FEATURE OBJECTIVES

CB. S7

## FEATURE: EUROPEAN OTTER

### OBJECTIVE:

To maintain a European otter population in favourable condition, where:

<b>Population:</b>	In 3 years out of 5: <ul style="list-style-type: none"> <li>at least one otter should be recorded;</li> <li>or signs (eg spraint or tracks) confirming recent presence.</li> </ul>
<b>Distribution:</b>	Otters or signs of their presence should be confirmed: <ul style="list-style-type: none"> <li>in the Frainslake valley (between Frainslake beach &amp; the mill).</li> </ul>

<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
Current MOD access policy & byelaws help to minimise potential disturbance. Military use minimises human activity at Frainslake and Blucks Pool enabling the possibility of undisturbed day-time feeding on the sandy foreshore.  The effects of disturbance by military activities are not known but are perceived to be minimal.	Potential for changes in military activities which might impinge on areas currently favoured otters.
<b>2. Agriculture and Estate Management</b>	
Maintenance of high water quality, high water levels in Frainslake Pool, well stocked with fish, is beneficial to otters.  The presence of good patches of ungrazed, un-managed scrub, fen and swamp provides otters with good lying up cover.	Lowering of water quality could be detrimental to otters. Removal of fish stocks may discourage them. Mink have been reported though have not been confirmed.  There is clearly a potential for a clash between game and otter management interests.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Potential increased disturbance as a result of changes in access patterns of use.  The Frainslake area is disturbed (fished occasionally, and shot over for waterfowl in winter). Disturbance by dogs is particularly harmful. Otters may in turn occasionally disturb recreational fishing interests at Frainslake!
<b>4. Natural processes &amp; Other factors</b>	
Eels form a high proportion of the otters diet; the habitat in Frainslake appears highly suitable for eels. Otters may well be attracted to feed in the coastal zone near Frainslake beach.	Currently there is insufficient data about their activities in the Range to determine behavioural patterns or trends.
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to	Currently no significant factors are thought to

apply.	apply.
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**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

During the three years out of five, between 1995 and 1999 otters have been reported and signs also confirmed. The feature was therefore considered to be in **FAVOURABLE CONDITION**. However further surveillance is required to determine the seasonal and behavioural trends.

**SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Otters are protected under parts 1 and 2 of the Wildlife and Countryside Act, 1981 (As amended).

Maintaining a regular watchful eye for otter activity, recording their occurrence and minimising disturbance to them, within the Frainslake Valley and beach area, will be the most important consideration, combined with a programme of:

- recording and mapping sightings and recent spraint/signs and noting behaviour;
- identifying potential otter holts/lying-up sites;
- maintaining high quality and unpolluted wetland and open water habitats, supporting a diverse food resources - including eels, other fish species and amphibians (eg frogs);
- maintenance of quiet, undisturbed cover in the Frainslake Valley area, minimising visits to Frainslake and Bluckspool, especially involving dogs;
- maintenance of liaison with a number of statutory and non-statutory organisations will also be important.

The objective should be achievable, via several different mechanisms, some already in place:

- 1. Through MOD staff implementing access restrictions, Range byelaws and minimising potential disturbance activities by military/civilian personnel within the Range.
- 2. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);
- 3. Collecting & compiling sightings/occupancy data and providing this for the Site Database/GIS and SPRRAG.
- 4. Providing copies of relevant information to the County Mammal Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor otters (sightings, signs and habitat use).
2. Maintain otter records for SPRRAG and Site Database/GIS.
3. Prevent pollution and deterioration in water quality in Frainslake valley.
4. Maintain undisturbed cover for otters in Frainslake valley.
5. Prevent disturbance to otters, through a controlled access policy.
6. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
7. Obtain all necessary consents/licenses from CCW.

**FEATURE: BADGER****OBJECTIVE:**

To maintain a badger population in favourable condition, where:

<b>Breeding population:</b>	During a long-term average (ie six years) is not less than: <ul style="list-style-type: none"> <li>10 active setts</li> </ul> (NB the current population is thought to be 23 occupied setts)
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<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
<p>The Range provide a safe haven for most wildlife. Current MOD access policy &amp; byelaws helps to minimise potential disturbance from illegal activities.</p> <p>The effects of disturbance by military activities are not known but are perceived to be minimal.</p>	Potential accidental damage to setts by construction works.
<b>2. Agriculture and Estate Management</b>	
<p>Badgers utilise for setts disused quarries, hedge-banks, open pasture and scrub-land.</p> <p>Large areas of unimproved grassland and managed crops provide a wide range of food sources - from invertebrates to berries or roots.</p>	Potential problem with stock-fences interfering with badgers.
<b>3. Access and Recreation</b>	
Currently no significant factors are thought to apply.	Potential for illegal activities. Badgers can become caught in snares poorly but legally set for other target species.
<b>4. Natural processes &amp; Other factors</b>	
<p>A number of setts have been in use for some 30 years (1969-1999). A map of setts in 1998 has been produced. The population has increased over the years, there being about 20 setts known at this time from Bosherton to Brownslade. Some seem to be well populated by the number of entrances/ exits in use.</p>	<p>Insufficient knowledge about dispersion within the Range or movements across Range boundaries.</p> <p>Badgers could potentially undermine buildings, roads, targetry and other structures.</p>
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Excavations of archaeological features could also potentially cause disturbance to setts. (Badgers may potentially cause damage to archaeological features).

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the badger population was healthy and about 20 setts were thought to be active. The badger population is therefore considered to be in a **FAVOURABLE MAINTAINED** condition.

**SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Badgers and their breeding sites are protected under parts 1 and 2 of the Wildlife and Countryside Act, 1981 (As amended).

Minimising disturbance to the breeding badger population, between December to June will be the most important consideration, combined with a programme of locating active setts and surveillance of breeding activity.

The objective should be achievable, via several different mechanisms, some already in place:

- 1. Through MOD staff implementing access restrictions, Range byelaws and minimising potential disturbance activities by military/civilian personnel within the Range.
- 2. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);
- 3. Collecting & compiling sett occupancy data and providing this for the Site Database/GIS and SPRRAG.
- 4. Providing copies of relevant information to the County Mammal Recorder.

**ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the breeding badger population/sett occupancy.
2. Maintain badger set occupancy maps/records for SPRRAG and Site Database/GIS.
3. Prevent disturbance to breeding badgers, through a controlled access policy.
4. Maintain suitable cover for badgers and their breeding setts.
5. Minimise impacts of military activities near breeding sites (active setts).
6. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.
7. Obtain all necessary consents/licenses from CCW.



**FEATURE: BROWN HARE**

**OBJECTIVE:**

To maintain a brown hare population in favourable condition, where:

<b>Breeding population:</b>	<p>During a long-term average (ie five years):</p> <ul style="list-style-type: none"> <li>A breeding population should be present including leverets.</li> </ul> <p><i>(Further survey and monitoring are needed to determine population distribution, size or extent)</i></p>
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<b>FACTORS - a summary of the most important factors which influence or may influence the feature objective:</b>	
<b>Positive factors</b>	<b>Negative factors</b>
<b>1. Military Use</b>	
<p>The MOD have been instrumental in trying to re-introduce hares to the Castlemartin peninsula, in partnership with the Game Conservancy.</p> <p>Current MOD access policy &amp; byelaws helps to minimise potential disturbance from illegal activities.</p> <p>The effects of disturbance by military activities are not known but are perceived to be minimal.</p>	<p>Potential for changes in military activities which might impinge on areas currently favoured by hares.</p> <p>Many hares move off the MOD property to adjacent farmland where there is less protection.</p>
<b>2. Agriculture and Estate Management</b>	
<p>Game plots are maintained to ensure there is cover in the spring, when much of the remainder of the Range is grazed tight by sheep and cattle.</p> <p>Large areas of unimproved grassland and managed game-crops provide a wide range of food sources - free from herbicides, pesticides and artificial fertilisers.</p> <p>The Range Shooting Syndicate does not shoot hares and maintains a watchful presence.</p>	<p>There is little mixed agriculture, which they thrive on.</p> <p>There is usually very little cover for hares in April and May, following heavy winter grazing.</p> <p>Neighbouring arable farms may attract them off the Range.</p>
<b>3. Access and Recreation</b>	
<p>Currently no significant factors are thought to apply.</p>	<p>Potential increased disturbance as a result of changes in access patterns of use.</p> <p>There are very few other hares in Pembrokeshire. Thus they are attractive for sport by owners of long-dogs.</p>

<b>4. Natural processes &amp; Other factors</b>	
<p>In the 19th century hares were once abundant on kept estates in south Pembrokeshire.</p> <p>During the 20th Century hares died out at Castlemartin and in the period prior to 1991 there were no hares at the Castlemartin Range.</p> <p>61 hares were introduced in 4 groups between 23rd April 1994 and 4th February 1996.</p> <p>Sightings recently have been encouraging.</p>	<p>Hares tend not to do so well on the west side of the UK. Foxes will take leverets and remain a constant threat. Other potential predators include hawks and badgers.</p> <p>Insufficient knowledge about dispersion within the Range or movements across Range boundaries.</p> <p>It can be difficult to observe hares in the Range, due to the length of the grass.</p>
<b>5. Archaeological Management</b>	
Currently no significant factors are thought to apply.	Currently no significant factors are thought to apply.

#### **ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING THE OBJECTIVE:**

In 1999 the hare population was probably still quite small and was considered to still be in a condition of **UNFAVOURABLE NO CHANGE**. Further surveillance and monitoring are required to determine the trend.

#### **SUMMARY RATIONALE FOR ACHIEVING THE OBJECTIVE:**

Minimising disturbance to the breeding hare population, between mid March to mid August will be the most important consideration, combined with a programme of:

- surveillance of the hares and recording leverets;
- culling foxes;
- maintaining food resources and cover in the periods March to May, when there is little grass;
- maintenance of liaison with a number of statutory and non-statutory organisations will also be important.

The objective should be achievable, via several different mechanisms, some already in place:

- 1. Through MOD staff implementing access restrictions, Range byelaws and minimising potential disturbance activities by military/civilian personnel within the Range.
- 2. Through the Castlemartin Range Recording and Advisory Group (SPRRAG);
- 3. Collecting & compiling breeding occupancy data and providing this for the Site Database/GIS and SPRRAG.
- 4. Providing copies of relevant information to the County Mammal Recorder.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS:**

1. Monitor the hare breeding population.
2. Maintain brown hare records for SPRRAG and Site Database/GIS.
3. Prevent disturbance to breeding hares, through a controlled access policy.
4. Plant/Maintain game plots for hare cover and food.
5. Keep fox populations to a minimum.
6. Minimise impacts of military activities near hare breeding areas.
7. Maintain liaison with appropriate statutory & non-statutory organisations through SPRRAG.

**FEATURE: OLD RED SANDSTONE ROCKS BETWEEN FRESHWATER WEST AND FRAINSLAKE SANDS****OBJECTIVE:**

To ensure that the old red sandstone rocks between freshwater west and Frainslake sands, are maintained in favourable condition where:

existing coastal exposures of the Old Red Sandstone are not modified in any way which would damage the sedimentological and palaeontological interest within these rocks, or prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
none	Access restrictions limit use of this important educational/research resource
<b>2. Agriculture and Estate Management</b>	
none	none
<b>3. Access and Recreation</b>	
A potentially excellent educational resource	There would be better use of this important educational resource if access was easier
<b>4. Natural Processes and other Factors</b>	
Marine erosion is essential to maintain exposures, and often reveals new interest.  MOD byelaws permit access to deal with pollution incidents in an emergency.	Marine erosion and associated mass movement can destroy or obscure geological interest  Under certain conditions, oil spills can result in formation of very persistent tarry residues which obscure geological interest.
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered to be **FAVOURABLE MAINTAINED**.

**SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Natural processes rather than specific management for the geological features are largely responsible for maintaining the site in favourable condition.

Oil spill contingency plans should include provision for safeguarding upper intertidal and splash zone exposures.

There should be provision for use of this site, at least as far as Great Furzenip, without any access restriction or briefing formalities, even when firing is in progress, provided that other features are not compromised or damaged.

The objectives should be achievable through:

- The Range Recording and Advisory Group (SPRRAG).
- CCW/MOD liaison.
- Liaison with educational/recreational organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS**

- 1 Continue to provide geological input to SPRRAG and MOD/CCW liaison
- 2 Ensure that marine erosion (necessary for maintenance of exposures) is not impeded
- 3 Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion.
- 4 Ensure oil spill contingency plans include appropriate measures to safeguard rock exposures.
- 5 Allow access to geological exposures.

**FEATURE: VARISCAN STRUCTURES (FOLDS AND FAULTS) BETWEEN BLUCKS POOL AND THE WASH****OBJECTIVE:**

To ensure that the VARISCAN structures (folds and faults) between Blucks pool and the wash, are maintained in favourable condition where:

existing coastal exposures of the Carboniferous Limestone are not modified in any way which would damage the structural interest within these rocks, or prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
none	Access restrictions limit use of this educational/research resource
<b>2. Agriculture and Estate Management</b>	
none	none
<b>3. Access and Recreation</b>	
A potentially excellent educational resource	There would be better use of this important educational resource if access was easier and there were no risks from munitions
<b>4. Natural Processes and other Factors</b>	
Marine erosion is essential to maintain exposures, and often reveals new interest.	Marine erosion and associated mass movement can destroy or obscure geological interest
MOD byelaws permit access to deal with pollution incidents in an emergency.	Under certain conditions, oil spills can result in formation of very persistent tarry residues which obscure geological interest.
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered to be **FAVOURABLE MAINTAINED**.

**SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Natural processes rather than specific management for the geological features are largely responsible for maintaining the site in favourable condition.

Oil spill contingency plans should include provision for safeguarding upper intertidal and splash zone exposures.

There should be provision for use of this site, at least as far as Great Furzenip, without any access restriction or briefing formalities, even when firing is in progress, provided that this does not compromise or damage other features.

The objectives should be achievable through:

- The Range Recording and Advisory Group (SPRRAG).
- CCW/MOD liaison.
- Liaison with educational/recreational organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS**

- 1 Continue to provide geological input to SPRRAG and MOD/CCW liaison
- 2 Ensure that marine erosion (necessary for maintenance of exposures) is not impeded
- 3 Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion.
- 4 Ensure oil spill contingency plans include appropriate measures to safeguard rock exposures.
- 5 Allow access to geological exposures

**FEATURE: KARST LANDFORMS INCLUDING CAVE SYSTEMS****OBJECTIVE:**

To ensure that the karst landforms including cave systems are maintained in favourable condition where:

the relict landforms and cave deposits are not modified or damaged in any way which would prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
none	Access restrictions limit use of this important educational/research resource
<b>2. Agriculture and Estate Management</b>	
grazing and scrub clearance are needed to maintain some of the landforms	dumping of waste materials, including trees and branches could modify and damage the feature
<b>3. Access and Recreation</b>	
A potentially excellent educational resource. The cave entrances are difficult to approach and unpublicised so visitors are limited to specialists.	Access could damage the case of cave deposits.  There would be better use of elements of this important educational resource if access was easier and there were no risks from munitions
<b>4. Natural Processes and other Factors</b>	
none	Weathering and vegetation growth lead to degradation of exposures and marine erosion is a threat to the caves and their deposits.
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered, generally, to be **UNFAVOURABLE DECLINING**.

**SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Active management of vegetation is needed to restore exposures to favourable condition.

If access is allowed, the collection of fossil specimens should be discouraged in favour of recording by macrophotography except in cases of genuine scientific need. Requests for permission to visit the site should be considered by SPRRAG members.

Because of the high quality and extreme sensitivity of some of the cave deposits (and their associated archaeological features) access to certain caves must be strictly limited.

The objectives should be achievable through:

- The Range Recording and Advisory Group (SPRRAG).
- CCW/MOD/Cambria Archaeology liaison.
- Liaison with educational/recreational organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS**

- 1 Continue to provide geological input to SPRRAG and MOD/CCW liaison
- 2 Ensure that marine erosion (necessary for maintenance of exposures) is not impeded - caves excepted.
- 3 Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion.
- 4 Allow access to geological exposures - requests for permission to visit the site must be considered by SPRRAG members.



**FEATURE: SURFACE DRAINAGE AND THE CARBONIFEROUS LIMESTONE AQUIFER**

*NB Although considered here as a Castlemartin Range secondary feature, the aquifer and surface drainage form a substantial part of the catchment area for the "nationally important" standing open water primary feature - Bosherton Lakes - within the adjacent Stackpole SSSI.*

**OBJECTIVE:**

To ensure that the surface drainage and the carboniferous limestone aquifer is maintained in favourable condition, thereby contributing to the maintenance of spring water quality inputs to the nationally important Bosherton Lakes system, adjacent to the Range, where:

flow rates, flow paths and ground water quality (measured by selected chemical determinants below) are not affected by human influence, or in any way which would prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>Water Chemistry:</b>	<p>Ground water, measured in permanent or temporary bore-holes should show:</p> <p style="padding-left: 40px;">phosphorous levels considerably below 25 micro-grams per litre; nil or negligible traces of nitrates and ammonia, high alkalinity and pH nil or negligible traces of Hydrocarbon or metal pollutants.</p> <p><i>NB baseline data, anticipated from ILMP contractors, has not yet been provided, to allow scrutiny of chemical determinants needed to assess current condition.</i></p>
<b>Hydrology:</b>	<p>Water should constantly be present in permanent or temporary bore-holes, with no indication of levels diminishing, over and above anticipated normal seasonal peaks and troughs, and weather or tidal cycles.</p> <p><i>NB Less than one seasons data have been collected; it is too soon to anticipate maximum or minimum water levels or flow rates or set targets.</i></p>

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
Has probably prevented potential agricultural improvements which may have led to lower water quality standards, due to use of fertilizers and pesticides.	<p>Risk of contamination by spent ordnance, propellants, spillages of fuel and chemicals etc.</p> <p>Access restrictions limit use of this important educational/research resource</p>
<b>2. Agriculture and Estate Management</b>	
Disposal of waste is legally regulated. The Sewage Works at Merrion is presumed to be functioning adequately.	<p>Activities such as water abstraction, ditching, slurry spreading or dumping of waste/materials could cause unacceptable modification of flow rates, flow paths and water quality.</p> <p>Failure of the sewage works could affect ground and surface water quality.</p>

<b>3. Access and Recreation</b>	
A potentially excellent educational resource	There would be better use of this important educational resource if access was easier and there were no risks from munitions
<b>4. Natural Processes and other Factors</b>	
A considerable portion of the catchment for Bosherton Lakes, a Grade 1 conservation area within Stackpole SSSI, lies within the Castlemartin Range. The catchment contributes a significant portion of the lake water supply via underground springs. Currently this water is of high quality and low in nutrients.	<p>If water flow from the catchment diminishes or water quality declines, the Bosherton Lake system would be affected and potentially damaged significantly.</p> <p>Long-term changes in climate may affect the ability for the aquifer to maintain its condition.</p>
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

### ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES

Until baseline data have been collected and analysed of water depths and water quality, the current condition of the feature is **UNKNOWN**.

### SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES

Regular readings of water levels will be needed from the permanent boreholes, following an agreed methodology to inspect these and record the data.

Maintenance of a regular watchful eye on water levels in low-lying ground within the Range, especially after heavy winter rains will also be useful to obtain a better understanding of the hydrological system.

The objective should be achievable, via several different mechanisms, some already in place:

- 1. By minimising the risk of pollution & maintaining a culture of awareness of potential hazards to aquifer water quality.
- 2. Through regular liaison at Castlemartin Range Recording and Advisory Group (SPRRAG);
- 3. Maintaining close liaison with Environment Agency and CCW staff.
- 4. Collecting & compiling hydrology and water quality data, and maintaining this in a suitable form (eg a spreadsheet) and providing annual reports for the Range Dossier and SPRRAG.
- 5. Recording observations of exceptional events in the catchment following heavy rain.
- 6. Providing copies of relevant data/reports to SPRRAG, the Environment Agency and CCW.

### ACTION PLAN - OUTLINE PRESCRIPTIONS:

1. Measure/Monitor bore-hole water levels and other potential sources in the Range.
2. Measure/Monitor bore-hole water quality and other potential sources in the Range.
3. Maintain hydrology and water chemistry records for SPRRAG and Site Database.
4. Prevent pollution of ground-waters.
5. Maintain the Merrion sewage Works to a high standard.
6. Maintain liaison with appropriate statutory & non-statutory organisations and SPRRAG.
7. Obtain all necessary consents/licenses from appropriate authorities.



**FEATURE: COASTAL GEOMORPHOLOGY (PROCESSES AND LANDFORMS) BETWEEN BLUCKS POOL AND THE WASH****OBJECTIVE:**

To ensure that the coastal geomorphology (processes and landforms) between Blucks pool and the wash, are maintained in favourable condition where:

existing coastal processes and landforms are not modified by direct human influence, in any way which would prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
none	Access restrictions limit use of this educational/research resource
<b>2. Agriculture and Estate Management</b>	
none	none
<b>3. Access and Recreation</b>	
A potentially excellent education resource	There would be better use of this important educational resource if access was easier and there were no risks from munitions
<b>4. Natural Processes and other Factors</b>	
Marine erosion is essential to maintain exposures, and often reveals new interest.	Marine erosion and associated mass movement can destroy or obscure geological interest
MOD byelaws permit access to deal with pollution incidents in an emergency.	Under certain conditions, oil spills can result in formation of very persistent tarry residues which obscure geological interest.
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered to be **FAVOURABLE MAINTAINED**.

**SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Natural processes rather than specific management for the geological features are largely responsible for maintaining the site in favourable condition.

Oil spill contingency plans should include provision for safeguarding upper intertidal and splash zone exposures.

There should be provision for use of this site, at least as far as Great Furzenip, without any access restriction or briefing formalities, even when firing is in progress, provided that this does not compromise or damage other features.

The objectives should be achievable through:

- 1. The Range Recording and Advisory Group (SPRRAG).
- 2. CCW/MOD liaison.
- 3. Liaison with educational/recreational organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans.

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS**

- |   |  |
|---|--|
| 1 | Continue to provide geological input to SPRRAG and MOD/CCW liaison   |
| 2 | Ensure that marine erosion (necessary for maintenance of exposures) is not impeded   |
| 3 | Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion. |
| 4 | Ensure oil spill contingency plans include appropriate measures to safeguard rock exposures.   |
| 5 | Allow access to geological exposures   |

**FEATURE: FRAINSLAKE - BROWNSLADE DUNE SYSTEM****OBJECTIVE:**

To ensure that the Frainslake - Brownslade dune system and the cemented dune sands at the northern end of Frainslake sands, are maintained in favourable condition where:

the landform and the associated deposits are not modified in any way which would damage the geomorphological interest, or prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
MOD use has resulted in a lack of intensification of farming on the site.	Access restrictions limit use of this educational/research resource
<b>2. Agriculture and Estate Management</b>	
none	Past sand quarrying.
<b>3. Access and Recreation</b>	
A potentially excellent educational resource	There would be better use of this important educational resource if access was easier and there were no risks from munitions
<b>4. Natural Processes and other Factors</b>	
Marine erosion is essential to maintain exposures, and often reveals new interest.	Marine erosion and associated mass movement can destroy or obscure geological interest
MOD byelaws permit access to deal with pollution incidents in an emergency.	Under certain conditions, oil spills can result in formation of very persistent tarry residues which obscure geological interest. Access through the dunes for oil spill clean-up operations could be damaging.
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered to be **FAVOURABLE MAINTAINED**.

**SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Natural processes rather than specific management for the geological features are largely responsible for maintaining the site in favourable condition.

Oil spill contingency plans should include provision for safeguarding upper intertidal and splash zone exposures. Oil spill clean-up operations should avoid creating new access roads through the dunes.

There should be provision for use of this site, at least as far as Great Furzenip, without any access restriction or briefing formalities, even when firing is in progress, provided that this does not compromise or damage other features.

The objectives will be achievable through:

- 1. The Range Recording and Advisory Group (SPRRAG).
- 2. CCW/MOD liaison.
- 3. Liaison with educational/recreational organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans .

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS**

- |   |  |
|---|--|
| 1 | Continue to provide geological input to SPRRAG and MOD/CCW liaison   |
| 2 | Ensure that marine erosion (necessary for maintenance of exposures) is not impeded   |
| 3 | Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion. |
| 4 | Ensure oil spill contingency plans include appropriate measures to safeguard and/or clean rock exposures, minimising disturbance to the dunes. |
| 5 | Allow access to geological exposures.  |

**FEATURE: CARBONIFEROUS LIMESTONE (DINANTIAN) ROCKS IN THE INLAND AREAS OF THE RANGE****OBJECTIVE:**

To ensure that the Carboniferous limestone (DINANTIAN) rocks in the inland areas of the range, are maintained in favourable condition where:

existing exposures of the Carboniferous Limestone are not modified in any way which would damage the sedimentological and palaeontological interest of these rocks, or prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
none	Access restrictions limit use of this important educational/research resource
<b>2. Agriculture and Estate Management</b>	
grazing and scrub clearance are needed to maintain the exposures	none
<b>3. Access and Recreation</b>	
A potentially excellent educational resource	There would be better use of this important educational resource if access was easier and there were no risks from munitions.  If access was easier there would be more chance of important fossils being removed
<b>4. Natural Processes and other Factors</b>	
none	Weathering and vegetation growth lead to degradation of exposures
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered, generally, to be **UNFAVOURABLE DECLINING**.

**SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Active management of vegetation is needed to restore exposures to favourable condition.

If access is allowed, the collection of fossil specimens should be discouraged in favour of recording by macrophotography except in cases of genuine scientific need. Requests for permission to visit the site should be considered by SPRAG members.



The objectives will be achievable through:

- 1. The Range Recording and Advisory Group (SPRRAG).
- 2. CCW/MOD liaison.
- 3. Liaison with educational/recreational organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans .

#### **ACTION PLAN - OUTLINE PRESCRIPTIONS**

- 1 Continue to provide geological input to SPRRAG and MOD/CCW liaison
- 2 Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion.
- 3 Allow access to geological exposures - requests for permission to visit the site must be considered by SPRRAG members.

**FEATURE: PEAT DEPOSITS ('THE SUBMERGED FOREST')****OBJECTIVE:**

To ensure that the peat deposits and any associated palaeontological interest is maintained in favourable condition where:

existing exposures are not modified in any way which would damage the interest, or prevent scientific study \*.

*\* NB A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding (eg. education, research etc.) of the primary interest. Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features**.*

<b>FACTORS - a summary of the most important factors which influence, or may influence the feature objective</b>	
<b>Positive Factors</b>	<b>Negative Factors</b>
<b>1. Military Use</b>	
none	Access restrictions limit use of this important educational/research resource The feature could be damaged by military activities such as amphibious landings
<b>2. Agriculture and Estate Management</b>	
none known	none
<b>3. Access and Recreation</b>	
A potentially excellent educational resource	There would be better use of this important educational resource if access was easier.
<b>4. Natural Processes and other Factors</b>	
none known	Only viewable at low tide. Natural weathering processes could lead to degradation of exposures
<b>5. Archaeological Management</b>	
Usually beneficial	None envisaged

**ANALYSIS OF CURRENT ACHIEVEMENTS IN MEETING OBJECTIVES**

The current condition of the feature is considered, generally, to be **FAVOURABLE DECLINING**.

**SUMMARY RATIONALE FOR ACHIEVING OBJECTIVES**

Limit activities which would lead to accelerated erosion of the peat deposits.

The objectives will be achievable through:

- 1. The Range Recording and Advisory Group (SPRRAG).
- 2. CCW/MOD liaison.
- 3. Liaison with educational/recreational organisations and continued involvement with Pembs Outdoor Charter Group and contribution to PCNP Management Plans .

**ACTION PLAN - OUTLINE PRESCRIPTIONS**

- 1 Continue to provide geological input to SPRRAG and MOD/CCW liaison
- 2 Make provision for regular monitoring and updating/improvement of geological data including recording of interest at risk from marine erosion.
- 3 Allow access to geological exposures - requests for permission to visit the site must be considered by SPRRAG members.

SSSI Description

SSSI Description

SSSI Description

SSSI Map

## List of Operations



SPA citation

SPA map

SAC citation

SAC citation

SAC map

NVC Map

## **Appendix 8**

### **Phase 1 Intertidal survey**





## Appendix 8 Phase 1 Intertidal survey

## Appendix 8 Phase 1 Intertidal survey

## Appendix 8 Phase 1 Intertidal survey



## Appendix 8 Phase 1 Intertidal survey

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## Appendix 8 Phase 1 Intertidal survey



## Appendix 8 Phase 1 Intertidal survey

# **APPENDIX 9**

## **HYDROLOGY & HYDROGEOLOGY OF CASTLEMARTIN RANGE**

S. Howells



## **Topography and drainage**

The area consists of a dissected plateau surface (a former marine erosion surface) developed on Carboniferous Limestone. Its northern limit is defined by a ridge with an WNW-ESE alignment that marks the outcrop of the Old Red Sandstone on the southern limb of the Freshwater West Anticline. Elsewhere the area is bounded by sea cliffs, except at Bluck's Pool and Frainslake Sands where there are low-lying sand dune systems.

The plateau surface is most clearly defined in the Flimston area and adjacent to the coast between Linney Head and St Govan's Head, where only slight modification of the surface has occurred. Elevation in the central core of this area (c. 10km<sup>2</sup>) is generally 45-55mOD. Geophysical investigation (Howells, 1998) has shown that in some areas clays overly an undulating limestone surface that may lie as much as 20m below the plateau surface. To the east and west the plateau has been deeply dissected by valleys which reflect the WNW-ESE structural alignments within the underlying limestone.

On the western side, the Brownslade Valley contains a stream which flows westwards to Frainslake Sands. A little further south, the mouth of the Castle Lady Valley is blocked by wind-blown sand at Bluck's Pool.

To the east of the Flimston Plateau there are four valleys, three of which lead into the artificial Bosherton Lake system. The northmost of these, the Sampson Valley, feeds into the northern part of the lakes and is developed on the Blucks Pool Formation. The valley is occupied by a stream which is fed mainly by small springs and surface runoff from the southern flank of the ORS ridge. A little further south, the Trenorgan Valley leads into the central lake. The southern part of the lakes lies in the Southrow Valley. This valley contains the disused Caled Quarry, which has been excavated below the level of the groundwater table. Another valley leads towards the dune system at Broad Haven. With the exceptions mentioned above these are generally dry valleys, although during the wettest winters, after prolonged rainfall, there may be ephemeral surface flow.

The Carboniferous Limestone aquifer is the major component (store) of the hydrological/hydrogeological systems of this area but suprisingly little is known about it, and given the lithological and structural complexity a great amount of work would be required to progress much beyond current knowledge and surmise.

The limestones are generally not porous but it is permeable by virtue of its bedding and joint planes. In some areas faults and relict karst systems (sink holes and caves) may be even more important. Near the coast, and in the absence of major voids, freshwater probably overlies a saltwater wedge (a tidal influence has been recorded in some boreholes).

An attempt has been made to delimit catchments and flow direction in terms of watersheds and surface topography, where it is assumed that there is homogeneity within the aquifer. Although this approach may give a rough approximation, it should be treated with a great deal of caution for the reasons outlined above, particularly in the boundary areas. For this reason the coastal strip of the Bosherton Catchment has been included although it lies outside the watershed.

## **Water resources**

Although this area is currently only exploited for private water supplies (domestic and agricultural), either by boreholes (at Merrion Camp, and formerly at Frainslake) or directly from (in some cases seasonal) streams and ponds, there may be a future need for public use of this resource. Probably the main concern at this time is that at least half of the area influenced by the MOD activities is critical to water replenishment and quality at the Bosherton Lakes (part of Stackpole National Nature Reserve). The bulk of the replenishment is directly from the limestone aquifer but with important contribution from Sampson Stream, which receives effluent from the MOD sewage treatment works.

## Boreholes in Bosherton Catchment

Location	Grid reference	Depth metres	Base OD metres	Notes	Monitoring	
					Water table	Analysis
Merrion Camp no.1	SR 940 969	to be determined	to be determined	MOD water supply		?MOD RPS
Merrion Camp no.2	SR 940 969	to be determined	to be determined	MOD water supply		?MOD RPS
Sampson Cross	SR 9653 9645	to be determined	to be determined	EA monitoring	EA (DL)	EA
Home Farm	SR 969 955	to be determined	to be determined	agricultural water supply		
Hayston Lane	SR 9457 9603	35m	to be determined	ILMP monitoring	BG	RPS
Lyerry Covert	SR 9537 9584	to be determined	to be determined	EA monitoring	EA (DL)	EA
Sampson Brake	SR 969 959	to be determined	to be determined	EA monitoring	EA (DL)	EA
Southrow Quarry	SR 9515 9511	39.5m	to be determined	ILMP monitoring	BG	RPS
Newton Gate	SR 963 941	36m	to be determined	ILMP monitoring	U/S	U/S
Trevallen Farm	SR 974 938	25m?	to be determined	private water supply		
Devil's Quoit	SR 9819 9520	to be determined	to be determined	EA monitoring	EA (DL)	

Hydrology/hydrogeology

Hydrology/hydrogeology

Hydrology/hydrogeology



Hydrology/hydrogeology

Hydrology/hydrogeology

Hydrology/hydrogeology

Hydrology/hydrogeology

# Appendix 10

## ACCESS AND GEOLOGICAL FEATURES

In the Introduction to the Earth Science Review ( Ellis *et al.*, 1996), Chapter 2 'The need for Earth heritage conservation' the following statement appears.

*Earth heritage sites are essential for training and education. Students and teachers need sites for practical demonstration of the principles of geology and to illustrate the processes of landscape evolution.*

*The use of rocks and minerals, water and the energy derived from fossil and nuclear fuels are at the centre of modern society and are essential to its economic well-being. Trained geologists are needed to locate and extract oil and gas, metal ores and the raw material for the construction industry, such as clays for brick making, stone for building and aggregates for concrete. Geologists also discover aquifers, and locate reservoirs and sites for major engineering projects.*

This confirms that research and educational use are important reasons for the existence of GCR sites and it follows that there is a fundamental difference between management objectives for geological and biological features

CCW's Earth Science Working Group (ESWG) have formulated the following outline definition of favourable condition.

*A geological feature should be reported as being in a favourable condition when it is in a state which would allow full understanding ( eg. education, research etc.) of the primary interest.*

\* the precise wording has yet to be finalised.

JNCC's Earth scientists have previously suggested that the condition should be reported unfavourable if access permission could not be obtained, but CCW's ESWG did not accept this view.

Members of the ESWG were, however, unanimously agreed that access should be a management objective provided there were no overriding contra-indications. Using an example from Castlemartin ILMP, appropriate wording is suggested

.....  
FEATURE - Carboniferous Limestone (Dinantian) rocks

Objective - to ensure that the feature is maintained in a favorable condition where

existing coastal exposures are not modified in any way which would damage the sedimentological, palaeontological and stratigraphic interest of these rocks
--

*Although restrictions on access do not affect the condition of the site, the reasoning behind geological conservation dictates that it is a management objective to allow for access, wherever this can be achieved **without detriment to geological or biological features.***  
.....

With respect to Castlemartin Ranges, and Range West in particular, the issue of fossil collecting needs to be considered in the context of this management objective. Silicified fossils in the Carboniferous Limestone are exposed by natural processes and, if removed, it takes a considerable time for new ones to appear. For the Caves and Karst secondary feature the possibility of damage to speleothems during exploration and disturbance of cave deposits by unauthorised excavation are also contra-indications to unrestricted access.

Thus, although access is generally desirable for geological features, appropriate measures should be devised and implemented to protect components at risk. Implications for biological features also need to be considered.

These matters need to be discussed by the RRAG and considered during the deconflicting process of the ILMP. It is recommended that the MOD safety briefings are attended by a CCW staff member to ensure that visitors are aware of all geological and nature conservation issues, particularly legal implications.

Sid Howells  
Area Earth Scientist ( Pembs, Carms, Gower).

## Appendix 11 Nat Park Maps

## Appendix 11 Nat Park Maps



## Appendix 11 Nat Park Maps

## Appendix 12 IUCN Info

## Appendix 12 IUCN Info

# APPENDIX 13

## GLOSSARY

1. **Terms used within the ILMP**
2. **List of plants and animals (English and Latin names) referred to within the ILMP**
3. **Codes for nature conservation features referred to within the ILMP**
4. **National Vegetation Communities (NVC) referred to within the ILMP**

### 1. TERMS USED WITHIN THE ILMP

**Anthelmintics** - drugs that expel or destroy internal parasitic worms of the intestine.

**Ballantine Grade 3 exposed shore** - as described by J W Ballantine in his paper, "A Biologically defined Exposure scale for Rocky Shores", Field Studies Vol.1 No 3 (1961).

**Biodiversity Action Plans** - the UK signed up to the Biodiversity Convention at the earth Summit in Rio de Janeiro in June 1992. The Government launched "Biodiversity: the UK Action Plan" in January 1994. Part of this plan was the development of costed targets for the conservation/restoration of key species and habitats in a series of Habitat and Species Action Plans. These include the following issues: current status; current actions; rationale for conservation targets; legislative protection; site or species protection/management; monitoring and research; principle threats; and responsibility for actions.

**Biodiversity Habitat Statements** - provide a context for the preparation of costed Habitat and Species Action Plans; include preliminary findings on measure which need to be addressed to conserve the species or habitat; provide a description of current status, factors affecting, current action and conservation direction; and are intended to assist all concerned at national and local level in taking forward UK Biodiversity.

**Birds of Conservation Concern in the UK, Channel Islands and Isle of Man:** a 1996 publication by the UK's leading non-governmental bird conservation organisations. Priorities for bird conservation have been agreed after reviewing the status of all bird species in the UK, Channel Islands and the Isle of Man. This approach follows that developed by the UK Government's Steering Group on Biodiversity. The list is divided into three sections: red (of greatest conservation concern), amber (of medium conservation concern), and green (must be at least monitored).

**Birds of Conservation Importance in Great Britain:** a JNCC paper agreed in May 1996 which is used by the statutory agencies. Four tables have been produced listing priority species based on analyses of the same data as for the "Birds of Conservation Concern" publication, but covering a slightly different geographical area and giving greater priority to globally threatened and relatively rare species. Tables 1 to 3 equate to the "red" list in "Birds of Conservation Concern" and table 4 equates to the "amber" list.

**Endemic** - Only recorded from this site/area.

- **Favourable condition** - a feature is judged as being in favourable condition when its conservation objectives are being met - these are statements of the nature conservation aspirations for features expressed in terms of the condition which we wish to attain for each feature.
- **Favourable maintained** - a feature is judged as favourable maintained when its conservation objectives were being met at the previous assessment, and are still being met.

- **Unfavourable No Change** - a feature is judged as unfavourable no change when it is being retained in a more-or less steady state by repeated or continuing damage: it is unfavourable but neither declining or recovering. In rare cases, a feature might not be able to regain its original condition following a damaging event/activity, but a new stable state might be achieved.
- **Unfavourable Declining** - decline is another possible consequence of a damaging event/activity. In this case recovery is possible and may occur either spontaneously or if suitable management input is made.
- **Unknown** - not enough is known regarding the status of this feature on a site to make a judgement on its condition.

**GCR** - A systematic review of the key earth science localities, designed to identify and help conserve those sites of national and international importance in Britain. This Geological Conservation Review (GCR) was completed in 1990.

**IUCN** - International Union for the Conservation of Nature. Responsible for revising the criteria used to draw up Red Lists with a more objective and quantitative framework for the classification of species according to their extinction risk (World Conservation Union, 1994).

**JNCC** - The Joint Nature Conservation Committee (JNCC) is the statutory committee through which the conservation agencies of England, Scotland and Wales carry out particular aspects of their work. These aspects include matters relating to Great Britain as a whole, international matters and the upkeep of consistent standards in science between the country agencies.

**Local rarity/notable** - Occurring in less than 3 10km squares in the Vice - County. This ties in with the Institute of Terrestrial Ecology (ITE) NVC of Castlemartin Range report 1998.

**Mesotrophic** - of neutral pH between pH5 and pH6.5.

**NVC** (National Vegetation Classification) - A strategic and comprehensive approach to the classification of British\* plant communities, with standardised descriptions of named and systematically arranged vegetation types. (\*Northern Ireland is not included) See below for full list of those communities identified at Castlemartin.

**Red Data Book** - published version of Red Data Lists in a series of volumes covering different plant or animal groups, sometimes slightly behind the Red Data Lists due to publishing delays. (See Red Data List below).

**Red Data List** (plants) - Lists of rare and threatened vascular plant species, selected under the IUCN criteria as extracted from the British red data Books 1 vascular Plants - 3rd Edition 1999. See Appendix 6, page 98.

**SPA** (Special Protection Area) - a site designated under the European Birds Directive, for the conservation of birds.

**cSAC** (candidate Special Area of Conservation) - a candidate site for designation under the European Habitats Directive (Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora).

**Thermophilous animal** - An animal requiring and thriving at relatively high temperatures.

**Therophyte** - A species which is tolerant of heat/drought conditions.

## 2. LIST OF PLANTS AND ANIMALS (ENGLISH AND LATIN NAMES) REFERRED TO WITHIN THE ILMP

### 2.1 Plants

A moss	<i>Trichostomum crispulum</i>
Adder's tongue fern	<i>Ophioglossum vulgatum</i>
Annual meadow grass	<i>Poa annua</i>
Australian swamp cypress	<i>Crassula helmsii</i>
Autumn gentian	<i>Gentianella amarella</i>
Bell heather	<i>Erica cinerea</i>
Black/lesser knapweed	<i>Centaurea nigra</i>
Blackthorn	<i>Prunus spinosa</i>
Blunt-flowered rush	<i>Juncus subnodulosus</i>
Bracken	<i>Pteridium aquilinum</i>
Bramble	<i>Rubus fruticosus</i>
Buck'shorn plantain	<i>Plantago coronopus</i>
Bulrush	<i>Typha latifolia</i>
Carlina thistle	<i>Carlina vulgaris</i>
Chaffweed	<i>Anagalis minima</i>
Cliff sea-spurrey	<i>Spergularia rupicola</i>
Clover species	<i>Trifolium</i> species
Cock's-foot	<i>Dactylis glomerata</i>
Common bird's-foot trefoil	<i>Lotus corniculatus</i>
Common dog-violet	<i>Viola riviniana</i>
Common storks-bill	<i>Erodium cicutarium</i>
Common bent	<i>Agrostis capillaris</i>
Common sedge	<i>Carex nigra</i>
Creeping willow	<i>Salix repens</i>
Creeping thistle	<i>Cirsium arvense</i>
Creeping bent (fioren)	<i>Agrostis stolonifera</i>
Crested dogs tail	<i>Cynosurus cristatus</i>
Curved hard-grass	<i>Parapholis incurva</i>
Dark-green mouse-ear	<i>Cerastium diffusum</i> ssp. <i>diffusum</i>
European gorse	<i>Ulex europaeus</i>
False oat grass	<i>Arrhenatherum elatius</i>
Fen pondweed	<i>Potamogeton coloratus</i>
Field gentian	<i>Gentianella campestris</i>
Golden samphire	<i>Inula crithmoides</i>
Goldilocks aster	<i>Aster linosyris</i>
Greater bird's-foot trefoil	<i>Lotus uliginosus</i>
Green-winged orchid	<i>Orchis morio</i>
Hastate orache	<i>Atriplex hastata</i>
Hawthorn	<i>Crataegus monogyna</i>
Hoary rock-rose	<i>Helianthemum canum</i>
Hottentot fig	<i>Carpobrotus edulis</i>
Japanese knotweed	<i>Fallopia japonica</i>
Japanese seaweed	<i>Sargassum muticum</i>
Ladies bedstraw	<i>Galium verum</i>
Lesser pond sedge	<i>Carex acutiformis</i>
Ling (heather)	<i>Calluna vulgaris</i>
Marram grass	<i>Ammophila arenaria</i>
Marsh foxtail	<i>Alopecurus geniculatus</i>
Marsh orchid species	<i>Dactylorhiza</i> species
Marsh violet	<i>Vilola palustris</i>
Marsh helleborine	<i>Epipactis palustris</i>
Mouse-eared hawkweed	<i>Hieracium pilosella</i>
Pale dog-violet	<i>Viola lactea</i>
Perennial rye-grass	<i>Lolium perenne</i>
Petalwort	<i>Petalophyllum ralphsii</i>
Policeman's helmet	<i>Impatiens glandulifera</i>
Portland spurge	<i>Euphorbia portlandica</i>

Red bartsia	<i>Odontites verna</i>
Red fescue	<i>Festuca rubra</i>
Rock samphire	<i>Crithmum maritimum</i>
Rock sea lavender (endemic species)	<i>Limonium binervosum</i> agg
Sand couch-grass species	<i>Elymus</i> species
Sand sedge	<i>Carex arenaria</i>
Scrambled egg lichen	<i>Fulgensia fulgens</i>
Sea Rocket	<i>Cakile maritima</i>
Sea sandwort	<i>Honkenya peploides</i>
Sea aster	<i>Aster tripolium</i>
Sea buckthorn	<i>Hippophae rhamnoides</i>
Sea plantain	<i>Plantago maritima</i>
Sea-beet	<i>Beta vulgaris</i> ssp <i>maritima</i>
Sea-Kale	<i>Crambe maritima</i>
Sheeps fescue	<i>Festuca ovina</i>
Silverweed	<i>Potentilla anserina</i>
Small restharrow	<i>Ononis reclinata</i>
Soft rush	<i>Juncus effusus</i>
Spear thistle	<i>Cirsium vulgare</i>
Spring squill	<i>Scilla verna</i>
Stackpole rock sea-lavender	<i>Limonium parvum</i>
Stonewort	<i>Chara</i> species
Thrift	<i>Armeria maritima</i>
Tor-grass	<i>Brachypodium pinnatum</i>
Variegated horsetail	<i>Equisetum variegatum</i>
Water fern	<i>Azolla filiculoides</i>
Western gorse	<i>Ulex gallii</i>
Wild carrot	<i>Daucus carota</i>
Wild thyme	<i>Thymus polytrichus</i>
Winter heliotrope	<i>Petasites fragrans</i>
Yorkshire fog	<i>Holcus lanatus</i>

## 2.2 Invertebrates

### 2.2.1 Butterflies

Brown argus	<i>Aricia agestis</i>
Dark green fritillary	<i>Argynnis aglaja</i>
Dingy skipper	<i>Erynnis tages</i>
Grayling	<i>Hipparchia semele</i>
Silver studded blue butterfly	<i>Plebejus argus</i>
Silver-washed fritillary	<i>Argynnis paphia</i>
Small pearl-bordered fritillary	<i>Boloria selene</i>

### 2.2.1 Dragonflies:

Azure damselfly	<i>Coenagrion puella</i>
Banded demoiselle	<i>Calopteryx splendens</i>
Black-tailed skimmer	<i>Orthetrum cancellatum</i>
Blue-tailed damselfly	<i>Ischnura elegans</i>
Broad-bodied chaser	<i>Libellula depressa</i>
Common blue damselfly	<i>Enallagma cyathigerum</i>
Common darter	<i>Sympetrum striolatum</i>
Emerald damselfly	<i>Lestes sponsa</i>
Emperor dragonfly	<i>Anax imperator</i>
Four-spotted chaser	<i>Libellula quadrimaculata</i>
Golden-ringed dragonfly	<i>Cordulegaster boltonii</i>
Hairy dragonfly	<i>Brachytron pratense</i>
Large red damselfly	<i>Phyrossoma nymphula</i>
Migrant hawk	<i>Aeshna mixta</i>
Scarce blue-tailed damselfly	<i>Ischnura pumilio</i>
Southern hawk	<i>Aeshna cyanea</i>

### 2.2.3 Other invertebrates

Cranefly species  
Great green bush-cricket  
Shrill carder bee  
Strand-line beetle  
Yellow ant

*Tipulid* species  
*Tettigonia viridissima*  
*Bombus sylvarum*  
*Nebria complanata*  
*Lasius flavus*

### 2.3 Birds

Bar-tailed godwit  
Barn owl  
Blackbird  
Bullfinch  
Buzzard  
Chough  
Curlew  
Dunlin  
Dunnock  
Golden plover  
Goldfinch  
Grasshopper warbler  
Green woodpecker  
Grey plover  
Guillemot  
Harrier species  
Herring gull  
House martin  
Kestrel  
Kittiwake  
Lapwing  
Lesser black-backed gull  
Linnet  
Marsh harrier  
Marsh tit  
Oystercatcher  
Peregrine  
Puffin  
Raven  
Razorbill  
Reed bunting  
Ringed plover  
Sedge warbler  
Shag  
Shelduck  
Skylark  
Stonechat  
Song thrush  
Spotted flycatcher  
Starling  
Swallow  
Swift  
Thrushes  
Water rail  
Wheatear  
Whimbrel  
Whitethroat  
Yellowhammer

*Limosa lapponica*  
*Tyto alba*  
*Turdus merula*  
*Pyrrhula pyrrhula*  
*Buteo buteo*  
*Pyrrhocorax pyrrhocorax*  
*Numenius arquata*  
*Calidris alpina*  
*Prunella modularis*  
*Pluvialis apricaria*  
*Caruelis carduelis*  
*Locustella naevia*  
*Picus viridis*  
*Pluvialis squatarola*  
*Uria aalge*  
*Circus* species  
*Larus argentatus*  
*Delichon urbica*  
*Falco tinnunculus*  
*Rissa tridactyla*  
*Vanellus vanellus*  
*Larus fuscus*  
*Acanthis cannabina*  
*Circus aeruginosus*  
*Parus palustris*  
*Haematopus ostralegus*  
*Falco peregrinus*  
*Fratercula arctica*  
*Corvus corax*  
*Alca torda*  
*Emberiza schoeniclus*  
*Charadrius hiaticula*  
*Acrocephalus schoenobaenus*  
*Phalacrocorax aristotelis*  
*Tadorna tadorna*  
*Alauda arvensis*  
*Saxicola torquata*  
*Turdus philomelos*  
*Muscicapa striata*  
*Sturnus vulgaris*  
*Hirundo rustica*  
*Apus apus*  
*Turdus* species  
*Rallus aquaticus*  
*Oenanthe oenanthe*  
*Numenius phaeopus*  
*Sylvia communis*  
*Emberiza citrinella*

### 2.4 Mammals and other vertebrate animals

Badger  
Brown hare  
Eel

*Meles meles*  
*Lepus europaeus*  
*Anguilla anguilla*

European otter  
Frog

*Lutra lutra*  
*Rana temporaria*



Greater horseshoe bat	<i>Rhinolophus ferrumequinum</i>
Grey seal	<i>Halichoerus grypus</i>
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>
Rabbit	<i>Oryctolagus cuniculus</i>

### 3. CODES FOR NATURE CONSERVATION FEATURES REFERRED TO WITHIN THE ILMP

The following codes are assigned to each feature:

- letter 1            Range initial -e.g. C for Castlemartin;
- letter 2            Initial for whether the feature is biological (B) or geological (G);
- letter 3            Initial for whether the feature is primary (P), unconfirmed primary (UP) or secondary (S);
- letter 4            Number assigned to the feature.

This results in a four-letter/figure code such as CB.P3, which stands for Castlemartin Range, Biological feature, Primarily feature, feature number 3.

#### 4. CASTLEMARTIN RANGE NATIONAL VEGETATION COMMUNITIES (NVC) REFERRED TO WITHIN THE ILMP

(For a full list of communities, sub-communities and variants see ITE Vegetation Survey of Castlemartin Range (1998) and the key to the NVC vegetation map, Appendix 7).

##### MARITIME CLIFF COMMUNITIES

- MC1 *Crithmum maritimum* - *Spergularia rupicola* maritime rock-crevice community
- MC5 *Armeria maritima* - *Cerastium diffusum* ssp. *diffusum* maritime therophyte community
- MC6 *Atriplex hastata* - *Beta vulgaris* ssp. *maritima* seabird cliff community
- MC8 *Festuca rubra* - *Armeria maritima* maritime grassland
- MC9 *Festuca rubra* - *Holcus lanatus* maritime grassland
- MC10 *Festuca rubra* - *Plantago* spp. maritime grassland
- MC11 *Festuca rubra* - *Daucus carota* ssp. *gummifer* maritime grassland

##### COASTAL CALCAREOUS HEATH

- H7 *Calluna vulgaris* - *Scilla verna* heath
- H8 *Calluna vulgaris* - *Ulex gallii* heath

##### SAND DUNE COMMUNITIES

- SD2 *Honkenya peploides* - *Cakile maritima* strandline community
- SD4 *Elymus* species foredune
- SD6 *Ammophila arenaria* mobile dune community
- SD7 *Ammophila arenaria* - *Festuca rubra* semi-fixed dune community
- SD8 *Festuca rubra* - *Gallium verum* fixed dune grassland
- SD10 *Carex arenaria* dune blow-out community
- SD17 *Potentilla anserina* - *Carex nigra* dune slack community
- SD18 *Hippophae rhamnoides* scrub

##### CALCAREOUS GRASSLAND COMMUNITIES

- CG1 *Festuca ovina*-*Carlina vulgaris* grassland
- CG7 *Festuca ovina* (*rubra*)-*Hieracium pilosella*-*Thymus polytrichus* grassland

##### SWAMP COMMUNITIES

- S7 *Carex acutiformis* swamp

##### NEUTRAL GRASSLAND COMMUNITIES

- MG1 *Arrhenatherum elatius* grassland
- MG5 *Cynosurus cristatus*-*Centaurea nigra* grassland
- MG6 *Lolium perenne*-*Cynosurus cristatus* grassland
- MG7 *Lolium perenne* leys and related grasslands
- MG10 *Holcus lanatus*-*Juncus effusus* rush-pasture
- MG11 *Festuca rubra*-*Agrostis stolonifera*-*Potentilla anserina* grassland
- MG13 *Agrostis stolonifera*-*Alopecurus geniculatus* grassland

##### WOODLAND & SCRUB COMMUNITIES

- W21 *Cretagus monogyna* - *Rubus fruticosus* agg scrub
- W22 *Prunus spinosa* - *Rubus fruticosus* agg scrub
- W23 *Ulex europaeus* - *Rubus fruticosus* agg scrub
- W24 *Rubus fruticosus*-*Holcus lanatus* under-scrub
- W25 *Pteridium aquilinum*-*Rubus fruticosus* under-scrub

TABLE 1

**RECREATIONAL ACTIVITIES ON CASTLEMARTIN RANGE**

Activity	Representative Organisation	Areas Used	Months When Access Provided	Number of Briefings/ Year	No Users Per Year	Comments
Climbing	BMC + Cadets	Range West, Sea Cliffs and Access from Stack Rocks	8/9/10/11/12/1	3	211 briefed 139 visits (1999 – 2000 figures)	Every climber briefed Briefs at Castlemartin, Plas y Brenin & Bristol 2000
Guided Walks	PCNP/RA	Cliff path and Area Inland Return	1 - 12	2	365	Leaders briefed and trained
Fishing*		Frainslake Beach N of Pole <u>only</u>	1 - 12 No limit to nos. or	P - 10 event	200+ people briefed	
Horseriding	SPH / Pony Club	Range West	One event in Mar/Apr	1	150	Course of 60+ Jumps built by MoD. Joint event with Army Benevolent Fund, SPM & SPM Pony Club.
Game Shooting	Castlemartin AFTC	W Range	9/10/11/12/1	1 or 2	14	
Surfing	Pembroke Surf Club	Frainslake Beach	1 - 12	2	100	Surfers
Educational Visits	Various including Universities and Schools esp. Geology, local & visiting schools	Whole Range but usually SSSI areas	1 - 12	12	150	Varies from year to year. Some universities and schools come every year.
Feretting/Vermin Shooting	A few individuals	Whole Range	9/10/11/12/1/2	1 or 2	5	Areas are specified
Laverbread	James & Co from Laugharne	Frainslake Beach	1 - 12	1 or 2	6	Frainslake Beach
Motor Rallying	Pembrokeshire Motor Club	Range 8/4 in Range West	1 every year	1	100 30 - 40 cars	1 <sup>st</sup> one due August '98
Carriage Driving	British Driving Association - Pembrokeshire Branch	Whole Range	1 every year	1 or 2	30	Normally one weekend in mid August
Falconry	A few individuals Clive Sillence	Away from SSSI's ie. the Coast	9/10/11/12/1/2	1 or 2	4	Wholly in pursuit of Rabbits
Picnics (MoD) (Beaches)	Castlemartin AFTC	Blucks Pool, Frainslake	5/6/7/8/9	as required	30 total people	
Painting	Several Individuals	Whole Range	1 - 12	2 or 3	up to 6	
General visits	All kinds - Probus, WI, NFU - individuals who lived, worked on the Range	Whole Range	1 - 12	60	200+	Not all details have been recorded.

\* No legitimate cliff fishing in Range W.

90% of fishing probably legitimate. Surfers less likely to have been briefed.

Below MHW the byelaws make it trespass only rather than criminal offence.

## **Appendix 1**

### **Membership of Cliff Climbing Liaison Group**

P	De Mingle	BMC
J W	Donovan	Wildlife Trust West Wales
Richard	Ellis	National Trust
Holly	Harries	Dyfed Wildlife Trust
		Sports Council for Wales
R J	Haycock	Stackpole Home Farm
Jonathan	Hughes	National Trust
Elfyn	Jones	Tan-y-Celyn
Pat	Littlejohn	Bryn Gwynant Lodge
Patrick	Lowman	Pembrokeshire Climbing Club
M	Mellors	Defence Land Agent
David	Miller	H M Coastguard
Peter	Morris	H M Coastguard
M B	Portman	Castlemartin Range
S	Quinton	Pembrokeshire College
David	Turnbull	British Mountaineering Council
Dave	Worrall	Countryside Council for Wales

### **Membership of Recreation Sub-group Producing this Plan**

		Sports Council for Wales
Bob	Haycock	Countryside Council for Wales
Jonathan	Hughes	National Trust
Margaret	Jones	Countryside Council for Wales
Mike	Mellors	Defence Land Agent MoD
Trevor	Owen	Pembrokeshire County Council
M B	Portman	The Commandant Castlemartin Range
		MoD Penally Training Camp
J B W	Warbuton	Officer Commanding Royal Artillery
		Range

## **Appendix 2**

### **Numbers of Users on Range East**

<b>Date</b>	<b>Climbers</b>	<b>Cyclists</b>	<b>Fishermen</b>
<b>MARCH</b>			
6-3-99	12	4	0
13-3-99	39	0	0
14-3-99	11	0	0
20-3-99	35	0	0
21-3-99	16	3	0
27-3-99	26	0	0
28-3-99	9	2	0
<b>APRIL</b>			
2-4-99	150	2	3
3-4-99	40	1	0
4-4-99	158	3	0
5-4-99	120	4	0
10-4-99	28	0	0
11-4-99	24	0	0
17-4-99	18	2	0
18-4-99	24	0	2
24-4-99	17	0	0
25-4-99	0	0	0
<b>MAY</b>			
1-5-99	250	5	4
2-5-99	260	4	4
3-5-99	260	4	2
8-5-99	6	0	0
9-5-99	3	2	0
15-5-99	34	0	0
16-5-99	40	1	0
22-5-99	31	2	6
23-5-99	12	0	1
29-5-99	62	2	4
30-5-99	179	12	7

Date	Climbers	Cyclists	Fishermen
31-5-99	108	5	5
<b>JUNE</b>			
5-6-99	23	0	0
6-6-99	24	0	2
12-6-99	53	4	1
13-6-99	77	2	5
19-6-99	72	0	4
20-6-99	76	2	6
26-6-99	78	3	3
27-6-99	62	4	2
<b>JULY</b>			
10-7-99	92	4	2
11-7-99	104	3	5
17-7-99	48	3	4
18-7-99	35	1	2
24-7-99	74	3	5
25-7-99	68	5	3
31-7-99	44	0	1
<b>AUGUST</b>			
1-8-99	46	1	0
7-8-99	48	2	2
8-8-99	0	0	0
14-8-99	112	6	2
15-8-99	85	5	3
21-8-99	64	6	5
22-8-99	34	0	2
28-8-99	165	6	5
29-8-99	180	8	7
30-8-99	172	6	3

## **Appendix 3**

### **Individual and Organisations Consulted or Contacted**

National Trust  
Sports Council for Wales  
BMC Local & National Reps  
CCW Local & National Reps  
MoD  
Welsh Surfing Federation  
Welsh Orienteering Federation  
Welsh Cycling Union  
Welsh Federation of Sea Anglers  
Welsh Canoeing Association  
Welsh Federation of Course Anglers  
Welsh Salmon & Trout Angling Association  
Cambrian Caving Council  
British Horse Society  
Castlemartin, Stackpole & Angle Community Councils  
Ramblers Association Local & National Reps  
Clive Sillence Falconry

} Draft plan sent by S.C.W.

Friends of National Park  
Alun Richardson (Climbing)  
Pembroke/Pembroke Dock Canoe Club  
Pippa  
Pembs Access Group  
Dee De Mengle - Prince's Trust  
Field Studies Council Orielton

### **Marine Survey Consultees**

District Inspector of Fisheries, Sea Fisheries Inspectorate (offshore fisheries)  
South Wales Sea Fisheries Committee (inshore fisheries)  
Harbour Master, Milford Haven  
Harbour Master, Tenby  
Harbour Master, Saundersfoot  
HM Coastguard  
Customs and Excise  
RN Dockyard, Pembroke Dock  
Environment Agency  
Pembroke Haven Yacht Club  
Tenby Sailing Club  
Saundersfoot Sailing Club  
Neyland Yacht Club  
Neyland Marina  
Gelliswick Yacht Club  
Angle Boat Owners Society  
Dale Yacht Club  
Freshwater East Boat and Fishing Club  
Milford Haven Harbour Users Association  
Bourne Leisure  
Celtic Haven  
Local Fishermen (14 in total)

## Appendix 4

### MAIN ISSUES RAISED IN CONSULTATIONS

(N.B. Marine Consultations are detailed in "Access to Sea Danger Areas" Report R.P.S. 1999)

Date	Response from	Range*	Comment	MoD Response
3/11/97	Ramblers' Association	C	Would like to be part of RRAG	Main object to look at military use & prevent damage. Pressure groups welcome to put points in writing
	(meeting)	C	National Trail through Range W. Priority	Not possible while live firing continues
		C	Axiomatic that military and NP are incompatible	Not the case in practice
		C	Strong case to give access in the same way as Lulworth Range	Topography and use entirely different
		C	Would like independent survey of military use to see if it can be adapted better to allow access	
		C	NPA demand for Range W details is difficult for RA to meet	MoD are flexible in allowing changes of dates where possible
		C	'Blood chit' is serious deterrent to some	Insurance value and serious warning.
		C	Would welcome similar liaison group to climbers	Better to cover whole Pembs as climbing does
		C	Having Red Flags out 24 hours/day reduces their impact	Conforms with byelaws/Shows uncleared areas
		C	Need to get British troop booking as reliable as that of Germans	British as reliable. helicopter not as reliable - weather
		P	Perceived increase in weekend firing	True - and may increase further
		P	Too many weekends/Bank Holidays used	No firing now on whole of BH weekends
		P	Path around W of Range - under railway bridge needs drainage	Not MoD. Some drainage done
		P	Need firing time notices on Tenby Beach access and Penally otherwise you have to retrace your steps if going west	No need you can see Red Flags from Tenby.
		G	Would welcome further consultation at deconflicting stage	
30/09/97	Friends of NP	P	Welcome agreement not to use range on Bank Holiday weekends	No response
		P	Consider any closure of National Trail incompatible with NP purposes	Minimum compatible with byelaws/safety
	Friends of NP (contd.)	P	Believe Penally firing could be moved to a site outside of NP and away from a centre of	Beyond scope of Rec Man Plan



Date	Response from	Range*	Comment	MoD Response
			population	pass to Military Plan
		P	If Penally functions were to be moved to Castlemartin there should be an assurance that no further Coast Path closures would occur as a result	No such assurance available No firm plan/proposal
		M	Perceived as part time use of remaining Range	Range not usually operational Christmas, Easter, Bank Holidays and most of August.
		M	Reinstate fisherman's track on Old Castle Head and permit access	Area contaminated with ordnance. Not feasible for operational reasons and impractical route. Guided access possible.
		M	Might need to fence MoD buildings and sign route	Not feasible for operational reasons
		C	Much intensification of use recently	Agreed
		C	1994 NP planning consent included condition "To seek further discussions with a view to enhancing access and recreational use of the Range" ..... No evidence of this	Progress on surfers, climbers, anglers, wheelchairs, etc.
		C	Unexpectedly available days on Castlemartin are of little use to visitors who assume the range is closed	Agreed but does have some value.
		C	1st objective is an assurance that Range E coast should be open for all holiday periods, resulting in a reduction to 40 weeks use. Generally in use 44 weeks	No assurance can be given.
		C	Would like footpath through Trenorgan opened as better alternative for when CP closed	Has been discussed - see plan Submit proposal on map CWM
		C	Would like Range W open for Coastal access as Range E. Signing and waymarking could achieve as much as briefing	Not possible because of live firing and remaining debris
		C	Signage would help meet the concerns over wildlife disturbance on Range W (cf. Marloes Deer Park)	No military objection - as an addition
		C	'Danger' or similar signs could be erected to keep people away from geologically sensitive areas	As above, both inadequate by themselves for R.W.
		C	Would favour same approach to access as is taken at Lulworth range	Not comparable
		C	would like independent assessment of risk at Frainslake - Consider that beach could be open to the public at all times	Frainslake equally dangerous and conservation concern
		C	Not aware that sand extraction ceases at Brownslade when firing is in progress	Extraction closed 1997
		G	Offer of any written or oral evidence needed	
04/11/97	Stackpole Co Co	G	Interested but no comment to make	
29/10/97	Alun Richardson Climbing School	C	Management and information system does fine job	
	Alun Richardson	C	Climbers feel talked down to	

Date	Response from	Range*	Comment	MoD Response
	Climbing School (contd.)			
		C	Unhindered access to Range E and W whenever there is no firing	See comments for RA
		C	Small arms firing could be moved further into the Range and St Govans road not shut so often	Naval Range there for 20 years. Actually need more land
		C	Briefed climber should be able to take a partner	MOD consider everyone needs briefing only exception: guided walks
		C	Fishermen have very short briefing	Access needs are simpler
		C	Why do climbers have to listen to CG and environmentalists?	More safety/environmental concerns
		C	Why can climbers not take dogs onto the Range?	Disturbance to wildlife/sheep/ risk to climbers
		C	Why can climbers not take mountain bikes?	No military objection. Cause conservation problems
		C	Why are climbers forbidden to climb the archaeological site when landrovers and sheep use the site?	Sheep keep grass in check. Landrover for military and public safety rarely use area
		C	Why are the Range W restrictions longer than Range E?	RRAG advice
		C	Why do climbers have to gain access from Stack Rocks when others can gain entry from sand pits?	Best access point - single access helps security.
06/11/97	Tenby Golf Club	P	Forming small group to submit comments. NH to follow up	
24/11/97	Cwmbran Caving Club Frank Baguely	C	Given details of main coves	Noted
		C	Ogof Bran Goesgoch should probably be safeguarded	Design needed - consult RRAG
		C	Remainder 'protected' because access is so difficult	Noted
		C	Would hope present access by permission for clubs could continue	No problem. Bring to RRAG
19/11/97	Tenby Town Council NH attended meeting	G	Support recreational use of Ranges	Noted
		G	Please keep Council informed	Commandant offer talk
		G	Keen on public meeting	Commandant offer talk
20/11/97	Pembroke/Pembroke Dock Canoe Club	G	Value Range coastline very highly	Noted
		G	Permission to land a) in emergency and b) for refreshment stops would be appreciated	a) emergency only, otherwise use St Govans. Great bird disturbance from landing

Date	Response from	Range*	Comment	MoD Response
		G	While Castlemartin firing information is easily available this is not the case for Manorbier or Penally. Could times be given to Coastguard?	Times are given to C/G and many others, including Welsh Canoe Association
		G	Keen on public meeting	Not enough support. Better to meet individually
03/12/97	Friends of NP	C	Note limiting effect of present range restrictions on levels of use. NP has duty to encourage use	Noted
		C	Believe MoD could open Range far more often than currently, Range should be open wherever there is no firing. Cf. Lulworth and Otterburn	Range E coastal area is open whenever there is no firing
		C	Linney Head Road should be open to provide access for less able.	Need to be briefed/permit holder
		C	Realign Range W. West boundary to allow access to Frainslake	Frainslake as dangerous as remainder
		C	Range W should be open for CP walkers on all non-firing days and summer evenings	Not possible. See previous answers
		P	Very concerned at Penally leaflet advertising camp for rent by groups. Request NPA to investigate and take action to stop this development	Booklet produced for internal MoD market in line with MoD policy
19/12/97	BMC	G	Concern that overall aim of ILMP does not include recreation	Recreation is a concern, note existence of the sub-plan specifically
		C	Note high quality of Range W & E for climbing - National importance	Noted
		C	Gave details of numbers of climbers and BMC's approach to climbing in S Pembs together with an assessment of the communications and restriction setting process	Noted
		C	PCNP leaflet should continue to be available	No problem
		C	Important to build on existing success of system	Agree
		C	Introduction of infantry firing and increased night firing during the summer both impacted on climbing	Do climbers want night climbing? Very little change of night firing. Infantry firing is increasing. Little impact on climbers
	BMC (contd.)	C	Local climbers feel an information helpline specifying dates and times of firing updated daily/weekly	Funding limits helpline but direct calls are dealt with
		C	Warden service has been very effective and should be maintained	Noted
		C	Requirement for all climbers to be briefed is regarded as the main weakness of the Range West system	Actually a strength, leads to very few incidents
		C	A series of detailed points relating to the briefings are made	Noted
		C	Request of the restrictions on 3 'less sensitive' cliffs in Range West - Greenham Common,	Met on site with RRAG. Fully

Date	Response from	Range*	Comment	MoD Response
			Mount Sion Central and Mount Sion East. Not considered that year round access to these cliffs would significantly increase environmental impact	discussed
		C	Rationalise Range W restrictions to a similar state to those in Range E	See Alan Richardson's points
		C	Allow mountain bike access for climbers to Linney Head. This would increase climbing time	See Alan Richardson's points
22/11/97	PIPPA	G	Good opportunity for disabled facilities. Essential to ensure full access to all facilities. Full consultation with PAG and PCC Access Officer. Opportunities for disabled to appreciate nature.	Nature of plan not fully clear Trevor Owen asked onto group Noted
7/11/97	Pembs Access Group	G	Need to consult closely in early stages with disabled reps.	Trevor Owen asked to attend group
12/11/97	Manorbier Community Council	G	Would like a public meeting. Public meeting should include all aspects of plan. Would host meeting at Skrinkle.	Not felt appropriate. Individual meetings with Co Co to be organised by Commandants
10/11/97	Penally Community Council	P	Coast Path is vital all year facility. More detail on firing times would be valuable. Guards on duty could be more helpful	Problem of security limits time detail. Outline firing times could be on notice at Range entry

\*

**C = Castlemartin**

**P = Penally**

**M = Manorbier**

**G = General**

## **Appendix 7- Draft Mock Up of All-Range Information Sheet**

### **Information for those using Castlemartin, Penally & Manorbier Ranges**

#### **All Ranges**

- ♦ Do not touch any unfamiliar object found on ranges, beaches or in the sea.
- ♦ Unscheduled firing may take place without prior warning, and firing may be cancelled without notice.
- ♦ Please keep children under close control on the coast. Steep cliffs and unguarded blow holes make this a hazardous area.

#### **Boat Users**

- ♦ Boat users are requested to avoid the Range when red flags are flying. Information available on Channel – Tel \_\_\_\_\_  
Please co-operate with requests of Range Safety Boat.
- ♦ If you sight any drones/wreckage off the range please notify range number (below).

#### **Castlemartin**

- ♦ Day firing = 9.00 am – 5.00 pm  
Night firing = 7.00 pm – 11.59pm
- ♦ The Pembrokeshire Coast National Trail passes through Range East and is open to the public on non-firing days.
- ♦ Range E climbing: please see noticeboards at range entrances for information on agreed climbing restrictions.
- ♦ Fishermen are asked to avoid areas which are used by cliff nesting birds (as shown on climbing leaflets) during the nesting season.
- ♦ Stack Rocks and St Govans car park are operated by PCNP.
- ♦ Cyclists please keep to bridleway (St Govans to Stack Rocks).
- ♦ Access to Range West is by permit only. There are guided walks on Range West (see Coast to Coast).

- ♦ During firing periods, the Coast Path passes inland of the Range – see OS maps for route.

#### **Penally**

- ♦ Normal firing times are as follows:  
Monday to Friday                0830 – 1600  
Saturday                         0830 – 1600  
Sunday                            1100 – 1545  
Bank/Public Holidays          No firing
- ♦ The Coast Path crosses the range. When the range is in use please use alternative paths on west boundary of Range.
- ♦ You may still cross the range from Penally Station to South Beach when the range is in use.
- ♦ Climbing  
No climbing stakes or bolts are to be placed on this site.  
Please avoid “gardening” routes there are very rare plants on this site.
- ♦ Dogs  
Please control dogs on Giltar Point – sheep grazing.  
Please clean up after your dogs.

#### **Manorbier**

- ♦ Normal firing times are 0830 – 1700
- ♦ There is no access to Manorbier Range (on land) except by arrangement.
- ♦ The Coast Path passes around the inland boundary of the range.

#### **Range Information is available from:**

MOD 24 Hour Recording 01646 \_\_\_\_\_  
MOD Office hours 01646 \_\_\_\_\_  
Coastguard 01646 \_\_\_\_\_  
www.mod \_\_\_\_\_