

Local Flood Risk Management Strategy HRA

Appropriate Assessment
11 November 2013



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Executive Summary

Under the Conservation of Species and Habitats Regulations (2010), a Habitats Regulations Assessment (HRA) is required of the Local Flood Risk Management Strategy for the Vale of Glamorgan Council (VoGC).

The HRA screening exercise and subsequent report identified one measure from VoGC LFRMS recommended for the next stage – Appropriate Assessment (AA) of the HRA process. The Screening Report also identified the potential for the VoGC LFRMS to have significant adverse effects on three of the European sites identified.

This Appropriate Assessment has been carried out in response to that conclusion for the following three sites:

- Severn Estuary SPA/SAC
- Kenfig SAC
- Cefn Cribwr Grasslands SAC

In this Appropriate Assessment, information on the conservation objectives and the potential impact of the LFRMS on European Designated Sites was collated.

The one “screened in” objective/measure of the LFRMS was then analysed alone and in combination for likely significant effect on European Designated Sites.

Having considered, by means of the HRA appropriate assessment, the potential impact of the Vale of Glamorgan Council (VoGC) LFRMS on the international sites within its area of influence, and that the plan was not directly connected with or necessary to the management of these sites, the assessment has concluded that:

The LFRMS as proposed (due to one screened in measure/objective) has the potential to adversely affect the integrity of the 2 European sites identified from the HRA screening report, when considered in isolation from the other plans and projects.

However, at this high level stage, the objective/measure provides no indication which, if any, of the 2 sites will be affected or if the effects will be significant in regards to the conservation objectives of the European Designated Sites.

Significant effects are also unlikely, as the VoGC LFRMS aims to improve or not detrimentally affect European Designated Sites as required under the Welsh Government guidance document “Local Flood Risk Management Strategies”.

Due to this conclusion, there is no requirement to progress to the next stage of the HRA, the Assessment of Alternative Solutions. Any potential significant negative effects will be identified and managed through subsequent HRAs required by the Habitats Regulations.

This Assessment concludes that further HRAs are required for any plans, programmes or policies related to, or that arise from the LFRMS that have the potential to affect any European Designated Site.

1. Introduction

1.1 General Background

The Vale of Glamorgan Council has developed its Local Flood Risk Management Strategy and is undertaking a Habitats Regulations Assessment (HRA) in line with the requirements set by the Conservation of Habitats and Species Regulations 2010 (as amended).

This HRA report addresses the Appropriate Assessment stage of the HRA which considers how the likely significant effects on designated European Sites identified through the first Screening stage of the HRA (Habitats Regulations Assessment Screening Report, Vale of Glamorgan Council Local Flood Risk Management Strategy) may affect European site integrity.

Habitats Regulations Assessment is also commonly referred to as Appropriate Assessment (AA) although the requirement for AA is first determined by an initial 'screening' stage undertaken as part of the full HRA.

The Screening Report identified the potential for the LFRMS to have a negative impact on 3 European sites identified within the agreed search area around the Vale of Glamorgan Council's (VoGC) Planning Authority boundary. These 3 sites are Severn Estuary SPA/SAC, Kenfig SAC and Cefn Cribwr Grasslands SAC.

By applying the precautionary principle, the HRA screening assessment also identified that the same 3 European sites could potentially be affected by the delivery of the LFRMS in combination with other projects and plans in SE Wales.

This report addresses the Appropriate Assessment stage of the HRA; it outlines the key tasks undertaken and the key findings/ recommendations emerging from the assessment.

1.2 Requirement for Habitats Regulations Assessment

The European Directive (92/43/EEC) on the Conservation of Natural Habitats and Wild Flora and Fauna (the Habitats Directive) protects habitats and species of European nature conservation importance. The Habitats Directive establishes a network of internationally important sites designated for their ecological status. These are referred to as Natura 2000 (N2K) sites or European Sites, and comprise Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) [which are classified under the Council Directive 79/409/EEC on the conservation of wild birds, the 'Birds Directive'].

Articles 6 (3) and 6 (4) of the Habitats Directive require AA to be undertaken on proposed plans or projects which are not necessary for the management of the site but which are likely to have a significant effect on one or more European sites either individually, or in combination with other plans and projects.

The purpose of HRA/AA is to assess the impacts of a policy or plan, in combination with the effects of other plans and projects, against the conservation objectives of a European Site and to ascertain whether it would adversely affect the integrity of that site. Where significant negative effects are identified, alternative options or mitigation measures should be examined to avoid any potential damaging effects.

The scope of the HRA/AA is dependent on the location, size and significance of the proposed plan or project and the sensitivities and nature of the interest features of the European sites under consideration. If it is not possible to avoid or remove the identified effects assessed as

arising from the plan implementation, then (if the plan makers wish to proceed with the policies/ proposals as set) it must be demonstrated that there are Imperative Reasons of Overriding Public Interest (IROPI) to continue with the plan (Article 6(4) of the Habitats Directive).

1.3 Guidance for Habitats Regulations Assessment (Appropriate Assessment)

Draft guidance for HRA ‘The Assessment of Development Plans in Wales under the Provisions of the Habitats Regulations’ has been produced by WG, (David Tyldesley and Associates, October 2006). A partnership of consultants has also prepared guidance (Appropriate Assessment of Plans, August 2007) to assist planning bodies in complying with the Habitats Directive.

The methods and approach used for this Appropriate Assessment are based on the formal Welsh guidance currently available and emergent practice, which recommends that HRA is approached in three main stages – outlined in Table 1. This report outlines the method and findings for stage 2 of the HRA process – the Appropriate Assessment.

Table 1 Habitats Regulations Assessment: Key Stages	
Stage 1	
Screening for likely significant effect	<ul style="list-style-type: none"> ▪ Identify international sites in and around the plan/ strategy area in search area/ buffer zone agreed with the Statutory Body the Countryside Council for Wales (now Natural Resources Wales - NRW) ▪ Examine conservation objectives of the interest feature(s) (where available) ▪ Review plan policies and proposals and consider potential effects on European sites (magnitude, duration, location, extent) ▪ Examine other plans and programmes that could contribute to ‘in combination’ effects
	<ul style="list-style-type: none"> ▪ <i>If no effects likely – report no significant effect (taking advice from CCW as necessary).</i> ▪ <i>If effects are judged likely or uncertainty exists – the precautionary principle applies proceed to stage 2</i>
Stage 2	
Appropriate Assessment	<ul style="list-style-type: none"> ▪ Complete additional scoping work including the collation of further information on sites as necessary to evaluate impact in light of conservation objectives ▪ Agree scope and method of AA with CCW (NRW) ▪ Consider how plan ‘in combination’ with other plans and programmes will interact when implemented (the Appropriate Assessment) ▪ Consider how effect on integrity of site could be avoided by changes to plan and the consideration of alternatives ▪ Develop mitigation measures (including timescale and mechanisms) ▪ Report outcomes of AA including mitigation measures, consult with CCW (NRW) and wider [public] stakeholders as necessary ▪ If plan will not significantly affect European site proceed without further reference to Habitats Regulations.
	<ul style="list-style-type: none"> ▪ <i>If effects or uncertainty remain following the consideration of alternatives and development of mitigations proceed to Stage 3</i>

Table 1 Habitats Regulations Assessment: Key Stages	
Stage 3	
Procedures where significant effect on integrity of international site remains	<ul style="list-style-type: none"> ▪ Consider alternative solutions, delete from plan or modify ▪ Consider if priority species/ habitats affected ▪ Identify 'imperative reasons of overriding public interest' (IROPI) economic, social, environmental, human health, public safety ▪ Notify Assembly Government ▪ Develop and secure compensatory measures

Table 1 Key Stages of the Habitats Regulation Assessment (HRA)

1.4 Consultation

The Habitats Regulations require the plan making/competent authority – Vale of Glamorgan Council (VoGC) to consult the appropriate nature conservation statutory body Natural Resources Wales (NRW). NRW have previously agreed the proposed methodology to this Appropriate Assessment stage. However, the conclusion of the HRA/AA has yet to be signed off by NRW and consultation should be carried out by the competent authority.

The Habitats Regulations leave consultation with other bodies and the public to the discretion of the plan making authority. The WG guidance notes that it is good practice to make information on HRA available to the public at each formal development plan consultation stage. Therefore, in addition to the statutory consultation to be undertaken with NRW this report can be made available for wider public consultation.

1.5 Purpose and Structure of Report

This report documents the process and the findings from the Appropriate Assessment stage of the HRA for Vale of Glamorgan Council LFRMS. Following this introductory section the document is organised into a further four sections:

- Section 2** outlines the method used for the Appropriate Assessment and includes reference to the key information sources used.
- Section 3** outlines the process of the Appropriate Assessment.
- Section 4** is the core of the study and constitutes the appropriate assessment of the Plan.
- Section 5** summarises the impact avoidance and mitigation measures proposed for the LFRMS.
- Section 6** outlines the conclusions and how the plan should now proceed with reference to the Habitats Regulations.

2. Method of Assessment

2.1 Outline of Methodology

Report) for the Vale of Glamorgan Council LFRMS, identified which European sites around the plan area should be considered in further detail as part of an Appropriate Assessment. The Screening combined a plan and a site focus.

- The plan focus first screened out those elements of the plan unlikely to affect European site integrity and then considered the impacts of the remaining elements on European sites, including the potential for 'in-combination' impacts.
- The site focus considered the environmental conditions of the sites and the factors required to maintain site integrity, and then looked at the potential impacts the plan may have [including in-combination impacts].

The results of the screening identified that the following European sites may be potentially affected by activities/ impacts arising from the plan:

- Severn Estuary SPA/SAC;
- Cefn Cribwr Grasslands SAC;
- Kenfig SAC.

The potential impacts that could arise from these policies were generally considered to be:

- deterioration of air composition and quality;
- disturbance of features by factors such as noise, light etc;
- loss of habitat area, quality and connectivity;
- changes to the flow regime and sediment characteristics;
- changes in drainage characteristics;
- deterioration of water quality and changes in the nutrient loads of receiving waters;
- introduction of physical and hydrological barriers etc. in watercourses.

Under Article 6 of the Habitats Directive, the AA stage of the Habitat Regulation Process (HRA) considers the impact of the LFRMS on the integrity of the 3 European sites identified from the HRA screening, alone or in combination with other projects or plans, with respect to the sites' structure, integrity and function and their conservation objectives.

Stage 2 can be subdivided into six tasks. These are:

1. Analysis of the sites and the reasons for their designation, and the underlying trends affecting them;
2. Analysis of the plan, including its key components and how it would be implemented in practice;

3. Analysis of other plans and projects that could contribute to 'in combination' effects;
4. Analysis of how the plan, the "in-combination" effects of other plans and projects and the subject site will 'interact' come plan implementation;
5. Where applicable, to propose and assess mitigation measures for addressing adverse effects;
6. To prepare an Appropriate Assessment Report for consultation with key stakeholders including the conservation authority.

2.2 Consultation

Consultation by means of email and telephone was carried out by Capita and the Vale of Glamorgan Council with the following:

- Countryside County for Wales local team staff (now Natural Resources Wales (NRW));
- Environment Agency local team staff (Now NRW);
- Local planning authority officers;
- Local authority ecologists;

The objectives of these consultations were to gain agreement on:

1. the spatial extent of likely impact from the LFRMS;
2. the significance of impact – taking into account the 'in combination' factor.

These consultations were also to:

- Confirm key environmental conditions supporting site integrity;
- Identify other plans and projects with the potential to have an 'in combination' effect with the deposit LFRMS;
- Identify possible mitigation measures.

These consultations also helped to confirm 'cross-cutting' issues that could potentially affect more than one of the designated sites. These are:

- Water resources;
- Water quality;
- Air quality;
- Climate change.

3. Appropriate Assessment

3.1 What is required

As noted in Section 2 of this report, the HRA Screening Report, Vale of Glamorgan Council LFRMS, October 2012 set out details of the European Sites and the types of impact to be considered in the more detailed Appropriate Assessment work.

The degree to which a plan's effects on a European site can be demonstrated is related to whether the site's "integrity" is affected.

Article 6(3) of the Habitats Directive requires that: "the competent national authorities shall agree to the plan, only after having ascertained that it will not adversely affect the integrity of the site concerned."

'Integrity' is, in turn, defined by the European Commission (2000) as relating to the reasons for the site's designation:

According to guidelines on the assessment of plans, a key stage in the Appropriate Assessment process is identifying why a European site was designated by collating information on the following, where possible, for each relevant European site:

- Qualifying interest features: These are the reasons why the European site has been designated, for instance the endangered species that occupy the SAC; rare habitats that occur there; or threatened birds that breed or over-winter in the SPA. The AA focuses on the qualifying interest features that were the primary reasons for the site's designation;
- The site's conservation objectives: These help to focus the assessment. Conservation objectives are a statement of the overall nature conservation requirements for a site, expressed in terms of the favourable condition required for the habitats and / or species for which the site was selected;
- The Favourable Condition Table for the site: Although these tables are designed primarily for monitoring the state of a site, they give information on the trends and environmental conditions required to sustain or promote qualifying interest features and site integrity. However, they should be treated with caution, as favourable conditions as assessed for SSSIs may have little bearing on the conservation status of the features for which a site has been designated.

The relevant conservation authorities are important sources for most of this information – in the case of this assessment that authority is Natural Resources Wales.

Relevant information on European sites and their interest features was obtained from the Internet, particularly from sites including www.jncc.gov.uk, www.natureonthemap.org.uk, and the environment agency and CCW websites (Now NRW website).

The EC (2000) guidance defines the 'integrity of the site' as 'the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified'.

When looking at the 'integrity of the site', it is therefore important to take into account a range of factors, including the possibility of effects manifesting themselves in the short, medium and long-term.

The integrity of the site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site’s conservation objectives.

3.2 What Trends Affect Them

Trends – direct and indirect – that could affect a European site include, for instance, increasing nitrous oxide emissions from vehicles, declining water levels due to temperature changes and over-abstraction, increasing urbanisation of an area leading to increased greenhouse gases emissions and water consumption.

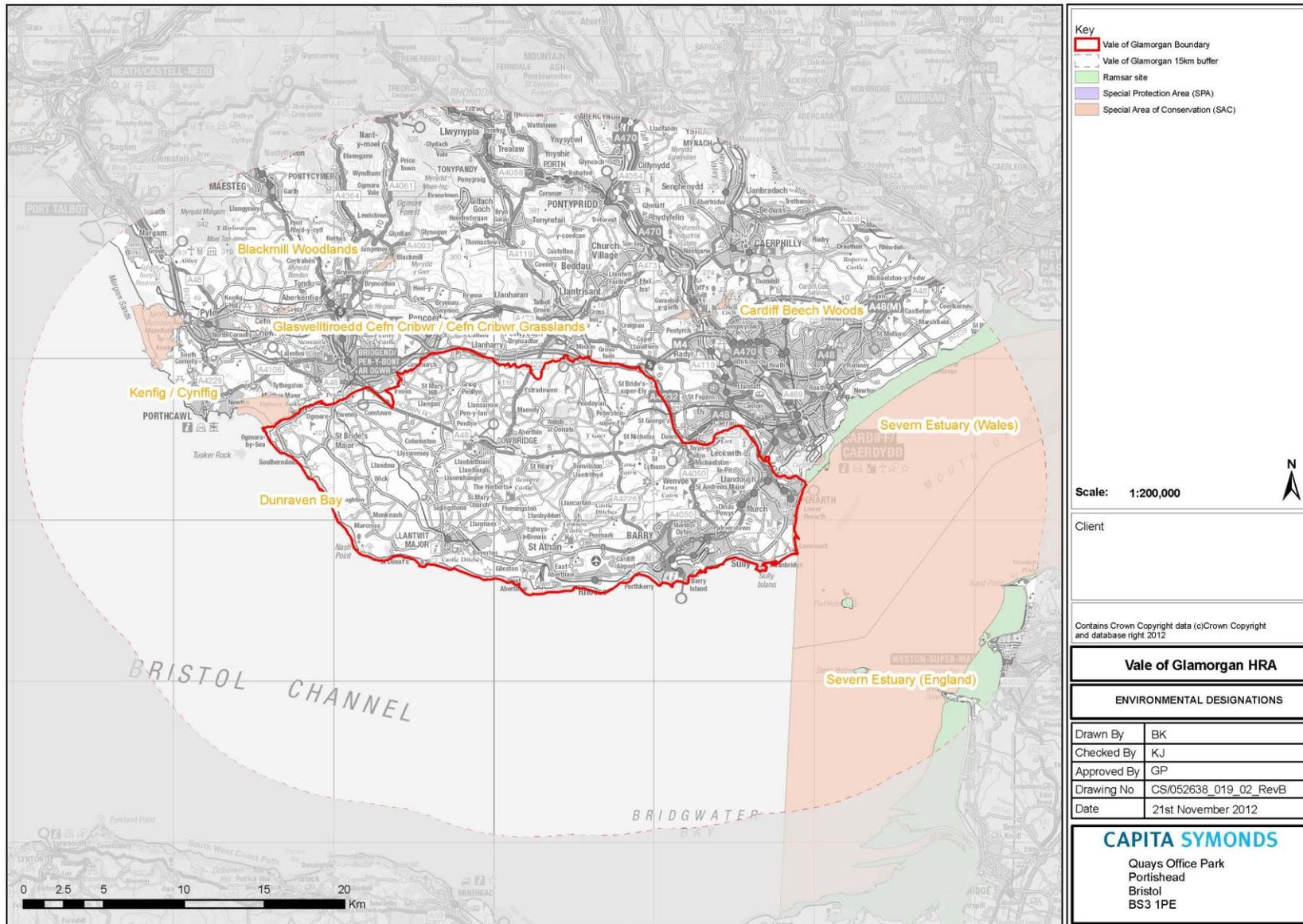
They also include those factors that have led to the current state of the site and which may or may not be continuing e.g. scrub encroachment on a heathland site. Trends relating to climate change may be a particularly important consideration.

For this assessment, some of the relevant parameters whose trends (underlying patterns) require close examination are: acid deposition; greenhouse gas; water levels; pH; land-use; deforestation rate (square miles); dissolved oxygen levels; turbidity; BOD; river flow; species population; recreational pressure; population growth of non-native species (invasive species threaten biodiversity, habitat quality and ecosystem function).

3.3 Impact Types and Likely Significance

Impacts may include the following as detailed in Table 2 below:

Table 2 Impact Types and Likely Significance	
Impact Type	Significance Indicator
Disturbance	Intensity; time of occurrence (daytime/night- time/breeding season); permanence;
Distance from	Habitat/feature; presence of attenuation elements (to shield reception position e.g. topography, barrier etc)
Water Resources (Quantity & Availability)	Likely to cause unfavourable changes in indicative parameters (hydrograph shape time of peak etc), velocity, water level, wetted perimeter – function of distance and attenuating influences; distance from habitat/feature; sensitivity to changes of indicative parameter.
Water Quality (physical & chemical)	Likely to cause unfavourable changes in indicative parameters: suspended solids, turbidity, dissolved oxygen, pH, temperature, nitrates etc – function of dilution, volume and the degree to suspended solids settle; also how bioavailable these parameters are, likelihood of biodegradation, and sensitivity to changes of indicative parameter.
Habitat Loss	Area of loss, time of occurrence, permanence, reversibility of loss, availability of nearby alternative, how critical is loss to features’ integrity (breeding, food, shelter from predation), possibility and effectiveness of mitigation measures.
Habitat Fragmentation	Time of occurrence, permanence, reversibility, Impact on structural complexity and connectivity, impact on diversity.
Habitat Severance	Similar to fragmentation – but of major relevance re: storage of waters, culverting.



Plan showing the location of European Sites and the Plan Boundary

3.4 Plan Analysis

An analysis of the LFRMS as a whole has taken place. In this way, the plan's impacts can be considered in their totality.

A plan's components may include:

- Objectives – the plan aspirations;
- Options – the choices open to the plan authors for achieving the plan objectives;
- Preferred options – the chosen options which provide the plan's foundations;
- Detailed policies and measures – the preferred options expressed in detail.

3.4.1 Purpose of LFRMS

The Flood Risk Regulations came into force in December 2009 and the Flood and Water Management Act became law in April 2010. The purpose of the Flood Risk Regulations is to transpose the European Commission (EC) Floods Directive (2007/60/EC), on the assessment and management of local flood risk, into domestic law in England and Wales and to implement its provisions.

Under this legislation the Vale of Glamorgan Council (VoGC) has been identified as a Lead Local Flood Authority (LLFA) and has been given a number of key responsibilities – one of which is the preparation of the Flood Risk Management Plan to be completed by 22nd June 2015.

The preparation of the Flood Risk Management Plan is linked to the development of a viable Local Flood Risk Management Strategy (LFRMS) with clear objectives and measures applicable to the area of the plan.

The LFRMS will influence and complement spatial planning policy including identifying where development can and cannot occur.

3.4.2 The LFRMS Components

Objectives

In November 2011 the Welsh Government published the overarching strategy "The National Strategy for Flood and Erosion Risk Management in Wales."

This document identifies four Overarching Objectives that must be addressed within Local Strategies. The four overarching objectives:

- 1 Reducing the consequences for individuals, communities, businesses and the environment from flooding and coastal erosion;
- 2 Raising awareness of and engaging people in the response to flood and coastal erosion risk;
- 3 Providing an effective and sustained response to flood and coastal erosion events;
- 4 Prioritising investment in the most at risk communities.

Further to this, in November 2011, the Welsh Government published its guidance document “Local Flood Risk Management Strategies” that lists the following 9 objectives grouped under the 3 sustainability pillars:

Social:

- Reduce distress (by reducing the number of people exposed to flooding);
- Reduce community disruption;
- Reduce risk to life;
- Reduce disruption to critical infrastructure.

Economic

- Reduce economic damage (e.g. Annual Average Damages AAD);
- Reduce cost of management

Environmental

- Reduce damages to Natura 2000 / SSSIs / BAP sites (or improve sites);
- Improve naturalness (reduce modification of channels / waterbodies);
- WFD objectives: improve water quality / ecological status (or not deteriorate) – hydro-morphological and diffuse pollution issues.

The Measures

The strategy identifies the measures that VoGC will adopt to achieve the overarching objectives of the National Strategy for Flood Risk Management.

Measures are activities that will be undertaken to manage risk and achieve the stated objectives.

Both structural and non-structural measures have been considered. Structural measures include physical options to manage flood risk. Non-structural measures include activities such as spatial planning, emergency planning and improved flood awareness.

3.4.3 *Detailed LFRMS Strategic Measures*

The Vale of Glamorgan Local Flood Risk Management Strategy presents 13 local measures which outline how the Authority intends to manage flood risk within this LFRMS cycle. These measures adhere to the high level measures set out in the Welsh Government’s National Strategy for Flood and Coastal Erosion Risk Management and the ambitions of the VoG’s Community Strategy. Table 3 below summarises the specific measures that will be used to achieve the four national objectives.

Table 3 The Vale of Glamorgan Detailed LFRMS Measures	
Reducing the consequences for individuals, communities, businesses and the environment from flooding and coastal erosion	
1	Provide leadership and direction at a local level
2	Develop local planning control policies to ensure sustainable flood and coastal erosion risk management measures are delivered by development
3	Establish and maintain an Asset Register as defined by the FWMA
4	Seek to reduce flood risks and consequences to identified high risk areas
Raising awareness of and engaging people in the response to flood and coastal erosion risk	
5	Identify communities and businesses that are at risk from flooding and coastal erosion
6	Work with at-risk communities and businesses to collectively understand local flood risks and how they can be managed
7	Promote property and community level flood resilience
Providing an effective and sustained response to flood and coastal erosion events	
8	Ensure the preparation and testing of Emergency Plans
9	Respond to flood events in a timely and appropriate manner
10	Facilitate recovery from flooding within the shortest possible timescales
Prioritising investment in the most at risk communities	
11	Utilise a risk based approach to managing flood risk to ensure structural and non-structural measures are considered to arrive at cost effective solutions that are proportional to local flood risk
12	Identify and prioritise local risk mitigation works for feeding into the National Investment Programme
13	Promote the use of alternative funding sources through delivery of multi-benefit risk mitigation projects which are sustainable and protect biodiversity interests using multiple funding sources

Table 3: Vale of Glamorgan LFRMS Objectives and Measures

4. Appropriate Assessment

4.1 European Site Details and Assessment of Sites potentially Affected by LFRMS

Table 4 Severn Estuary	
Key Facts	
Approximate Centroid Grid Reference	ST321748
Site Location & Description	<p>The Severn Estuary is the largest coastal plain estuary in the UK with extensive mudflats and sandflats, rocky shore platforms, shingle and islands. Saltmarsh fringes the coast, backed by grazing marsh with freshwater and occasional brackish ditches. This tidal regime results in plant and animal communities typical of the extreme physical conditions of strong flows, mobile sediments, changing salinity, high turbidity and heavy scouring.</p> <p>The conservation of the site features is dependent on the tidal regime.</p> <p>The physical loss of areas of intertidal habitats may be caused directly through change of land use or indirectly as a consequence of changes to sedimentation processes (e.g. coastal defences) as well as via the effects of smothering by artificial structures (e.g. jetties) or the disposal of spoils. The intertidal mudflats and sandflats and the saltmarsh are highly sensitive to removal by land reclamation and barrage construction. Information provided by NE and CCW states that large areas of the European marine site are not currently under threat, however when combined with a high level of sensitivity this leads to a moderate vulnerability.</p> <p>Changes in organic or nutrient loading can change the species composition of the plants on the saltmarsh and thus the structure of the sward. Increases in nutrients can also cause excessive algal growth on the mudflats, denying the birds access to their invertebrate prey and changing the invertebrate species composition in the sediment.</p>
Total Area (ha)	73715.4
General Site Character	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins) (99%) Salt marshes, Salt pastures, Salt steppes (1%)
Reasons for Selection and Qualifying Interests	<p><i>Annex I habitats that are a primary reason for selection of this site</i></p> <p>1130 Estuaries Habitat occurrence description not yet available.</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide Habitat occurrence description not yet available.</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) Habitat occurrence description not yet available.</p>

<p>Reasons for Selection and Qualifying Interests</p>	<p><i>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site</i></p> <p>1110 Sandbanks which are slightly covered by sea water all the time</p> <p>1170 Reefs</p> <p><i>Annex II species that are a primary reason for selection of this site</i></p> <p>1095 Sea lamprey <i>Petromyzon marinus</i> Species occurrence description not yet available.</p> <p>1099 River lamprey <i>Lampetra fluviatilis</i> Species occurrence description not yet available.</p> <p>1103 Twaite shad <i>Alosa fallax</i> Species occurrence description not yet available.</p>
<p>Vulnerabilities</p>	<p>The conservation of the site features is dependent on the tidal regime. The tidal range in the Severn Estuary is the second-highest in the world and the scouring of the seabed and strong tidal streams result in natural erosion of the habitats and the presence of high sediment loads. The estuary is therefore vulnerable to large-scale interference, mainly as a result of human actions. These include land-claim, aggregate extraction, physical developments such as barrage construction and other commercial construction activities, flood defences, industrial pollution, oil spillage and tourism-based activities and disturbance.</p> <p>There are several management mechanisms that seek to secure sustainable management of the Severn Estuary and its wildlife interest. Under the 1994 Habitats Regulations, a management scheme under Regulation 34 was established in 2004 in relation to the international bird interest that underpins designation as a Special Protection Area (SPA). Conservation advice has been provided under Regulation 33 for the Severn Estuary Special Area of Conservation (SAC), SPA and Ramsar site. Under the 2010 Habitat Regulations the management scheme previously produced is being reviewed and expanded to cover the not only the SPA but also the SAC and Ramsar site. The Severn Estuary Partnership is a long-standing partnership whose remit and membership extends beyond the designated area. It pre-dates the European designations and seeks to deliver holistic management of the uses of the estuary. In Wales, Community Strategies and Local Biodiversity Action Plans also contribute to achieving the conservation aims for the Estuary.</p>
<p>Hydrological needs</p>	<p>The site receives freshwater from watercourses within the LFRMS area.</p>
<p>Potential impact of LFRMS measures</p>	<p>The LFRMS could potentially alter the integrity of the site by: -</p> <ul style="list-style-type: none"> - Holding water for longer in upstream catchments, reducing the peaks of discharge into the Estuary - Altering flow and intertidal regimes - Changes to sediment characteristics which could significantly affect the feature - Deterioration of water quality - Requiring land for flood alleviation works, although it is highly unlikely that land will be used for this purpose in a European Designated Site.

Table 5 Kenfig SAC	
Key Facts	
Approximate Centroid Grid Reference	SS790813
Site Location & Description	<p>Kenfig is a largely intact dune system in south Wales with extensive areas of fixed dune vegetation with red fescue and lady's bedstraw and semi-fixed dune grassland. The site also contains one of the largest series of dune slacks in Wales. The dune slacks are species-rich and there are extensive areas of dunes with <i>Salix repens</i> ssp. <i>argentea</i>, which represent a mature phase in dune slack development.</p> <p>Kenfig Pool is a shallow lake system within the extensive sand dune system of Kenfig, alongside Swansea Bay in south Wales. The water chemistry is indicative of a coastal, alkaline lake with a moderate nutrient status. High alkalinity, conductivity, sodium and chloride values reflect this marine influence.</p> <p>It is thought that the dune slacks at Kenfig and Merthyr Mawr as well as Kenfig Pool are mainly fed by groundwater, and possibly a deep Carboniferous Limestone aquifer. There are also three small ephemeral streams that enter Kenfig Pool.</p> <p>Maintenance of the natural hydrological regime of both dune systems is critical for the maintenance of the character, composition and condition of the features. The major water quality concerns are related to elevated macro-nutrient levels.</p> <p>The nature of the underlying limestone aquifer means that off-site activities a considerable distance away can potentially have an impact on the SAC. This effect may occur both spatially and temporally.</p>
Total Area (ha)	1191.67
General Site Character	<p>Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins) (19%)</p> <p>Salt marshes, Salt pastures, Salt steppes (1%)</p> <p>Coastal sand dunes, Sand beaches, Machair (63%)</p> <p>Shingle, Sea cliffs, Islets (4%)</p> <p>Inland water bodies (Standing water, Running water) (2.5%)</p> <p>Bogs, Marshes, Water fringed vegetation, Fens (0.5%)</p> <p>Heath, Scrub, Maquis and Garrigue, Phygrana (7.5%)</p> <p>Broad-leaved deciduous woodland (2.5%)</p>
Reasons for Selection and Qualifying Interests	<p>4. <i>Annex I habitats that are a primary reason for selection of this site</i></p> <p>2130 <u>"Fixed coastal dunes with herbaceous vegetation ("grey dunes")"</u> * Priority feature</p> <p>Kenfig is a largely intact dune system in south Wales with extensive areas of fixed dune vegetation with red fescue <i>Festuca rubra</i> and lady's bedstraw <i>Galium verum</i> and semi-fixed dune grassland with marram <i>Ammophila arenaria</i> and red fescue. There is also a relatively large area of more acidic vegetation dominated by sand sedge <i>Carex arenaria</i>, sheep's-fescue <i>Festuca ovina</i> and common bent <i>Agrostis capillaris</i>.</p> <p>2170 <u>Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)</u></p> <p>Kenfig contains one of the largest series of dune slacks in Wales. The dune slacks are species-rich and there are extensive areas of dunes with <i>Salix repens</i> ssp. <i>argentea</i>, which represent a mature phase in dune slack development. This site is in the central part of the range of</p>

	<p>this community on the west coast and is a highly representative example of this habitat type.</p> <p>2190 Humid dune slacks</p> <p>Kenfig in south Wales contains the most important example of Humid dune slacks in the UK, owing to the extent of the habitat type and the conservation of its structure and function. These calcareous dune slacks are also amongst the most species-rich in the UK, supporting communities dominated by a variety of mosses and a number of rare plants, notably 1903 Fen orchid <i>Liparis loeselii</i>, for which the site is also selected. Some of the dune slacks on the site are still in the early successional stage of development.</p> <p>3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</p> <p>Kenfig Pool is a shallow lake system within the extensive sand dune system of Kenfig, alongside Swansea Bay in south Wales. The water chemistry is indicative of a coastal, alkaline lake with a moderate nutrient status. High alkalinity, conductivity, sodium and chloride values reflect this marine influence. Elevated calcium values are probably derived from marine shell remains in the sandy substrate. Large stands of common reed <i>Phragmites australis</i> are found on the pool's seaward side. Grey club-rush <i>Scirpus lacustris</i> ssp. <i>tabernaemontani</i>, sea club-rush <i>Scirpus maritimus</i>, branched bur-reed <i>Sparganium erectum</i> and yellow iris <i>Iris pseudacorus</i> are also present. A sheltered bay supports a plant association dominated by shining pondweed <i>Potamogeton lucens</i> and curled pondweed <i>P. crispus</i>. Hairlike pondweed <i>P. trichoides</i> is locally dominant in the north end and the south end has abundant rigid hornwort <i>Ceratophyllum demersum</i>, Canadian waterweed <i>Elodea canadensis</i>, fan-leaved water-crowfoot <i>Ranunculus circinatus</i>, spiked water-milfoil <i>Myriophyllum spicatum</i> and the charophytes <i>Chara aspera</i> var. <i>aspera</i> and <i>Nitella flexilis</i> var. <i>flexilis</i>. Shoreweed <i>Littorella uniflora</i> can be found growing in association with <i>C. aspera</i> and the aquatic moss <i>Fontinalis antipyretica</i> along the sandy shore section. <i>C. aspera</i> also dominates the substrate off the grazed landward shoreline, to a depth of approximately 1.5 m.</p> <p>5. <i>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site</i></p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p> <p>6. <i>Annex II species that are a primary reason for selection of this site</i></p> <p>1395 Petalwort <i>Petalophyllum ralfsii</i></p> <p>Kenfig is one of two sites selected for petalwort <i>Petalophyllum ralfsii</i> in south Wales and supports a large population of the species, numbering thousands of thalli. The calcareous dune system has many dune slacks that include the early successional, open slack vegetation this species requires.</p> <p>1903 Fen orchid <i>Liparis loeselii</i></p> <p>Kenfig on the south Wales coast holds the largest populations of fen orchid <i>Liparis loeselii</i> in the UK, comprising about 50% of the UK resource. Management of the site is directed towards the maintenance and enhancement of the populations of fen orchid. The variety that occurs here, as at Whiteford Burrows, is var. <i>ovata</i>, which is currently known to occur only in Wales and on the coast of Brittany, as well as in the past at Braunton Burrows, Devon, England.</p>
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Vulnerabilities	<p>Natural successional changes within the dune systems are detrimental to the plant communities of the dune grassland and humid dune slacks as well as to <i>Liparis loeselii</i> and <i>Petalophyllum ralfsii</i>, which are species of early successional changes. Kenfig National Nature Reserve (NNR) has been grazed by sheep in recent years, and grazing is currently under review. Selected dune slacks are mown in order to provide appropriate conditions for the maintenance of these species and the vegetation.</p> <p>At Merthyr Mawr NNR, the main focus of ongoing management is the control of <i>Hippophae rhamnoides</i>, which is an introduced species here. This will benefit the two main SAC features represented on this component of the site - dune grassland and <i>Petalophyllum ralfsii</i>. Merthyr Mawr is grazed by rabbits, and it is intended to introduce grazing by domestic animals.</p> <p>Maintenance of the hydrological regime of both dune systems is essential, as the dune slacks and Kenfig Pool are believed to be fed in part by groundwater.</p>
Hydrological needs	<p>The site receives freshwater from watercourses within the LFRMS area. Believed that dunes and Kenfig Pool fed in part by groundwater.</p>
Potential impact of LFRMS measures	<p>Part of the management area of Kenfig SAC is adjacent to the Vale of Glamorgan Planning boundary.</p> <p>Coastal impacts are unlikely, but there is possible deterioration of air composition and quality, water quality and, changes to the flow regime which could negatively affect the feature.</p> <p>The LFRMS could potentially alter the integrity of the site by: -</p> <ul style="list-style-type: none"> • Altering groundwater regimes/hydrological pathways and processes; • Elevated sediment transportation pathways and linkage; • Altering the water table; • Requiring land for flood alleviation works, although it is highly unlikely that land will be used for this purpose in a European Designated Site.

Table 6 Cefn Cribwr Grasslands SAC	
Key Facts	
Approximate Centroid Grid Reference	SS870830
Site Location & Description	<p>The site(s) is situated to the east of Bridgend in close proximity to the M4. This is one of four sites representing <i>Molinia</i> meadows in south and central Wales, one of the major UK strongholds for this habitat type.</p> <p>At this site, there are extensive stands of M24 <i>Molinia</i> – <i>Cirsium dissectum</i> fen-meadow, including the heathy sub-type with cross-leaved heath <i>Erica tetralix</i>, as well as other forms with a stronger representation of grasses, rushes and small sedges.</p>
Total Area (ha)	58.35
General Site Character	<p>Bogs, Marshes, Water fringed vegetation, Fens (1%) Heath, Scrub, Maquis and Garrigue, <i>Phygrana</i> (10%) Humid grassland, Mesophile grassland (64%) Broad-leaved deciduous woodland (25%)</p>

Reasons for Selection and Qualifying Interests	<p>7. Annex I habitats that are a primary reason for selection of this site</p> <p>6410 <u>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)</u></p> <p>This is one of four sites representing Molinia meadows in south and central Wales, one of the major UK strongholds for this habitat type. At this site, there are extensive stands of M24 <i>Molinia – Cirsium dissectum</i> fen-meadow, including the heathy sub-type with cross-leaved heath <i>Erica tetralix</i>, as well as other forms with a stronger representation of grasses, rushes and small sedges. Transitions to stands of more acidic <i>Molinia</i> and <i>Juncus</i> pasture, dry neutral grassland and wet scrub vegetation are well-represented. Uncommon and declining species associated with the <i>Molinia</i> meadows at this site include the nationally rare viper's-grass <i>Scorzonera humilis</i> and the nationally scarce soft-leaved sedge <i>Carex montana</i>.</p> <p>8. Annex II species present as a qualifying feature, but not a primary reason for site selection</p> <p>1065 <u>Marsh fritillary butterfly</u> Euphydryas (Eurodryas, Hypodryas) aurinia</p>
Vulnerabilities	<p>These grasslands are dependent on the maintenance of the hydrological regime and continuation of traditional agricultural management. This is ideally light summer grazing by cattle or horses, without the use of artificial fertilisers. Even short periods of inappropriate management can cause serious long-term damage. Maintenance of the hydrological regime is also essential as the grassland communities are strongly influenced by the quantity and base status of the groundwater.</p> <p>Although appropriate summer grazing is the current practice over much of the area, this management is secure for the future over only a relatively small part (approximately 10%). In other parts of the area there is a need to re-introduce grazing or adjust grazing levels. Management agreements will be used to secure appropriate management over the whole area.</p> <p>The features are particularly vulnerable to:</p> <ul style="list-style-type: none"> • Livestock grazing; • Shelter belts – Hedgerows, woodland and mature trees in and around the site provide the sheltered conditions which the marsh fritillary requires. These should be retained and managed; • Hydrological regime – The eu-Molinion marshy grassland is dependent on a number of springs and watercourses feeding the site; • Off-site pollution (air).
Hydrological needs	<p>Maintenance of the hydrological regime is essential as the grassland communities are strongly influenced by the quantity and base status of the groundwater.</p>
Potential impact of LFRMS measures	<p>The nature of the underlying geology means that off-site activities a considerable distance away can potentially have an impact on the SAC, due to changes in groundwater quality and flow.</p> <p>The LFRMS could potentially alter the integrity of the site by:</p> <ul style="list-style-type: none"> • Altering groundwater regimes/hydrological pathways and processes; • Altering the water table; • Requiring land for flood alleviation works, although it is highly unlikely that land will be used for this purpose in a European Designated Site.

4.2 Screened in LFRMS Measures and Potential Effects

From the HRA Screening Report, one of the proposed objectives/measures was screened in as having potential to affect the integrity of a European Site either alone or in combination with other plans.

The Objective was: *Identify and prioritise local risk mitigation works for feeding into the National Investment Programme.*

The potential effects of implementing this measure are shown for each of the 3 screened in European Sites in Table 7 below:

Table 7 Potential Effects of Screened in Measures		
Plan policy/ proposal	Potential Effects on SAC:	Likely Significant Effect (LSE) No N, Yes Y, Uncertain ?
<i>Outline key Measures in turn</i>	<i>Description of potential effect, using Criteria 1-8 as relevant.</i>	<i>Identification of LSE</i>
Severn Estuary SPA/SAC Identify and prioritise local risk mitigation works for feeding into the National Investment Programme	Possible deterioration of water quality and, changes to the flow and intertidal regimes and, sediment characteristics	?
Kenfig SAC Identify and prioritise local risk mitigation works for feeding into the National Investment Programme	Possible deterioration of air composition and quality, water quality and, changes to the flow regime. Changes to drainage and groundwater regime. Habitat loss	?
Cefn Cribwr Grasslands SAC Identify and prioritise local risk mitigation works for feeding into the National Investment Programme	Changes to drainage and groundwater regime. The Cefn Cribwr Grasslands SAC is separated from the western and northern boundaries of the Vale of Glamorgan by 2 river valleys, namely the Ogmere and Ewenny river valleys. There is therefore no pathway by which flood risk mitigation works within the Vale could impact upon the Cefn Cribwr Grasslands SAC. Habitat loss - Direct habitat loss will not occur due to distance of site from Vale of Glamorgan boundary.	N

4.3 Consideration of Other Plans, Programmes and Projects

It is a requirement of Article 6(3) of the Habitats Directive that HRA examines the potential for the Vale of Glamorgan Council's Local Flood Risk Management Strategy (LFRMS) to have a significant effect either individually or "in combination" with other plans & projects.

4.3.1 *Screening of Plans, Programmes and Policies Overview*

In the screening exercise, other Plans, Policies and Programmes (PPPs) relevant to the LFRMS were considered for in combination effects with the LFRMS on European Designated Sites. The risk of negative effects in combination is very low as the measures in the LFRMS are intended to maintain or improve the status of European Designated Sites, to improve or not detrimentally affect water quality and to, where possible, improve naturalness as required by the Welsh Government guidance document "*Local Flood Risk Management Strategies*".

At this high-tier level, no PPPs have been identified to have a negative effect in combination with the LFRMS. It is not appropriate to consider the effects of PPPs at each Designated European Site as there is insufficient information on the location of works to arise from the LFRMS.

4.3.2 *Interaction of Individual Measures within the LFRMS*

There is a risk of objectives/ measures in LFRMS having a detrimental effect on the conservation objectives of European Designated Sites when acting in combination with each other. The LFRMS does not detail the measures in terms of location, extent and time. Therefore, the objectives and measures can be implemented at a location, time and extent that will not have a significant effect in combination with each other on any European Designated Site.

5. Mitigation Measures

At this high-tier strategy stage, without detailed proposals (no information is currently available on the magnitude, duration, location, size and extent of the works that will be undertaken under the LFRMS) it is not possible to provide specific mitigation, avoidance or reduction measures. Mitigation measures will be dependent on the European Designated Sites conservation objectives and the type of impact the measure or objective will have. Therefore, this Appropriate Assessment should be considered precautionary and further HRAs will be conducted as more detailed plans become available. In these HRAs, detailed mitigation measures can be explored alongside specific details of works proposed.

The main hazards of the LFRMS on European Designated Sites are changes to surface water flows, groundwater/drainage regimes, ordinary watercourse flows and habitat loss/severance. For example, the measure - *Identify and prioritise local risk mitigation works for feeding into the National Investment Programme* – may contribute to these changes, but may also improve or maintain groundwater regimes, surface water flows and habitats simultaneously.

It is generally expected that for the European Designated Sites that have been screened in, the impact will not be significant due to the nature of the changes and it is anticipated that many of the European Designated Sites will benefit from these effects.

Mitigation is effectively prescribed through the measure “*Maintain an up to date knowledge of significant environmental sites and how they interact with flood risk areas to ensure that multi-benefit flood risk mitigation solutions are identified and improve the status of their classification*” which sits under Local Objective 11 of the Plan (*Utilise a risk based approach to managing flood risk to ensure structural and non-structural measures are considered to arrive at cost effective solutions that are proportional to local flood risk*).

It will be necessary to ensure that potential negative effects on European Designated Sites can be identified and mitigated when the objectives/ measures of the LFRMS are implemented, and more detail is available. Carrying out HRAs of lower tier plans will ensure these negative effects are identified and managed.

Consideration was given to whether the screened in objectives/measures should be altered to ensure no detrimental effect on European Designated Sites. However, it is possible that these screened in objectives/measures may have beneficial impacts on European Designated Sites.

6. Conclusions and Future Work

In line with the requirements of the Habitats Regulations, an Appropriate Assessment has been conducted to determine the potential impact of the LFRMS on European Designated Sites. In the screening report (HRA Stage 1), objectives and measures were screened for effect on the screened in European Designated sites. This exercise concluded an Appropriate Assessment was required.

Effects upon the integrity of the Cefn Cribwr Grasslands SAC have been discounted due to the separation of the site from the western and northern boundaries of the Vale of Glamorgan by the Ogmere and Ewenny river valleys. There is therefore no pathway by which flood risk mitigation works within the Vale could impact upon the Cefn Cribwr Grasslands SAC.

This Appropriate Assessment has found that one screened in objective/ measure of the LFRMS could affect the integrity of 2 European Designated Sites. However, this objective/measure provides no indication of what will be involved or the location of works. The objectives/ measures that could potentially affect the integrity of European Designated Sites may have positive and/or negative effects.

At this high-level stage, it is not possible to conclude which, if any, sites will be affected or if the effects will be significant in regards to the conservation objectives of the European Designated Sites highlighted in this report. It is acknowledged that the LFRMS sets out the strategic direction for managing flood risk in the Vale of Glamorgan and that no impacts will arise directly from the strategy itself.

The strategy, however, cannot be put into effect until lower-tier plans, projects or activities arising out of this LFRMS are determined and implemented; therefore the potential impacts of the strategy cannot be fully determined until more detailed plans are confirmed. Subsequent plans and projects arising from this LFRMS will be subject to another HRA if there is a potential to affect European Designated Sites, under the Habitats Regulations.

This Appropriate Assessment concludes that the LFRMS itself is not likely to have any significant negative effects on any European sites, alone or in combination with other plans or projects. If there is a potential negative impact, further HRAs conducted on lower tier plans and projects will ensure that this is identified and managed.

Given this conclusion, there is no requirement to progress to the next stage of the HRA (the Assessment of Alternative Options). This conclusion does not remove the need further HRAs of any other plans, projects, or permissions related with, or arising from the LFRMS.

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