

## BESS detailed article for LOSRA website – draft v3.

**On the 24th January a planning application by consultants DWD, acting as agents for the Applicant Sunbury BESS Ltd., a subsidiary of developers EcoDev, was uploaded to the Spelthorne BC Planning website, with reference 24/00017/FUL. It is for the ‘Sunbury Battery Energy Storage System’ (‘BESS’) which featured on the front page of LOSRA’s 2024 New Year Newsletter.**

The submitted scheme appears to be of the same size in electrical output capacity terms as the one which DWD presented online to some representatives of local Residents Associations, including LOSRA, back in June 2023. It does however now cover a rather larger area of Green Belt land, due in no small part to a requirement to site the batteries installation at least 100 metres away from the M3 motorway. This is to reduce the impact of the smoke plume on motorway traffic, should the BESS catch fire (of which more later).

The Applicant’s Planning, Design and Access Statement describes how the proposal covers *‘the erection of approximately 96 battery containers units (15.3m (L); 2.7m (W); and 2.34m (H)), each comprising an industrial lithium-ion battery’*, together with 48 shipping containers for associated plant and an underground high voltage cable connecting the BESS to the Laleham grid sub-station at Staines-upon-Thames.

### **The size of the scheme:**

This proposal is hugely ambitious! The size of a BESS is given by two main parameters: its power output, and its storage capacity. A simple analogy is with a car. Its power output is the horsepower of its engine. Its capacity is the amount of energy stored in its fuel tank. The proposed Sunbury BESS has an output of 200 megawatts. Some readers may remember the old power station in Kingston-upon-Thames, with its two huge chimneys, which stopped generating in 1980. Its nominal output was 117 megawatts, so the Sunbury BESS would provide nearly twice as much as that traditional powerplant.

The proposed energy capacity is rather more difficult to establish, as well as to envisage. The developer gives a number of different figures in various documents. In the Planning Design and Access Statement it is stated that the Sunbury BESS has a proposed storage capacity of 800 megawatt hours – in other words it could provide four hours of output at 200 megawatts. However, in the ‘Very Special Circumstances Report’ this number is given in para 2.18 as only 184 megawatt hours. On the other hand, by summing the 96<sup>no.</sup> battery containers shown on the plans as having a capacity of 4.3 megawatt hours each gives a different total of 413 megawatt hours. Whatever the number may actually be, this energy is stored chemically in the lithium batteries and released when required.

### **Fire risk:**

By way of providing a more easily visualised energy comparison, some recent exercises by academic institutions have involved calculating the amount of energy released in the Beirut warehouse explosion in August 2020, which destroyed much of the city’s port area. The lower end of this calculation came out at the equivalent of about 580 megawatt hours, so somewhere in the middle of the number range given for the proposed BESS capacity. This is not to imply that a BESS could explode in the same way as the stored fertiliser involved in Beirut, but lithium-based batteries can and do suffer from ‘thermal runaway’. This is a chemical reaction which creates huge amounts of heat and toxic fumes that cannot be extinguished by conventional oxygen-removing fire-fighting means; instead it has to be cooled down by the application of very considerable amounts of water, as is indicated by the very large volume of water that has been deemed necessary to store in nine large tanks on the BESS site. The media have been showing increasingly dramatic examples of such thermal runaways, ranging from small appliance batteries through e-scooters to electric cars and even buses. There have also been examples in newly built BESS installations that have demonstrated not only the challenges of extinguishing them but also the very toxic nature of the runoff of the water used for quenching. A thermal runaway fire in a very much smaller BESS in a Liverpool suburb in September 2020 took 59 hours to extinguish. All of this means that a Sunbury BESS would need to have a wide and intensive range of safety installations to ensure that any accident could not only be contained but also have no subsequent adverse effect on the environment. Unfortunately the ‘Framework / Outline Safety Management Plan’ submitted with the developer’s application leaves much of the detail to be agreed after planning is granted or as a planning condition, which seems most unsatisfactory for what has been submitted as a Full planning application.

### **Siting:**

The proposed location of this major industrial development is quite extraordinary, for several reasons. The site is stated to cover 5.8605 hectares (that’s 14.5 acres, or about 7 football pitches) of Green Belt land, midway between the communities of Charlton Village and Upper Halliford. It is bounded to the northwest by the M3 motorway, to the northeast by the railway line from Shepperton to London, and to the south by the Charlton Lane EcoPark waste complex. Given the safety risks inherent in a BESS that have been referenced above, it seems strange that the proposed siting is closest to the methane storage tanks at the northern end of the EcoPark site. It is also unfortunate that the site

is less than 900 metres to the south of Ashford Common Water Treatment Works, which supplies potable water to a considerable area to the southwest of London. In the event of a fire at the BESS, the smoke plume, in the prevailing southerly winds, could end up over the Treatment Works, potentially raining down its toxic content on the filter beds below.

Charlton Lane is the only accessible road from the site, so all traffic, both at construction and operational phases, would need to travel down a connecting driveway to exit through the EcoPark site entrance onto Charlton Lane. Conversely, the necessary high voltage connecting cable between the BESS and the nearest grid connection point would need to follow a convoluted route west across the M3, up through Charlton Village, round to the north of the Queen Mary Reservoir and across to the Laleham sub-station by Fordbridge roundabout – a distance of around 3.5 kilometres on the map. This is also odd, given that the ‘Very Special Circumstances Report’ insists, in para 2.63, that *‘2.8km is at the end of viability in terms of the efficiency in providing the overall financial viability of the Proposed Development due to the cost of laying cables long distances’*.

### **Appearance:**

The complex itself would consist of many rows of containers; 96 ‘battery containers’ and 48 larger ‘shipping-style containers’, presumably for the associated transformers. The developer does not seem to have provided a drawing showing an image of this overall layout, but it is, sadly, not difficult to imagine what 144 large industrial containers laid out in rows would look like, and it is by no means a pretty sight. There are some landscaping plans provided, but these seem limited to maintain the existing scrubland rather than providing any significant new planting that might have hidden some of the worst visual aspects of the complex.

### **‘Very special circumstances’?**

Given that such siting is patently absurd and in contravention of Green Belt National Policy Planning Framework guidelines, the developer has been required to present a ‘Very Special Circumstances Report’ in an attempt to justify why the guidelines should be ignored for this particular application. The Report contains a number of inaccuracies and inconsistencies that suggest that parts of it may perhaps have been copied and pasted from elsewhere. Be that as it may, its basic premise is that a BESS is too important a concept relative to the provision of renewable energy to be denied a Green Belt location and that there is nowhere else suitable in the locality. Whilst there is little doubt that the United Kingdom does and will continue to benefit from an increasing proportion of electricity generated from renewable sources, and that such sources are often intermittent in nature such that the ability to store it at times of excess is desirable, nonetheless there is nothing in the design and operation of a Battery Energy Storage System which limits its use to renewables. It can be used just as effectively – and profitably – by buying conventionally generated electricity on the open market when the price is low, storing it in the batteries and then selling it back on to the grid when the price rises; it does not need renewable energy to work.

The Applicant additionally claims that the scheme would offer ‘support for the rural economy’. It’s not exactly clear which ‘rural economy’ is being referred to here, since it is an unlikely description of the Sunbury area. The BESS is described as being unmanned in its operating phase, so there is little employment opportunity there. The major part of the proposed plant is inevitably in the 960 (ten per container) battery modules, which are specified on the drawings as being provided by BYD, a Chinese manufacturer. That would not appear to provide much local benefit.

Finally, the Applicant claims the ‘temporary and reversible nature of the proposal’, with temporary in this context being stated as 40 years, after which the land could revert back to Green Belt again. Let’s just say that that would not be an easy one on which to ensure compliance!

### **The EcoPark as precedent?**

The Report also unfortunately implies that an industrial precedent has already been set with the earlier (2012) granting of planning permission by Surrey County Council for its methane digester and gasifier plant, aka the EcoPark, on the adjacent Green Belt site, an implication which adds insult to injury to all those residents who campaigned so strongly against it in the past and have had to live with its towering presence ever since. Many of those same residents will now be joining others to decide what stance to take on this second major industrial complex that is intended to be imposed upon them. There may well be some who believe that local sacrifice is necessary in the cause of the common good, and that the risks and unpleasantness of a relatively novel technology are worth taking if it means that more renewable energy can be used. On the other hand there will equally be those who believe that nothing, however good or bad, should ever be allowed to overcome the sanctity of this Green Belt land. Most though will be in the middle, struggling to understand a complex and technical application in an attempt to make a properly measured judgement. Hopefully this brief article has helped just a little with that understanding.