Doc. No. SSE/18/a – Annex 1
Case Ref. 2032278

Appeal by BAA Ltd and Stansted Airport Ltd following the refusal by Uttlesford District Council of planning application UTT/0717/06/FUL

Proof of Evidence on behalf of the Campaign to Protect Rural Essex and Stop Stansted Expansion

Landscape, Visual Impact and Quality of Life – Annex 1

Cllr James Abbott

8 May 2007

1 INTRODUCTION

1.1 This supplementary evidence on light Pollution relates to proof of evidence SSE/18/a paragraph 3.4.14. It is submitted by Cllr James Abbott BSc (Hons) Astronomy (UCL 1982), Member of the British Astronomical Association, Member of the Campaign for Dark Skies and active astronomer and writer.

2 OBSERVATIONS OF THE IMPACT OF ARTIFICIAL LIGHT SOURCES FROM STANSTED AIRPORT

2.1 Observations were made from three locations on the evening of 7th May 2007 between 21:30 and 23:00 hrs BST. The map at section 4 of this Annex shows the locations visited, namely:

Location A: Footpath behind the Three Willows Public House in Birchanger – 3.75km from the Control Tower

Location B: Where the road from Coopers End Roundabout to Takeley crosses over the new A120 – 1.4km from the Control Tower

Location C: Browns End Road, Broxted – 4.4km from the Control Tower

2.2 Initially the weather was dry and about 2/8 broken, decaying cloud from earlier showers. By 23:00 the sky was largely clear. Transparency was good due to the showers having rained out dust in the atmosphere. The wind was a light westerly.

2.3 From Location A:

2.3.1 At the time of observation the sky was still in twilight to the west. Decaying shower clouds were observed passing directly over the airport. The Meteorological Office has confirmed the cloud base an hour earlier as being at 3,500 feet. (After that they were reporting clear skies although there was still some broken cloud observed.)

2.3.2 The light pollution from the airport was very significant. Clouds were brightly illuminated (orange) and the level of illumination could be seen to increase from a low level in the west to an intense level as the clouds passed over the airport. For comparative purposes, the level of cloud illumination was similar to that which would be experienced under similar conditions from a city location such as central Manchester.

2.3.3 A bright light pollution dome was seen over the airport with numerous individual lights visible, some very bright. Well-designed lights should not be visible directly from such a distance. The fact that many bright light sources were visible indicates that a lot of light is being emitted at shallow angles. Modelling of light pollution by Dr Chris Baddiley1 has shown that shallow angle emission

[1] On-going research by Dr Chris Baddiley, Member of the Campaign for Dark Skies and British Astronomical Association.

is significant in causing light pollution due to the scattering effect of light interacting with particles in the atmosphere.

2.3.4 From Location A it was obvious that hedges and fences were lit dull orange on the side facing the airport.

2.4 From Location B:

2.4.1 From Location B, the light pollution was severe. The light pollution dome over the airport was visible to an altitude of around 45 degrees. As well as the orange/grey dome, numerous individual lights could be seen, reinforcing the finding from site A (on the opposite side of the airport) that there is a lot of shallow angle emission. In addition, a white glow was seen within the dome which is believed to come from the terminal building and surrounding area.

2.4.2 A magnitude estimate was made using stars in Cassiopeia which was over part of the airport from the location of observation. The faintest star just seen was magnitude 3.7. This indicates severe light pollution. Allowing for the conditions, the altitude of Cassiopeia at the time and the fact that the sky was in astronomical twilight (the Sun being more than 12 degrees below the horizon), this finding is consistent with the cloud illumination observation from Location A that the airport light pollution (facing the airport) is similar to that which would be experienced in a city location such as central Manchester.[2]

2.4.3 As for Location A, hedges and fences were clearly lit orange on sides facing the airport.

2.5 From Location C:

2.5.1 From Location C, the most distant of the three, lights from the airport could not be seen directly, so the location was a good test of the light pollution dome over the airport.

2.5.2 Light pollution was very significant with the sky over the airport lit orange. Hedges and fences were still clearly illuminated on the side facing the airport. From this location, the inbound aircraft could also be seen on their descent path in the darker skies to the east. At one time four inbound aircraft were simultaneously visible, their forward lights adding to the degradation of the natural dark sky that should have been otherwise enjoyed from such a rural location.

3 SUMMARY

3.1.1 Stansted Airport is already causing very significant or severe light pollution over a large area of the surrounding countryside.

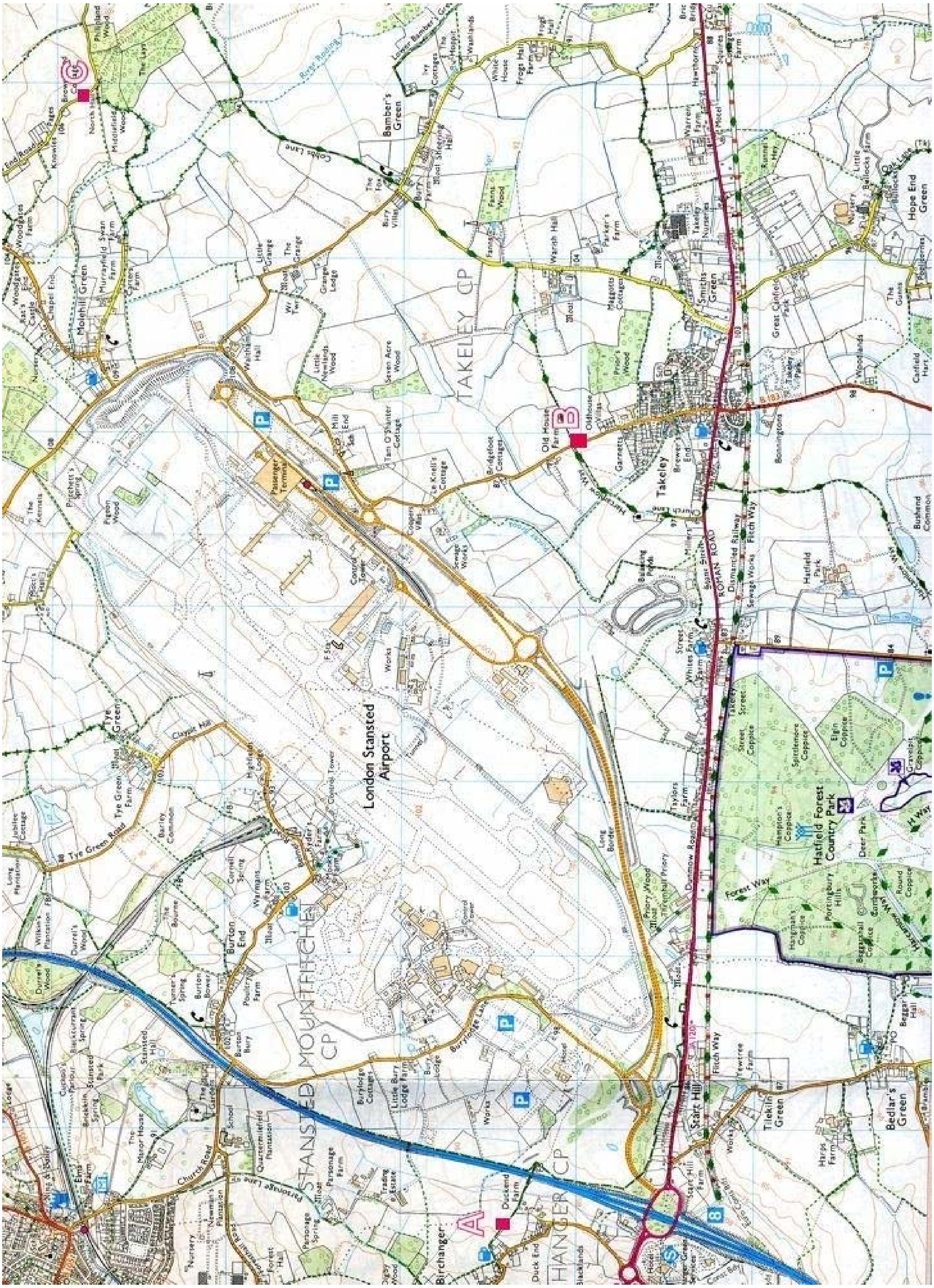
3.1.2 There is a bright light pollution dome; as well as numerous individual poorly directed light sources. The light pollution facing the airport is of a level comparable to a city centre location, capable of illuminating clouds brightly.

[2] The Philip's Dark Skies Map of Britain and Ireland, 2004.

3.1.3 The surface-generated light pollution, together with the lights of aircraft has badly degraded the quality of the night sky in the area so that, whilst visually, the landscape largely retains the physical quality of a rural area; the skies over the airport have the appearance of an urban location.

3.1.4 Expansion of the airport that will lead to more buildings and parking areas with more lighting and up to 50% more passenger air transport movements – implying a similar increase in airborne light impact - will add to this degradation and make it intrusive over a greater area.

4 MAP SHOWING VIEWING LOCATIONS (see overleaf)


London Stansted Airport
TAKELEY CP
Takeley
STANSTED MOUNTFITCHET CP
Hatfield Forest Country Park
Passenger Terminal
ROMAN ROAD
Molehill Green
Bamber's Green
Burton End
Birchanger
Stansted Hall
Tye Green
Start Hill
Hope End Green
Bedlar's Green
Tilekiln Green