



APPLICANT'S RESPONSE TO LANDSUL AND MUNSTER JOINERY'S DEADLINE 1 SUBMISSION NUMBER: 9.14

DECARBONISATION

Cory Decarbonisation Project

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TABLE OF CONTENTS

TABLE OF CONTENTS.....	1
1. INTRODUCTION AND SUMMARY.....	1
1.1. Summary.....	1
1.2. Basis of Design: Summary of Party's Positions and Context	2
2. RESPONSES TO DR EDGAR'S EXPERT REPORT	6
2.1. Response to Section 2: Cory Proposed Scheme	6
2.2. Response to Section 3: Alternative Site Layout.....	16
2.3. Response to Section 4: Comparison of Layout Options	19
3. RESPONSE TO THE LICHFIELDS REPORT	20
APPENDIX A –CONTEXTUAL INDICATIVE EQUIPMENT LAYOUT DRAWING	24
APPENDIX B – WORK PLANS EXTRACT	26

TABLE

Table 1-1 Indicative Equipment List.....	3
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1. INTRODUCTION AND SUMMARY

1.1. SUMMARY

- 1.1.1. This report is the Applicant's response to **Landsul Limited (REP1-059)** and **Munster Joinery (U.K.) Limited (REP1-060)** submissions at Deadline 1.
- 1.1.2. It is focussed on the content of Dr Edgar's Expert Report (Annex A) and the Lichfields Report on Socio-Economics (Annex E). Whilst Annex B: Plant Layout Study is noted as demonstrating Dr Edgar's understanding of the process requirements of a carbon capture facility, the Applicant considers that there are no points that require a response different from those given for Annex A.
- 1.1.3. This response is structured as follows:
- section 1.2 sets out a summary of the parties' positions on design matters and provides important context to the Applicant's approach which helps explain the differences;
 - section 2 responds to Dr Edgar's Expert Report referring to the capitalised lettered headings in his report starting at 2.A; and
 - section 3 responds to the Lichfields Report.
- 1.1.4. Fundamentally, this response refutes many of the contentions made in these submissions and demonstrates that, on proper analysis, there can be no reasonable contention that the Applicant's compulsory acquisition requirements can be considered to be 'excessive' (in answer to the contentions of paragraphs 1-7 of the Written Representation). It is based on reasonable and robust assumptions, whilst also allowing proportionate flexibility for detailed design. This is the position that has been consistently expressed to Landsul/Munster Joinery, and Dr Edgar's report does not change this.
- 1.1.5. The Applicant notes the suggestion at paragraph 2 of the Written Representation that, if authorised and implemented, the Development Consent Order will result in the loss of Munster Joinery's business from Belvedere. The Applicant does not agree with this contention. The Applicant has sought to engage, has been willing to support Munster Joinery to relocate and believes that the potential loss can be avoided.
- 1.1.6. This report demonstrates not only that Landsul/Munster Joinery's land is required for the Proposed Scheme, but also the unacceptability of a layout which seeks to keep Munster Joinery in-site (the 'alternative layout') (in answer to the contentions of paragraph 8-13 of the Written Representation).
- 1.1.7. Furthermore, as the Applicant's requirements are appropriate, the suggestion made in Landsul/Munster Joinery's Written Representations that less land could be taken within the alternative zones considered is also not correct; and the Applicant's conclusions in respect of the impacts of those zones is therefore correct (in answer to the contentions of paragraph 14 of the Written Representation).
- 1.1.8. The Applicant also notes (also in answer to the contentions of paragraph 14 of the Written Representation) the suggestion that the Iron Mountain site could be 'available'

for the Applicant's use (noting Annex D). The Applicant understands that Realty Income (which owns the freehold of the Iron Mountain site and is Iron Mountain's landlord) acquired the Iron Mountain site in March 2021 with Iron Mountain as the sitting tenant. Realty Income has confirmed to the Applicant that it has not marketed the site since (nor has the Applicant seen any evidence to support such propositions), nor does it intend to market or dispose of the site in future following its acquisition of it approximately four years ago. Further, the Applicant has established, through its own due diligence, that the planning consent for the facility was granted in 2001 (application reference 99/02838/OUT) and Iron Mountain is the original occupier with a protected 25 year lease (subject to security of tenure) until 2031, the implication being that Iron Mountain can seek a statutory renewal of its leasehold interest through to 2046.

- 1.1.9. Whilst the Applicant has also responded to the Lichfields Report below (and in so doing, paragraphs 15-17 of the Written Representation), the Applicant's fundamental position remains that, pursuant to the **Statement of Reasons (APP-020)** and **Planning Statement (APP-040)**:
- the compelling case in the public interest for the Proposed Scheme outweighs the worst case loss of Munster Joinery/Landsul's land and operations; and
 - that the benefits of the Proposed Scheme outweigh the socio-economic impacts of the loss of Munster Joinery's operations, no matter how they are characterised.
- 1.1.10. As discussed at the Preliminary Meeting, the Applicant will work with Landsul/Munster Joinery to seek to reach a SoCG on the basis of this response by Deadline 3. Dr Edgar and the Applicant's advisors have also met on the date of Deadline 2 to help shape this. However, on the basis of Dr Edgar's Expert Report, and this response, the Applicant still considers that there is no need for cross-examination to take place, in the overall context of the Examination process.
- 1.1.11. Furthermore, the Applicant remains willing to discuss and agree a relocation package for Munster Joinery's operations to a suitable alternative site such that the job losses assumed within the Environmental Statement on a worst case basis can be avoided.

1.2. BASIS OF DESIGN: SUMMARY OF PARTY'S POSITIONS AND CONTEXT

- 1.2.1. Having undertaken a thorough review of Dr Edgar's Expert Report, it is noted that there is little difference between his understanding of necessary plant and equipment as a basis of design and that which is included within the Proposed Scheme.
- 1.2.2. Table 1-1 below uses the list of equipment shown (and as numbered) on the **Indicative Equipment Layout Drawing (AS-054)** ('Indicative Equipment List') and applies an adapted RAG system to illustrate this point. In Table 1-1:
- green, indicates full agreement over size/footprint of the equipment items and facilities;
 - yellow, indicates agreement over size/footprint of equipment, but disagreement over overall footprint;

- amber, indicates disagreement over size/footprint of equipment and overall footprint; and
 - red indicates disagreement over the requirement for this equipment in its entirety.
- 1.2.3. The Indicative Equipment List provides a useful tool to record the level of agreement, but it is noted that the Indicative Equipment Layout Drawing does not form a layout for which consent is sought – it shows one way that the layout could look within the zoning established by the Works Plans.
- 1.2.4. The first thing to notice is that there is no red in Table 1-1; the Proposed Scheme does not include any plant, equipment, or supporting facility that Dr Edgar considers to be entirely superfluous as the basis of design.
- 1.2.5. Indeed, there is green colouring, indicating full agreement, over the: need for the equipment; the size of the equipment; and the size of the overall footprint (parking, access arrangements etc) across nine of the items (out of 20) listed in the Indicative Equipment List. These items collectively occupy about one quarter of the Carbon Capture Facility site area.
- 1.2.6. Across the other 11 items there is some disagreement over the equipment/space provision set out; but no disagreement that they are necessary elements of the Carbon Capture Facility.

Table 1-1 Indicative Equipment List

No.	Equipment	Agreement
1	Liquid CO2 Export Jetty	
2	Elevated Pipe & Duct Bridge	
3	Back Pressure Turbines and Steam Processing	
4	Direct Contact Cooler	
5	Chemical Storage and Injection	
6	Equipment Platform	
7	Absorber Column	
8	Solvent Regeneration and Reclaiming System	
9	CO2 Conditioning	
10	Substation and Transformers	
11	Refrigeration Package (Liquefaction)	
12	CO2 Compressor	
13	LCO2 Buffer Storage Area	
14	CO2 Liquefaction	
15	Hybrid Cooling System	
16	Control Room and Welfare Facilities and Gatehouse	
17	Water Treatment Plant	
18	Heat Transfer Station	
19	Operational Laydown Area	
20	Water Management Area	

- 1.2.7. The key difference between the parties, is the space required for the safe and efficient operation of the Carbon Capture Facility and accounting for the landscape setting and integration with natural boundaries such as ditch systems and associated buffer zones.
- 1.2.8. This is not surprising as the Proposed Scheme has been considered and developed by the Applicant and its multi-disciplinary technical and environmental advisor team over a period of some three years. It has taken into account discussions with utilities providers (such as Thames Water) and regulators (such as the Environment Agency), undertaken baseline environmental studies for the ES and development of the Design Principles.
- 1.2.9. This wider context is important as, beyond a cursory reference to the Crossness Local Nature Reserve, Dr Edgar does not engage with any strategic site masterplanning or design principles. Instead, and delivering the task he was commissioned to do, he focusses on process and plant layout only.
- 1.2.10. However, the Applicant, as with all project promoters, is required to go beyond just process considerations. Overarching National Policy Statement EN-1 (NPS EN-1) requires projects of critical national priority infrastructure, such as the Proposed Scheme, to consider and apply good design in its design development processes. The Secretary of State must be satisfied that applicants have (and so the Applicant was required to provide that it had) considered both functionality and aesthetics; and that the project is sustainable.
- 1.2.11. The Applicant's approach to fulfilling these policy requirements is set out in the **Design Approach Document (DAD, APP-044 to 046)**. The final paragraph of the Project Vision (page 20, Part 1 of the DAD, APP-044) confirms that:

'The proposal will demonstrate collaborative interdisciplinary working, ensuring the design process integrates operational requirements, consultation outcomes, environmental responsibility and delivers good design outcome that we will commit to delivering.'
- 1.2.12. A rigorous and iterative site assessment process has been undertaken, underpinned by the policy expectations of NPS EN-1, to identify the only appropriate site for the Carbon Capture Facility. Most of the Carbon Capture Facility (some 70%) is proposed on land allocated as a strategic industrial location. The Project Principles have informed design evolution and led to the indicative masterplan, not least incorporating the design approach of placing tall buildings at the north of Norman Road, locating process structures closest to the Riverside Campus and enabling building heights to be stepped down toward the south of the site, leading to more human scale (form and function) buildings at the point closest to residential communities.
- 1.2.13. The loss of land designated as Metropolitan Open Land (MOL), Site of Importance for Nature Conservation (SINC) and the Crossness Local Nature Reserve (LNR) has been minimised. Mitigation for these limited losses has been set out and committed to within the Outline LaBARDS. On site, opportunities for landscape enhancement and beneficial placement of drainage and attenuation have been explored, but are not fixed, recognising the necessity of detailed design work in the future. Instead, a

comprehensive set of Design Codes has been prepared to control the ongoing design of the Proposed Scheme and steer this process through to project implementation.

'The Design Code provides clarity over what constitutes good design, highlight important design matters that will shape the project design outcomes; and provide a level of insight for designers and control for the planning authority.' **Design Principles and Design Code (AS-020).**

- 1.2.14. To aid understanding of the sustainability considerations for the Proposed Scheme layout, the Applicant has prepared and appended (at Appendix A) to this response an updated version of the Indicative Equipment Layout Drawing ('the Contextual Indicative Equipment Layout Drawing'), which sets out the constraints which have, and will, influence the layout of the Proposed Scheme. It does so through labels and through including within the drawing the drainage ditches and ponds (existing and proposed), and set-offs to them required by stakeholders, and the indicative landscape proposals from the Outline LaBARDS.
- 1.2.15. With these wider considerations in mind, it is clear that Dr Edgar has not been through that robust and rounded process. For the reasons set out below, his alternative layouts are not deliverable and they fail to demonstrate that the relocation of Munster Joinery can be avoided.

2. RESPONSES TO DR EDGAR'S EXPERT REPORT

2.1. RESPONSE TO SECTION 2: CORY PROPOSED SCHEME

Letter	Summary of issue raised	Applicant's response
Liquid CO2 Export		
2.1.1	2.7 Given that the export arrangements do not impact the required footprint for the capture and storage facilities I have not reviewed this aspect of the Proposed Development.	Noted – no specific response required.
Interfaces with EfW Facilities		
2.1.2	2.9 The steam, flue gas and electrical connections are brought to the Carbon Capture plant on elevated pipebridges. I have not reviewed this aspect of the Proposed Development in detail and have assumed the same routing when developing the Alternative Scheme Layout.	Noted. For the Proposed Scheme, the Applicant has sought to minimise the length of large-diameter flue gas ductwork and high-pressure steam pipework, in order to minimise visual impact, pressure drop, and impacts to the various designations in and around the Riverside Campus.
Two-line vs Single-line Approach		
2.1.3	<p>2.12 Firstly, not all process equipment scales linearly with increased capacity. For instance, a pump with double the capacity will not be twice as big in terms of footprint.</p> <p>2.13 Secondly, for process equipment such as the absorber column where capacity is dependent on surface area of the packing, the packing area could be increased by using a taller column rather than just increasing the cross sectional area.</p> <p>2.14 Finally, and most significantly, the overall site footprint is dictated not just by the process equipment itself but the need to provide access for operation and maintenance.</p> <p>2.15 It can be seen that the decision to adopt a two-line approach is not neutral in terms of footprint as the Applicant suggests. Rather, selecting a two-line approach will significantly increase the required footprint.</p>	<p>The Applicant agrees that a single-train plant configuration has the potential to reduce the footprint of capture process equipment when compared against a two-train configuration, albeit in doing so the Applicant would lose the operational flexibility of the two-train configuration that it is seeking the flexibility to retain. However, when comparing the overall plant configurations for the two options, any reduction in footprint for the capture process equipment (approximately one quarter of the site) would be modest (amounting to a few percent of the overall site). This would not simply facilitate the relocation of facility elements located further to the south to a more northerly part of the site, due to the constraints imposed by the specific shape of the site. As discussed above, the site for the Carbon Capture Facility uses some 70% land allocated as Strategic Industrial Location and the natural boundaries for the Stable and East Paddocks.</p> <p>Rather, if a single-train solution were to be adopted, then the configuration would be laid out so as to ease maintenance and operational access to the process equipment and to enable additional landscape opportunities around the margins of the capture facility in space that cannot be otherwise utilised.</p>

Letter	Summary of issue raised	Applicant's response
Electricity and Steam		
2.1.4	2.20 Substation and transformer plant is used to provide appropriate isolations, metering and voltage step-up / step-down to connect facilities to electricity supplies on distribution and transmission electrical networks. In short, they enable electricity to be either imported or exported from a site. However, given that the Applicant proposes to serve the electrical needs of the development through a connection to the existing Riverside 1 and 2 facilities plus self-generation through a back-pressure steam turbine generator unit the need for this substation and transformer plant is not apparent.	<p>It is not correct to state that the substation and transformer plant are not required. The electrical infrastructure provided is that required to receive a 132 kV high-voltage supply from Riverside 1 and Riverside 2 via two independent circuits, integrate with the power generated from the new back-pressure steam turbine generator units, and step down to supply power at the range of voltages required by users across the Carbon Capture Facility.</p> <p>Further detail on this point is provided on page 3 of the Applicant's Written Summary of Oral Submissions at ISH1 (REP1-024).</p>
2.1.5	2.21 The area of the red box in figure 3 is approximately 0.4 hectares (4,000 m2). This is equivalent to about half of the Munster Joinery Land.	In addition to the substation and transformers, the electrical design includes an emergency diesel generator, which is sized to supply all essential loads, plus loads associated with CO2 ship loading, so that CO2 export to a ship may be continued in the event of a loss of power. This emergency diesel generator is located adjacent to the substation and transformers, all of which are contained within the "red box" area.
Carbon Capture		
2.1.6	2.23 In terms of the footprint occupied by this plant (items 3 to 8 in Figure 1) it is broadly in-line with what I would expect for a 2-line plant of this capacity.	Noted that there are no questions raised over the footprint of the main carbon capture process facilities. This represents around a quarter of the total footprint of the site.
Liquefaction and Storage		
2.1.7	2.26 In terms of the main process equipment associated with the compression and liquefaction the footprint suggested by the Applicant appears generally reasonable.	Noted that there are no questions raised over the footprint of these process facilities.
2.1.8	2.27 However, the site footprint though is not just driven by the equipment itself, it is necessary to provide adequate space to permit access for operations and maintenance and it is a general feature of the Applicant's site layout that the space around equipment / areas of unused / wasted space are excessive.	The Applicant agrees that the site layout must be cognisant of access requirements for operations and maintenance, and such requirements have been considered. The layout of the compression, liquefaction, refrigeration and CO2 storage areas includes not only the process equipment itself, but also factors including the provision of site roads for access and maintenance, the presence of the Thames Water access road, piperacks, allowances for existing retained water courses, and minimum offsets from ditches, together with constraints imposed by the specific shape of the site, which would be used for other elements of the Proposed Scheme (which can utilise odd corners of the site) such as landscape, and water storage and attenuation. These constraints are shown on the Contextual Indicative Equipment Layout Drawing (Appendix

Letter	Summary of issue raised	Applicant's response
		A). The Applicant therefore considers that the layout for these plant elements has been optimised, with no opportunity for footprint reduction.
2.1.9	2.28 The area of land occupied by the liquefaction and storage is approximately 11,250 m2. However, it can be seen from Figure 5 that the actual process equipment occupies less than half of this. As I discuss in 3.8 to 3.9 it is possible to accommodate liquefaction and storage equipment that will achieve the required duty in a much reduced space without compromising operability and maintainability.	The plot areas occupied by the liquefaction and storage facilities includes not only the process equipment itself, but site roads for access and maintenance, piperacks, and allowances for existing retained water courses and minimum offsets from ditches. In addition, the space accounts for the fact that in detailed design, the separation distances between the individual CO2 storage tanks, and their relationship with surrounding land and users (such as users of the public rights of way and Norman Road and staff at Riverside 1 and Riverside 2) are in line with best engineering practice for such plant. The Applicant therefore considers that the layout for these plant elements has been optimised, with no opportunity for footprint reduction.
2.1.10	2.30 There is a potential alternative to select floating storage rather than on-land storage. This is briefly discussed and discounted by the Applicant in the consideration of alternatives. The reasons given were that it would have an adverse impact on the marine environment, present navigation risks as well as increase operational costs due to maintenance of the floating storage and dredging to remove silt that might build up around the floating storage unit.	As stated, floating storage has been discounted due to the associated adverse impact on marine navigation and the marine environment, including shipping. As a result, onshore storage has been selected. Further detail on this point is provided on page 10 of the Applicant's Written Summary of Oral Submissions at ISH1 (REP1-024) .
2.1.11	2.33 Subsequent to the DCO application, the Applicant has had an amendment approved by the Planning Inspectorate to accommodate vessels of up to 20,000 m3. Logically, it would be thought that this would increase the required on-site storage but in the letter that sets out this proposed amendment it is stated that "the Applicant confirms that the change to provision for vessels of approximately 20,000 m3 would not require any changes in the size of the LCO2 Buffer Storage Area".	<p>The Applicant initially took a conservative approach in specifying the required CO2 storage volume, since at that stage of the project, the destination for CO2 transport had not been established, a shipping assessment had not been performed, and there was uncertainty over the size of ship that would be utilised (notwithstanding that an assumption was made for the ES for assessment purposes). In addition, avoiding the requirement to vent CO2 in the event that the buffer storage was full is an important consideration in achieving high overall capture rates.</p> <p>Further work, including the completion of further technical shipping work by a third party, which considered both appropriate sizing and how they would operate in terms of journey times and resilience requirements, has now allowed the Applicant to confirm that the selected CO2 storage volume is sufficient for 20,000m3 ships as a design basis assumption for this stage of the Proposed Scheme.</p>
2.1.12	2.34 The Applicant has subsequently confirmed that 24,000 m3 of storage is provided. This is more than would have been required for the original design basis but is appropriate for the amended design basis to accommodate the larger vessels.	Noted that the indicative storage volume is considered to be appropriate.

Letter	Summary of issue raised	Applicant's response
2.2.13	2.35 My own assessment of the storage requirements is that the same volume of storage can be provided in less space than the Applicant has allowed. In particular, the Applicant's layout shows 6 storage spheres but I consider that only 3 storage spheres are required to provide approximately 24,000 m3 of CO2 storage.	The Applicant agrees that larger individual storage receptacles are available from equipment suppliers. However, in selecting the size and shape of individual storage spheres, and hence the number required and the associated footprint, there are other factors that need to be taken into consideration. In particular, in the event of a catastrophic failure of one of the storage receptacles, the quantity of CO2 released would have a direct bearing on the consequences and impact on neighbouring receptors. The Applicant has undertaken a preliminary risk assessment to consider the potential consequences of a possible release from a range of storage tank configurations, and impact on third-party receptors, and this has informed the storage options being taken forward, and hence the plot area requirement for storage to allow for flexibility in what is brought forward in the context of the detailed design of the overall Proposed Scheme.
Cooling		
2.1.14	2.36 The process design will look to optimise the heating and cooling to minimise overall energy consumption but overall there will be a significant residual cooling load for the plant which the Applicant has estimated to be 362MW. This cooling load is considerably higher than that which I had calculated prior to the provision of new information from the Applicant, and may warrant further investigation.	The Applicant has determined the overall cooling load based on the requirements of individual process plant packages and equipment items and consider this to be an accurate figure, not merely based on industry benchmarks.
2.1.15	2.37 The wet and hybrid options require water and can potentially create visible plume which (whilst harmless) is often subject to negative public perception.	The Applicant agrees that a visible plume can result in negative public perception. The Applicant also notes that it can be a source of hazard if it results in impaired visibility both on site and outside the site boundary (for example on public roads). For these reasons, avoidance of visible plume was an important consideration in the assessment of cooling options.
2.1.16	2.39 These reasons are valid but the Applicant fails to acknowledge the difference in footprint between a wet cooling and hybrid cooling option.	The Applicant notes that the advantages of wet-dry (hybrid) cooling over wet cooling are acknowledged. The Applicant agrees that a Wet Cooling Tower approach (Option 2b in Chapter 3 of the ES) results in a lower footprint than hybrid cooling; however, wet cooling has been discounted primarily due to insufficient make up water being available together with the desire to minimise the potential for visible plume formation and the greater operational flexibility that a hybrid approach allows for. The alternatives considered for cooling technology are presented in Chapter 3: Consideration of Alternatives of the ES (APP-052) from paragraph 3.5.14. Discussion of the make-up water requirement of the cooling options is presented at reference 2.2.17 below.
2.1.17	2.40 The Applicant's main reason for discounting wet cooling is said to be that there is insufficient water supply... 2.42 In order to fully understand this issue I would need further detail on the Applicant's design, but, as should be apparent from the above, I am not	The assumptions made by Dr Edgar regarding cooling water make-up requirements and the quantity of process condensate available do not accurately represent the water balance. The Applicant has performed detailed analysis of make-up water demand, water available from condensate knock-out from the incoming flue gas, and water supply available for import to the site (determined to be 180 m³/h if significant network reinforcement were provided by Thames Water, following discussions with Thames

Letter	Summary of issue raised	Applicant's response
	convinced that a wet cooling tower option would not be possible.	Water – this is equivalent to the water consumption of around 14,000 households). This has determined that there is insufficient water available to allow a wet only cooling solution to be employed, but there is sufficient for hybrid cooling. Therefore, the wet cooling option has been discounted.
2.1.18	2.43 Notwithstanding my concerns over whether the Applicant has been sufficiently rigorous in the selection of cooling technology, my own assessment suggests that the Applicant's footprint is approximately 30% larger than I would expect for a hybrid cooling system of the cooling load anticipated by the Applicant.	The Applicant has performed a rigorous sizing calculation for the hybrid cooling tower, and the size is based on the results of this calculation in the basis of design.
2.1.19	<p>2.44 For this particular development, there is also an additional opportunity to capture waste heat and feed it to the Riverside Heat Network. The Applicant estimates that up to 100MWt of heat can be supplied to the heat network.</p> <p>2.45 However, if this was implemented then the cooling load would be decreased accordingly. This would lead to a corresponding decrease in the footprint required for the cooling plant. Given that it would appear that the cooling requirement could be reduced by >25% then the footprint saving could be over 800 m2.</p>	If heat recovery from the carbon capture plant to a heat network is implemented, the cooling system will still have to be sized for the full cooling load of the plant, since there will be periods when there is zero or very low demand from the heat network for heat specifically recovered from the carbon capture facility. Therefore, it is not possible to reduce the footprint of the hybrid cooling towers.
Balance Of Plant		
2.1.20	2.47 The water recovered from the flue gas and potable water from the Thames Water supply will be suitable for use in a wet / hybrid cooling tower without significant further processing.	Condensate from the Direct Contact Cooler contains dissolved acid components from the flue gas, which are neutralised through the addition of caustic, resulting in the production of dissolved salts. This condensate therefore requires treatment prior to its use as cooling water make-up. Facilities for the treatment of the condensate stream are included in the Water Treatment Plant.
2.1.21	2.48 A feature of the Applicant's layout is the significant space that is allowed around items of equipment and a failure to best optimise the footprint available. The heat transfer station is an example of this...	<p>The heat available for recovery from the Carbon Capture Facility into the heat network via the heat transfer station has not yet been fully quantified. The heat transfer station building is therefore nominally sized, based on previous project experience.</p> <p>The heat transfer station is located in a dedicated compound, with its own access, roadway and parking area, since access to the heat transfer station will be required by the operators of the heat transfer network, and it is necessary to segregate these personnel from the carbon capture plant.</p>

Letter	Summary of issue raised	Applicant's response
Operational laydown area		
2.1.22	2.49 Operational laydown, in relatively close proximity to the plant is certainly beneficial – particularly during outages. However, there is no absolute requirement that this be on the carbon capture site itself – it could be located within the wider Riverside campus. It would appear that there is plenty of other alternative land available to the Applicant for temporary laydown on the existing EfW facilities	<p>The areas indicated on the Riverside campus are not suitable for use as operational laydown for the Carbon Capture Facility. Addressing each of these in turn:</p> <ul style="list-style-type: none"> • The area to the west substantially aligns with Work Nos. 2, 3 and 4 (as well as being overlain by Work Nos. 5 and 6) of the Riverside Energy Park Order 2020 (as amended) and will be occupied by elements of Riverside 2 (principally the air cooled condensers, equipment for heat exchange and electrical substation) – see Appendix B, which is an extract from that project's Works Plans. • The area to the south accommodates underground water attenuation (constructed alongside Riverside 1). Therefore, this area is not load-bearing and is a location for landscape planting approved under the Riverside Energy Park Order 2020 (as amended); it is unsuitable for storing equipment and materials. • The area to the east is a habitat mitigation area associated with Riverside 1, unsuitable for storing equipment and materials.
Administration and Welfare Facilities		
2.1.23	2.52 The Applicant has included two buildings designated as "Control Room And Welfare Facilities And Gatehouse". It is assumed that the western of these buildings is the control room and welfare facilities whilst the eastern is the gatehouse.	This is correct for the purposes of the Indicative Equipment Layout Drawing (although in detailed design, these areas may swap or interact differently with the rest of the Carbon Capture Supporting Facilities). It should be noted that there will also be welfare facilities associated with the control room building, and the control room building and/or gatehouse building will also accommodate an office area, stores and workshop facilities.
2.1.24	2.53 It is common on industrial facilities to have a gatehouse to monitor deliveries in and out of site. However, on a carbon capture facility it is not common to have a dedicated gatehouse due to the very low number of deliveries to site... There is no necessity for a dedicated gatehouse to accommodate these vehicle movements. They could be managed by the control room operators.	<p>The Applicant does not consider that it would be appropriate for the Carbon Capture Facility not to have a permanently staffed gatehouse to control access to the site, ensure site security, provide site inductions to visitors, etc. All Cory operational sites have a dedicated staffed gatehouse at the site access for Health & Safety and security purposes. In addition, the Applicant does not consider that it would be appropriate for control room operators to be responsible for dealing with visitors/delivery to the site, in addition to their other duties; such distractions could result in safety-related incidents arising.</p> <p>It is noted, for example, that Riverside 2 has its own separate control room, to Riverside 1, and that control room operators are not responsible for matters managed by the gatehouse staff.</p>
2.1.25	2.55 The Applicant has allowed for a large control and welfare block with dimensions of approximately 40m x 20m and a footprint of 800 m2. The Applicant states that this is because the carbon capture facility will be operated as a "separate facility to Riverside 1 and Riverside 2". In my own experience, this is unusual. Normally, a post combustion carbon capture facility is designed to be closely integrated with the host power station.	<p>The Riverside 1 and Riverside 2 control rooms do not have space to accommodate the additional facilities associated with the Carbon Capture Facility.</p> <p>Notwithstanding this, and whilst the Applicant does not disagree that some carbon capture facilities are operated remotely from the plant providing input CO2, in this case the entire Carbon Capture Facility and associated development will be independently project financed and operated. Therefore, the basis of design assumes that the Carbon Capture Facility will need to provide for dedicated operators and its own on-site control room, welfare facilities, gatehouse, parking as well as appropriate telemetry infrastructure connecting it to both energy from waste facilities.</p>

Letter	Summary of issue raised	Applicant's response
	<p>2.56 The key reason for this is that the process interactions are relatively complex and the operation of the host power plant and carbon capture facility are very much intertwined... ...Accordingly, in my experience, it would be normal practice for a post combustion carbon capture plant to be operated from the control room of the combustion plant to which it is attached.</p>	<p>As the Carbon Capture Facility will need to be capable of autonomous operation, the control room will need operator stations, Continuous Emissions Monitoring System terminals (CEMS), servers, switches, areas for strategic stores (tools and spares) and welfare (including kitchen/canteen, toilet, changing facilities, showers – for both operators and contractors), permit office and a small maintenance workshop. In addition to the normal CEMS and plant management roles, the control room will likely be required to perform a specific role in the fiscal and custody management of CO₂, involving specialist equipment and personnel to support monitoring, recording and verification, requiring testing and laboratory facilities. Furthermore, the control room will also be required to support the operational management of the associated heating offtake and transfer station.</p> <p>It is also the case that remotely operated networked control systems are far more vulnerable to attacks from outside threats. The autonomous control and local telemetry philosophy proposed by the Applicant will be more resilient.</p> <p>Regarding the size of the control room building, as stated in 2.2.23 above, this building also accommodates an office area, stores and workshop facilities.</p>
2.1.26	<p>2.59 The Applicant further states that there is no space in the existing control rooms to accommodate the facilities or personnel for the carbon capture plant. I have not got information on the size of the existing control rooms so I am unable to robustly confirm or deny this statement but I would observe that the necessary facilities are likely to comprise an operator station, a station for the Continuous Emissions Monitoring System (CEMS) as well as space for servers and switches. This is a relatively small amount of equipment which would not take up a significant amount of space.</p>	<p>The Applicant reiterates that the existing Riverside 1 and Riverside 2 control rooms do not have space to accommodate the additional facilities associated with the carbon capture facility. Therefore, a new, dedicated control room is required.</p> <p>In any event, the Applicant's operational experience and philosophy is for each operating facility to have its own dedicated control room, in order to facilitate operational resilience and avoid the potential for common-mode failure.</p>
2.1.27	<p>2.60 The Applicant also advances the argument that the control room / welfare facilities "support the requirement for a single contiguous plot of land for the construction, operation and maintenance of the Proposed Scheme, and the need for fast response times in the unlikely event of an operational incident". There is no detail on what an operational incident is considered to be but I would observe that good industrial practice is that the plant should be designed to fail into a safe condition rather than requiring operator intervention and, especially, it</p>	<p>By "operational incident" the Applicant is considering process upsets, equipment failures, etc. that would result in the capture plant being unable to continue in normal operation, and consequently require operator intervention to remediate.</p> <p>Safety-related incidents will have appropriate response measures that do not result in operators being unnecessarily exposed to additional hazards, further to the Applicant's statutory duties and obligations.</p>

Letter	Summary of issue raised	Applicant's response
	would generally be unacceptable to require operatives to be in the vicinity of any operational incident – especially when one considers the hazards involved in the proposed facility including chemicals such as carbon dioxide and amines as well as fire and electricity. Normally, if there is an operational incident then trained first responders (for instance the fire brigade) are called, the plant is shut-down / put into a safe state and personnel are evacuated. It is not acceptable health and safety practice for operators / maintenance personnel to put themselves in harm's way by moving towards the source of an operational incident. As such, I do not agree with what the Applicant appears to be arguing in this section.	
2.1.28	2.61 An additional consequence of the Applicant's decision to consider the carbon capture facility separate from EfW plants is that there will be a requirement for parking within the carbon capture facility which would not otherwise be required if the carbon capture facility and the EfW plants were operated as one facility.	An appropriate level of car parking provision has been made based on the anticipated maximum number of site personnel who will be present at any time, plus provision for visitors.
Water Management Area		
2.1.29	2.62 The Applicant has made allowance for a "Water Management Area" with a footprint in the region of 2000 m2. The need for this or what it entails is not explained in the Site and Proposed Scheme Description. However, in the Applicant's response to a question on what this area entailed it is stated that this is to be "finalised through the detailed design and include Water Supply Storage Tank(s)". The Applicant has stated that 8,400 m3 of water storage will be provided....I consider that it may be possible to reduce the water abstracted from Thames Water which would reduce the required storage. The Applicant states that the storage is sized to achieve 2 days of capacity. This is quite a significant amount of storage.	The Applicant has determined the level of water supply required from Thames Water by considering water consumption of the Carbon Capture Facility and the availability of other sources of water, such as condensate from the Direct Contact Cooler. On this basis, Thames Water has stipulated that a water storage provision of 8,400m3 should be provided as part of the Carbon Capture Facility, to allow for diurnal variation and interruptions in the instantaneous supply rate available and ensure continuous provision.

Letter	Summary of issue raised	Applicant's response
2.1.30	2.63 Regardless of the above, as an example, a tank with capacity 8,354 m3 from Superior Tank Company Inc[13] has a diameter of 38m and height of 7.4m. The footprint of that tank would be 1,134 m2. This is far less than the circa. 2,000 m2 allowed for in the Applicant's footprint.	The Applicant has made provision for a buried, rectangular water storage tank, rather than an above-ground cylindrical tank, in order to minimise visual impact at the southern end of the site, in line with the overall Design Principles of the site, and notwithstanding that this would be at greater cost to the Applicant. The footprint is appropriate for this type of storage tank.
Contiguous Site		
2.1.31	2.65 I do not agree that "severance" of the type contemplated would compromise operational efficiency, site security and safety.	The Applicant repeats its position, based on its past operational experience and knowledge of the wider sector, that severance would compromise operational efficiency, site security and safety, and reduce the potential for enhancement within/at the edges of the Carbon Capture Facility.
2.1.32	2.66 I would also observe that this seems rather contradictory to the decision to separate the carbon capture facility from the EfW facilities... ...It seems inconsistent to argue that a contiguous site is necessary for these facilities but not for the more complex interactions with the EfW facilities.	The interaction between the Carbon Capture Facility and the energy from waste facilities consists of interconnecting ductwork, pipework, electrical cabling and instrument cabling. There is no requirement for personnel or vehicles to transit between the two facilities, albeit some movement will be required across both sites, for example routine inspection of pipework and ductwork. Having the two sites adjoining, but not integrated in terms of shared access, is entirely consistent with this level of interaction.
2.1.33	2.67 A further inconsistency in terms of the contiguous site argument can be seen from the Applicant's plans for accommodating the Thames Water access road... ...the Applicant has included gates to isolate the Thames Water access road from the carbon capture facility. In effect, this means that the Thames Water access road bifurcates the site.	The Thames Water Access Road is a secondary access, that is used very infrequently by Thames Water and the EA. Access to this road is via locked gates at both the east (Norman Road) and west (Thames Water's operational site) ends of the road. With the Carbon Capture Facility in operation, this road will be used primarily as an internal site road, providing a link between the southern and northern areas for personnel and vehicles. The gates to isolate the Thames Water access road from the Carbon Capture Facility will normally be open, and would only be closed on the infrequent occasions when Thames Water or the Environment Agency need to use the road, in order to prevent access by unauthorised personnel to the rest of the Carbon Capture Facility. Consequently, the Applicant does not consider the site to be bifurcated.
2.1.34	2.68 A concern with a bifurcated / non-contiguous site is the need to maintain safe and secure access. However, there is no reason why this could not be achieved even with two completely separate site areas. It would require separate access control and would be less convenient, but it is entirely achievable.	The Applicant agrees that a non-contiguous site presents a challenge in maintaining safe and secure access. In addition, as stated in 2.2.31 above, severance would compromise operational efficiency, site safety, and reduce the potential for enhancement within/at the edges of the Carbon Capture Facility. Having separate access control would require additional roadways, parking areas, facilities and personnel, increasing the overall footprint requirements of the Carbon Capture Facility.
2.1.35	2.69 There is no technical challenge to bringing services such as water and electricity between a development located North and South of the Munster Joinery Land.	If a pipework/cable corridor, and means of personnel access, were to be provided to the west of the Munster Joinery Land, this would encroach on the Metropolitan Open Land and expanded Crossness Local Nature Reserve. The Proposed Scheme has been designed to date (and is controlled in the future through the Design Code) to minimise impact on land designated as Metropolitan Open Land, Site of Importance for Nature Conservation and Local Nature Reserve.

Letter	Summary of issue raised	Applicant's response
		<p>Mr Turney KC has indicated verbally at ISH1 that a corridor of the Munster Joinery Land could be made available to avoid this, although the details of this are not provided in Dr Edgar's Expert Report. However, the Applicant does not consider that this would be technically achievable without the relocation of the existing buildings utilised by Munster Joinery, since there is very little space between the west side of the buildings and the west edge of the Munster Joinery Land, and this space is considered to be insufficient to accommodate the necessary pipe racks and access roadway for heavy good vehicles, emergency services vehicles, and personnel.</p>

2.2. RESPONSE TO SECTION 3: ALTERNATIVE SITE LAYOUT

Number	Summary of issue raised	Applicant's response
General		
2.2.1	3.3 A key assumption that I have made is to provide 2x50% trains for the carbon capture and liquefaction equipment. This has been done to enable a direct comparison with the Cory DCO scheme which has been designed on this basis. As I discuss above selecting a single 100% train would enable a plant with a smaller footprint to be designed.	Noted. Please refer to the Applicant's response in 2.2.3 above regarding the single train option.
2.2.2	3.4 I have also adopted the Applicant's assumption that the carbon capture development will be separate from the EfW plants without shared access.	Noted. The Applicant considers that separate access is essential, as the Carbon Capture Facility and associated development will be an independent facility with a dedicated workforce, and discrete facilities.
2.2.3	3.5 A layout drawing for my alternative scheme is provided in Appendix B. It will be immediately evident the footprint for the alternative scheme is significantly smaller than the one proposed by the Applicant, would not require the use of the Munster Joinery Land and would provide a contiguous site for the carbon capture development.	The Applicant does not consider that this layout provides sufficient footprint for the process plant, equipment and buildings required for the Carbon Capture Facility. The Applicant addresses specific issues in Table 2-2 above and in the following elements of Table 2-3.
2.2.4	3.6 In terms of the main process equipment (including the carbon capture plant such as absorbers, strippers and reboilers as well as the drying and liquefaction) the size of this equipment is generally similar to that suggested by the Applicant.	Noted that there is no dispute over the size of these equipment items and packages.
Switchyard		
2.2.5	3.7 ...the Applicant has included for an allocation of approximately 4,000 m2 for "substation and transformers" which is not necessary. The alternative scheme provides electricity using a back-pressure steam turbine driven by high pressure steam from the EfW stations supplemented by an electrical fed from the EfW stations. This is the same methodology as	<p>It is not correct to state that the substation and transformer plant are not required. The electrical infrastructure provided is that required to receive a 132 kV high-voltage supply from Riverside 1 and Riverside 2 via two independent circuits, integrate with the power generated from the new back-pressure steam turbine generator units, and step down to supply power at the range of voltages required by users across the carbon capture plant site.</p> <p>In addition to the substation and transformers, the electrical design includes an emergency diesel generator, which is sized to supply all essential loads, plus loads associated with CO2 ship loading, so that CO2 export to a ship may be continued in the event of a loss of power. There is no provision for these facilities in Dr Edgar's Alternative Site Layout.</p>

Number	Summary of issue raised	Applicant's response
	proposed by the Applicant and can be achieved without the need for the large switchyard specified by the Applicant.	
CO2 Buffer Storage		
2.2.6	<p>3.8 I would suggest that using spherical tanks of the size that I have employed will provide a more efficient use of space.</p> <p>3.9 I have specified 3 x 25m diameter spherical tanks which provides almost 24,000 m3 of storage. This is sufficient even for the increased vessel size proposed by the Applicant in the recent change request.</p>	<p>Please refer to 2.2.13 above regarding selection of CO2 storage configuration. A full risk assessment would be necessary to consider whether individual storage tanks of 8,000m3 capacity would be acceptable.</p> <p>In addition, in the Alternative Site Layout the CO2 storage tanks are located on the east side of the Site, adjacent to Norman Road. This location would mean that the storage tanks are significantly closer to neighbouring receptors than they are in the Indicative Equipment Layout, accentuating the hazard risks associated with these storage tanks.</p>
Cooling and Heat Transfer Station		
2.2.7	3.10 I have selected hybrid cooling towers as the technology.	Noted.
2.2.8	3.11 ...if waste heat is supplied to the local district heating network then the cooling load and hence the footprint of the cooling towers can be reduced accordingly.	If heat recovery from the carbon capture plant to a heat network is implemented, the cooling system will still have to be sized for the full cooling load of the plant, since there will be periods when there is zero or very low demand from the heat network for heat recovered from the Carbon Capture Facility. Therefore, it is not possible to reduce the footprint of the hybrid cooling towers.
2.2.9	3.12 The alternative scheme includes a footprint that would be sufficient to provide the necessary cooling in the event that waste heat recovery to the district heating network was not included. However, in the event that this is included, then the alternative scheme locates the heat transfer station within the footprint of the cooling towers using the space that would become available due to the reduced cooling load.	As stated in 2.3.8 above, the footprint of the cooling towers cannot be reduced. The Alternative Site Layout therefore fails to make provision for the Heat Transfer Station.
2.2.10	3.13 An additional option for cooling if it were required to further reduce the footprint would be to install V-shaped air coolers on top of the buildings.	The Applicant is currently considering a dry cooling option, as an alternative to hybrid cooling. For the dry cooling option, an overall increase in the footprint of the cooling equipment, when compared against hybrid cooling, would result. For the dry cooling option, the Applicant is therefore proposing locating some of the cooling equipment above piperacks and equipment. As such, locating these coolers above piperacks and equipment would be in addition to the main cooling tower array, and would not result in a reduction in footprint.

Number	Summary of issue raised	Applicant's response
Operational Laydown		
2.2.11	3.14 ...given the assumption that the carbon capture development will be separate from the rest of the Riverside Campus I have included for operational laydown of the same size (1000 m2) as the Applicant.	Noted.
Control Room, Welfare Facilities and Gatehouse		
2.2.12	3.15 I have provided a control room, welfare facilities, gatehouse and parking. On the Alternative Layout this is provided in the North East of the site.	In the Indicative Equipment Layout, the Applicant has sought to maximise the separation of occupied buildings from potential sources of process hazard. This philosophy does not appear to have been adopted in the Alternative Site Layout, which, for example, locates the Control, Administration and Welfare Facilities in close proximity to the capture plant.
Water Management Area		
2.2.13	3.17 The Alternative Layout provides a water storage tank, sized at 4,600 m3 with diameter 24.5m and height 9.8m. As I discuss in 2.40 to 2.42 I consider that there may be opportunity to reduce the water demand assumed by the Applicant. However, even on the Applicant's assumed water demand this tank provides 24 hours of back-up storage which I consider to be sufficient.	As stated in 2.2.29 above, Thames Water has stipulated that a water storage provision of 8,400m3 should be provided as part of the Carbon Capture Facility, to allow for diurnal variation and interruptions in the instantaneous supply rate available and ensure continuous provision.
Thames Water Access Road		
2.2.14	3.19 There is a requirement in the DCO to retain emergency access to their facilities for Thames Water through this route but there is flexibility in terms of moving the existing road. In the Alternative Layout I have made provision for a new access road for Thames Water that runs to the south of the carbon capture site. This avoids the Lagoon Field and has the advantage over the Applicant's scheme that Thames Water personnel do not have to travel through the Carbon Capture site itself.	The proposed rerouting would only be beneficial if the entire Carbon Capture Facility could be located to the north of the proposed rerouted road, as indicated in the Alternative Site Layout. However, as noted in 2.3.3 above, the Applicant does not consider that the Alternative Layout provides sufficient footprint, therefore the proposed rerouted Thames Water access road would still pass through the Carbon Capture Facility.

Number	Summary of issue raised	Applicant's response
Construction Laydown		
2.2.15	3.20 The Alternative Layout will permit a similar approach in terms of construction compound / construction laydown as proposed by the Applicant.	Noted. The provision of construction laydown has no impact on the overall footprint required for the Carbon Capture Facility.

2.3. RESPONSE TO SECTION 4: COMPARISON OF LAYOUT OPTIONS

Number	Summary of issue raised	Applicant's response
General		
2.3.1	4.1 As outlined in the previous section, I have developed the Alternative Layout to achieve the same design outcomes as the Applicant's layout. However, this is achieved with a smaller footprint. In this section, I will highlight the key drivers for this reduction.	As noted in 2.3.3 above, the Applicant does not consider that this layout provides sufficient footprint for the process plant, equipment and buildings required for the Carbon Capture Facility.
Overall Footprints		
2.3.2	4.4 My measurement using Google Earth for this footprint was approximately 61,000 m2.	<p>The shaded areas included for the three alternative layouts are indicative.</p> <p>This matter is addressed in more detail in the Applicant's Deadline 1 submissions, at Appendix B (from paragraph 1.2.11) to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025).</p>
2.3.3	4.8 ...one area of footprint saving is simply being more efficient with the specific location / position of plant items and supporting infrastructure (in particular for the liquefaction and storage plant). This is partly due to the shape of the land for the development. For the southern part especially, it is not a rectangle / square which makes it harder to fully utilise the land available in that part of the site.	<p>The Applicant agrees that the specific shape of the site (i.e. reflecting local plan employment land allocations and natural features such as ditches) presents challenges in plant configuration and results in a greater overall footprint being required than would be the case with a nominally rectangular site. However, where there are areas of the site that cannot be utilised for process equipment or associated facilities, these have been utilised for landscape, drainage, attenuation and landscaping – see the Contextual Indicative Equipment Layout Drawing (Appendix A).</p> <p>The Applicant considers that the positioning of plant items and supporting infrastructure has been undertaken in a space-efficient manner, taking due consideration of specific site constraints, the relative location of plant items to each other, safety considerations, maintenance and operational access requirements, and the overall design philosophy of the facilities.</p>
2.3.4	4.8 Further, given that provision of access around plant and equipment is a significant driver of required footprint, reduction in	While the Applicant agrees that a reduction in equipment sizing would also result in a reduction in access provision, the Applicant does not consider that there is opportunity to reduce the size of equipment, for the reasons set out in Tables 2-2 and 2-3 above.

Number	Summary of issue raised	Applicant's response
	equipment sizing (for instance the CO2 storage vessels) also enables a reduction in footprint for access .	
2.3.5	4.9 The footprint difference between the Applicant's own "Expanded" and "Compressed" layouts contradicts this argument and as further demonstrated by my Alternative Layout, even with (in general) relatively similar sizing for the process plant, it is possible to reduce the footprint by careful positioning of the process equipment and infrastructure.	<p>The Applicant considers that the footprint difference between the Applicant's own "Expanded" and "Compressed" layouts does not contradict the argument that "the specific location and position of these elements is immaterial in the context of the Proposed Scheme's land requirements", as the Expanded layout is not merely a repositioning of individual elements when compared to the Compressed layout, rather, it incorporates increased space for landscaping within the layout itself, between these elements, thereby resulting in the increased footprint of the Expanded layout.</p> <p>Adoption of the "Compressed" layout illustrates that the Applicant has sought to minimise the overall footprint of the Carbon Capture Facility. The location of individual equipment items and equipment packages within the Indicative Equipment Layout has also been driven by a desire to minimise overall footprint and make most efficient use of the space available, taking into account the specific restrictions of the site, such as field boundaries and watercourses. For these reasons, the Applicant considers that the repositioning of individual items within the overall layout would offer no additional opportunities for footprint reduction.</p>
Site Location		
2.3.6	4.10 – 4.11 It might be that had the 6.1 ha Compressed Layout been used as a basis this would have changed the outcome of that assessment as this would have allowed an equivalent option to South Zone 2 to have been developed with a significantly lesser impact on the Crossness Local Nature Reserve.	The selection of South Zone 2 would have a greater adverse impact on the Crossness Local Nature Reserve and Metropolitan Open Land and Site of Importance for Nature Conservation designations than the selected site. This would be the case even with a reduction in the overall plot area of the carbon capture facility. South Zone 2 is therefore rejected on this basis. Please see Appendix B to the Applicant's Written Summary of its Oral Submissions at ISH1 (REP1-025) .
2.3.7	4.13 I also note that the Alternative Layout that I have developed fits within the boundaries of South Zone 2 (but with a significantly reduced uptake of land in the Crossness Local Nature Reserve).	As noted in 2.3.3 above, the Applicant does not consider that this layout provides sufficient footprint for the process plant, equipment and buildings required for the carbon capture facility.
2.3.8	4.16 The East Zone (North 1 Zone)... ...was discounted by the Applicant due to impact on local businesses as well as concerns that "it would not form a single homogenous area with the Riverside Campus".	<p>South Zone 1 directly adjoins the Riverside Campus, with the Carbon Capture Facility potentially separated by a fence line. In contrast, East Zone/North Zone 1 would be separated from the Riverside Campus by third-party land, including a public right of way.</p> <p>The impact on this public right of way (FP4) is set out in more detail in the Applicant's Deadline 1 submissions, at Appendix D to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025).</p>

Number	Summary of issue raised	Applicant's response
	This second reason seems very strange given that the Applicant's plans for the development using the Southern Zone also do not form a single homogenous area with the Riverside Campus	
	4.18 ...the terrestrial part of the area now designated as North 1 by the Applicant is sufficiently large to accommodate the full carbon capture development even using the 61,000 m2 footprint of the Applicant's own proposed scheme. The result of this is that there would be no impact on the Lidl operation as assumed in the assessment of the East Zone in the Terrestrial Site Alternatives Report.	<p>The Applicant reiterates the points made in 2.4.2 above that the shaded areas included for the three alternative layouts are merely indicative.</p> <p>The Applicant has considered the potential for locating the Carbon Capture Facility at North Zone 1 in the TSAR Addendum (Appendix H to the Applicant's Response to Relevant Representations (AS-044)) demonstrating that it performs poorly against the Optioneering Principles and is not a reasonable alternative. The terrestrial area of North Zone 1 was considered as the East Zone in the TSAR (APP-125) with further consideration set out the Applicant's Deadline 1 submissions, at Appendices D and E to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025). The terrestrial part of North Zone 1 (or the East Zone) is not of sufficient size to accommodate the Carbon Capture Facility and there would be an impact on the Lidl operations (and others) if this location were to be selected. As set out in the site assessment documentation submitted to date, this is considered to be a more substantial impact than the relocation (or worst case loss) of Munster Joinery.</p>
Nature Reserve		
2.3.9	4.20 I have been instructed to consider a layout that would seek to minimise the impact on the nature reserve whilst maintaining the assumption that the Southern Zone remains the preferred option in terms of site location. This "LNR Preservation Layout" is presented in Appendix C.	<p>As with the Alternative Site Layout, the Applicant does not consider that this layout provides sufficient footprint for the process plant, equipment and buildings required for the Carbon Capture Facility.</p> <p>In addition, the CLNR Preservation Layout would result in a bifurcated site, much longer runs of flue gas ductwork (increasing pressure drop in the ductwork, and their visual impact) and the location of the capture plant and CO₂ storage tanks closer to neighbouring receptors.</p>
Conclusions		
2.3.10	5.6 – 5.7 In conclusion, I feel that it would be possible for the Applicant to develop a carbon capture, liquefaction and storage scheme that would meet their requirements whilst also reducing or minimising the impact on other parties. In particular, it is my view that it is not necessary to acquire the Munster Joinery Land in order to construct and operate a carbon capture scheme for the Riverside 1 and 2 EfW facilities.	The Applicant considers that these conclusions are without merit, for the specific reasons set out above in Tables 2-2, 2-3 and 2-4.

3. RESPONSE TO THE LICHFIELDS REPORT

- 3.1.1. The impacts of the Proposed Scheme on Munster Joinery UK Limited have been considered within:
- **Chapter 14: Population, Health and Land Use** of the **Environmental Statement (APP-063)**; and
 - **Chapter 15: Socio-economics** of the **Environmental Statement (APP-064)**.
- 3.1.2. As set out in **Paragraph 14.8.6** of **Chapter 14: Population, Health and Land Use** of the **Environmental Statement (APP-063)**, the Applicant sought to reach an agreement with Munster Joinery UK Limited on a relocation site but an agreement was not reached at the time of writing the Environmental Statement. The Applicant sought to engage with Munster Joinery UK Limited, including holding a discussion about supporting a relocation, but the approach was declined. The loss of operations at Munster Joinery's Norman Road premises was therefore considered within the Environmental Statement as a worst case scenario. As detailed in **Paragraph 14.8.7** of **Chapter 14: Population, Health and Land Use** of the **Environmental Statement (APP-063)**, the Applicant anticipated that the Proposed Scheme would have a direct, permanent, long term, Major Adverse (Significant) effect on Munster Joinery UK Limited as a result of the loss of the distribution centre.
- 3.1.3. As set out in **Table 14-14** of **Chapter 14: Population, Health and Land Use** of the **Environmental Statement (APP-063)**, the generation of construction jobs was considered as part of the construction assessment. **Table 14-17** of **Chapter 14: Population, Health and Land Use** of the **Environmental Statement (APP-063)**, considered the loss of jobs associated with Munster Joinery UK Limited (as estimated in Chapter 15: Socio-economics) as well as permanent jobs generated as part of the Proposed Scheme, as part of the operational human health assessment. The jobs losses associated with Munster Joinery UK Limited would be permanent (in the event that relocation was not agreed) and, therefore, these permanent job losses were considered alongside the permanent job generation from the operation of the Proposed Scheme.
- 3.1.4. **Chapter 14: Population, Health and Land Use** of the **Environmental Statement (APP-063)** considered the impact of the Proposed Scheme on individual businesses whilst **Chapter 15: Socio-economics** of the **Environmental Statement (APP-064)** considered the impacts on the local and regional economy.
- 3.1.5. There is no set methodology for socio-economic assessments that are undertaken as part of Environmental Impact Assessments. **Chapter 15: Socio-economics** of the **Environmental Statement (APP-064)** presents a proportionate assessment in accordance with best practice and professional judgement. The assessment presented in **Chapter 15: Socio-economics** of the **Environmental Statement (APP-064)** was based on the information available at the time of writing the Environmental Statement. As no data was available on the wider business activities associated with the Munster Joinery Norman Road

premises at the time of writing the Environmental Statement, a high multiplier of 1.7, in accordance with the Additionality Guide¹, was used for the employment calculations for the Munster Joinery Norman Road premises. Multiplier effects account for further economic activity (jobs, expenditure or income) associated with additional economic linkages in terms of suppliers and local expenditure.

- 3.1.6. Employment calculations, in accordance with the Employment Density Guide, are used to estimate job generation for a proposed scheme or for an existing scheme where the existing employment numbers are not available. Within Table 3.6 of the Lichfields Report, it is estimated that the Munster Joinery Norman Road premises currently supports a total of 69 direct jobs, with 17 jobs being associated with distribution, 15 jobs associated with the showroom and 37 associated with the office.
- 3.1.7. It is noted that this is provided as 'an estimate', which the Applicant considers (not least by reference to Environmental Statement **Appendix 15-1 Munster Joinery (APP-112)**) to be high. Furthermore, as Landsul Limited is the proprietor of Munster Joinery (UK) Limited, and Munster Joinery (UK) Limited is the operating company, the Applicant would have expected that actual employment numbers would have been provided in the Lichfields Report.
- 3.1.8. The Lichfields Report concludes significant effects on:
 - the labour market within the local study area;
 - businesses and commercial activity within the site boundary;
 - businesses and commercial activity within the local study area; and
 - businesses and commercial activity within the regional study area.
- 3.1.9. The Applicant agrees there would be a significant adverse effect on Munster Joinery if a relocation site is not agreed; this is detailed in **Chapter 14: Population, Health and Land Use of the Environmental Statement (APP-063)**. However, it does not agree that the effects on the local study area (London Borough of Bexley) would be significant in the context of the local employment market. Even when considering the estimated job numbers presented in the Lichfields Report, a loss of 209 jobs within the local study area is not deemed significant. According to the Office for National Statistics NOMIS data, there were 246,600 people residing in London Borough of Bexley in 2021. In 2023, there were 74,000 total employee jobs in London Borough of Bexley with 5,000 being in Sector C: Manufacturing and 7,000 in Sector H: Transportation and Storage. Within this context, it is anticipated that the loss of 209 jobs, of which approximately 181 would be directly at Munster Joinery or within the company's supply chain, would not be significant.
- 3.1.10. Based on the information provided in the Lichfields Report, the Applicant anticipates that there would not be a significant effect on business and

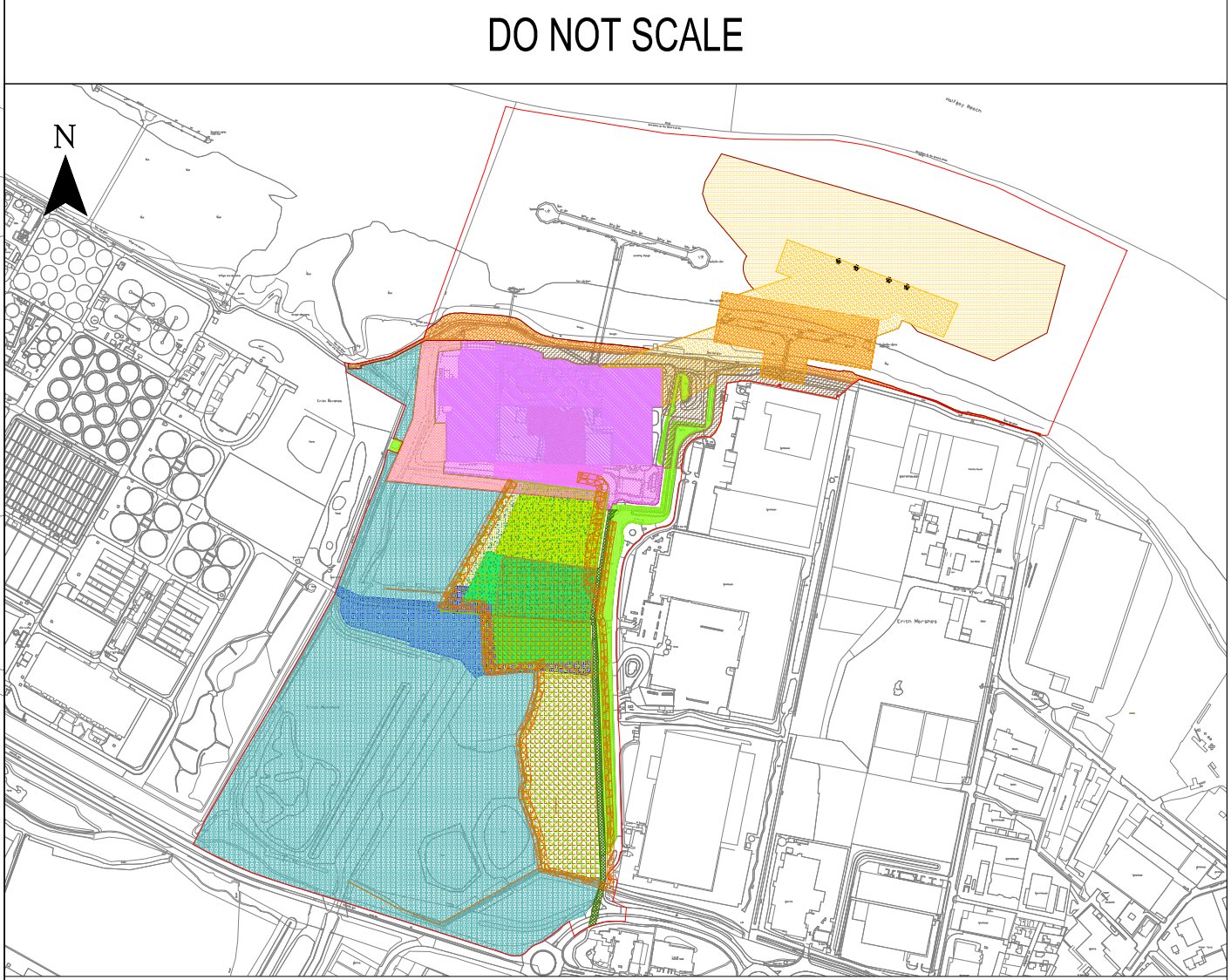
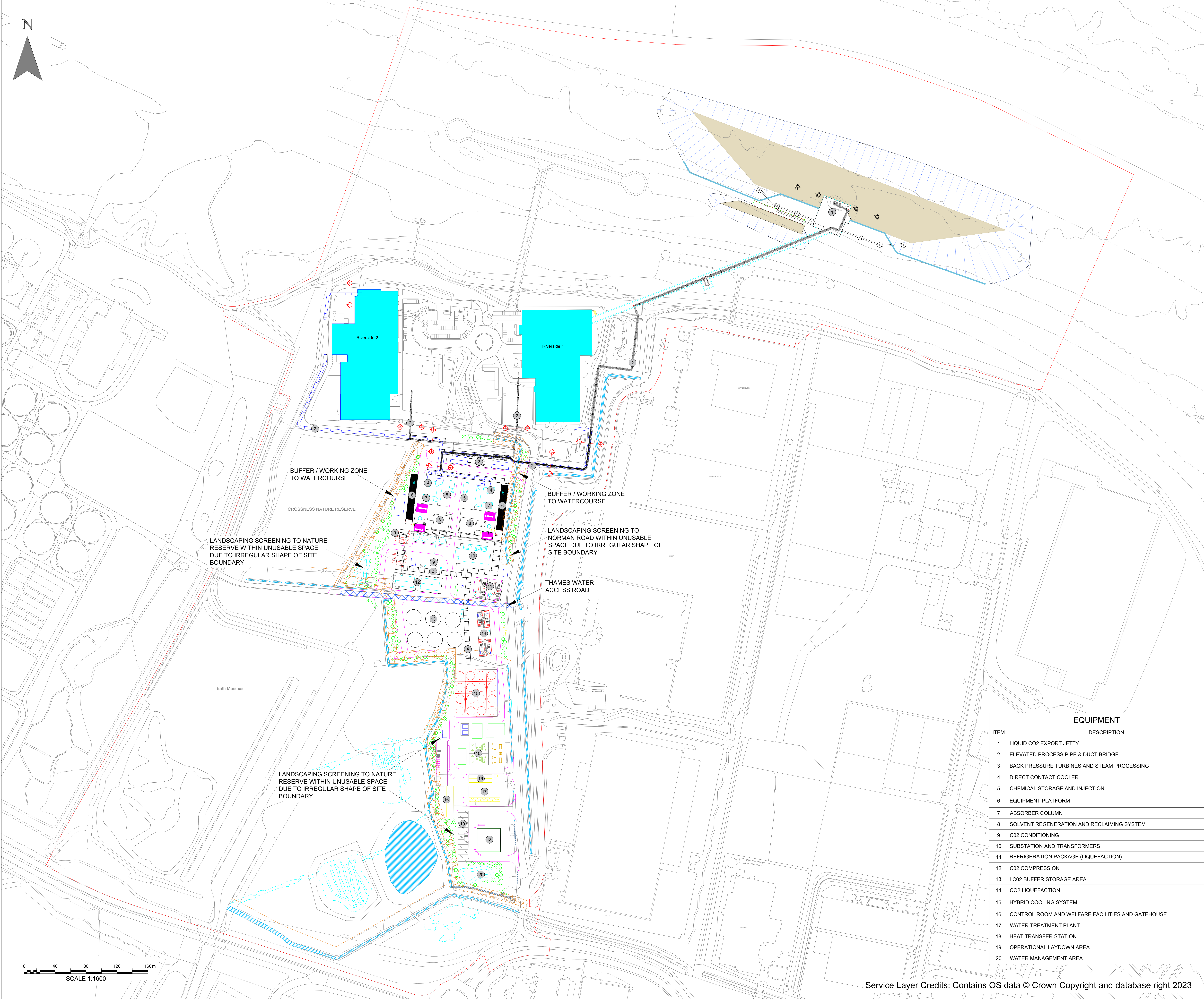
¹ Homes and Communities Agency (now known as Homes England). (2014). 'Additionality Guide 4th Edition'. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/378177/additionality_guide_2014_full.pdf

commercial activity in the local study area (London Borough of Bexley). This is due to the diversity of the employment market in the London Borough of Bexley and its diverse economy as a well-connected London borough. Additionally, the Applicant does not agree there would be a significant adverse effect on business and commercial activity in the regional study area (Greater London) due to Proposed Scheme. Greater London supports a vast number of jobs across a diverse range of industries and is a well-connected and stable economy.

- 3.1.11. As set out in **Paragraph 15.4.24 of Chapter 15: Socio-economics** of the **Environmental Statement (APP-064)**, the Applicant is seeking to reach an agreement with Munster Joinery UK Limited on a relocation of its Norman Road distribution premises. If the Munster Joinery Norman Road premises could be located to an area that supports existing business operations, this would avoid job losses from Munster Joinery Ltd. The Applicant has offered support to Munster Joinery (UK) Ltd to relocate its business currently at Norman Road; which to date has been declined.
- 3.1.12. Whilst the Applicant does not agree with the Lichfields Report, even if the ExA decided that it agreed with that report, the Applicant's fundamental position is that, pursuant to the **Statement of Reasons (APP-020)** and **Planning Statement (APP-040)**:
- the compelling case in the public interest for the Proposed Scheme outweighs the worst case loss of Munster Joinery/Landsul's land and operations; and
 - that the benefits of the Proposed Scheme outweigh the socio-economic impacts of the loss of Munster Joiner's operations, no matter how they are characterised.

Appendices

APPENDIX A –CONTEXTUAL INDICATIVE EQUIPMENT LAYOUT DRAWING



KEY:

- OUTLINE OF EXISTING PLANT
- ORDER LIMITS
- DREDGE POCKET
- DREDGE SLOPES
- INDICATIVE LOCATION OF RETAINING WALL TO ENABLE DREDGING
- WATERCOURSE BUFFER
- ILLUSTRATIVE LANDSCAPE

NOTES:

- THIS DRAWING IS FOR INFORMATION ONLY AND SHALL NOT BE USED FOR ANY OTHER PURPOSE
- LOCATION OF PROPOSED INFRASTRUCTURE SHOWN INDICATIVELY
- ALL LEVELS ARE IN METERS TO ORDINANCE DATUM (OD) UNLESS STATED OTHERWISE
- THIS PLAN SHOWS ONLY ONE EXAMPLE WAY THAT THE PROPOSED SCHEME COULD BE LAID OUT WITHIN THE PARAMETERS AND LIMITS OF DEVIATION SET BY THE DEVELOPMENT CONSENT ORDER TO AID UNDERSTANDING OF THE PROPOSED SCHEME

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P03	DB	DS	TA	13/12/2024
P02	SP	DS	TA	21/10/2024
P01	SP	DS	TA	20/03/2024

FINAL				
REVISION	DRAWN	CHECKED	APPROVED	DATE
DESCRIPTION				



PROJECT TITLE:

CORY DECARBONISATION PROJECT

DRAWING TITLE:

CONTEXTUAL INDICATIVE EQUIPMENT LAYOUT DRAWING

DRAWING STATUS

FOR DEADLINE 2

DRAWN:	CHECKED:	APPROVED:	AUTHORISED:
SP	DS	TA	AV
SCALE @ A0 SIZE:		DATE:	REVISION:
1:1600		October 2024	P03

DRAWING NUMBER:

EN010128-01-XX-DG-PL-0005-P02

EQUIPMENT	
ITEM	DESCRIPTION
1	LIQUID CO2 EXPORT JETTY
2	ELEVATED PROCESS PIPE & DUCT BRIDGE
3	BACK PRESSURE TURBINES AND STEAM PROCESSING
4	DIRECT CONTACT COOLER
5	CHEMICAL STORAGE AND INJECTION
6	EQUIPMENT PLATFORM
7	ABSORBER COLUMN
8	SOLVENT REGENERATION AND RECLAIMING SYSTEM
9	CO2 CONDITIONING
10	SUBSTATION AND TRANSFORMERS
11	REFRIGERATION PACKAGE (LIQUEFACTION)
12	CO2 COMPRESSION
13	LCO2 BUFFER STORAGE AREA
14	CO2 LIQUEFACTION
15	HYBRID COOLING SYSTEM
16	CONTROL ROOM AND WELFARE FACILITIES AND GATEHOUSE
17	WATER TREATMENT PLANT
18	HEAT TRANSFER STATION
19	OPERATIONAL LAYDOWN AREA
20	WATER MANAGEMENT AREA

APPENDIX B – WORK PLANS EXTRACT



KEY:

- ORDER LIMITS
- AREA NOT INCLUDED IN DEVELOPMENT CONSENT ORDER
- LOCAL AUTHORITY BOUNDARY
- REFERENCE POINT

LIMITS OF DEVIATION	WORK No.	AUTHORISED DEVELOPMENT
	1A	AN ENERGY RECOVERY FACILITY EXCLUDING WORK No. 1A(iv)
	1A (iv)	UP TO TWO EMISSION STACKS
	1B	AN ANAEROBIC DIGESTION SYSTEM
	1C	SOLAR PHOTOVOLTAIC PANELS ON ALL OR PART OF WORK No. 1E AND, SHOULD A STEAM TURBINE BE CONSTRUCTED AS PART OF WORK No. 2, ON ALL OR PART OF THE STEAM TURBINE BUILDING FORMING PART OF WORK No. 2. SWITCHGEAR, INVERTERS, TRANSFORMERS, AND PERMANENT EQUIPMENT FOR MAINTENANCE
	1D	A BATTERY STORAGE FACILITY
	1E	A BUILDING WITH ROOF ENCLOSING AND/OR SUPPORTING ALL OR PART OF WORK NUMBERS 1A, 1B, 1C AND 1D
	2	WORKS TO CONSTRUCT A COOLING SYSTEM COMPRISING AIR-COOLED CONDENSERS AND, IF NOT CONSTRUCTED AND INSTALLED AS PART OF WORK No. 1A, A STEAM TURBINE, ELECTRICAL GENERATOR AND A STEAM TURBINE BUILDING
	3	WORKS TO CONSTRUCT AND INSTALL COMBINED HEAT AND POWER EQUIPMENT INCLUDING HEAT EXCHANGERS, PIPEWORK, INCLUDING FLOW/RETURN PIPEWORK, VALVING, PUMPS, PRESSURISATION AND WATER TREATMENT SYSTEMS
	4	WORKS TO CONSTRUCT AN ELECTRICAL SUBSTATION INCLUDING CIRCUIT BREAKER, AND TRANSFORMER BUSBAR SECTIONS, INTEGRATED PROTECTION SCHEME AND UNINTERRUPTIBLE POWER SUPPLIES
	5	WORKS TO CONSTRUCT AND INSTALL SUPPORTING BUILDINGS AND FACILITIES
	6	WORKS TO CONSTRUCT AND INSTALL SUPPORTING INFRASTRUCTURE
	7	WORKS TO CONSTRUCT AND INSTALL FROM WORK No. 6 PIPES AND CABLES
	8	TEMPORARY CONSTRUCTION COMPOUND
	9(a)-(d)	AN ELECTRICAL CONNECTION

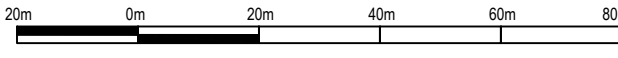
1 SINGLE ELECTRICAL CONNECTION 14.05.18 ED RG DS

WORKS PLAN

SHEET 2 OF 16

Drawing Number	Revision
DOC REF: 2.2	1

A1 Scale: 1:1250



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