CEDR SYMPOSIUM
COPENHAGEN

SOLAR NOISE BARRIER
FEASIBILITY STUDIES

GILES PARKER
SOUND BARRIER SOLUTIONS LTD
The objective is to find the best combined noise mitigating and solar power generating system such that the ongoing revenue from generated power would contribute substantially to the cost of the noise barrier schemes. Not only would this be attractive to transport agencies but also to local government planning, large-scale housing developers and the wider community.
UK installed more solar power than any other European country in 2014
UK solar power installations plummet after government cuts

The government's efforts to kill off the solar industry and lead us to fracking hell

30 Aug 2015

Revealed: Many more solar firms face closure if government cuts go ahead

19 Oct 2015 259
2028

4M FREE-STANDING SOLAR BARRIER
(OUTSIDE HE LAND)
4M FREE-STANDING SOLAR BARRIER
(OUTSIDE HE LAND)
### ESTIMATED BENEFITS

<table>
<thead>
<tr>
<th>SOLAR BARRIER TYPE</th>
<th>Highway Land</th>
<th>Height (m)</th>
<th>Length (m)</th>
<th>Annual £ SOLAR (per linm)</th>
<th>Annual £ SOLAR</th>
<th>Increase of Devel Land (sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS + T-PIECE</td>
<td>Within</td>
<td>3.0</td>
<td>2,000.0</td>
<td>£35</td>
<td>£ 70,000</td>
<td>275,000</td>
</tr>
<tr>
<td>SOLAR BUND</td>
<td>Outside</td>
<td>4.5</td>
<td>2,000.0</td>
<td>£70</td>
<td>£ 140,000</td>
<td>180,000</td>
</tr>
<tr>
<td>FREE STANDING</td>
<td>Outside</td>
<td>4.0</td>
<td>2,000.0</td>
<td>£70</td>
<td>£ 140,000</td>
<td>230,000</td>
</tr>
</tbody>
</table>

- This assumes an annual revenue of £35 per linm (at the time!)

- The annual revenue rate doubles to £70 per linm (at the time!) for the Bund/Free Standing designs.
## ESTIMATED COSTS

<table>
<thead>
<tr>
<th>SOLAR BARRIER TYPE</th>
<th>Highway Land</th>
<th>Height (m)</th>
<th>Length (m)</th>
<th>SOLAR Noise Barrier Budget Cost (per linm)</th>
<th>Total Ballpark Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLAR BUND</td>
<td>Outside</td>
<td>4.5</td>
<td>2,000.0</td>
<td>£1,300</td>
<td>£ 2,600,000</td>
</tr>
<tr>
<td>FREE-STANDING</td>
<td>Outside</td>
<td>4.0</td>
<td>2,000.0</td>
<td>£1,300</td>
<td>£ 2,600,000</td>
</tr>
</tbody>
</table>
EAST/WEST BARRIERS
COST / BENEFITS

<table>
<thead>
<tr>
<th>SOLAR BARRIER TYPE</th>
<th>Total Ballpark Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>EASTERN SOLAR BARRIER</td>
<td>£ 2,600,000</td>
</tr>
<tr>
<td>WESTERN BARRIERS</td>
<td>£ 800,000</td>
</tr>
<tr>
<td>TOTAL CAPITAL COST</td>
<td>£ 3,400,000</td>
</tr>
<tr>
<td>TOTAL REVENUE (25YRS) (£140K per year)</td>
<td>£ 3,500,000</td>
</tr>
</tbody>
</table>

- **700** Residential Properties Benefit from Noise Mitigation
- **~ 230,000 sqm** - Freed up for Residential Development
M4 WICHELSTOWE SOLAR NOISE BARRIER

3km
M4 WICHELSTOWE
3KM SOLAR NOISE BARRIER ………

CAPITAL COST
• NOISE BARRIER ~ £1.6M
• SOLAR ~ £3.0M
• TOTAL COST ~ £5.4M (plus 20%)

SOLAR REVENUE
• ~ £260K pa (at the time!)
• ~ 20 YRS = £5.2M
55dBA (unmitigated)

300m closer

~ 600,000 sqm

55dBA (mitigated)
ESTIMATED LAND VALUATION

- Land Value based on property density and average house sale £200k ~ £800/sqm
- 600,000 sqm extra ~ £480 Million

FINANCIAL INCENTIVE FOR GOOD DESIGN

- If moving the 55dBA contour 300m closer releases a potential £480 Million in developed land
- £1.6 Million in developed land is released for every 1 metre gained through good mitigation design