

1 October 2014

Our ref: 14/15-021



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Dear Jeremy

Supporting Commercial Spaceplane Operations in the UK: Consultation on the Criteria to Determine the location of a UK Spaceport

Natural England welcomes the opportunity to comment on this consultation on the criteria to determine the location of a UK Spaceport.

As the Government's advisor on the natural environment, our purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

We are a statutory consultee on many transport development proposals including:

- Nationally Significant Infrastructure Projects and other major transport schemes (roads, rail, port and airport expansion);
- Environmental Impact Assessments of transport schemes;
- Strategic Environmental Assessment/Sustainability Appraisal in relation to Local Transport Plans and Local Plans; and
- Habitats Regulations Assessment in relation to transport plans and projects.

As well as being the Government's statutory conservation adviser for England, we are also responsible for designated sites, such as National Parks and Sites of Special Scientific Interest, and for granting applications for protected species licenses.

A spaceport would be a new and untested development in the UK, and would require evidence to be gathered from outside of the UK, specifically the US, to determine the full range of environmental impacts. The issues associated with the development of a spaceport in the UK would be closely aligned to aviation, although specific requirements, such as remoteness from local populations, would differ.

Based on our experience in the aviation sector a development of this kind could have significant impacts on the natural environment and could adversely affect biodiversity, geodiversity and landscape through direct effects such as habitat loss or fragmentation, as well as indirect effects resulting from changes to air quality, water quality, light pollution levels, noise, disturbance and visual impacts. These are not fully reflected within the consultation's environmental criteria which currently focus on noise, air quality, carbon emissions and hazardous materials.



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We recommend that the environmental criteria are developed further to reflect the full range of impacts on the environment and ecosystem services and would recommend adopting the approach set out in the Treasury's Green Book Supplementary Guidance '*Accounting for Environmental Impacts*' (Dunn, 2012). The Airports Commission's recent Appraisal Framework has taken an ecosystem services approach and could provide a useful model for an appraisal process designed to inform decision making in respect of a new spaceport. Such work would benefit from early consultation with the relevant statutory environmental bodies from England, Scotland and Wales.

Natural England's recent advice to the Airports Commission considered the criteria for additional aviation capacity in the UK. To inform the high level decision making process we developed a series of aviation sensitivity maps which served to:

- Be a tool that could help steer sustainable growth
- Bring together existing environmental information and make it more accessible
- Provide information tailored to the aviation sector, focusing on key environmental issues facing aviation development

Newquay Cornwall Airport has been identified as a possible location for spaceport development within England. Our aviation sensitivity map analysis includes an assessment of Newquay Cornwall Airport and the interactive map is attached to this email. We would be happy to advise DfT on adapting and expanding the analysis for UK spaceport development should this be required.

We would welcome the opportunity to engage further with DfT in considering the options for the development of a spaceport in the UK.

Our detailed response is attached in the annex to this letter. If you have further questions regarding our response to this consultation, please contact Clare Warburton, Senior Environmental Specialist on 0300 060 1843 or at clare.warburton@naturalengland.org.uk.

Yours sincerely



Rob Cooke
Director, Sustainable Development

cc Andrew McWhir, Defra

Annex 1

Background

1. The Department for Transport, Civil Aviation Authority, Department for Business, Innovation & Skills, Ministry of Defence and UK Space Agency have opened a consultation exercise to examine the eight potential UK locations identified for a commercial sub-orbital spaceflight spaceport, and the key operational, safety, meteorological, environmental, economic criteria used by the Civil Aviation Authority in selection of these locations.
2. Natural England welcomes the opportunity to comment on the consultation document. Our response to the consultations questions is set out below.

Natural England's Response to Consultation Questions

CAA's high level recommendation

Q1. Do you agree with the CAA's high-level recommendation that, if a decision were taken to proceed, sub-orbital operations should preferably commence, either on a permanent or a temporary basis, from one (or more) of the following:

- an existing EASA-certificated aerodrome;
- an existing UK CAA-licensed aerodrome; and/or
- an existing UK military aerodrome, subject to approval from the MOD.

Making use of an existing aerodrome is less likely to have significant effects on the natural environment than creating new capacity because the land take requirements would be less. In both cases the location is a critical factor in determining the significance of the effects on the natural environment. It is feasible that a new location could have fewer significant impacts than an existing site, but this would depend on the type and magnitude of the impacts and the sensitivity of the receptor to the impacts. Location is very important in determining sensitivity. A full impact analysis would be required to compare options and assess alternatives.

Q2. Do you agree that in order to make maximum use of existing infrastructure, the location should preferably still be active but at a low level of aircraft movements and should have existing and appropriate ground infrastructure/facilities and service provision?

See response to question 1.

Q.3 Do you agree that greenfield sites should not be considered?

See response to question 1.

CAA's criteria

Q4. Do you agree with CAA's analysis identifying the criteria to be considered in identifying a permanent location for a UK spaceport? If not, please explain why.

The Government's National Planning Policy Framework (NPPF) emphasises the need to achieve economic, social and environmental gains through the planning and delivery of new infrastructure; consideration of environmental impacts and the potential for mitigation needs to be an integral element of the decision making process.

There would be significant environmental impacts associated with the construction and operation of the UK's first spaceport and any associated surface transport infrastructure. In this context, the development of appropriate environmental criteria will be extremely important in informing the final recommendations in relation to a permanent location for a spaceport. Ensuring that environmental criteria are as comprehensive as possible at an early stage will aid decision-making and avoid delays in the future.

We welcome the reference on page 12 of the consultation document to environmental impacts. However these currently focus on a fairly limited range of environmental criteria including noise, air quality, carbon emissions and hazardous material. Building on these, we would recommend that the environmental criteria be developed from the information provided below in Annex 2, Table 1, to include criteria for landscape, biodiversity, soils and geodiversity. These criteria should be applied not only to measures or proposals associated with the construction and operation of a spaceport but also, importantly, to any indirect ancillary impacts such as transport to and from the spaceport.

We advise that a coastal location could have significant impacts on the natural environment, both the terrestrial and marine environment, and detailed consideration would be needed of the impacts (see question 8 for more details).

Q5. Do you think there are any other criteria that should also be taken into consideration? If so, please explain why.

The adaptation of an existing aerodrome site for hosting sub-orbital operations is new and untested in the UK and would require evidence to be gathered from outside the UK, specifically the US, to determine the range of environmental impacts, both during the construction phase and operational phase. The findings of such evidence gathering would need to be reflected in the criteria.

Based on our understanding of the aviation sector, the development could involve substantial land take to accommodate new buildings or an extended runway, as well as for supporting services. In addition there will be impacts from spacecraft flight paths, surface access and safeguarding activities (assuming these would be similar to those for airports). These activities could adversely affect biodiversity, geodiversity and landscape through direct effects such as habitat loss or fragmentation, as well as indirect effects resulting from changes to air quality, water quality, light pollution levels, noise, disturbance and visual impacts. On this basis, we would advise that the current focus on a fairly limited range of environmental criteria including noise, air quality, carbon emissions and hazardous material is too narrow.

We recommend that the environmental criteria are developed further to reflect the full range of impacts on the environment and ecosystem services and that these are developed in close consultation with the relevant statutory environmental bodies representing England, Scotland and Wales. See Annex 2 for a list of proposed environmental criteria that we recommend are used to inform decision making.

There would be benefits in setting out at which stage environmental assessments such as Habitats Regulations Assessment (HRA), Appraisal of Sustainability (AoS) and/or Strategic Environmental Assessment (SEA) will be undertaken. It will be important for environmental legislation, such as the Conservation of Habitats and Species Regulations 2010 (as amended), (the "Habitats Regulations 2010"), to be applied as early as possible, informing which spaceport options could have the most significant effects on designated sites. Early identification of issues could enable the sifting out of proposals that will have a significant effect on the environment, which could help to avoid delays at later stages.

Natural England provided advice on environmental criteria to the Airports Commission as it developed options for airport capacity enhancement. As part of that process Natural England developed a series of aviation sensitivity maps which served to:

- Be a tool that could help steer sustainable growth
- Bring together existing environmental information and make it more accessible
- Provide information tailored to the aviation sector, focusing on key environmental issues facing aviation development

We would be happy to advise DfT on expanding this analysis for UK spaceport development should this be required.

We would advise that any assessment of impacts take an ecosystem services approach.

The Treasury's Green Book Supplementary Guidance '[Accounting for Environmental Impacts](#)' (Dunn, 2012) advises that the UK National Ecosystem Assessment (NEA) has provided a robust case for accounting for the environment in decision making. It recommends that the starting point when designing policies should be to identify the full range of effects on the environment/ecosystem services, so that these can be taken

into account when comparing different options. A recent study for DfT '[Applying an Ecosystem Services Framework to Transport Appraisal](#)' provides some useful conclusions and recommendations on how to take forward the assessment of ESS in transport appraisal. The Airports Commission's '[Appraisal Framework](#)' took an ecosystem services approach and could provide a useful model for an appraisal process designed to inform decision making in respect of a new spaceport.

Q6. Do you agree that these are relevant criteria? What weight should be attached to them?

We would advise using established appraisal methods rather than developing a new weighting system. The government's webtag transport appraisal process provides a method for options testing large scale projects, looking at economic, social and environmental impacts. It provides a basis for appraising options and a webtag appraisal of each potential option could be undertaken to inform the final decision. However webtag does not currently include an appraisal of ecosystems services, and we recommend that any options appraisal incorporates a more rigorous approach to ecosystem services than currently set out in Webtag, as set out above in our response to question 5.

We propose that an external advisory group is set up to advise on the broad range of issues associated with such a new type of development, including environmental issues such as biodiversity, geodiversity and landscape, to ensure that appropriate criteria and appraisal methodologies are developed.

Q7. If more than one location closely meet the essential operating criteria, safety, meteorological, environmental and economic criteria, do you agree that we should also consider factors around the contribution to local and national growth? If so, what weight should be given to these factors?

See response to question 6.

Q8. Do you agree with the CAA's analysis and strong recommendation that until there is a better understanding of sub-orbital spaceplane safety performance, spaceplane operations should only take place in areas of low population density and the resulting view that only a coastal location is suitable to protect the uninvolved general public?

Much of the English Coastline is designated for its geodiversity and biodiversity, for example 54% of England's Special Protection Areas (SPAs) and 21% of England's Special Areas of Conservation (SACs) are coastal. Coastal environments are sensitive to development and as such there is a risk of impacts (both direct and indirect) on designated sites if a coastal location is chosen. Suitable environmental assessments (as detailed in question 5) will need to be carried out if a coastal location is chosen going forward. Please see the response to question 9 for a more detailed analysis of the potential impact to designated sites from the one potential site shortlisted within England.

Any selected location will also need to consider any impacts on the England Coast Path and in addition any likely increased numbers of the uninvolved public using coastal areas who may be affected by such a proposal. "Low density" coastal areas may not have a high permanent population, but many have high seasonal populations which would need to be considered in terms of population density.

We would also advise that there will need to be consideration of policies within Shoreline Management Plans for preferred locations (where applicable) to ensure any site is resilient over the longer term to coastal change. It will also be necessary to assess whether any preferred locations are within Coastal Change Management Areas as identified within the NPPF.

CAA's shortlist of potentially feasible locations

Q9. What are your views on the CAA's shortlist of eight potential sites?

One potential site has been identified in England - Newquay Cornwall Airport. Our aviation sensitivity map analysis includes an assessment of Newquay Cornwall Airport and the interactive map is attached to this response. The analysis identifies that there is a risk of impacts on the following terrestrial sites:

Cornwall Area of Outstanding Natural Beauty
Trevose Head Heritage Coast
South West Coast National Trail
Bedruthen Steps and Park Head SSSI
Goss and Tregoss Moors SSSI
Rosenannon Bog and Downs SSSI
River Camel Valley and Tributaries SSSI
Trevose Head and Constantine Bay SSSI
Carrick Heaths SSSI
Kelsey Head SSSI
Tregonetha and Belowda Downs SSSI
Borlasevath and Retallack Down SSSI
Breny Common and Goss and Tregoss Moors SAC
River Camel SAC

Though not identified as being sensitive in the aviation mapping exercise, impacts on the following sites would also need to be considered:

Trelow Downs SSSI
Newlyn Downs SSSI

There are also potential impacts on the following marine sites:

South West Peninsula Marine Natural Area
Newquay and The Gannel recommended Marine Conservation Area

Any proposal for a major development in a highly environmentally sensitive location presents specific challenges because of the potential for adverse effects on nationally and internationally designated sites such as SSSIs and Natura 2000 (N2K) sites.

The environmental impacts of developing a spaceport and operation in the Newquay Cornwall Airport could include (but not be limited to):

- Direct and indirect land take (including supporting infrastructure, loss or deterioration of functional habitat and the impact of the any bird strike safeguarding zone around the airport – this is currently 13km for airports);
- Air pollution;
- Water pollution;
- Lighting;
- Bird strike and bird control measures;
- Noise Disturbance;
- Other environmental impacts including road congestion and soil and sediment pollution.

Under the Habitats Regulations 2010 any proposed development in or close to a European designated site, would require the developer to provide information to the competent authority that would enable them to:

- determine whether the project is likely to have a significant effect on the site, either alone or in combination with other plans or projects.
- If such an effect cannot be excluded to make an Appropriate Assessment of the implications for the site in view of its current conservation objectives and determine whether the project will adversely affect the integrity of the site.

Projects causing an adverse effect on site integrity can only ever proceed in the most exceptional of circumstances and there are special tests and procedures for this. If a project is to proceed despite a negative assessment, the competent authority is required to consider:

- whether it is satisfied that there are no alternative solutions;
- whether it is satisfied that the project must be carried out for imperative reasons of over-riding public interest (IROPI); and
- whether compensation can be secured to ensure the coherence of the N2K network in order to proceed.

Q10. Are there any locations on the CAA's shortlist which you consider should be disregarded? If yes, please give your reasoning.

We advise that full consideration be given to the environmental impacts on all the shortlisted sites and that there is early consultation with the relevant statutory environmental bodies such as Natural England, Environment Agency, Marine Management Organisation, Scottish Natural Heritage and Natural Resources Wales.

Q11. Are there any additional locations that you consider should be on the CAA's short list? If yes, please explain why.

There are no other sites that we consider should be on the CAA's shortlist.

Annex 2:

Table 1: Proposed Environmental Criteria

Environmental Criteria	Criteria based on:	Justification and Further information
Biodiversity and Conservation	<p>Protection and enhancement of national and international designated nature conservation sites in accordance with domestic and EU legislation.</p> <p>Includes:</p> <ul style="list-style-type: none"> • Sites of Special Scientific Interest (SSSIs); • Special Protection Areas (SPAs) and potential SPAs; • Special Areas of Conservation (SACs) and possible SACs; • Ramsar sites and listed or proposed Ramsar sites; • Sites identified or required for compensatory provision. • Marine Conservation Zones <p>Many of these sites are protected for their national and international bird populations.</p>	<p>SACs and SPAs are protected as European Sites in England by the Habitats Regulations 2010 (as amended) which transpose the relevant parts of the Habitats Directive into domestic law. Ramsar sites are subject to the same procedures as a matter of UK Government Policy.</p> <p>SSSI's are legally protected under the Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way (CROW) Act 2000 and the Natural Environment and Rural Communities (NERC) Act 2006</p> <p>Marine Conservation Zones are designated under the Marine and Coastal Access Act 2009.</p> <p>The NPPF confirms equivalent protection to European sites for potential SPA, possible SAC, listed and proposed Ramsar sites and sites identified or required for compensatory provision.</p> <p>Information on international and national designations is available from Defra and Natural England</p>
	<p>Protection and enhancement of European Protected Species and other species protected under domestic legislation.</p>	<p>European Protected Species are species protected under Annex IV(a) to the Habitats Directive (and which are also listed in Schedule 2 of the Habitats Regulations by reason of the transposition of the Habitats Directive).</p> <p>Other species are protected under the Wildlife and</p>

		<p>Countryside Act 1981, as amended.</p> <p>Information on protected species is available from Natural England</p>
	<p>Avoiding or minimising the impacts on wider biodiversity, for example ancient woodland, other priority habitats, Local Wildlife Sites, geodiversity (including soils).</p>	<p>Under the 2006 Natural Environment and Rural Communities (NERC) all public bodies have a legal duty to 'have regard' for biodiversity in their decision-making processes.</p> <p>The NPPF states that <i>"planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss."</i></p> <p>There are other policies within the NPPF that support these wider biodiversity interests (eg NPPF, paragraph 117)</p> <p>Information on local sites is available from Defra and Natural England.</p>
	<p>Supporting the conservation and enhancement of Nature Improvement Areas</p>	<p>Nature Improvement Areas were put forward by the Lawton Review 'Making Space for Nature'. NIAs are places where there are high opportunities for the management, restoration and enhancement of ecological networks. 12 NIAs were established in April 2012.</p> <p>The NPPF states that <i>'where Nature Improvement Areas are identified in Local Plans, consider specifying the types of development that may be appropriate in these Areas'</i>.</p> <p>Information on Nature Improvement Areas is available from Defra and Natural England.</p>

Landscape	Protection of nationally protected landscapes - National Parks and Areas of Outstanding Natural Beauty (AONBs), as well as areas defined as Heritage Coasts.	<p>England's National Parks and AONBs are designated under the provisions of The National Parks and Access to the Countryside Act, 1949. Heritage Coasts are 'defined' rather than designated.</p> <p>The NPPF states that '<i>Major developments should not take place in designated areas, except in exceptional circumstances</i>'.</p> <p>Information on protected landscapes is available from Natural England</p>
Ecosystem Services	Protection and enhancement of ecosystems services including: <ul style="list-style-type: none"> • Regulating services: such as water quality, air quality and climate regulation; • Cultural services: such as landscapes and recreation; • Supporting services: such as soil formation and habitats; • Provisioning services: such as supply of water and biomass. 	<p>The economic and/or environment criteria need to ensure that the value of the ecosystems services provided by the natural environment is included in the decision making process. This is in line with the recognition given to the wider benefits of ecosystem services in the NPPF.</p>