

# MINSMERE LEVELS STAKEHOLDERS GROUP

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Page | 1 of 17

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## **Response to the Second Stage Consultation of the Proposed Development of Sizewell C Nuclear Power Station**



Sizewell A and B from rear of sacrificial dune just topped during January 11 2017 tidal surge

### **Introduction**

This response is submitted on behalf of the Minsmere Levels Stakeholders Group (MLSG). Our terms of reference are attached as Appendix 2, but our primary objective is

*'To identify and then represent matters that are of common interest to those living and working in close proximity to the Minsmere Levels as well to others who have a concern for the future of the marshes'.*

Our response to the Stage 1 Pre-Application Consultation Environmental Report (S1ER) in February 2013 (see Appendix 1) regarding the existing groundwater environment of Sizewell Marshes and Minsmere Levels SSSI and especially the SSSI corridor between Goose Hill and the proposed Sizewell C platform (SZC) began thus:

***‘We are glad to see that the planned programme of analysis of the probable environmental impact of the development of the Sizewell C nuclear power stations will be so wide ranging and that it is recognised that a robust understanding of the complex hydrological and hydro-geological conditions is essential. (S1ER sections 4.10.1 to 4.11.21)***

It continued:

***We wish to be assured that we will have a continuing engagement with the process and receive regular reports on the progress of these studies***

We are greatly disappointed that not only has this ‘continuing engagement’ with us been almost entirely lacking, but that four years later the second stage consultation documents provide little evidence that any programme of environmental analysis has been taking place.

In May 2014 the Secretary of State responded to the company’s Environmental Scoping Report setting out the areas on which much more detailed supporting evidence was required. These were, in the main, ones already raised by MLSG at stage one relating to the impact both during the construction phase and long term on:

- The coast and shoreline to the north and south of the development
- The ground water systems within the Levels

The Environmental Scoping Report Opinion (ESRO) required the following:

- Details of the baseline conditions for the main development site and identify land that could be directly or indirectly affected by the proposed development (ESRO 2.77)
- The SoS considers that the ES should not be a series of disparate reports and stresses the importance of considering interrelationships and cumulative effects (ESRO 3.19 and Appendix 3)
- The SoS advises that the ES should be laid out clearly with a minimum amount of technical terms and should provide a clear objective and realistic description of the likely significant impacts of the proposed development. The information should be presented so as to be comprehensible to the specialist and non-specialist alike. The SoS recommends that the ES be concise with technical information placed in appendices (ESRO Appendix 3)
- Any proposed mitigation should be well documented in terms of how it will be identified and then secured (ESRO 3.22) for example habitat mitigation (ESRO 3.44)
- The impacts on Sizewell Marshes and other nearby designated sites should be carefully assessed. There is a need to consider potential related effects due to an increase in airborne pollution including fugitive dust especially during site preparation and construction (ESRO 3.76)

- Air quality and dust levels should be considered not only on site but also off-site, including along access roads, local footpaths and other PRow (ESRO 3.78)
- The SoS notes that groundwater level monitoring will continue through 2014 and additional site investigations have been initiated. (ESRO 3.93)
- The Scoping Report identifies a number of potential groundwater impacts that are correlated to surface water impacts and vice versa. The SoS advises that the inter-relationship between groundwater and surface water be presented clearly within the two proposed chapters, with appropriate cross-referencing (ESRO 3.96)
- The SoS advises that the results of the Flood Risk Assessment, in respect of groundwater as a potential pathway for discharge to surface and coastal waters, be taken into account (ESRO 3.98)
- Reference is made to control measures to mitigate for potential impacts on water quality and hydrology (ESRO 3.103)

## Consultation Process

A major weakness of the Stage 2 consultation document is that where some environmental information is provided on the possible impact on ground water and hydrology ( e.g. on the borrow pits and contractors' compounds) it is confined to that particular activity.

Given the sensitivity of the coastline both inland and seaward, we have been unimpressed at the paucity of detail regarding the possible, or probable, environmental impact provided at this second stage consultation. Such information as is provided is dispersed almost randomly throughout the main document and most difficult to access in the absence of any index and without any significant attempt at internal cross-reference.

There are general statements such as that 'this would be subject to appropriate monitoring and contingency arrangements' or that 'there is a potential for an effect on surface water flows which will need to be mitigated through detailed design'.

As we have said repeatedly since responding to the stage one consultation, we believe that the impact for the Minsmere coastal frontage, the inland drains, ground water systems and the functioning of the Minsmere sluice are of major concern, particularly during the construction phase but also during the many years that the station will be in place, both whilst operational and also subsequently in decommissioning.

Leiston Drain is shown below close to low tide during normal operation and normal winter water conditions on Minsmere Levels SSSI, south of the Minsmere New Cut, and the flow rate is almost at maximum.



Minsmere sluice from Leiston Drain 27/12/16



Leiston Drain sluice gate (left) low tide 27/12/16

## The coast and the shoreline

Changes to the off-shore sand banks and sediment transfer operates on both very long timeframes of decades to centuries but strong tides and storm surges can also have dramatic effects over much shorter time frames from days to months.

For example, over the last 250 years or so, the Dunwich and Sizewell Banks have gone from being a feature with two maxima ~5 metres below sea level with a “gap” some 8-10 metres below sea level, to becoming a long tear drop shaped bank with its maximum off Sizewell Gap and the minimum off Dunwich. In the last century this has started to reverse with clear maxima off Dunwich and Sizewell, but with the entire bank moving slightly closer to shore.

The effects of these changes with a minimum appearing once again between the Minsmere Sluice and the Sizewell Gap combined with the effects from global warming of rising seas and more frequent storm surges will be very hard to predict over the full lifetime of the three power stations that will be on the raised platform at Sizewell.

The second stage consultation documents claim minimal to no impact on the Minsmere coastal frontage, thus maintaining EDF Energy’s position of insisting that any changes in this very dynamic coastline will be down to natural processes rather than the development.

Whilst this may be true for the existing 4-5m sacrificial dune above the shingle beach, once this is breached, the new site features could considerably accelerate the natural embayment processes to the north of the site.

MLSG believe that a great deal more evidence and analysis need to be provided to support EDF’s contention of minimal impact as a result of:

- The considerable extension seaward of the 55 hectare platform (incl. sea defences) of the new station beyond the main frontage of Sizewell A and B.
  - This will be armoured with rock (lower extent of toe at 0-1m AOD but unclear in the document) and topped by a bund and, as sea level rises and the coast retreats past the seaward sand dune, will create a much more substantial hard frontage and northerly point than exists at present
- The 800 long metre jetty, of which a narrow and a wide version are illustrated, will be in place for the majority of the twelve or so years of the development phase
  - The likelihood of erosion resulting from the slowing of sediment movement is acknowledged, but no information is given as to what ‘the appropriate contingency arrangement’ might be.
  - Little is said about the impact of dredging that may be required to keep the jetty operational
  - No reference is made to the effect the jetty may have on navigation, recreational sailing or the Walberswick, Dunwich, Aldeburgh and Sizewell fishing boats.
  - No information is provided as to how the jetty and piles are to be removed at the end of their use. The 1,000 piles cannot be left to become a permanent legacy in the marine environment influencing sediment movement for decades to come.

- EDF need to specify how the piles will be fully removed or if they are to be cut below the water line provide clear evidence and mitigation for the long term effects of any such strategy
- The Beach Landing Facility (BLF) which is optionally proposed for the construction phase but also envisaged as a permanent facility during the operational phase
  - According to EDF at their consultation exhibitions, this structure will extend out to the sacrificial dune and beyond in the form of permanent piles which can be exposed later for use as the foundation of the docking structure for vessels and the landing ramp for access to the site.
  - The permanent beach landing facility and its armouring will exacerbate erosion and accelerate potential embayment to the north
  - Little is said about the added impact of dredging that may be required to keep the BLF operational.

MSLG believes this combination of hard points will put much greater pressure on the area immediately north of the SZC site in the following way;

- Changes to the off-shore Sizewell and Dunwich banks could allow more destructive waves to find their way to the northern end of the Sizewell C platform.
- On the Suffolk coast, it is well understood that hard points significantly advance the embayment process to the north of such structures. Local examples include Minsmere Sluice outfall and Walberswick/Southwold harbour entrance on the Blyth estuary
- Accelerated embayment to the north of SZC site will ultimately lead to the Minsmere and Walberswick SSSI south of the Minsmere New Cut becoming estuarine earlier
- The Sizewell C development and operation should not accelerate any natural coastal process
- There is no mention of potential mitigation to address accelerated embayment and potential encroachment of the sea into the Minsmere and Walberswick SSSI

- At the north of the site, the sacrificial dune is in far worse condition than that to the South. As the BLF extends right out to the sacrificial dune and has piles driven into the shore beyond the dune, the potential for this structure to cause accelerated embayment to the north and allow Minsmere SSSI to become saline much earlier is a real concern.



Sacrificial dune at northern extent of Sizewell B, height 5.7m AOD



Sacrificial dune from the beach at northern extent of Sizewell C with two breaches, height < 4.0m AOD



Sacrificial dune from northern extent of Sizewell C showing sand and debris from 11 Jan breach



Sacrificial dune from northern extent of Sizewell C north towards RSPB Minsmere and Dunwich Heath

- There is no mention of this possibility or of any efforts to assess the possibility of this occurring. Mitigation of such an outcome would be very difficult or impossible and the potential damage to the habitats on Minsmere Levels SSSI catastrophic.
- This concern alone raises doubts as to the wisdom and viability of the whole development at this fragile point on the coast.



Storm surge damage to sacrificial dune at northern extent of Sizewell C where the BLF will be sited

It is essential that the cumulative impact of SZC on the Minsmere Levels and Sizewell coastline, with the evidence underpinning these judgements, is set out well in advance of the Stage 3 consultation.

We wish to see a properly researched baseline map for the offshore seabed and coastal dune defences that show the variations that have been observed over the past 5-10 years based on the work that EDF and CEFAS have been conducting.

- Predictive models should be developed to explore coastal retreat without and with the construction of these permanent and temporary structures
- EDF Energy must be explicit about its planned mitigation should coastal erosion accelerate compared to the baseline of no development

Without this level of work being done and published, it is meaningless to ask for public and statutory organisations opinion on the relative merits of two jetties and the BLF. However, in the absence of this:

- We believe that given the fact that the BLF is the most prominent feature of the foreshore development, it is also the feature likely to cause the greatest acceleration of erosion at the site
- As the BLF is also proposed as a permanent structure we believe as a proposal it should be rejected for both temporary and permanent placement
- The temporary jetties are also considered as having great potential for accelerating disturbance of the natural erosion process along the coast both north and south of Sizewell
- No details are given on how the piled jetties would be removed and whether the piles would simply be cut off at the sea floor level. This needs to be clearly spelled out, as leaving any structures as significant as this in the long term could contribute to disturbance of the natural sediment and coastal erosion processes
- Whilst EDF have talked about long term monitoring it is difficult to see what mitigation is being proposed regarding any disturbances of the natural sediment and coastal erosion processes by these structures

These questions are all the more meaningless considering the options are heavily dependent upon the modal split between sea, rail and road deliveries.

Until EDF can provide the modelling information on the effects of these structures to the fragile coastline across the southern Minsmere Levels, the Sizewell A, B and C frontage and the coastal area south to Thorpeness, it is therefore not possible to provide a response that is based on proper consideration of the existing conditions and potential changes that might ensue from such constructions.

### **Ground and potable water and development site drainage**

The main area of the construction site is located within an Area of Outstanding Natural Beauty (AONB) and it is surrounded by two Sites of Special Scientific Interest, RAMSAR and a number of Special Protection Area (SPA) sites:

- 6 hectares of SSSI will be lost forever to the 55 hectare SZC station platform development
- The Aldhurst Site Habitat Creation site, whilst welcome, cannot in anyway be considered as adequate mitigation for the loss of 6 hectares of SSSI at Sizewell
  - EDF needs to find appropriate mitigation for this loss and for additional damage that will be caused to the SSSI during works to establish the SZC platform, creating a bridge across the SSSI and moving the Sizewell Drain

There is no mention in the consultation document regarding supply and usage of potable water or other abstracted water for use during the construction or onwards into operation of the site.

It has been estimated that the accommodation site alone will require 250 m<sup>3</sup> per day and no estimate or indication of the additional requirement for construction activities such as concrete batching plant are given.

In production the two power stations will need about 1,600 m<sup>3</sup> per day, although why this cannot be reduced in what should be closed loop cooling circuits is a surprise and a disappointment given the technologies available today for recycling water. The only open loop is that of sea water intake and output.

Suffolk Coastal District Council have recently approved a significant set of new housing developments in Leiston which will put added pressure on the potable water supply in the area. To have a significant short and long term addition to requirements for potable water from the local supply has to be demonstrated as both available and not detrimental to the overall water supply situation as clearly stated in EN1 5.15.3.

This is a significant omission in the Stage 2 Document provided by EDF regarding water requirements through both the development and operational phases. This is a clear and regrettable omission from both Stage 1 and Stage 2 consultations and needs to be addressed considering this area is known as one of the driest areas in the UK.

A full breakdown of water requirements for all stages of construction and operation over time must be provided at Stage 3 consultation, along with proportions that will come from direct water abstraction licenses, together with locations, and from mains water supplied by Essex and Suffolk Water..

The construction development area will consist of permeable, semi-permeable and some hard standing:

- 48 hectares are required for contractor compounds, laying down and common facilities area (e.g. concrete batching plants, green route rail head)

- 24 hectare accommodation campus for 2,400 workers will be sited immediately to the west of the development areas, outside the AONB but inside the SPA
- 19 hectare site access & entrance hub west of the AONB and outside of the SPA

Water Management Zones (WMZ) (7.5.67 and 7.8.4-5) will be used to divert and hold rainwater ‘run-off’ from the site

- There is great potential for water in the WMZs to be polluted from development site workings
  - It is essential that water reaching the surrounding SSSI is treated in an appropriate Waste Water Treatment Plant (WWTP) and free from any site pollution

EDF Energy indicate (7.5.50) it is their intention to pump both treated foul water from the accommodation site and other on-site facilities along with any ‘excess run off’, collected in WMZs, from the main construction site into the sea through a temporary discharge facility which will terminate at the same distance as the ‘fish return’ (FR) outlet ~300 metres from the shoreline

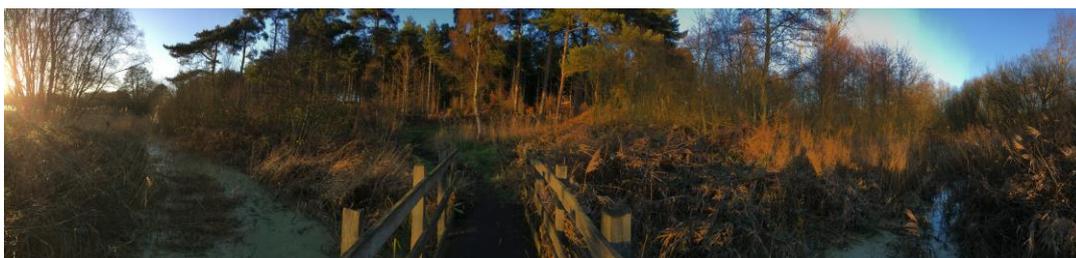
- The WWTP, temporary discharge and FR facilities will not be available for a considerable amount of time after development starts
- No indication is given about how water from the WMZs will be managed and treated prior to their availability
- A full project schedule of this development is needed to ensure that waste water and run-off from the development site is properly managed at all stages of the development

EDF offer several options for a causeway/culvert or two designs of bridge to access the SZC platform from the development site:

- The Leiston Beck and Sizewell Drain will have to be redirected to a single culvert through the causeway to access the Leiston Drain that connects this area to the Minsmere Sluice



Panorama of Sandlings Walk crossing of Sizewell Drain looking towards Leiston Beck and Goose Hill



Panorama of Sandlings Walk crossing of Leiston Beck looking towards Goose Hill

- Causeways crossing the ‘neck’ of the Sizewell Marshes and Minsmere SSSI sites will compress the underlying material and effectively block the natural hydrological flow between these two areas
- The two bridge designs will offer less disturbance to the natural hydrology and Option 3 offers the least disturbance overall and is preferred



Looking west down the existing Sandlings Walk where the proposed bridge/culvert crossing from Goose Hill to the north east corner of Sizewell C platform will be

The crossing will be raised to platform height and require considerable raising of the Goose Hill end of the structure where eventually the security gate house and car park will be sited

From all the above water management and development works, there are competing or cumulative impacts here:

- Potential blockage of the drainage corridor from Sizewell Marshes SSSI

plus either:

- a reduction in natural drainage from the land taken up by the construction site and pumping out of some of this natural rainfall replenishment of the water table and marshes leading to drying out of the habitat

or

- accelerated drainage of run-off through the WMZs into the marsh with potential rising water levels causing damage to the marsh, overloading of the Leiston Drain through the Minsmere Sluice and damage to wildlife habitats due to flooding

EDF also admit (7.5.17) that the production platform cut-off wall will potentially cause groundwater levels to rise in the Sizewell Marshes SSSI

All this combined will constitute a dramatic challenge to the hydrology of the Sizewell Marshes SSSI and Minsmere-Walberswick Heaths and Marshes SSSI. EDF needs to expand its work in this area to ensure no damage is done to the two SSSIs and the wildlife they contain:

- The natural water levels in both Sizewell Marshes and Minsmere Levels (south of Minsmere New Cut) need to be monitored and documented through at least five full annual cycles along with the flows into the Leiston Drain and through the Minsmere Sluice
- Monitoring of these areas needs to be planned for the entire development phase and onwards into the operational phase to be able to determine any deviations from the existing natural hydrology

- Mitigation needs to be planned for any deviations from the pre-development status and clear trigger points documented to ensure such mitigation is acted upon
- Mitigation has been allowed and planned for at the Aldhurst Farm Habitat Creation Project. The same should be true for this part of the project.

**At the north of the site ‘borrow pits’, spoil, sand and gravel heaps are planned:**

- 59 hectares are proposed for borrow pits and spoil management within the AONB and SPA
  - This reduces to ~35 hectares once the specific fields for the borrow pits have been selected.
  - Borrow pits will be deep excavations into the red crag secondary aquifer
  - As the borrow pits penetrate the secondary aquifer, they will need to be pumped out regularly during their open lifetime
    - One water management zone is sited to the north of the borrow pits but without any potential intervention to manage polluted water
    - Natural drainage and water flow to the north is directly to the Minsmere-Walberswick Heaths and Marshes SSSI and thus poses a significant pollution risk
  - Their use is intended to:
    - Supply sand and gravel that can be used in the construction
    - To be back-filled using excavated materials from the main platform that are unsuitable for use within the development site
    - The borrow pits will need to be at least 10 metres deep if all the estimated one million cubic metres of unsuitable excavated materials are to be buried here
      - These materials will include peat and alluvial deposits from the SSSI
      - There will be a significant amount of rejected concrete and other materials from the Sizewell B development on the proposed Sizewell C site
      - There is significant potential for the back-fill materials to introduce pollutants to the secondary aquifer and consequently the local waterways that form part of RSPB Minsmere and Minsmere-Walberswick Heaths and Marshes SSSI in the decades after the pits are filled and closed.
      - Plans need to be developed to monitor groundwater seepage from the pits once they are back-filled to ensure no pollution is caused by leachate from the buried materials
      - Plans for mitigation should any pollution be detected need to be specified in any future Development Consent Order and Environmental Statement
    - We find the borrow pits to be wholly unacceptable as a part of this development. Construction materials should be sourced from

existing sand/gravel pits and delivered by rail or by sea. Spoil should be removed from the site to a location that requires such materials, like RSPB Wallasea Island.

- The locations of fields 1 to 3 are too close to Eastbridge and Minsmere and the prospect of a crossing of the Eastbridge road from field 1 unconscionable.
  - The hedging along the Eastbridge Road is an excellent example of old hedging with larger oak trees and any damage to such an environment must be avoided.
  - Likewise Field 2 moves the site northern boundary closer to Eastbridge, effectively completes the surrounding of The Round House and must be rejected.
  - If we are forced to have any of these options, then fields 3 and 4 represent the least worst of the three options, but really no borrow pits should be allowed to be created at the development site.
- 15 Hectares of spoil heaps and sand and gravel resources
    - These heaps are to be between 20 and 35 metres high at their maximum
    - The heaps will be on site for up to 8 years in total
    - The heaps will be visible for most of the development time from Eastbridge, Minsmere and Dunwich Heath and most of the PRow that criss-cross the area to the north
    - With prevailing winds from the south west the natural travel for dust and sand pollution will be directly across Minsmere-Walberswick Heaths and Marshes SSSI and on into Minsmere Bird Reserve and onwards to National Trust Dunwich Heath property
    - There are no proposals as to how sand and dust will be contained and prevented from becoming ‘fugitive’ (ESRO 3.76)

It is essential that the cumulative impact of SZC development on the Minsmere Levels and Sizewell Marshes SSSI is set out well in advance of the Stage 3 consultation, with the evidence underpinning these judgements properly documented.

We believe it is essential that a properly researched baseline water level map for both the Sizewell marshes and the Minsmere Levels south of the Minsmere New Cut is produced. These need to show annual variations throughout the year based on at least 5 years of historic data and have comprehensive flow rates through the corridor where the Sizewell Marshes drains into the Minsmere Levels to the north of the proposed site for the SSSI crossing bridges/causeway.

We also believe it is essential that a properly researched baseline water level map for the area stretching west to east from the entrance at the B1122 to the SSSI crossing and north to south from the borrow pits to the green line rail corridor bordering the Sizewell marshes which clearly present the range of scenarios that the development site could be faced with until such time as the development site is fully restored.

Models must be developed with the Environment Agency that use the historic data referred to above and can look out into the short, medium and long term to see what changes will occur from climate change, increased rainfall, rising sea levels, and the probability that storm surges will become much more frequent over the next hundred years.

Included in these scenarios must be the modelling of how the station and its road access, would function should the Levels become estuarine and its site an island on at least three sides. SZC will remain on the site for a century or more, and it is vital the above analyses are projected over the construction, operational and decommissioning time frames.

Actual data must continue to be collected during the development, into the operational and later to the decommissioning stages of SZC which can then be compared to the predictions to ascertain whether SZC has impacted the expected behaviour of the landscape and trigger mitigation by EDF.

On the basis of these models and the potential disturbance relative to the baseline, EDF should also be explicit about their capability to mitigate should the actual changes deviate significantly from the baseline.

### **Summary**

We consider it to be essential that the data relating to all the investigations of possible environmental impact on the Minsmere coastal frontage and the inland hydrology systems should be modelled in systems that are agreed with organisations such as the Environment Agency, Marine Management Organisation and Internal Drainage Board. The outcomes should be made public at the earliest opportunity and well in advance of the Stage 3 consultation.

It would be quite unacceptable for small organisations representing the community such as Minsmere Levels Stakeholders Group to be confronted with a mass of technical detail at the last minute. The ten week consultation period of the Stage 2 consultation will be quite insufficient for us to secure the specialist advice to properly scrutinise EDF Energy's finalised Stage 3 consultation and Environmental Impact Assessment and submit an informed response.

# Appendix 1

## Minsmere Levels Stakeholder Group Stage 1 Consultation Response

1. We are glad to see that the planned programme of analysis of the probable environmental impact of the development of the Sizewell C nuclear power stations will be so wide ranging and that it is recognised that a robust understanding of the complex hydrological and hydro-geological conditions is essential. (4.10.11) **The fact that many of the proposed studies summarised in tables 4.11.2 ,4.12.2 and 4.13.2 have either not started or are in their very early stages makes it impossible for us to comment in any substance on many of the issues identified beyond agreeing that work should proceed as rapidly as possible. We wish to be assured that we will have a continuing engagement with the process and receive regular reports on their progress.** This will enable us to build up a picture of the likely effect that the complex elements of the development will have, cumulatively, on the Minsmere Levels.
2. We are most concerned about the impact over the short, medium and long term of the whole development on the outflow of inland ground water, and in particular that of the reinforcement of the station's site and the new access road. We note that it is intended that there should be very considerable areas of hard surface beside the site during the construction phase and we seriously question the need for a land take of in excess of 300 acres for the purpose of lying down. **Despite assurances given to us at a meeting with EDF officials on 17 January we continue to fear that the run off of surface water will also affect volume of the outflow into the Levels** and await the outcome of a number of studies commissioned by EDF that still have to report.
3. We note (4.10.13) that dewatering of the site will be required during the construction process. We wish to know whether it is intended that the discharge should be into the existing drainage system of the Levels or direct into the sea.
4. We wish to be fully informed of the likely impact of the development on Leiston Sewage works and its discharge into the Minsmere drainage system.
5. Factors which may affect the continued viability of the Minsmere Sluice are acknowledged in paragraphs 4.11.19., 4.12.14 and elsewhere. Cumulatively, the increased outflow resulting from the development, together with the natural consequences of increased rainfall, rising sea levels and climate change will accelerate the point at which the existing gravity fed sluice will no longer be able handle the volume of discharge. This will have a seriously adverse impact on the Levels relative to the existing situation and result in alternative solutions, including installation of a pump, becoming essential. **We wish to be assured that EDF will recognise its responsibility to make a major contribution towards such mitigation.** The Meteorological Office have just confirmed (reported Telegraph 4th Jan 2013) that 2012 had the highest rainfall in England since records began in 1910, with 4 of the 5 wettest years since then occurring this century. They also predict, based on analysis of 30 year trends, that more extreme rainfall events (heavy rainfall which occurs once every 100 days) are now occurring about once every 70 days, and that the long-term trend towards wetter weather, in particular periods of intense rainfall, is likely to continue as global air temperatures rise.

6. A particular feature of the Minsmere Levels is the complex interaction between the challenge of managing the system for the drainage of inland water and the defence of the coast line. The report acknowledges the significance of the Minsmere Sluice as a 'hard point' protecting the coast line, but goes on to acknowledge factors that could lead to a re-alignment of the Sizewell shoreline, and thus lead to a breach of the shoreline (4.11.18) and the reactivation of the former Minsmere Estuary. **We need to know a great deal more of the projected impact of the development on the Minsmere coastline both during the construction phase and also over the course of lifetime of the station.** The Minsmere sluice was originally built in 1812 and has stayed in the same place ever since. The line of the shingle beach wall from Dunwich cliff to Sizewell has also remained sensibly the same over that 200 year period, with some local maintenance. Experience along the Walberswick beach shows that storm surges can break the shingle bank, but such breaches will rapidly self repair. The predicted long term trend is for the whole coast to erode slowly, between the strong points at Southwold and Thorpeness. (E.g. comments by Professor John Pethwick to Sizewell Stakeholder group in 2006) We therefore ask that EDF produce a fluvial/tidal model which will show likely breach developments and the subsequent land use change which will evolve from a tidal estuary.
7. January 31 2013 marks the 60th anniversary of the 1953 storm surge and associated catastrophic flooding. The Environment Agency now indicates that projected sea level rise will mean that surges of this severity will occur much more frequently. Events which in 2000 were considered likely once in 200 years will, by 2100, have to be expected between every two and ten years. The storm surge of November 2006 was originally expected once in one hundred years; when a second storm surge occurred in 2007 that figure was revised to once in forty years. **Sea level rise would present a major challenge to the Minsmere Levels even without the Sizewell C development, but it is vital that we understand the added complexities which it will present.**
8. It is probable that the structure of the station will still be in place 2150. Paragraph 4.11.12 acknowledges the potential of the Sizewell C site to be subject the flooding from both its landward, and (debatably) to a lesser extent the seaward side. Serious flooding from a storm surge should also be considered very seriously, the Japanese experience at Fukushima in 2012 shows that even one in 1000 year events CAN occur and overwhelm defences. We need a great deal more information as to how it is intended to ensure its protection from storm surges and the associated flooding during the entire lifetime of the structure.
9. A number of imponderables will determine the impact that Sizewell C has on the Minsmere Levels. Many will only be revealed during the life of the station. **We consider it essential from the outset that EDF acknowledges, as a good neighbour, its moral obligation to share in the protection and preservation of the Levels and their coastline for as long as its vast structure overshadowing them remains in place.**
10. The Engineer to the East Suffolk Inland Drainage Board and senior staff of the Minsmere RSPB reserve have contributed to the preparation of this response and wish to be associated with it.

John Rea Price

Secretary, Minsmere Levels Stakeholders Group 30 January 2013

## Appendix 2

### **MINSMERE LEVELS STAKEHOLDERS GROUP**

#### **Membership of the Group**

**This should be open to all residents of Theberton and Eastbridge Civil Parish and adjacent villages as well as others concerned for the future of the Minsmere Levels**

#### **Terms of Reference**

- 1. To identify and then represent matters that is of common interest to those living and working in close proximity to the Minsmere Levels as well to others who have a concern for the future of the marshes .**
- 2. To liaise and collaborate with other stakeholders, in particular the major landowners, who have an interest in the Minsmere Levels.**
- 3. To establish, and maintain a dialogue, with conservation bodies, in particular the RSPB, and Suffolk Wildlife Trust, that have an interest in the Minsmere Levels, with particular regard to the management and development strategy for the Minsmere Levels and surrounding area.**
- 4. To collaborate with other stakeholders in discussions and negotiations with all external bodies, such as the Environment Agency and the nuclear power industry, whose actions and policies are likely to impact on the Levels in both the short and long term.**
- 5. To develop and maintain close relationships with other local organisations on issues of common interest and concern.**