Riverside Energy Park

Clarification on Above Ordnance Datum and Above Ground Level

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RIVERSIDE ENERGY

TECHNICAL NOTE

Job Name: Riverside Energy Park

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Subject: **Clarification on Above Ordnance Datum and Above Ground Level**

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1.	Introduction The Applicant has prepared this note to clarify and explain the changes made to **Table 1** of **Schedule 2** of the **draft Development Consent Order (dDCO)** (**3.1; REP2-006**) and as submitted at Deadline 3 (**3.1; Rev 2**) specifically in respect of height/level controls and how these relate either to levels that are Above Ordnance Datum (AOD) (hereinafter referred to as *"absolute"* levels) or to local existing ground levels (hereinafter referred to as *"relative"* levels). Note that AOD is a commonly used term, however levels may be identified as being below Ordnance Datum by use of a negative figure, i.e. -3 m AOD would mean 3 m below the Ordnance Datum.
2.	Definition – Absolute level Absolute levels have been given by reference to a national datum and are quoted as a level Above Ordnance Datum (AOD). The use of a common national datum means that the local ground level (the relative level) does not affect the AOD level that a constraint may be set at. For example, if you are flying at a height of 100 m AOD and the ground beneath is at 0 m AOD, then you would be 100m above the level of the ground below. However, if the ground is at 50 m AOD, and you are still flying at 100 m AOD, then you would be flying 50 m above the level of the ground below.
3.	Definition – Relative level Relative levels, as the term suggests, have been given relative to a local datum or feature, not a national datum point. In the above example the AOD level would be irrelevant if considering relative levels. In the first case the flyer would be 100 m above (i.e. relative to) ground level and in the second they would be 50 m above (relative to) ground level.
4.	Project Description At the REP site, and as set out in **Paragraph 3.3.69** of **Chapter 3 Project and Site Description** of the **Environmental Statement (ES) (6.1; REP2-**

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	013), the existing ground levels have been surveyed and were found to vary between 1.7 to 2.5 m AOD. Ground levels of the final development may vary to suit the detailed layout and positioning of the REP buildings and other infrastructure. To allow flexibility, whilst providing ground level limits against which the EIA could be considered, the Applicant has confirmed that finished ground levels at the site would vary between 1 m and 3 m AOD, which is captured for Work 1 at **Schedule 2, Requirement 3(2)** in the **dDCO (3.1; Rev 2)**. Therefore, where constraints are set relative to surrounding ground level in the dDCO (which can vary by up to 2 m), those constraints may also vary by 2 m.
5.	Explanation of differing uses of the terms Whether absolute or relative ground levels are used depends on the aspect of development under consideration and the manner in (or extent to) which those levels are relevant to the assessment. In light of this, the REP **dDCO (3.1; Rev 2)** utilises the most appropriate referencing system for each aspect. The presence of absolute and relative ground level constraints is explained further below for each item in **Schedule 2, Table 1** of the **dDCO (3.1; Rev 2),** which is recreated below with additional row numbers:

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Schedule 2, Table 1 of Rev 2 of the dDCO (with annotated row numbers to the right)

Table 1

(1) Element of authorised development	*(2) Work No.*	*(3) Maximum length (metres)*	*(4) Maximum width (metres)*	*(5) Maximum height (metres) AOD*	*(6) Minimum height (metres) Above surrounding ground level*	*(7) Maximum depth (metres) below AOD*	Row
Main Riverside Energy Park Building	1A (excluding Work No.1A(iv), 1C and 1E	200	102	65	–	–	1
Solid fuel storage bunker	Part of Work No. 1A(i)	–	–	–	–	8	2
Anaerobic digestion system	1B (excluding Work No. 1B(vi) and Work No. (vii)	87	68	43	–	–	3
Other integral process buildings and structures	1D, 2(b), 3, 4, 5, 6 and 7	111	116	38	–	–	4
Emissions stacks(s)	1A(iv)	–	46	113	90	–	5
Emission stack	1B(vi)			11	4		6
Gas Flare	1B(vii)			17	4		7

- Rows 1, 3 and 4 in the table relate to AOD levels given in **Table 3.1** of **Chapter 3 Project and Site Description** of the **ES (6.1; REP2-013)** and are also reflected in the **Parameter Plans** of the **ES (Figures 1.3a-c) (6.2; APP-056)** and are maximum heights for buildings or other elements of REP. Since the effects arising from these elements are primarily visual, the constraints are set to AOD as the surrounding finished ground level is of limited consequence and the TVIA works on the basis of a model derived from AOD levels.
- Row 2 of the table relates to the waste bunker and utilises an AOD constraint. This is to ensure that the potential interaction with underground features (in respect of groundwater, differing ground

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	conditions or heritage assets) is controlled, particularly in respect of the Ground Conditions aspect of the assessment, which is related to AOD levels derived from borehole logs etc. The maximum base depth of -8 m AOD provides absolute certainty of the potential interaction of the underground works relative to the known AOD of features or conditions considered in **Chapter 13 Ground Conditions** of the **ES (6.1; REP2-027)** or **Chapter 10 Historic Environment** of the **ES (6.1; APP-047)**. Note that due to the further 2 m downward flexibility provided by Article 3 of the **dDCO (3.1; Rev 2)**, the lowest depth of the bunker could be -10 m AOD (i.e. 10 m below the Ordnance Datum). • Rows 5-7 of the table relate to the stacks and gas flare and utilise a relative constraint for the minimum height and an absolute AOD constraint for the maximum height. The reasons for this are set out below: ○ Maximum height: The maximum height of the emission stack(s) (Work 1A (iv)) have been derived from the flight envelope associated with London City Airport. This envelope is derived and applied as absolute levels, regardless of surrounding ground levels. The use of an AOD maximum height constraint provides certainty to the airport operator and the CAA that the stack(s) will not interfere with the flight envelope, regardless of the height of the stack relative to surrounding ground level. The use of an AOD constraint for maximum height also feeds into the TVIA for the same reason set out above for Rows 1, 3 and 4 of the table. The shorter Emission Stack and Gas Flare (Works (1B(vi) and 1B(vii) respectively) would not have the potential to interact with the flight envelope, however, use of AOD is appropriate, particularly in respect of fixing their maximum height relative to existing features from a visual perspective. ○ Minimum height: The minimum height of Work 1A (iv) relative to surrounding buildings and local ground level affects the modelling of dispersion of emissions, therefore to ensure that the minimum stack height constraint is not breached by variations in finished ground level, this has used a relative datum. In the case of Works 1B(vi), the dispersion of emissions from the stack is essentially controlled by the presence of the adjacent buildings which are significantly taller, such that the relative level of the surrounding ground and adjacent buildings are important to the air quality model. A relative approach also accords with the Environmental

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	Permit (EP) application where the minimum stack height is set relative to ground level.
6.	Summary In respect of the various emission stacks and the gas flare, **Schedule 2**, **Table 1** of the **dDCO (3.1; Rev 2)** ensures that: • Relative to the finished surrounding ground level, the Emission Stack(s) (Work 1A(iv)) cannot be shorter than 90 m. This accords with the height proposed in the EP application; • Relative to the finished surrounding ground level, neither the Emission Stack nor the Gas Flare (Works (1B(vi) and 1B(vii) respectively) can be shorter than 4 m; • The Emission Stack(s) (Work 1A(iv)) cannot impinge on the flight path envelope for London City Airport and cannot exceed the absolute level considered in the TVIA regardless of the final surrounding ground level; and • Neither the Emission Stack nor the Gas Flare (Works 1B(vi) and 1B(vii) respectively) can exceed the height considered in the TVIA and, whilst there is no potential interaction, security is provided in respect of their interaction with aircraft.