

**Town and Country Planning Act 1990**

**Applications by London Ashford Airport Ltd**

**APP/L2250/V/10/2131934 & APP/L2250/V/10/2131936**

**Site at London Ashford Airport Limited, Lydd, Romney Marsh, TN29 9QL**

**CPRE/07/D –Climate Change and Sea Level Rise**

**SUMMARY**

Statement by Dr Geoff Meaden Ph.D.  
on behalf of Protect Kent (the Kent Branch of CPRE) on Flood Risk and Sea Level Rise

- 1.1 Protect Kent is the Kent Branch of the Campaign to Protect Rural England (CPRE). CPRE is a national charity which promotes the beauty, tranquillity and diversity of rural England. We advocate positive solutions for the long-term future of the countryside, as well as challenging proposals that will harm it. Founded in 1926, we have around 60,000 supporters and a branch in every county. The Kent Branch was established in 1929.
- 1.2 My name is Dr Geoff Meaden. I have lived in Canterbury, Kent, since 1974 and have worked until very recently as a Principal Lecturer in the Department of Geographical and Life Sciences at Canterbury Christ Church University. I am now retired, though I am still undertaking some research projects, consultancies and writing commitments. I specialised in three areas – biogeography, which is the study of the distribution of plants and animals on the planet, local physical geography of Kent which includes coastal geography and water supply in the region and a third area, that of Geographical Information System (GIS). These are computer-based mapping and analysis programmes. Fisheries GIS is my research area and I was the Director of the Fisheries GIS Unit at the University.
- 1.3 Climate change is currently a major cause of rising sea levels, and for South East England this is a particularly worrying process because the effects will be seriously felt in this area.
- 1.4 For these collective reasons, sea levels in the South East are presently rising at almost one centimetre per year. However, it can be stated with certainty that temporal rates of rise in sea levels are occurring exponentially. Even the more modest estimates suggest that sea levels will rise by nearly one metre by the end of this century, and various predictions suggest that sea levels could rise by perhaps four or even five metres by the end of the next century.
- 1.5 I believe that the sea level rises will be at the higher end of the present Inter-governmental Panel on Climate Change (IPCC) predictions, and indeed nearly all past estimations of the rates of rise have had to be adjusted upwards. Very recently the scientific adviser to the World Bank stated that within a short time period temperatures will be 4°C above pre-industrial (1750) levels, and this fact was recently agreed by Professor John Beddington,

the British government's chief scientist.

- 1.6 Climate change and increased warming means increased storm activity with more hurricanes and cyclones in tropical areas due to enhanced temperatures. But Britain will be similarly affected. Increased winds, especially in winters, will cause higher waves and thus a greater likelihood of flooding. If storms occur in conjunction with high tides then the flooding is increasingly likely to be on a very extensive scale. It was just such an event that occurred in 1953.
- 1.7 My evidence presents a series of maps covering the Romney Marsh area. These maps show progressive amounts of sea level rise starting from the present situation. The maps also give a clear indication of areas liable to be flooded given any breaches in the sea defences.
- 1.8 The impact of sea level rise on the Romney Marsh area could be very significant indeed, and all the time that global warming continues the likelihood of catastrophic events in the area grows incrementally. Indeed, in order to prevent the scenario shown in Map F from becoming a reality (with the area being permanently lost to the sea), as mentioned in paragraph 12 below it will require a flood defence barrier of perhaps 13 metres in height to surround the whole of the seaward side of the Romney Marsh area. The Environment Agency recently noted that Romney Marsh is one of the top 10 areas in the UK in terms of flood risk, and Shepway District Council notes in its Local Development Framework – Core Strategy “It is clear sea flooding is a major issue for Romney Marsh's low-lying land.”
- 1.9 Looking now more specifically at the airport site. The likelihood of flooding here will be exacerbated by the rising underground water table. Thus, in a recent report, Royal Haskoning (2008) noted that with rising sea levels high tide events will be considerably extended in terms of the land levels being affected, and this will allow water penetration through the highly permeable Denge Gravels to extend much further inland. Indeed, paragraph S 10.4 of the Environment Statement by Parsons Brinckerhoff Ltd (December 2006) acknowledges that “Groundwater levels at the airport are high”, and in any case the most recent Water Level Management Plan (WLMP) for the area served by Lydd airport envisages maintaining higher water table levels. Ground water levels will also be increased in winter through higher winter rains. High groundwater levels will impede surface drainage and thus will increase surface water during high rainfall events. A single flood event affecting any properties on the marsh has an average cost valued at 10% of the value of the property, though it is very much higher than this for people who are obliged to evacuate their properties. Increasingly we are going to find that insurance for any low lying properties is going to be harder to obtain or very much more expensive.
- 1.10 In Chapter 7 of the applicant's Environment Statement (paragraph 7.7.4) it is noted “that the entire LAA site is within a coastal flooding area and will be potentially exposed to a 1 in 200 year tide level of 5.47m Above Ordnance Datum (AOD). At such a level the potential impact of flooding is considered significant...” But Table 7.4 of Chapter 7 of the Environmental Statement notes that the crest of the flood bank at nearby Romney Sands is 6.5 metres above OD, and that “this is insufficient to stop overtopping during extreme high tide events”, and that flooding at nearby Greatstone sometimes occurs. So the EA flood level figures clearly seem to be out of date and indeed the EA (2008) note as an existing constraint “The need to provide coastal defences at Lade, between the existing defences

at Lydd-on-Sea and Greatstone.”(page 45). In other words we see that flooding from high sea levels is already occurring, and of course these sea levels are as nothing compared with estimated sea levels in 100 or 200 years’ time. And there are no flood defences in place at Lade which is only one mile from the proposed extended runway. Despite flooding already occurring the EA (2008) notes (page 101) that there will be “no active intervention (frontage is naturally accreting)” along the coast between Dungeness and Greatstone, and in the area immediately to the north (Greatstone to Littlestone South) the intention is to only ‘stabilise the dunes’. These actions seem to be totally inadequate given that these are the intentions for a 100 year future period. As shown in Map C, these dunes would allow no flood protection with even a two metre rise in sea level such that any severe storm could even now totally devastate areas inland from this point. But the situation at the Lydd Ranges (to the west of the Dungeness Power stations) seems considerably more worrying. To quote directly from the EA (2008) report “The present standard of defence, provided by a combination of annual beach profiling and the “green wall” embankment, gives a greater than 20% annual probability of flooding.”(page 44). This means that the defences here, only 3 miles from the Lydd airport, are only sustained to in 1 in 5 year standard which is totally inappropriate and unsatisfactory. A storm surge moving up the English Channel would easily overcome the existing defences at this location. And it will be “at least eight years” (p.93) before any scheme will be in place to protect this area, during which time natural longshore drift processes will be relied upon to keep the sea at bay.

- 1.11 Turning to the Flood Risk Assessment Report by BSF Consulting that accompanied the applicant’s main Environmental Statement. In his evidence Sean Furey has already mentioned the incorrect status of the flooding probability declared for the area covered by the planning application. In paragraph 10.3 the claim is made that protection for a 1 in 200 year flood is given for Lydd by the present defences at a 5.64 metre AOD level. However, we have already mentioned in Paragraph 10 above that even today this level is insufficient, and it will certainly be completely inadequate by 2060. In paragraph 10.4 no mention is made as to whether the sea level rise rate of 6mm p.a. includes thermal expansion as well as actual water level rise and South Eastern land sink. And the rate of total sea level rise is exponentially increasing so it is totally illogical to give a 6mm consistent sea level rise rate for the years 2000 to 2050. Even if this is an averaged rate it does not match up with the rates given in paragraph 10.5 of 12mm p.a. rise for 2055 to 2085 and then a 15mm p.a. rise for 2085 to 2115, i.e. there is not an exponential rate indicated.
- 1.12 Paragraph 10.5 then says that a 200 year level is achieved by 2115 with no reason being given as to why the measurements should start at 1915 or how the figure of 6.4 m AOD is achieved. Paragraph 10.6 states that the MOD maintain the flood defence level at the Lydd Ranges to a 1 in 200 year protection level, but the Environment Agency (2008) document (see footnote 11) states that this MOD protection level is currently at less than a 1 in 5 year level (20%), i.e. this varies by a factor of 40! Paragraph 12.1.1 states that were there a flood then “The floodwater would rise steadily and allow a calm and controlled evacuation to be implemented.” This incorrectly assumes that floodwaters would be slowly rising. In fact it is very much more likely that the flood defences would be breached at perhaps a level of +5 metres, following which waters might swiftly pour through a rapidly widening breach (as happened in the 1953 North Sea floods and in the 2005 New Orleans flooding – both causing huge loss of life).

- 1.13 Recall that the new terminal floor level is to be only 3.3 m AOD, and that paragraph 4.5 of Sean Furey's evidence has corroborated the significant depth of flood waters that might accrue at the terminal site. We also know that the information given in paragraph 12.1.4 of the Flood Risk Assessment Report regarding the level of protection is totally out of date. It seems clear that all the source information reviewed in this Flood Risk Assessment Report will need to be reviewed and revised.
- 1.14 Added to this already unsatisfactory situation regarding future sea defence protection plans there will be an increase in storm activity such that wave heights may be 8% more by 2200. So, if the present 6.5 metre high flood defences can be shown to be insufficient, by the year 2200 we must envisage that the height of any flood defences must be at least 13 metres above present AOB, i.e. the present sea wall height (6.5 m), plus sea level rise (5 m), plus 8% wave height rise (60 cms), plus additional height to make up for present height inadequacy (90 cms). To protect the whole of Romney Marsh this defensive wall would need to be a minimum of 50 kms long, the cost of which could run into billions of pounds. Not only will there then be a huge challenge to preventing marine flooding in the future but the problems of disposing of any drainage waters from the marsh will be significantly increased.
- 1.15 For various reasons, it is difficult to be precise on any of the descriptions made above. For instance, the actual rate of sea level rise is constantly being re-modelled as further more detailed models are developed and as more data is gathered. And although the Environment Agency say that this coastline will be defended we have no way of knowing that this will be affordable. However, with accelerating sea level rises then obviously further flood protection cannot proceed indefinitely, and indeed already areas that were to be saved in the past have now been downgraded so allowing so-called 'managed realignment' to occur<sup>18</sup>. Also, just as it was impossible to know where the Mississippi levees were to break causing New Orleans to flood, we cannot foretell where any Romney Marsh flood embankment breaching might occur. This means that flooding locations and patterns might vary. Finally, the amount and extent of any single flooding event is totally unpredictable, i.e. depending on a combination of the state of the tide, wind strength, wave height and direction plus the local strength of the defences.
- 1.16 Recently, in the UK we have not had a large, catastrophic marine flood event. We have had severe flooding on inland rivers such as around Tewkesbury or Hull in 2007, but there are few examples of sea flooding. With increasing time gaps between flood events complacency sets in, and it is a proven fact that people begin to think that "it won't happen to us". Yet, on a world scale, every year we see increasing natural disasters, one of the foremost of which is flooding. You can be very certain that the authorities in places such as New Orleans would have been confident that they had sufficient flood protection in place. But this was not the case. At the recent Cancun Climate Change negotiations, Britain's main representative Chris Huhne noted "The pattern of extreme weather events is alarming. In Britain, our insurers paid out £4.5 billion in flood damage in the last ten years compared with £1.5 billion in the previous ten years. This is a warning of worse to come." The point is that we in Britain are not only getting significantly more serious flood events, but we will certainly have major marine flood events in the future, and the longer we wait for such events the more catastrophic they will be. Given the evidence outlined above, Romney Marsh is just such an area that is pre-eminently likely to suffer in the future.