



nature's voice

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20 August 2010

Dear Ms McNeil

**Application under Section 36 of the Electricity Act 1989**

**Erection of a multi-fuel power station at site to south west of Hunterston Coal Yard, Fairlie, Largs  
Ayrshire**

Thank you for consulting RSPB Scotland on this application. Please find our detailed assessment attached. **RSPB Scotland objects to the application** for the following three reasons:

**1. Unacceptable direct biodiversity impacts**

- The proposal would result in the loss of over 30 ha of intertidal habitats. The sandflat, eelgrass bed and mussel bed habitats that would be lost are regionally uncommon and this site is the largest area of these habitats on the Ayrshire coast.
- The site is particularly important for wintering birds, which are likely to be significantly affected by loss of feeding habitat, loss of roost sites and disturbance.
- The loss of habitat would result in a significant impact on the integrity of the Portencross Coast SSSI.

**Patron:** Her Majesty the Queen    **Chairman of Council:** Ian Darling FRICS    **President:** Kate Humble  
**Chairman, Committee for Scotland:** Pamela Pumphrey    **Director, Scotland:** Stuart Housden OBE  
**Regional Director:** Anne McCall

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## 2. Unacceptable climate change impacts

- Climate change is a major threat to wildlife, including birds. With no action to minimise climate change, there will be a catastrophic effect on natural systems.
- Hunterston power station would represent a significant increase in carbon dioxide emissions, equivalent to almost 20% of the target Scotland has set for total emissions in 2017, when the power station is proposed to be commissioned.
- The application does not provide sufficient certainty that the plant would be fully carbon capture ready (CCR) or that carbon capture and storage (CCS) technology could be implemented on 300 MW, as required by current Scottish Government policy.
- Government have acknowledged that electricity generation needs to be largely decarbonised by 2030. However, there is currently no clear mechanism that would require the operator to install full CCS and no evidence of technical or economic feasibility is presented. It must therefore be assumed that the plant could operate as a largely unabated power station for its 40-year lifetime.

## 3. Lack of certainty of full environmental impacts:

- The proposed development would result in warming of the water around the plant. The scale and extent of the effect has not been modelled. The effects on native fauna and flora are uncertain but changes could have follow on effects throughout the food chain. Increased water temperatures combined with more disturbance and new artificial structures could aid the spread of non-native invasive species.
- It is unclear whether the construction and operation of the development would cause deterioration of ecological status of the Largs Channel coastal water body. Consideration must be given to the legislative requirements of the EU Water Framework Directive.
- No attempt is made to assess the likelihood or significance of any impact on the Renfrewshire Heights Site of Special Scientific Interest (SSSI) or Special Protection Area (SPA).
- There is uncertainty over the marketability of ash by-products. The ES does not assess the environmental impacts of ash disposal if sufficient market uses are not found.
- The impacts of biomass production on biodiversity can be very damaging. There is no commitment in this application to ensure that biomass that would be used in this plant would be from sustainable sources and no calculation of the carbon balance of potential biomass sources.
- It is not possible to predict where coal would be sourced over the lifetime of the plant or what the biodiversity and other environmental impacts of its extraction would be. Coal production can have very significant environmental impacts, which have not been considered within the ES.

Opposition to this development is widespread and reflects concern about the excessive and unacceptable environmental damage that the proposal would cause locally and the contribution it would make to global climate change. This concern is reflected by the fact that an estimated 14,000 objections to the development have already been submitted, including over 3,000 via RSPB pledge cards and RSPB's website. It should be noted that opposition has been expressed at a local, national and international level, reflecting both the concerns over direct environmental impacts and wider concerns that, if this project was to be consented, Scotland would not be maintaining the ambition to tackle climate change that was established by the Climate Change (Scotland) Act.

Further detailed analysis to support our position is contained within the attached annex but please do not hesitate to contact me with any queries on any aspect of our response.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Zoë Clelland', with a stylized flourish at the end.

Zoë Clelland  
Senior Conservation Officer

## Annex 1 – RSPB Scotland Comments on Hunterston Multi-fuel Power Station Application

### Background

1. The RSPB in Scotland is supported by over 86,000 members (with over 2,000 in North Ayrshire) and employs around 200 staff to promote the conservation of birds and biodiversity. Bird populations reflect the health of the planet on which our future depends. Climate change, agricultural intensification, expansion of urban areas, new transport and energy infrastructure and over-exploitation of our seas all pose major threats to birds. RSPB Scotland's work therefore covers all these areas. We also have practical experience of directly managing land and coast for conservation, farming, forestry and other enterprises.
2. Because of the potential for development to harm birds and other wildlife, we devote considerable efforts to engaging with the planning process. We try to influence national planning policy and legislation and our professional planning and conservation staff are involved with several hundred individual development proposals each year in Scotland.
3. In combination with RSPB staff across the UK, and our international partners in Birdlife International, we have cross-cutting expertise and experience of spatial planning, land use, marine and sustainability issues within Scotland, the UK and internationally.

### Need for the development

4. RSPB Scotland has been involved throughout the process of planning modernisation. We worked with the Scottish Government, the Scottish Parliament and others during the preparation of the Planning etc. (Scotland) Act 2006 and throughout the preparation of the second National Planning Framework for Scotland (NPF2). While we believe that NPF2 is a very positive planning document in many ways, we have always been concerned about the potential for adverse environmental effects from some of the national developments, in particular from Hunterston. RSPB Scotland was only one of four respondents to raise concerns in response to the Scottish Government consultation when the Hunterston proposals were originally put forward as a potential national development<sup>1</sup>. We also had concerns about the process used to identify the national developments and are therefore involved in supporting a current judicial review of the decision to include Hunterston as a National Development in NPF2.
5. Designation in the National Planning Framework as a national development is the mechanism for establishing the need for those developments. Any subsequent examination of the detailed

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<sup>1</sup> <http://www.scotland.gov.uk/Publications/2009/01/08150027/7>

planning implications cannot therefore be concerned with the principle of the need for the development and the statements of need provided in NPF2 must be material considerations in the determination of planning applications.

6. National development 9 in NPF2 is for a new power station and transshipment hub at Hunterston. This designation establishes the need for a range of developments at Hunterston, including a “clean coal fired power station”.
7. However, despite the need being established in planning terms by inclusion in NPF2, there is no genuine absolute need for a new coal plant at Hunterston. Work that we jointly commissioned from the specialist energy consultants Garrad Hassan has shown that, even allowing for anticipated reductions in electricity generating capacity such as from the Hunterston nuclear plant, Scotland’s energy needs can easily be met through continued expansion of renewable energy at a similar level to recent years. The summary report is available from our website<sup>2</sup> and the full report on request.
8. In addition to this doubt over the energy need, the need in planning policy terms is currently subject to legal challenge. A local individual is currently pursuing a judicial review of the Scottish Ministers’ decision to include this development as a national development within NPF2. Without prejudice to the final decision of the Court, it is possible that the national development status of Hunterston could be overturned. It is likely that the Court will make a judgement before Scottish Ministers determine the application for the new coal plant at Hunterston. We therefore believe that others involved in the consideration of the Electricity Act application by Ayrshire Power Ltd must also assume that the planning need for the development may no longer be established at the point at which Scottish Ministers make their decision and provide Ministers with sufficient information to make an informed decision on that basis if necessary.
9. It is now also appears that a further material consideration could supersede the need established in NPF2. The Energy Minister, Jim Mather, recently provided the following written Parliamentary Answer in response to Parliamentary Question S3W-34742:
10. *“The Scottish Government’s Climate Change Delivery Plan, published on 17 June 2009 sets out at a high level the options available to meet the statutory targets in the Climate Change (Scotland) Act 2009. This includes a largely decarbonised electricity generation sector by 2030 using renewables complemented by fossil fuelled plants with carbon capture and storage. As part of their obligations under s.38 of the Climate Change (Scotland) Act (2009), Scottish Ministers are required to lay a report outlining the impact on emissions of the exercise of their electricity generation related functions. To fulfil this obligation, and in light of recent developments in our renewables potential, the Scottish Government is currently conducting an internal study on the extent of the need for new thermal generation. This will take account of our clear policy*

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<sup>2</sup> [www.rspb.org.uk/images/PowerofScotlandRenewed\\_tcm9-222405.pdf](http://www.rspb.org.uk/images/PowerofScotlandRenewed_tcm9-222405.pdf)

*on CCS and CCS retrofit which requires demonstration of CCS for new coal plants on a minimum of 300MW net from day one, retrofitting by 2018 following a review of the technical and economic viability of CCS, and full CCS on new builds from 2020, and will reflect the competitive and dynamic nature of the electricity market. The report will include an assessment of energy demand and supply projections – including the current electricity supply base, projected rates of renewables deployment and planned retirement of existing baseload plants. It will also be informed by the energy storage and demand management study. The outcome of the study will provide a high level assessment on the extent of need for new thermal generation capacity and an evaluation of the potential security of supply issues that may occur in Scotland during the expected transformation towards a decarbonised electricity supply sector by 2030. This assessment will be one of the factors taken into account in considering policy on future generation options, alongside environmental, social and economic criteria. The initial findings will be presented to the Thermal Generation and CCS Industry Advisory Group for its consideration and advice before the report is published in the autumn.”*

11. Clearly, the findings of this study on the extent of need for new thermal generation capacity could further influence whether the need for a new coal plant at Hunterston remains established and would therefore need to be a material consideration in the determination of the current application. RSPB Scotland will provide additional comments on the potential implications of this study for this application in due course.
12. NPF2 also makes it clear that there are a wide range of issues that must be addressed when consent is sought and must therefore be considered as part of the assessment of these proposals. This includes the siting, design and layout of the power station and associated facilities, transport, grid connections, carbon impact, CCS provision, ash management, heat utilisation, landscape and visual impacts, effects on cultural and natural heritage – including on the SSSI, effects on coastal processes and measures to minimise, mitigate or compensate for adverse effects on the environment. Even assuming the need for the development is established in principle, there are therefore many significant material considerations against which this proposed development could be deemed inappropriate and refused consent.

## **Direct Biodiversity Impacts**

### **Habitat Impacts**

13. The biotope survey presented in chapter 16 (Figure 16.1) appears to adequately describe the marine habitats within the survey area and the NVC survey has quantified the terrestrial habitats that would be affected.

14. However, there is considerable confusion about the conclusions on habitat loss, with different figures for extent of loss appearing in different parts of the document. For example, the NTS states that SSSI land-take is down to 22.5 ha from an original proposal of 30.5 ha while the marine ecology chapter shows (Table 16.14 ) that 28.5 ha of intertidal habitat will be destroyed and 3.8 ha would be affected by construction (all within the SSSI). A further 0.6 ha of saltmarsh within the SSSI would be lost (Table 15.4). In this case, the NTS appears to contain incorrect and misleading information.
15. According to our own estimates (based on Figures 4.1 and 4.3), 31.4ha of intertidal habitat would be permanently lost from the SSSI, with a further 3.9ha affected during the construction phase.
16. Table 16.14 states that a minimum of 28.5 ha of intertidal habitat would be lost because of construction. This is mainly fine sands and sandy muds, with significant areas of eelgrass and some mussel beds. The table also shows that an additional 3.8 ha of intertidal habitat would be affected by construction. The ES (16.8.12) predicts that these areas would recover in two years, despite mechanical damage due to excavation and placement of temporary ballast. No evidence is provided to support the conclusion of recovery of habitats such as mussel beds from such significant damage within two years.
17. Little account has been taken of further indirect effects either of construction or of the subsequent presence of permanent structures on the remaining intertidal habitat. 16.8.15 states that infilling will indirectly affect remaining mussel beds through alterations in wave climate due to the proximity of the revetment along the northwest facing margin of the site. No indication is given of the nature, severity or extent of this effect and no assessment is provided of whether there may be significant alterations to other habitats as a result of infilling such a large proportion of Southannan Sands. There may be further effective habitat loss through loss of ecological function and habitat loss figures as a result of infill must therefore be regarded as a minimum figure only.
18. Habitat creation is proposed within an area of dry dock in Hunterston Sands. The area of proposed eelgrass habitat creation is either 3 ha(13.6.8) or 4 ha (16.8.26). The ES itself stresses that success is more likely in locations where *Zostera noltii* has previously been present but this is not the case at the proposed restoration site. While removal of the area of dry dock may have some nature conservation benefit, the success of establishing *Zostera noltii* beds is at best uncertain. The NTS misleadingly presents this habitat creation as compensation for habitat loss. In fact, the loss of habitat within Hunterston Sands alone amounts to 5 ha for the cooling water intake (13.6.14) so not even habitat loss within this portion of the SSSI would be adequately compensated. No compensation is proposed for the significant loss of habitats in Southannan Sands.
19. In order to serve as compensation, new habitat should be created and functional prior to loss of existing habitat. Although Appendix 4.3 proposes production of a Biodiversity Management Plan

prior to commencement of development, timescales for habitat creation itself are not discussed in the ES. Given the fact that created habitat is generally of lower ecological value than existing habitat, true compensation will generally require the creation of a significantly larger area of habitat than that lost. This is not the case even if Hunterston Sands is considered in isolation, and very clearly not so with regard to the whole SSSI.

20. Within the interactive effect section (15.9.4) the ES states that Hunterston Sands will retain its integrity and will be enhanced by the removal of reclaimed land. At best this is overly simplistic, as it neither takes into account the fact that this habitat restoration may not be successful nor does it consider the effects of increased water temperature that could increase the spread of invasive species. The value of this habitat, in particular the eelgrass beds, could be significantly reduced if there is competition from the non-native *Sargassum* or if it is directly affected by changes in water temperature, sedimentation or pollution.
21. We therefore conclude (based on the ES) that a minimum of 32.9 ha of intertidal and saltmarsh would be directly affected by the development with uncertain potential for up to 3.8 ha to partly recover and uncertain additional effects on the surrounding habitat. The proposed compensatory habitat creation is woefully inadequate given the scale of the loss.
22. The UK BAP includes action plans for priority habitats. Targets of relevance to this proposal are to maintain the extent of eelgrass beds and to ensure no further net loss of extent of intertidal sediment ecosystems (saltmarsh and mudflat). Even taking account of the proposed offsetting measures, the proposed development would lead to loss of both habitat types, preventing achievement of this target.
23. The Scottish Biodiversity List is a list of flora, fauna and habitats considered by the Scottish Ministers to be of principal importance for biodiversity conservation including eelgrass (seagrass) beds and saltmarsh, both of which will be lost at Southannan sands.
24. The first objective of the Scottish Biodiversity Strategy is to halt the loss of biodiversity and continue to reverse previous losses through targeted action for species and habitats. The proposed development would lead to significant further loss of priority habitats, preventing achievement of this objective.
25. The Nature Conservation (Scotland) Act 2004, gave all public bodies in Scotland a duty to "further the conservation of biodiversity" in carrying out their functions and (so far as is consistent with the proper exercise of those functions) "further the conservation and enhancement of notified SSSI features". When considering this application, Scottish Government should be cognisant of these duties and the significant negative effects on priority habitats that this proposal would have.



26. The Ayrshire Biodiversity Action Plan has identified coastal habitats as one of two priority habitats for conservation action. The proposal would cause significant damage to important coastal habitats.
27. It is important to emphasize that this habitat type is incredibly rare on the Ayrshire coast as there are no other significant areas of intertidal sands and muds on this coastline. The proposed loss would therefore be a very significant loss of important intertidal habitat between the Inner Clyde and the Solway. The impact of this loss on birds is discussed below.

## **Impacts on Birds**

### **Breeding Birds**

28. Numerous mistakes are made in the use of BTO codes, making interpretation of the mapped results difficult. Literal interpretation of the map would have suggested that both black grouse and white-tailed eagle were present on the site when in fact it was blackcap and wheatear that were recorded. Codes are used on the maps that are not listed in the key. No survey boundary is marked on the map.
29. These mistakes in survey methods, data management and presentation reduce confidence in the standard and results of the survey.
30. The breeding bird survey recorded 29 species within the survey area, of which 25 are recorded as breeding.
31. Records provided by a local RSPB member show an additional 15 species recorded at the site during May and June 2008, when the ES surveys were carried out. Of these, 3 were confirmed as breeding. Mute swan was also confirmed as breeding despite being recorded as non-breeding by the ES. We are particularly surprised that relatively common species including mallard, carrion crow and hooded crow were not recorded. It also seems highly likely that, as in other years, house martin and swallow bred within the construction yard and that herring gull bred on the lagoon.
32. Despite recording eider with young in Hunterston lagoon and the young being unable to fly at this stage, the ES records them as non-breeding. This seems highly unlikely as they regularly breed on the lagoon, as do red-breasted merganser and mallard.
33. We are also aware that breeding wader numbers within the site are often significantly higher than recorded in the survey, with 10 pairs of lapwing and 6 pairs of oystercatcher not unusual. In addition, no passage waders have been recorded and no curlew recorded on the site.

34. Two visits in May and June 2010 for the BTO Bird Atlas found 51 species in the tetrad (2 km by 2 km survey square) NS15W (which forms only part of the application site) and the current total for this tetrad is 90 species.
35. In conclusion, the ES appears to have underestimated the range and numbers of breeding birds that breed on the site. For those birds that do breed on the site, the impacts of the development will be significant.

### Wintering Birds

36. Six survey visits were carried out between February and April 2008. The inadequacy of this number of visits in capturing peak numbers is evident when compared with records from the local WeBS recorder during the same time period. These show the applicant's surveys underestimate numbers of several species. These include curlew (615 rather than 157), redshank (41 rather than 18) shelduck (144 rather than 68) and eider (56 rather than 21).
37. Bimonthly visits took place from September 2008 until the beginning of April 2009 and these appear to better match the data held by the WeBS recorder. However, some species are still under recorded. For example, the peak count of wigeon was 446 rather than 11 at Hunterston Sands and 480 rather than 406 at Southannan Sands. The local WeBS recorder noted a further 20 species that are not recorded in these tables, albeit in many cases single or low numbers of birds.
38. Examination of the WeBS data for the Hunterston Sands count over the past few years shows variability in numbers between years but confirms that 2008/09 was not a year when particularly high numbers were recorded.
39. As with the breeding bird survey, the winter bird report unhelpfully maps data using the wrong BTO codes.
40. The report covers high tide use of the site by waders and waterfowl but only low tide usage by waders. The report has a separate section on 'other species' but this includes several wader and wildfowl species. It is not clear why these have not been included in the main tables and this makes it particularly difficult to get a full picture of bird usage of the site.
41. The report separates Southannan Sands into the area outwith and within the development footprint. This is confusing as the report does not clarify whether peak counts in the two areas could be the same birds moving as the tide moves or should be added to give one peak count for Southannan Sands. Considering only the numbers within the development footprint may represent a significant underestimate of the importance of the site. In any case, the distinction is rather meaningless as birds are at present free to use the whole site regardless of the precise

location of the red-line application boundary – and are indeed likely to do so, according to the state of the tide.

42. As with intertidal areas generally, the Hunterston site is used by wintering birds for two main purposes; feeding (on the intertidal) and roosting. The impact of the development on these two uses is different but it must be remembered that significant impacts on only one may be enough to render the site useless to that species. For example, if feeding areas remain, but there are no suitable roost sites within an appropriate distance, birds may not travel to the flats to feed, or they may expend so much energy in doing so that the site loses its value to those birds.
43. Southannan Sands supported the largest numbers of feeding oystercatcher (487), curlew (263), redshank (45), wigeon (406) and shelduck (81) within the survey area. The sandflats and mussel beds are important feeding sites for most of these species while wigeon feed on the seagrass beds and algae.
44. Hunterston Sands supported the largest number of dunlin and ringed plover and is also a very important area for wigeon.
45. The ES concludes that habitat loss is likely to have locally or regionally significant impacts on bird populations of oystercatcher, curlew, redshank, shelduck, wigeon, mallard and teal. Given the importance of this site on the Ayrshire coast and the scarcity of this habitat, this impact should certainly be regarded as regionally significant.
46. The most significant high tide roost sites were found to be on the sand bar at the north-eastern edge of Southannan Sands and on its eastern edge. These were of importance for oystercatcher and curlew respectively. The construction yard was found to be a significant roost site for dunlin and ringed plover. The ES does not adequately assess the effects of loss of roost sites or the interaction of the loss of feeding habitat and loss or disturbance to roost sites.
47. The ES wrongly states that dunlin and ringed plover were recorded in habitats outwith the application site. In fact, the wintering bird survey shows that both species have roost sites within the site, on the construction yard, which will be lost. The ES is therefore wrong to conclude there will be an insignificant effect on these species as a result of habitat loss and wrong to suggest that these areas have no ecological value.
48. The ES rightly concludes that there will be significant impacts on wintering birds as a result of physical and noise disturbance during construction. We do not agree that operational disturbance is likely to have an insignificant effect, as it cannot be assumed that wintering birds would habituate to the significant increase in activity at the site. Disturbance would not only include

routine and background activity but would include increased shipping movement, movement of materials around the site and far greater movement of vehicles and personnel than at present.

49. While the ES rightly concludes there would be a significant impact on wintering birds as a result of the cumulative impact of habitat loss and disturbance, this has not been fully or adequately described. Loss of feeding habitat would be combined with disturbance impacts on key roost sites for species like curlew and oystercatcher, resulting in direct cumulative impacts on the requirements of these species.
50. However, other cumulative impacts are not so obvious. For example, all birds that do continue to feed on the sandflats, mussel beds and eelgrass beds would be subject to greater disturbance, over a smaller habitat area. This may result in reduced value of this habitat as a food resource.
51. The impacts of water temperature on native flora and fauna, in particular eelgrass, algae, molluscs and marine worms is uncertain but all could be negatively affected (see paragraphs 106-108 for further comments). If this is the case, the value of all parts of the SSSI as a food resource for birds could be reduced.
52. The proposed mitigation measures to minimise physical and noise disturbance would help reduce the impact but are unlikely to reduce them fully. It is not possible to conclude that they would be sufficient to prevent these impacts dissuading birds from using the site. It would be particularly important to ensure that suitable roost sites remain, to enable birds to continue to make use of the whole site throughout the winter. Appendix 4.3 proposes to create new artificial roost sites. However, no map is provided of potential roost locations and development activity so it is not possible to tell whether these would mitigate for loss of roost sites for the full range of species affected or whether they would be at suitable locations to remain undisturbed. Timing works to avoid impacts would also be difficult in a site with both breeding and wintering bird interest.
53. The applicant is not able to offer any meaningful mitigation for the loss of habitat for birds. The proposed compensatory habitat would be insignificant compared to the scale of loss and does not include provision for the range of habitats that would be lost. The ES is extremely misleading when it states that habitat impacts would be mitigated to a significant degree by habitat creation. This is not the case and impacts on regionally important bird populations would remain significant.

### **Impacts on the Portencross Coast SSSI**

54. The Portencross Coast SSSI was designated in 1971, under the National Parks & Access to the Countryside Act 1949. The site was designated because it included a "*great variety of seashore habitats with interesting plants, the best mud flats for wildfowl and waders in the Clyde*". SNH list the

aggregation of non-breeding birds as a notified feature on their Sitelink website. Designation as a SSSI indicates this site is of national importance and was selected because it represents the best example of this habitat type in the area. Despite historic habitat loss, the site retains this status and importance today. There is no other site with similar habitat of this scale on the Ayrshire coast.

55. Around one quarter of the intertidal habitat within the original SSSI site boundary has already been lost to development. This further heightens the importance of the remaining area of intertidal habitat and the need to maintain it. If this application were to be consented, an additional 10% of the original SSSI area would be lost completely, with indirect effects likely on much more (not to mention the prospect of very significant additional permanent loss of habitat should the potential developments outlined in Figure 4.3 in the ES also come forward).
56. SNH have set three management objectives for the site as follows:
- To maintain and where possible enhance the coastal habitats particularly the mudflats.
  - To maintain and conserve notable species, particularly birds and scarce plants.
  - To maintain and where possible enhance the woodland habitat.
57. The ES concludes that the development would significantly affect both the mudflats and the wintering birds. If the development were to be consented, it would therefore not be possible to achieve the first two management objectives.
58. The ES concludes that *" the loss of the productive area and habitat diversity will permanently alter the SSSI and will adversely affect its ecological integrity"* and we agree with this statement. Despite this, the ES maintains that *" the features for which the area is designated will not be significantly affected"*. We do not agree with this conclusion, as it is contradicted by the clear admission of adverse effects on ecological integrity of the SSSI, which is notified for its biological interest. The definition of integrity given in the Scottish Executive Circular of June 2000 covering the Habitats Directive is a useful and appropriate one to adopt in determining impacts on SSSI and other habitats. We note that the reporters in the Trump International Golf Links public local inquiry, also adopted this definition of integrity as being *" the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and / or the levels of populations of the species for which it was classified"* (para 4.61 of the inquiry report). We note that on this basis, the reporters found that *" the objectives of both designation [of the Foveran Links SSSI] and overall integrity would be compromised"* (para 5.10) and that a similar proportion of SSSI habitat is proposed to be affected at Hunterston. Moreover, the SNH renotification process would have to consider whether habitats of SSSI quality remain. In particular, we note the significant loss of fine sand or mud from Southannan Sands, which is not present in other parts of the SSSI, and the loss of a significant area of eelgrass bed, for which the site is nationally important.

59. In conclusion, we believe that both site integrity and the range of features for which the site is designated would be permanently impaired by direct land take required for this proposal, regardless of any additional impact of indirect operational effects (see paragraphs 106 -111).

### **Conclusions on Direct Biodiversity Impacts**

60. A minimum of 32.9 ha of intertidal and saltmarsh would be directly affected by the development with uncertain potential for up to 3.8 ha to partly recover. There would be uncertain additional effects on the surrounding habitat as a result of temperature increases and pollution. The proposed compensatory habitat creation would be insignificant and wholly inadequate compared with the scale of the loss.
61. Breeding birds would be significantly affected in the terrestrial areas of the site, as a result of habitat loss. This would be unacceptable.
62. Wintering birds of regional importance would be significantly affected by loss of feeding habitat, loss of roost sites, disturbance and complicated cumulative effects including the impacts of increased water temperature and pollution on food resources. The applicant is not proposing to mitigate for these impacts, which is wholly unacceptable.
63. The development would result in an unacceptable significant adverse impact on the integrity and qualifying features of the Portencross Coast SSSS.

### **Climate Impacts**

#### **Significance of Climate Change for Wildlife**

64. RSPB Scotland recognises the scale and urgency of the climate change problem, and are mobilising our own resources as an organisation, and the talents, energy and efforts of our membership, to help address it.
65. The scientific consensus behind human-induced climate change and the dire implications for our natural environment, if we do not respond, are overwhelming. A rise of 2°C would be at least equivalent to the warmest global climate conditions of the last 2 million years, while a rise of 3.5°C or more might be unparalleled for as many as 10 million years. The significance of this is that most of the world's species have evolved in a much cooler global climate than the one we now face. Studies predict that by 2050, a third of all land-based species could be on the pathway to extinction under a 'business as usual' emissions scenario.

66. According to the Inter-governmental Panel on Climate Change (IPCC), if no action is taken to stem climate change we may see a rise in average global temperatures of up to 5.8°C in this century. This would cause havoc to natural systems and humankind's economic, political and social systems may be unable to cope.
67. The RSPB and Durham University have produced a Climatic Atlas of European Breeding Birds<sup>3</sup>. The Atlas predicts that without vigorous and immediate action to reduce climate change, the potential future range of the average European bird species will shift by nearly 550 km north-east by the end of this century and will reduce in size by a fifth. The predictions assume a 3°C warming scenario. For some species, the potential future range does not overlap with the current range at all and in some cases, suitable habitat may not exist within the predicted suitable climatic range. The atlas shows a 3°C average temperature rise risks catastrophic impacts on bird life.
68. The most recent IPCC Assessment Report on Mitigation concludes that an 80% reduction in emissions of green house gases by developed countries will be required by 2050, to give us a reasonable chance of staying below a 2°C global temperature increase.
69. RSPB Scotland therefore welcomes the ambitious targets set by Scottish Government in the Climate Change (Scotland) Act 2010 for an 80% reduction in greenhouse gas emission from 1990 levels by 2050 and a 42% reduction in emissions by 2020. We recognise the significant challenge to meet these targets. We therefore welcome the Scottish Government target to provide for 50% of Scottish electricity demand from renewables by 2020 and to encourage reductions in energy demand.

### **Significance of Climate Impacts of Hunterston Power Station**

70. The ES does not present a clear analysis of the increase in carbon emissions that would result from operation of the proposed Hunterston power station. It is particularly difficult to understand the scale of new emissions that would result, given the fact that there is no certainty over the proportion of biomass that would be burnt, there is no knowledge of the load at which the power station would be operating and there is no certainty over when or if CCS would be fitted to the full plant capacity.
71. As the following is not included in the ES, a full assessment of potential emissions from the development is not possible:
- Assessment of emissions from the plant with maximum biomass (14%), no biomass and with an intermediate level of biomass. This would allow the potential role of biomass in reducing

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<sup>3</sup> <http://www.rspb.org.uk/news/details.asp?id=tcm:9-180304>

emissions to be understood. This assessment should be presented for operation under both a 300MW CCS and full CCS scenario and include for full carbon balance calculations for biomass production and transport.

- Assessment of the plant's cumulative emissions to 2025 both with and without a full CCS retrofit, as this would allow a more robust assessment of the total (and cumulative) emissions that may result if the proposal were to be consented.

72. The assessment of emissions within the ES excludes emissions from construction of the plant and extraction and transportation of coal and biomass. While it is not possible to quantify all of these sources of emissions, it should be noted that the emissions assessment therefore provides a lower figure than would occur in reality.
73. The ES states that with full CCS and full load, the plant would emit 42 Mt of CO<sub>2</sub> over its 40 year lifetime. However, full CCS would not be in place over 40 years of operation and the most optimistic scenario appears to be installation of full CCS in 2025. If the plant operated with demonstration CCS until 2025 and full CCS for the remainder of the plant's lifetime, the total emissions over 40 years would increase to over 100 Mt, based on the values provided in the ES.
74. However, as there is currently no mechanism for decision makers to ensure that full CCS will be fitted in 2025, this application must be considered on the basis that CCS would remain at demonstration scale for the remainder of the plant's operational life. Emissions would therefore be over 300 Mt CO<sub>2</sub> over 40 years.
75. Scotland's annual emissions in 2007 were 56.9 Mt CO<sub>2</sub> and a target has been set by Scottish Government to reduce this to 43.4 Mt CO<sub>2</sub><sup>4</sup> by 2017 (when the applicant intends the plant to be commissioned). The emissions from Hunterston (with demonstration CCS) would be 8.34 Mt CO<sub>2</sub> per year. This is an increase equivalent to almost a fifth of Scotland's target emissions for 2017, making a mockery of the ambitious targets set by the Climate Change (Scotland) Act, for emissions reductions.
76. The ES states that "*the proposed power station will export all its electricity to the grid, therefore emissions should be considered in a UK wide context*". This is not correct as Scottish emissions targets include those resulting from power generation in Scotland. The emissions from this plant would therefore need to be considered firstly in the context of Scotland's ambitious and welcome targets for emissions reductions. Even when considered in a UK context, the proposal represents an unacceptable increase in carbon intensity of the UK grid.

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<sup>4</sup> UK Committee on Climate Change report to Scottish Ministers (2010) Scotland's path to a low-carbon economy



77. The ES attempts to demonstrate that the proposed power station would result in 'carbon savings' by comparing emissions from operation of Hunterston with full CCS to a gas fired power station. It states that "*compared to CCGT of same capacity, Hunterston would deliver a total saving of 25.6 Mt CO<sub>2</sub> to 2050.*" As Hunterston will not replace capacity from existing gas fired plants, this is a particularly misleading way of presenting what would, in fact, be a large increase in emissions resulting from the operation of an entirely new power station. In addition, and as discussed above, there is no guarantee that this proposed plant would ever have full CCS installed. In fact, in the initial years of operation, with only partial CCS, Hunterston would be more carbon intensive than an efficient gas fired power station without any CCS but which makes use of waste heat and could have an emission performance below 0.3kg/kWh<sup>5</sup>.
78. The comparison made in the ES with a gas-fired power station is made on the basis that the gas plant operates without CCS. However, a recent announcement<sup>6</sup> shows that CCS could be demonstrated on an existing gas fired power station in Scotland, which would result in real emissions saving through CCS retrofitting.
79. Given that Scotland's Climate Change Adaptation Framework recognises the value of intertidal and coastal habitats in contributing to climate change adaptation, it would also seem imprudent for Scottish Ministers to give permission to a development that destroys such an important area of intertidal habitat.

### **Carbon Capture Capability of Hunterston Power Station**

80. We have significant concerns regarding the CCS operating regime proposed for Hunterston. RSPB Scotland along with other environmental organisations including Friends of the Earth Scotland and WWF Scotland, have commissioned specialist research on this topic. The research will aim to address uncertainties regarding the emissions resulting from the proposed Hunterston power station within a Scottish context, examining in detail the possible emissions scenarios with partial CCS, full CCS and various levels of biomass co-firing. The research will cover the period from the first day of operation until 2025, when a full CCS retrofit may be required, and for the lifetime of the plant. The results of this research will be submitted to the Scottish Government when concluded and preliminary findings are presented in Annex 2 to this letter. In the interim, we are able to make the following comments on this aspect of the application.

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<sup>5</sup> [http://assets.wwf.org.uk/downloads/joint\\_public\\_ccs\\_statement\\_june\\_09.pdf](http://assets.wwf.org.uk/downloads/joint_public_ccs_statement_june_09.pdf)

<sup>6</sup> [http://www.scottish-southern.co.uk/SSEInternet/index.aspx?id=22800&TierSlicer1\\_TSMMenuTargetID=1368&TierSlicer1\\_TSMMenuTargetType=1&TierSlicer1\\_TSMMenuID=6](http://www.scottish-southern.co.uk/SSEInternet/index.aspx?id=22800&TierSlicer1_TSMMenuTargetID=1368&TierSlicer1_TSMMenuTargetType=1&TierSlicer1_TSMMenuID=6)

## Carbon Capture Ready (CCR) Capability

81. Scottish Government Guidance on Section 36 applications requires that all new power stations with electrical outputs over 300 MW and of a type covered by the Large Combustion Plant Directive (LCPD) must be CCR if they are to be consented. Applications for Section 36 consent are required to demonstrate:

- that sufficient space is available on or near the site to accommodate carbon capture equipment in the future;
- the technical feasibility of retrofitting their chosen carbon capture technology;
- that a suitable area of deep geological storage offshore exists for the storage of captured CO<sub>2</sub> from the proposed power station;
- the technical feasibility of transporting the captured CO<sub>2</sub> to the proposed storage area; and
- the likelihood that it will be economically feasible within the power station's lifetime, to link it to a full CCS chain, covering retrofitting of capture equipment, transport and storage.

Applicants must make clear in their CCR assessments which CCS retrofit, transport and storage technology options are considered the most suitable for their proposed development.

82. Furthermore, Scottish Government Guidance makes clear the whole plant must be CCR.

*“Applications for construction of new coal based stations or existing power-stations upgrading to super-critical technology, will still need to indicate their suitability in terms of carbon capture readiness as the initial requirements for CCS refer to only part of the station capacity. Over time, it is envisaged that such stations covered by this section of the guidance will be expected to fit CCS to their full capacity so an indication of CCR for the station as a whole will be required.”*

83. The current application fails to satisfy these clear requirements on a number of counts:

- Technical feasibility of CCS on this scale has never been tested and the applicant is unable to provide evidence that CCS is feasible on the scale required for the whole plant
- The application seeks consent for construction of the power station with an incomplete CCS chain, including reasonable certainty as to how the CO<sub>2</sub> would be transported and where it is to be stored
- The economic assessment of implementing CCS at this scale shows a large degree of uncertainty and concludes that CCS may not be economically viable until as late as 2035, depending on the costs of CCS and EU Allowances

- The CCS Assessment states that research into suitable areas of storage for captured CO<sub>2</sub> has identified preferred storage locations at Liverpool Bay and Morecambe Bay but limited evidence of technical suitability or availability for this use is provided
- The CCS Assessment states there is significant over capacity for Hunterston's CO<sub>2</sub> storage needs in the East Irish Sea Gas Fields. However, this relies on the availability of the largest field (Morecambe Bay), which holds the majority of capacity. If only the Liverpool Bay fields prove technically or economically feasible, there will not be capacity for the maximum storage needs for Hunterston
- It is also unclear what level of competition there might be from other potential users of this storage capacity. Given that there are some significant CO<sub>2</sub> emitters closer to these storage sites than Hunterston, this could be a serious issue
- Figure 5.1 of the CCS Assessment identifies possible CO<sub>2</sub> pipeline routes but technical feasibility of using these routes is not tested
- The application does not provide clear conclusions on what technology is most suited to this development. For example, the ES describes possible routes for an offshore pipeline but states that shipping CO<sub>2</sub> has not been ruled out. The CCS Design Concept also describes several potential CO<sub>2</sub> capture technologies but is not able to give certainty on which is most suited to the development

84. As part of the assessment of suitability of CO<sub>2</sub> transport and storage facilities, it is important to consider the potential environmental impact of the proposed technology. The suggested pipeline routes run close to the Northern Ireland coastline and there appears to be no assessment of the potential environmental impacts. The additional environmental impact of the pipeline, which would need to be in place from the first day of operation, is not considered within the ES. The full environmental impact of the development is therefore not assessed.

85. We note that the CCR Assessment states that if the eventual choice of technology should require additional land, "*APL will also have access to further land owned by Clydeport within the landholding of Hunterston Terminal, which currently lies outside the boundary of the proposed power station*". This is completely unacceptable. The full extent of the development must be clearly established before any consent is considered. This possible requirement for additional land appears to be supported by the findings of the Crichton Carbon Centre, who have reported to North Ayrshire Council that "*the application is lacking with regard to the allocated space requirements for CCR*"<sup>7</sup>. We would be extremely concerned if this reference were to imply any additional loss of intertidal habitat would be required and RSPB Scotland would vigorously oppose any further damage to the SSSI.

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<sup>7</sup> Report to North Ayrshire Council Special Committee Meeting, 18 August 2010

86. For these reasons, the application does not demonstrate a fully feasible CCS chain and therefore does not comply with Scottish Government requirements.

### Carbon Capture and Storage (CCS) Capability

87. Scottish Government guidance makes clear that any application for a new coal plant in Scotland will need to demonstrate CCS on a minimum of 300 MW (net) of capacity from its first day of operation.

88. We are extremely concerned that there is a fundamental uncertainty over whether CCS technology for 300 MW generating capacity is included in the application. Section 1.3.4 of the ES states "*The power station has been designed to be Carbon Capture Ready but APL are not applying for the technology design of the CCS infrastructure within this application. Planning permission for around 25% of the capacity of this infrastructure (around 400 MW equivalent net CO<sub>2</sub> capture) **will be sought as part of a future Section 36 CCS submission to Scottish Ministers** (our emphasis), if this Section 36 submission for the power station is successful.*" This contradicts section 3.1 of the supporting CCR Assessment document, which assumes that "*planning consent for around 25% of the capacity of this infrastructure (327MW equivalent net CO<sub>2</sub> capture) is being **sought as part of the Section 36 submission** (our emphasis) for the proposed power station to Scottish Ministers*". We hope this will be clarified by the developers as soon as possible.

89. In addition to uncertainty over the intention to include CCS, the application raises serious concerns over the ability of the applicant to install and operate the required technology by day one of operation. The supporting document CCS Design Concept clearly states that "*the calculations presented in this report are largely founded on initial engagements with a number of suppliers*", "*there is no experience in the operation of these technologies at commercial scale*" and "*the calculations presented in this report are based on generic technology configurations*". This document does not provide any confidence in the ability of APL to install the required technology. Although various CCS technologies are described, the applicant cannot provide evidence that these will be feasible and effective at this scale. It seems likely that this supporting document has been produced in response to the announcement of Scottish Government policy on CCS in November 2009 and has not been an integral part of the design process for the development.

90. This is a point of fundamental importance and the application could not be considered for approval unless it includes provision of operational CCS for a minimum of 300 MW operating capacity from day one. Decision makers must have certainty that the applicant would be able to operate this technology and store the carbon dioxide. It is our view that this certainty is not provided by the current application.

91. While we agree that demonstration CCS is required in Scotland, this should be trialled on existing power stations, where success on any scale would result in a decrease in emissions. Even if APL could successfully develop this unproven technology to install it at this scale, the remainder of the operating capacity of the plant (c. 1500 MW) would initially be operating with no carbon capture, resulting in a significant new source of emissions.
92. Scottish Government policy states that "*it is the Government's expectation that new conventional coal-fired generating stations will retrofit CCS to their full capacity by 2025*" following a review of technical and economic feasibility. Scottish Ministers have stated<sup>8</sup> "*if CCS is not seen as technically or financially viable at some stage in the future then alternatives will be considered based around the Emissions Trading Scheme, including consideration of an Emissions Performance Standard*".
93. Assessment of emissions in the application assumes that CCS will be fitted to the whole plant by 2025. However, there is no mechanism to ensure this would happen and as the technology has not yet been tested, the possibility remains that the Scottish Government review could result in the applicant being able to continue operating without full CCS, resulting in unacceptable increases in emissions. Incorporation within the Emissions Trading Scheme would result in a consent for this project resulting in a heavy burden being placed elsewhere to meet Scotland's emission reduction targets.

#### Use of Waste Heat

94. While CHP or use of waste heat does not inherently reduce emissions, it does increase the efficiency of the use of thermal power stations. Therefore, it is very disappointing that use of waste heat is not being proposed at this site. With Hunterston having an estimated plant efficiency of between 35% and 45%<sup>9</sup>, it seems sensible that waste heat is fully utilised to improve the overall plant efficiency.
95. We note that an assessment of opportunities for supply of waste heat has been undertaken as part of the application, as required by Scottish Government Policy on Thermal Energy<sup>10</sup> and the National Planning Framework 2. However, we do not consider that this study has fully assessed the viability of the proposals and does not fully justify the decision not to utilise waste heat.
96. The Scottish Government's Thermal Energy Guidance requires developers to consider the utilisation of heat in deciding the most suitable location for a plant. The assessment carried out for this proposal concludes that there is demand for heat within the area and that from a technical

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<sup>8</sup> <http://www.scottish.parliament.uk/business/pqa/wa-09/wa1109.htm>

<sup>9</sup> Based upon calculations by Element Energy Consultants.

<sup>10</sup> Scottish Government (2010) Thermal Power Stations in Scotland: Guidance and Information on Section 36 of the Electricity Act 1989 under which Scottish Ministers determine consents relating to thermal power stations. March 2010.

perspective, the proposed power station has been designed such that heat provision is technically feasible. It is therefore disappointing that the application does not include proposals for use of waste heat. In this instance, the thermal energy guidance states that a full assessment of why heat utilisation is not feasible is required and this has not been conducted. We believe this would need to be carried out before any consideration could be given to consenting this proposal. If such an assessment concludes that utilisation of heat is not feasible on account of location, this would indicate that the location is inappropriate.

97. Although the figures for potential revenue are given, it is disappointing that details on the cost of installing this scheme are not provided, with the report only stating that "*without further analysis of such a scheme, capital costs cannot be calculated*". The assessment also concludes that the establishment of an Energy Services Company would be necessary to secure contracts in terms of heat connections and it would take several years to raise the required level of finance. The assessment simply concludes that the provision of waste heat facilities would delay the proposed timescale for the Section 36 application. We consider this conclusion to be inadequate, as a detailed cost analysis has not been completed and delay to the development is not adequate grounds on which to reject the utilisation of waste heat. In summary, the only barriers identified in the study are economic and the delivery of a heat network is technically feasible.
98. The Thermal Energy guidance also states that developers should provide an outline of the provisions that will be employed to ensure that any potential future heat demand could be met by the proposed plant. The assessment provided with the application does, however, conclude that APL may consider the future development of a heat network to serve specific new developments and we welcome this proposal. Nevertheless, the current application fails to set out how future heat demand will be met. Consent without use of waste heat would be unacceptably inefficient and as a minimum, should the proposal be consented, conditions requiring the future utilisation of waste heat should be adopted.

### Conclusions on Climate Impacts

99. The proposed development would result in a new source of carbon dioxide emissions of between 42 Mt CO<sub>2</sub> and over 300 Mt CO<sub>2</sub> over its 40 year lifetime, depending on when and if full scale CCS is implemented. The application gives no certainty on actual emissions, as the load, percentage biomass and CCS feasibility are unknown.
100. There appears to be uncertainty over the applicant's ability to operate CCS on 300 MW operating capacity from day one, although this is required to comply with Scottish Government guidance. There is even uncertainty over whether the demonstration scale CCS unit is included within this application.

101. Full scale CCS is not included within this application, despite the emissions being presented as if full scale CCS is to be installed from day one. The plant will not replace an existing gas fired plant and will therefore not result in emissions savings. Both are inferred in the ES, resulting in a very misleading assessment of climate impact.
102. The ability to install and operate full scale CCS has not been proven and the CCS chain has not been demonstrated to be fully feasible as storage and transport options have not been tested. The environmental impacts of these options have not been assessed.
103. There is no mechanism currently in place to require full CCS to be installed by 2025. It is possible that a CCS review by 2018 may conclude the technology is not technically or economically feasible at this scale. In assessing impacts, it must therefore be assumed that this plant could be built and full CCS never implemented. This would result in the unnecessary construction of a largely unabated power station and significant emissions increases, contrary to the Scottish targets for emissions reduction. The plant is proposed to operate until 2057. The potential impacts of the proposal must be considered based on this operating scenario.
104. It is unacceptably inefficient to propose this plant without use of waste heat. The Scottish Government's Thermal Energy Guidance requires developers to consider the utilisation of heat in relation to the location of the plant. The applicant's conclusion, that waste heat cannot be used for economic reasons, is not acceptable.

## **Uncertain Environmental Impacts**

105. In addition to the principle impacts directly on biodiversity and through climate change emissions, the proposal would result in several other impacts on the environment. These raise significant concerns and have not been adequately assessed within the application. It will not be possible to make a sound decision on the application, in consideration of the full environmental impacts, until further information and assessment is provided on the following topics.

## **Thermal Pollution and Implications for Invasive Species**

### **Impacts on Native Invertebrate Fauna**

106. The ES (16.8.64) states that: "*Under the conditions modelled the natural background (modelled at 10°C) will be exceeded by up to 14°C on Southannan Sands and 8°C over Hunterston Sands. The results also indicate that the warm conditions will remain for significant periods of time.*" We are concerned that no spatial modelling of the area affected is provided, making it impossible to judge the scale of the

impact. The effects of prevailing winds and currents may not have been fully considered, as these could potentially exacerbate the effects on Southannan Sands by forcing warm water into the bay. Modelling of the extent of the impacts must be provided by the applicant.

107. The effects of this temperature increase are difficult to predict. The conclusion that " *the thermal discharge is likely to lead to a thermally adapted community with cold water species such as *Arenicola marina* being disadvantaged*" is overly simplistic. Lugworm (*Arenicola*) is just one species likely to be directly affected, as it requires low winter temperatures to reproduce. However, complex interactions between water temperature, physiology, breeding biology and ecology may result in negative effects on species that are reported in the ES as responding positively to warmer water. Long-term studies at Hunterston nuclear power station cooling water outlet and Kaimies Bay on Cumbrae have demonstrated, for example, that higher metabolic rates occurred in the bivalve *Angulus tenuis* in warmer temperatures. Although this allowed *Angula tenuis* to gain body weight more quickly when its phytoplankton food was plentiful in summer, it also resulted in lower body weight when food was scarce in winter. In addition, lifespan was shorter in the warmed site and therefore the maximum size reached was smaller than the naturally cooler site (pers comm. Dr P Barnett).
108. Birds such as oystercatcher, curlew, redshank, shelduck and eider that feed on Hunterston and Southannan Sands prey on a range of molluscs, crustaceans and marine worms. Prey species include *Angulus tenuis*, *Arenicola marina* and mussels (*Mytilus edulis*). Water temperature is known to have significant effects on mussels, with increased temperatures affecting reproduction, metabolism and sensitivity to parasites. We are concerned that changes to the abundance, size or ecology of invertebrate fauna may have negative impacts on wintering birds, rendering the intertidal habitat that remains after construction less valuable than before. Effects on food resources do not appear to have been considered in the assessment of impacts on wintering birds.

### Impacts on Invasive Species

109. Water temperature is known to be a key factor in facilitating the establishment and survival of non-native marine invertebrates generally. The increase in water temperatures around the proposed power station could potentially encourage the spread of non-native species within the area.
110. One species of particular concern is the carpet sea squirt *Didemnum vexillum*. In several coastal areas around the world *Didemnum* has been introduced as a non-native species. Where local conditions facilitate establishment and spread, it has had serious ecological and economic consequences. The first record of this species in Scotland was reported at Largs marina in January 2010. The species is likely to benefit from both increased water temperatures and the increase in artificial structures at Hunterston. Research has shown that recruitment in non-native *Didemnum*



populations is positively correlated with water temperature<sup>13</sup> and it therefore seems likely that warming will facilitate the establishment and spread of this non-native species.

111. The ES reports that *Sargassum muticum* (Japanese wire weed) was common and in places dominant. This non native seaweed has a fast growth rate and prefers warm waters. This species competes with native seagrasses and could therefore be a particular problem at Hunterston where preservation of the remaining *Zostera noltii* beds could be threatened. It benefits from disturbed substrate and is therefore especially likely to colonise in areas affected by the construction and infill in Southannan Sands and may pose a threat to the proposed habitat recreation of *Zostera noltii* beds at Hunterston Sands.

### Water Pollution and Impacts on Ecological Status

112. The development would require extensive use of chemicals in the operation process and the potential for accidental pollution incidents and serious negative impacts on native flora and fauna must be fully considered.

113. We are also concerned that the routine use of biocides to prevent fouling of the water intake receives very little assessment within the ES. It does not appear that a particular biocide has been identified but we assume that chlorine is likely to be used. The effects of this chemical on native fauna within the channel does not appear to have been fully assessed.

114. The proposed development is located within the Largs Channel (Fairlie Roads) coastal water body<sup>14</sup>, which is currently classified as being in good ecological status under the Water Framework Directive (WFD). It is not clear whether potential impacts on the hydromorphology and ecological quality elements (such as benthic invertebrates) have been assessed and taken into account to ensure that the development does not cause deterioration to the status of this water body, either through the construction of the site and/or its operation. Details of this should be provided in the ES.

115. If the construction and/ or operation of the development would cause deterioration in status, then Article 4.7 of the WFD states that the competent authority must demonstrate that all of the following conditions are met:

- all practicable steps are taken to mitigate the adverse impact on the status of the body of water;

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<sup>13</sup> Auker, L. A., and Oviatt, C. A. 2008. Factors influencing the recruitment and abundance of *Didemnum* in Narragansett Bay, Rhode Island. – ICES Journal of Marine Science, 65: 765–769.

<sup>14</sup> <http://apps.sepa.org.uk/rbmp/pdf/200026.pdf>

- the reasons for those modifications or alterations are specifically set out and explained in the river basin management plan required under Article 13 and the objectives are reviewed every six years;
- the reasons for those modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in paragraph 1 are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development, and
- the beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.

116. This information is not presented within the ES, making it unclear whether construction or operation of the proposed development would result in breach of the WFD.

117. Scottish Ministers and responsible authorities have a duty under the Water Environment and Water Services (Scotland) Act 2003, to exercise their functions so as to secure compliance with the requirements of the Water Framework Directive (2000/60/EC). In doing so, they must act in the way best calculated to contribute to the achievement of sustainable development.

118. The Largs Channel coastal water body contains two sites that are designated under the Bathing Waters Directive 2006/7/EC (Largs and Millport) and has a nearby site that is designated under the Shellfish Waters Directive 2006/113/EC (Fairlie). It is unclear whether the construction or operation of the proposed development would result in site deterioration and/ or failure to meet the environmental quality standards associated with those Directives.

### **Impacts of Pollution on the Renfrewshire Heights SSSI and SPA**

119. No attempt is made in the ES to assess the likelihood or significance of any impact due to the operation of the power station (such as from emissions) on the Renfrewshire Heights Special Protection Area (SPA), or its underpinning SSSI.

### **Ash Production**

120. We note that the ES indicates annual production of 0.5 million tonnes of fly-ash and 0.25 million tonnes of gypsum. As we understand it, this would represent increases of more than 10% and just under 20% respectively over current UK levels of production of both power station by-products.

121. The marketability of these by-products from a new power station at Hunterston would clearly depend largely on overall demand by the construction materials industry. We are not able to

comment on this in detail but note that this would represent a significant increase in the UK supply of both by-products and that currently around half of all fly-ash produced in the UK is land-filled. The ES does not assess the environmental impacts of alternative disposal locations, should no market be found.

## Impacts of Biomass Production

122. The proposed power station would burn up to 14% biomass, which is presented as benefiting the environment, through reducing carbon emissions from the process. However, it should be noted that it has not been possible for us to fully assess the carbon emissions resulting from the production or importing of biomass as the relevant information has not been provided.
123. We are disappointed that APL have not followed good practice and assessed the sustainability of the use of biomass fuel. Not only should this include a full assessment of the impacts of fuel type and source on biodiversity, it should also include a detailed carbon balance for the proposal, including for different biomass use scenarios. This should also provide a robust assessment of the change in greenhouse gas emissions that the use of biomass is likely to make. This should be achieved by carrying out a full life-cycle analysis of the woodchip production process, including the carbon emissions produced by land clearance, forestry cultivation and the transportation of feedstock to Hunterston, as well as the plant's operation itself. As the precise proportion of biomass remains uncertain at this stage, it would be useful to provide carbon balances for a range of different potential scenarios.
124. In addition, we note that the Scottish Government Thermal Energy Guidance recommends that, on efficiency grounds, biomass should be utilised for heat-only or in combined heat and power plants. However, as discussed above, this application does not include provision for the use of waste heat and the use of biomass as proposed would therefore be very inefficient.
125. There is significant existing demand in Scotland and particularly South West Scotland, for biomass from the Lockerbie biomass plant, UPM Caledonian Paper factory at Irvine and Egger Barony panelboard factory at Auchinleck. This demand is likely to increase in the future, as indicated by the current Section 36 application for a 100 MW biomass power station at Dundee Port and further live proposals for large-scale biomass power stations at Leith, Grangemouth and Rosyth. It is therefore very unlikely that it would be possible to source sufficient biomass for the proposed plant from Scotland alone. This is supported by a recent study published by Guy Watt of John Clegg Consulting on behalf of ConFor, UKFPA & WPIF. This study concludes that Scotland will increasingly rely on imports of wood fibre as demand for biomass increases.
126. Forestry biomass production should be carefully located, designed and managed to ensure that important wildlife habitats, species and sites are not harmed. This should apply to imported

biomass, as well as Scottish biomass. In order to reduce the biodiversity impacts of biomass burning, heat and energy generators should use biomass from known traceable sources, certified against credible environmental standards, such as the Forest Stewardship Council (FSC). No assessment appears to have been made of the potential biodiversity impacts of the proposals as a result of the increased demand for biomass and no detail on the type and source of biomass fuel that would be used is provided within the application. It is very disappointing that no commitment has been made to source fuel from certified sources. We would, at the very least, expect a commitment to ensure that that all forest-derived fuels are certified by internationally accepted sustainability certification systems such as the FSC. In order to ensure that all the likely significant environmental effects of this proposal have been assessed, it will be necessary for the applicant to provide further information on their intentions regarding biomass use, sourcing and production.

### **Coal Production**

127. The proposed development would burn a maximum of 4.6 million tonnes of coal a year. The ES states sources of coal would include South Africa, Columbia, Russia and the USA. It is not possible to predict where coal would be sourced over the 40 year operational lifetime of the plant or what the environmental impacts of its extraction would be. However, coal production can have very significant environmental impacts, which have not been considered within the ES.

### **Planning Context**

128. This application is for an electricity generating station of over 50 MW in capacity. It will therefore be considered by Scottish Ministers as an application under section 36 of the Electricity Act 1989 not, as suggested in the opening paragraph of the applicant's planning policy statement, as a planning application.

129. However, a consent under section 36 would also grant deemed planning consent and current planning policy will be a significant material consideration in the determination of the section 36 application. North Ayrshire Council, as the local planning authority, is a statutory consultee. The view of the Council will be a significant material consideration when Ministers make their decision on the application. In addition, if North Ayrshire Council decides to object to the proposal, and does not subsequently withdraw that objection or if the objection cannot be dealt with through condition, Scottish Ministers must call a public local inquiry (PLI). A PLI would allow thorough scrutiny of the proposal in a public forum, giving the developer, supporters and opponents of the proposal an opportunity to put forward their arguments and scrutinise the arguments of others. Given the significant level of concern and opposition to the proposal

amongst people locally and nationally, we believe there should be a public local inquiry into the proposals for Hunterston.

### **National Policy Context**

130. There are two key pieces of national planning policy that will be a material consideration in the determination of this application: The National Planning Framework (NPF2) and; Scottish Planning Policy (SPP).
131. For the reasons described in paragraphs 4-12 above, we believe that all parties should not consider the need for this development established through inclusion in NPF2. Considering all relevant issues, including the need for the development, would prevent the need to revisit the application should the current judicial review of the national planning framework be successful. However, the majority of the policy background established by NPF2 remains relevant and, in many aspects, the policy provided by NPF2 is contradictory to the promotion of a coal plant at Hunterston.
132. Paragraph 15 of NPF2 explains that the Scottish Government is committed to sustainable development and that there is a statutory requirement for the NPF to contribute to sustainable development, which has social, economic and environmental dimensions. For the reasons outlined in this annex, it is clear that this development would not contribute to sustainable development other than through some limited economic benefits.
133. Paragraphs 16-20 of NPF2 highlight the potential implications of climate change and make it clear that substantial reductions in greenhouse gas emissions will be necessary. Clearly, the construction and operation of a new fossil fuel power plant, with only partial carbon capture, would result in increased emissions for Scotland. This could only be compatible with the need for reductions if there was a guarantee that it would directly result in greater emissions reductions elsewhere, for example if the new plant was a direct replacement of an existing less efficient power station. There are no such guarantees with this proposal, so it must be assumed that this development would result in significant additional emissions.
134. Paragraph 25 of NPF2 states *“Tackling climate change and reducing dependence on finite fossil fuels are two of the major global challenges of our time”*. RSPB Scotland fully supports this statement, however it is difficult to see how these proposals would allow us to meet these challenges.
135. Paragraph 49 of NPF2 states: *“The planning system has an important role to play in improving the environment, for example by strengthening green infrastructure, safeguarding and enhancing urban and rural biodiversity, and contributing to the improvement of water, air and soil quality.”* We believe that

the current proposals for Hunterston are exactly the sort of development that the planning system needs to protect and safeguard areas of biodiversity importance from.

136. Paragraphs 101 and 102 of NPF2 explain how important the marine environment is to Scotland. Paragraph 101 states: *“Our marine and coastal environment is a unique asset which helps to define Scotland’s character and supports a wide range of economic activities, including fishing, aquaculture, energy production and tourism. It also supports internationally important seabird and marine mammal populations and rare seabed ecosystems”*. Paragraph 102 states: *“The planning system should help to ensure that marine resources are developed sustainably, with development taking account of effects on environmental resources, the capacity of marine and coastal areas, with adverse effects minimised and mitigated.”* While the proposed development would exploit its coastal location for economic benefit, it is clear from the issues raised in this annex that there has been minimal consideration of the adverse impacts the development would have on these other special qualities of the coastal and marine environment. The mitigation proposed for these adverse impacts is also wholly inadequate.
137. Paragraph 105 of NPF2 lists and describes the role of national developments. It states *“Given the Government’s climate change targets, it will be important to ensure that they are designed to minimise their carbon impacts.”* It also states that *“Mitigation or compensation measures may be needed to counteract any adverse effects on emissions”*. The limited demonstration CCS that would be required from day one of operation would mitigate carbon emissions to a small extent. However, this would clearly be inadequate to mitigate the overall adverse effects of the emissions.
138. Paragraph 152 of NPF2 identifies that coal based electricity generation can continue to contribute to Scotland’s energy mix and identifies Hunterston as having *“capacity to accommodate a major new clean coal fired power station”*. RSPB Scotland would agree that coal based generation is likely to continue to contribute to electricity generation, at least in the short term. However, as described above, research<sup>15</sup> has shown that coal based generation could be phased out by 2030 and there is certainly no need for new thermal plant to meet Scotland’s energy needs. Efforts would be better focused on reducing emissions from the existing portfolio of high greenhouse gas emitting power stations, rather than adding a new major emitter at Hunterston.
139. Scottish Planning Policy (SPP) was produced in February 2010. RSPB Scotland was heavily involved in the drafting stages of this new style planning document. Overall, we believe the SPP sets out a useful framework to guide policy and decisions on land use planning matters across Scotland.
140. The developer’s planning policy statement describes the SPP as *“a policy statement that sets out the purpose of the planning system in achieving the Government’s central purpose sustainable economic*

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<sup>15</sup> [www.rspb.org.uk/images/PowerofScotlandRenewed\\_tcm9-222405.pdf](http://www.rspb.org.uk/images/PowerofScotlandRenewed_tcm9-222405.pdf)

*growth.” Paragraph 36 of the SPP itself states “Sustainable economic growth means building a dynamic and growing economy that will provide prosperity and opportunities for all, while respecting the limits of our environment in order to ensure that future generations can enjoy a better quality of life too.” This proposed development, which would permanently destroy a large part of a nationally important site for wildlife and significantly increase emissions of climate change causing greenhouse gases, would clearly not be “respecting the limits of our environment in order to ensure that future generations can enjoy a better quality of life”.*

141. Paragraph 42 of the SPP makes it clear that the need to mitigate the causes of climate change should be taken into account in all decisions throughout the planning system. The adverse impacts of this proposal on climate change will therefore be a material consideration that will need to be taken into account in reaching a decision on the application. If this development were to be approved, the adverse implications of this development for climate change would need to be clearly outweighed by other material considerations that would weigh in favour of the development. We do not believe there are any other material considerations that would outweigh these adverse climate change impacts.
142. Paragraphs 137 and 138 of the SPP set out national planning policy on nationally designated sites. They make clear that development that would affect a SSSI should only be permitted where:
- It will not adversely affect the integrity of the area or the qualities for which it has been designated, or
  - Any such adverse effects are clearly outweighed by social, environmental or economic benefits of national importance
143. The proposed development would clearly adversely affect the qualities for which the SSSI has been designated. The decision maker must therefore consider whether these adverse effects are clearly outweighed by social, environmental or economic benefits of national importance. The development would have adverse environmental effects and no net environmental benefits. This can therefore be discounted. In terms of national social benefits, the main potential area of benefit would be the provision of electricity. However, research shows that this power station is not essential to meet Scotland’s electricity needs and this can therefore also be discounted.
144. In terms of economic benefits, this project would have a significant capital cost. There would, no doubt, be some benefit to local communities through some job creation and incidental economic benefits during construction and operation. However, it does not seem likely that this would result in *nationally* important benefits. The first paragraph of page 1 of the developer’s planning policy statement states: *“The application seeks consent for multi-fuel power station (coal and biomass) which would utilise efficient, modern and proven technology with strict emission controls to produce up to 1,852 MW (gross output) of electric power.”* Given that the development would make use of

*“modern, efficient and proven technology”*, the potential for financial gain to Scotland as a result of exporting novel technology would presumably be limited. We therefore do not believe the application demonstrates that the development would result in economic benefits of national significance. The significant damage to the SSSI is therefore unjustified.

## Local Policy Context

145. Planning decisions must be made in accordance with the development plan unless material considerations indicate otherwise. The development plan will also be a major consideration in the determination of this application for consent under section 36 of the Electricity Act. The development plan for the Hunterston site comprises the approved Ayrshire Joint Structure Plan and the adopted North Ayrshire Local Plan.

146. The Structure Plan provides a strategic landuse context for Ayrshire and sets a shared vision for the area to 2025. One of the five key objectives of the plan is: *“To safeguard and enhance the quality of the environment.”* The current proposals would clearly be contrary to this objective and are offered no significant support from the other four objectives.

147. The first policy in the Structure Plan is STRAT1 Sustainable Development. STRAT1 states: *“The three Councils shall, as appropriate, apply the Guiding Principles of Sustainable Development in Schedule 1 to the preparation of development plans, the consideration of masterplans and to planning applications.”* Schedule 1 contains a range of relevant principles. We believe the following are of particular relevance here and illustrate that the proposed power station would be contrary to the guiding principles of the approved Structure Plan:

- Developments will require to be of good quality design and reflect where appropriate local character and materials.
- The quality of the natural and built heritage will be conserved and enhanced.
- Development will require to respect the landscape character of the area and not result in visual damage or intrusion.
- Development should not lead to unacceptable damage to priority species and habitats.
- New development will be expected to take account of the impact of climate change.
- The assets and amenity of the coast and coastal waters shall be protected from harmful developments.
- Non-renewable resources will be used prudently.
- Developers will be expected to mitigate the significant adverse impacts of their developments and to ensure the costs involved are not borne locally.



148. The strategic importance of Hunterston as a freight terminal is specifically identified in policies ECON1 and ECON2. ECON1 requires that the Councils will: *“in conjunction with other agencies, support the gateway locations as key drivers of the economy through proposals which promote the development of an international transshipment hub requiring deep water for sea freight movement at Hunterston and safeguard existing rail and road access in the vicinity against adverse development;”* ECON2 requires that the Councils safeguard, enhance and promote a range of sites for *“major industrial and business development”* including Hunterston as a “Bulk Freight Location”. The proposed development is not necessarily contrary to these policies. However, neither do the policies provide specific support for this proposed development.

149. A range of other Structure Plan policies will be relevant to the consideration of this proposal. However, we note in particular that ENV7 requires the Councils to: *“recognise international and national natural heritage designations and the statutory protection afforded to them;”* We do not believe that this proposal would be compatible with this policy, for the reasons outlined above in relation to the SSSIs policy context provided by the SPP. We also note that, surprisingly, the developer does not refer to this approved Structure Plan policy in their interpretation of the proposal’s compliance with the Structure Plan set out on page 35 of their Planning Policy Statement.

150. The adopted North Ayrshire Local Plan also contains a number of relevant policies. Policy IND4 is specifically concerned with the Hunterston site. IND4 states:

*“The site at Hunterston, identified on the Local Plan Map, safeguarded by the Secretary of State in 1971 shall be reserved for large scale trading and industrial development of significant national importance requiring deep water access which will create or protect employment and provide a major benefit to the Scottish economy, and accordingly any development:*

- (a) shall be compatible with the existing industrial development on site;*
- (b) shall safeguard the wider potential for development within the large industrial site, including the scope for attracting reinvestment in steel production;*
- (c) shall not foreclose the possibility of providing deep water access from other parts of the site;*
- (d) which involves warehousing, open storage and transshipment or other large scale trading, shall be restricted to the area north of the access road to the marine construction yard; and*
- (e) which is unrelated to the deep-water access and is considered to be otherwise acceptable, shall be located to the south of the electricity pylon lines.*

*And, any proposed development on the Hunterston safeguarded site:*

- (a) shall be constructed and operated to minimise its impact on the environment. An environmental assessment, including the requirements for appropriate provision for the restoration and after use of the site, will be required for projects which are expected to have significant environmental effect;*

- (b) shall be subject to the necessary consultation as required by the Health and Safety Executive (SDD Circular 58/92) for development within the safeguarded area around the nuclear power station; and*
- (c) development including small or phased development within the site shall require to clearly demonstrate that it is a forerunner of a large scale industrial development on the site.*

*All development proposals shall be subject to an integrated transport study as required by Policy TRA6 B."*

151. IND4 is a detailed policy, as befits forward planning for the use of such an important site. It is clear that a great deal of consideration has been given to what type of use would be appropriate and we note that while steel production, transshipment, open storage, warehousing and other large scale trading are all specifically identified in the policy, a power station development is not identified as a potential use for the site. IND4 therefore offers no specific support for a proposal of this nature. The policy also makes it clear that any proposed development *"shall be constructed and operated to minimise its impact on the environment"*. This development would result in massive local direct adverse environmental impacts and contribute to environmental damage globally through increased greenhouse gas emissions. Given the lack of specific support for a development of this description, and the fact that it would be clearly contrary to an important element of the policy, we do not believe this proposal is compatible with IND4 overall.
152. A number of other local plan policies are also relevant to this application. In particular, we note that ENV6 restates national policy on the protection of SSSIs and this proposal is therefore contrary to ENV6 for the same reasons that it is contrary to that part of the SPP. We also note that the Local Plan provides a policy on non-conforming uses, policy A1. This applies to uses which do not conform to the land use allocation in the Local Plan and A1 could therefore be considered to apply to this proposal. Policy A1 makes it clear that non-conforming uses shall not accord with the Local Plan. Exceptions have to demonstrate that:
- (a) there is a proven need for the development and a resultant economic, environmental or community benefit arising from the development;
  - (b) no suitable alternative site exists within appropriately allocated land; and
  - (c) the nature of the proposal is compatible with and sympathetic to the character of the surrounding area.
153. We note that all three of these criteria need to be met in order to justify an exception and, as discussed above, we do not believe that all these criteria are met by this development.
154. In addition to the various areas where the proposal is contrary to the development plan, we believe it is also unfortunate that the potential implications of this proposal have not been considered in detail as part of the statutory development planning process. RSPB Scotland strongly supports effective development planning, to help facilitate appropriate development

while avoiding damage to our most important places for wildlife. Notwithstanding our opposition to this proposal, we believe that the massive scale and likely wide ranging impacts of this proposal on the local and global environment, local businesses and communities warrant detailed consideration through the development planning process. At best, it would seem premature of the developer to have submitted such a significant proposal without making efforts to integrate with the development planning process, thereby allowing the Council and local communities the opportunity to consider the proposals in the context of wider aspirations for the area.

155. This proposal is not offered specific support anywhere in the development plan and is contrary to a number of specific policies in both the Structure Plan and the Local Plan. If this development were to be approved, there would need to be other material considerations that would outweigh the development plan policies. National planning policy does not provide sufficient support to override the development plan and in fact, the proposal is also contrary to some significant parts of national planning policy. As we have outlined in this response, there are many other issues that will also be material to the decision making process that indicate that this proposal should be refused consent.

## Annex 2 – provisional analysis from Element Energy regarding CO<sub>2</sub> emissions and intensity from the proposed coal plant at Hunterston

WWF Scotland, together with Friends of the Earth Scotland and RSPB Scotland have commissioned Element Energy to undertake an independent high level brief analysis of the likely potential carbon intensity and CO<sub>2</sub> emissions from plants comparable to the proposed Hunterston coal plant under different levels of CCS, drawing on published estimates for coal/CCS plant performance. A selection of the provisional analysis (**as interpreted by WWF**) is presented here:

Provisional assessment of CO<sub>2</sub> emissions from operating the proposed plant with demonstration scale CCS

There is an expectation (but no legal requirement) that CCS will be fitted to the full generating capacity of any new coal plant by 2025. However, between 2017 and the end of 2024 the proposed plant at Hunterston with only 327MW of CCS operating would still emit (according to provisional Element Energy analysis and based on eight years of operation at a load factor of 83%) **55.4-63.8MtCO<sub>2</sub>**<sup>1</sup> capturing ca. 17% of its emissions. If this is compared to emissions from an equivalent new CCGT gas plant this would lead to higher net emissions from the power sector of between **21.8 and 30.2MtCO<sub>2</sub>**.

Even if it assumed that full scale CCS is fitted to the proposed Hunterston plant at the start of 2025, the net cumulative CO<sub>2</sub> emissions that are released to the atmosphere from the plant would still, according to Element Energy's provisional analysis, exceed those from a fully unabated gas plant until around 2034 (or a few years earlier depending on the level of biomass co-firing).

If such a station continued to operate with only 327MW of CCS capacity for the whole of its 40 year life, Element Energy estimate that it may emit a net **277-319MtCO<sub>2</sub>** into the atmosphere over this period. This would lead to a net increase in emissions from the power sector of between **109 and 151MtCO<sub>2</sub>** greater than that which would be emitted from equivalent CCGT plant. Clearly if a new coal plant were built instead of commensurate investment in renewable energy the impact on overall power sector emissions would be even greater and broadly equivalent to the lifetime emissions of the plant e.g. power sector emissions could be **between 277-319MtCO<sub>2</sub>** higher in 2057.

**Table 1: CO<sub>2</sub> emissions from new unabated CCGT compared to the proposed plant at Hunterston (with demonstration scale CCS and varying levels of biomass co-firing). Assumes an average load factor of 83%.**

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<sup>1</sup> Depending on the level of biomass co-firing.

Hunterston with only CCS demo for whole plant life	8.0	319
Hunterston with only CCS demo for whole plant life and 14% biomass** by energy	6.9	277
Hunterston with only CCS demo for whole plant life and 14% biomass** by weight	7.2	289

\*\* Note - there is considerable uncertainty on life cycle CO<sub>2</sub> emissions for biomass. Use of specific values does not imply any endorsement by WWF or Element Energy.

If CCS is not fitted to the full generating capacity of the plant then only ca.17% of the lifetime CO<sub>2</sub> emissions may be captured leaving 83% pumped into the atmosphere. In the absence of any legally binding requirement for power plants to meet strict CO<sub>2</sub> emission limits now and in the 2020s, WWF consider this to be an all too plausible outcome<sup>1</sup>.

Assessment of the carbon intensity of the proposed plant with demonstration scale CCS

Under a full load operating scenario the “*Analysis of CO<sub>2</sub> Emissions from Hunterston*” report by Eunomia (which accompanies APL’s application) states that the carbon intensity of the proposed Hunterston plant with demonstration scale CCS (at 327MW) would be **0.587kgCO<sub>2</sub>/kWh**. Table 3.2 on page 6 of this report appears to imply, by its absence, that this assessment does not take into account any co-firing with biomass. In contrast to this however, provisional analysis from Element Energy, which assumes a net output of 1700MW and a load factor of 83%, estimates that the carbon intensity of the plant with only demonstration CCS and zero biomass would deliver a carbon intensity of around **0.65kgCO<sub>2</sub>/kWh**. This is clearly significantly higher than the current average carbon intensity of the electricity grid which is around **0.54kgCO<sub>2</sub>/kWh** and far in excess of where the Committee on Climate Change suggest we need to be by 2020<sup>2</sup>.

With the inclusion of 14% biomass by weight Element Energy estimate that the carbon intensity of the plant running with 327MW capture may fall to **0.59kgCO<sub>2</sub>/kWh**<sup>3</sup>. However, it is only with the inclusion of 14% biomass by energy that the carbon intensity falls (to around **0.56kgCO<sub>2</sub>/kWh**) to approximately the current carbon intensity of the grid (but importantly still far higher than the carbon intensity of a new unabated CCGT which Element Energy assess as **0.32kgCO<sub>2</sub>/kWh**). Given that APL make no specific commitment to use this amount

<sup>1</sup> [http://assets.wwf.org.uk/downloads/joint\\_public\\_ccs\\_statement\\_june\\_09.pdf](http://assets.wwf.org.uk/downloads/joint_public_ccs_statement_june_09.pdf)

<sup>2</sup> “Emissions from the power sector need to be reduced by 50% by 2020, which will require the carbon-intensity of the electricity we use to fall from 540gCO<sub>2</sub>/kWh today to less than 300gCO<sub>2</sub>/kWh in 2020” CCC, <http://www.theccc.org.uk/sectors/power>

<sup>3</sup> This assumes a constant net efficiency of 39.5% and the Biomass Energy Centre’s assumption of 15kgCO<sub>2</sub>/MWh for life cycle emissions for wood pellets. However, there is considerable uncertainty on life cycle CO<sub>2</sub> emissions for biomass. For example the Environment Agency analysis suggests it should be about 3-4 times higher than this:

<http://www.environment->

[agency.gov.uk/static/documents/Leisure/Biomass\\_carbon\\_sink\\_or\\_carbon\\_sinner\\_summary\\_report.pdf](http://www.environment-agency.gov.uk/static/documents/Leisure/Biomass_carbon_sink_or_carbon_sinner_summary_report.pdf)

Use of specific values does not imply any endorsement by Element Energy or WWF.

of biomass it is unrealistic to assume that the plant would operate at this carbon intensity for a significant proportion of the time.

### Conclusions

The proposed power station with only demonstration CCS would operate with a carbon intensity far greater than that of (i) the current average carbon intensity of the electricity grid, (ii) the carbon intensity of an equivalent new unabated CCGT, and (iii) the carbon intensity suggested by the UK Committee on Climate Change for 2020, which would be required in order to meet our ambitions to decarbonise electricity generation.

Hunterston as it is currently proposed could result in a net increase of CO<sub>2</sub> emissions from the power sector over its life of 319 MtCO<sub>2</sub>. This is equivalent to more than five times Scotland's total greenhouse gas emissions in 2007<sup>1</sup>.

Increasing the use of biomass could marginally improve emissions from the plant but only if the feedstocks used are either wastes or from forestry or energy crops that are sustainably grown. However, even with very significant biomass use, Hunterston would still result in a massive increase in greenhouse gas emissions.

Please note that the final summary report will be provided in due course.

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<sup>1</sup> <http://www.scotland.gov.uk/Publications/2009/09/07145629/1>