# **DECARBONISATION**

# APPENDICES A-E TO WRITTEN SUMMARY OF THE APPLICANT'S ORAL SUBMISSION AT ISSUE SPECIFIC HEARING 1 (ISH1): 9.8

### **Cory Decarbonisation Project**

PINS Reference: EN010128

November 2024

Revision A

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations, 2009 – Regulation 5(2)(b)



## APPENDIX A: HEAT NETWORK INTERACTION NOTE

### **Cory Decarbonisation Project**

PINS Reference: EN010128

**November 2024** 

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### 1.1. INTRODUCTION

- 1.1.1. The carbon capture process rejects heat, which is often wasted. The Proposed Scheme will incorporate a Heat Recovery and Heat Transfer System so that this heat opportunity can instead be captured and redirected into a district heating network, including any potential synergies with the nearby Riverside Heat Network.
- 1.1.2. The Riverside Heat Network is in development and is currently capable of diverting up to 28.6 MWth of heat from Riverside 1, potentially benefitting up to 25,000 homes and businesses in the local area.
- 1.1.3. In addition to the potential heat benefits from the Proposed Scheme itself, opportunities have been identified to provide an additional 189 MWth of heat from Riverside 1 and 169 MWth of heat from Riverside 2 to the Riverside Heat Network or other district heat networks.

### 1.2. OPPORTUNITY

- 1.2.1. The Proposed Scheme through the carbon capture process has the potential to provide over 100 MWth of additional heat which would benefit an even greater number of homes and businesses. Several potential sources of heat from within the Carbon Capture Plant(s) have been identified that may be suitable for supply to a heat network. These include:
  - the incoming hot flue gas from Riverside 1 and Riverside 2 supplied to the Carbon Capture Plant(s);
  - amine solvent circulating in the Carbon Capture Plant(s);
  - hot CO<sub>2</sub> exiting the stripper column;
  - hot CO<sub>2</sub> at discharge from each stage of CO<sub>2</sub> compressors;
  - heat rejected from the refrigerant circuit in the CO<sub>2</sub> liquefaction plant; and
  - steam condensate, prior to return to Riverside 1 and Riverside 2.
- 1.2.2. In some cases, this heat may be available at a suitable temperature for recovery into a heat network; in other cases, the use of heat pumps may be required to upgrade the heat to a more suitable temperature.
- 1.2.3. This additional heat from the Proposed Scheme may be utilised by optimising with the Riverside Heat Network or by directing the heat to other district heat networks.

### 1.3. SYSTEM REQUIREMENTS

1.3.1. A Heat Transfer Station will be installed as the interface between the Proposed Scheme and the receiving heat network. It will accommodate the main operating plant and water treatment equipment necessary to support the heat transfer system, including thermal storage, and provide a connection into the receiving heat network



within the Utilities Connections and Site Access Works Area (Work No. 3) and potentially backup heat generating plant in the event of outages.

- 1.3.2. The Heat Recovery and Heat Transfer system will include the following:
  - heat recovery equipment for the reuse of heat within the Carbon Capture Plant(s);
  - heat pumps (if required);
  - heat offtake equipment to either transfer the waste heat from the Carbon Capture Plant(s) to the circulating heat transfer medium, or route hot process streams directly to the heat transfer system via separate insulated pipes;
  - insulated pipework that will run from the heat offtake equipment or heat sources to the Heat Transfer Station; and
  - a Heat Transfer Station, as above.

### 1.4. RIVERSIDE 1 HEAT RECOVERY

- 1.4.1. Various opportunities exist to recover heat from Riverside 1 and export it to a district heating network. These opportunities include:
  - up to an additional 14.9 MWth to the 28.6 MWth previously identified, giving a total
    of 43.5 MWth where turbine bleed steam is used as the heat source; and
  - up to 4.5 MWth from cooling of the flue gas prior to release from the stack; and
  - up to 170 MWth of heat from the steam turbine exhaust whose temperature is increased with a heat pump to a level suitable for district heating networks; or
  - up to 159 MWth of heat from mechanical vapour recompression (MVR) of the steam turbine exhaust providing heat at a temperature suitable for district heating networks.
- 1.4.2. The CHP area for Riverside 1 is shown on drawing 3199-8310-0002. The installation includes facilities to recover heat from the above identified process sources, potentially including heat pumps to upgrade the temperature level of recovered heat, thermal stores that can be utilised to maintain a supply of heat to the network to balance supply from Riverside 1 and the demand profile of users, and interconnecting pipework between the heat sources, the heat store and from the installation to the district heating network.

### 1.5. RIVERSIDE 2 HEAT RECOVERY

- 1.5.1. Riverside 2 also has the potential to provide useful heat towards a district heating network. The potential opportunities include:
  - up to 30 MWth from the steam turbine bleeds; and
  - up to 139 MWth of heat from the steam turbine exhaust whose temperature is increased with a heat pump to a level suitable for district heating networks; or
  - up to 116 MWth of heat from MVR of the turbine exhaust providing heat at a temperature suitable for district heating networks.

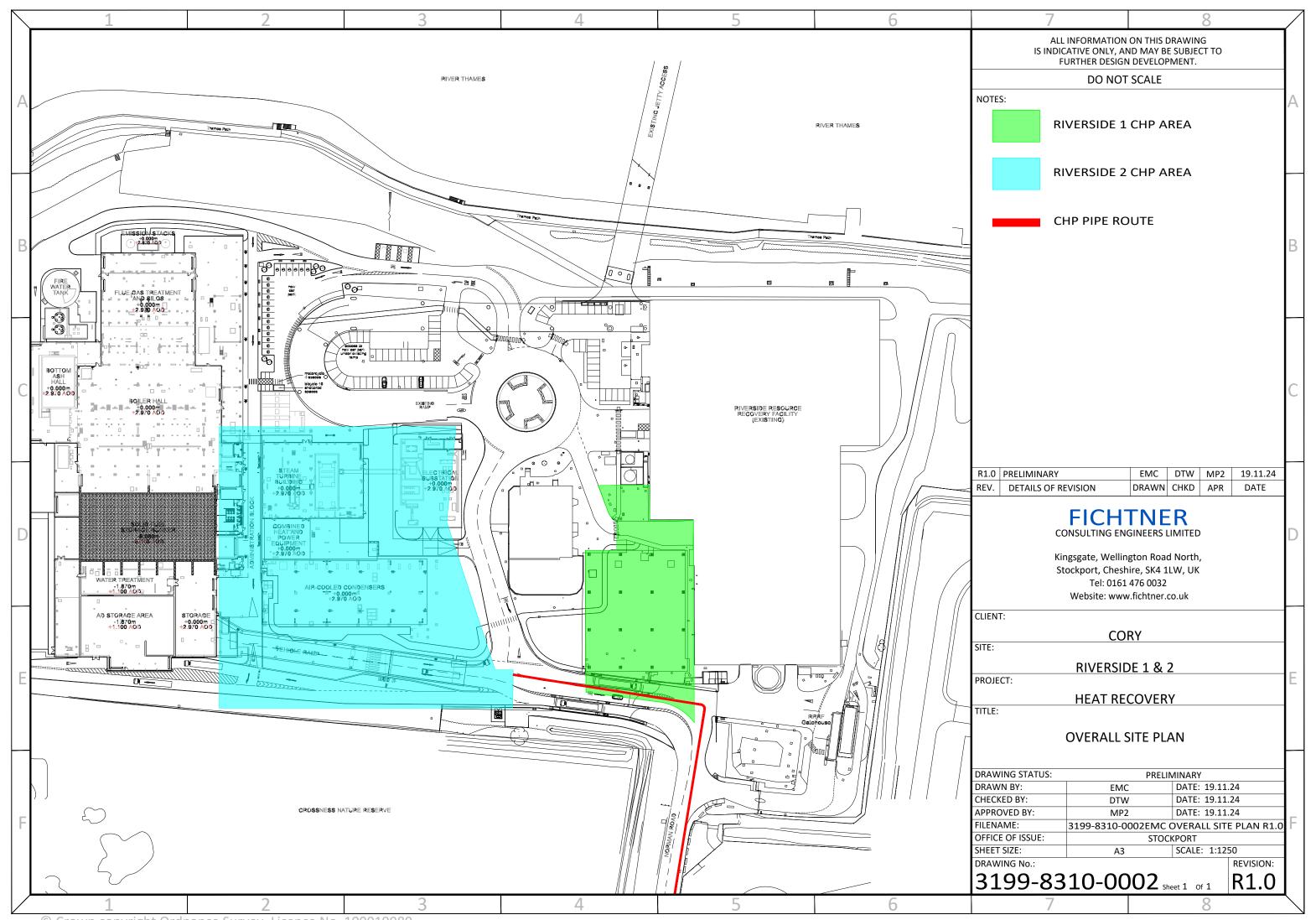


1.5.2. The CHP area allocated for Riverside 2 is also shown on drawing 3199-8310-0002. The drawing displays the tie in of the CHP pipes from both Riverside 1 and 2 with an indicative pipe routing along Norman Road. The installation will consist of facilities and equipment comparable with those described above for Riverside 1.

### 1.6. CARBON CAPTURE PLANT HEAT RECOVERY

- 1.6.1. In summary, the Proposed Scheme has identified a heat opportunity within the carbon capture process itself and taken account of that potential in the basis of design. That opportunity could be brought forward either through connecting to the Riverside Heat Network or becoming part of its own heat network. Potential opportunities and synergies with Riverside 1/Riverside 2 and the Riverside Heat Network, as well as any other suitable heat networks, will be considered during FEED and at the detailed design stage.
- 1.6.2. Crucially, however, the key point is that the heat transfer station provided for as part of the DCO is proposed on the basis of the heat recovery opportunities from the Carbon Capture Facility, taking into account potential synergies with the heat networks associated with Riverside 1 and Riverside 2. The plant associated with integration with the Riverside 1/Riverside 2 heat networks has minimal impact on the overall size of the area taken within the Carbon Capture Facility.

### ANNEX A





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# APPENDIX B: TERRESTRIAL SITE ASSESSMENT PROCESS OVERVIEW

### **Cory Decarbonisation Project**

PINS Reference: EN010128

**November 2024** 

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**Annex A Revised ES Figure 3-3** 



### 1.1. INTRODUCTION

- 1.1.1. During Issue Specific Hearing (ISH) 1, the Examining Authority (ExA) sought clarity on the steps followed through the terrestrial site assessment process, and as reported in the Terrestrial Site Alternatives Report (APP-125, TSAR) and TSAR Addendum (AS-044) (submitted as Appendix H of the Applicant's Response to Relevant Representations (AS-043)).
- 1.1.2. In addition, Mr Turney KC queried the site area relevant to the Carbon Capture Facility, through reference to Environmental Statement Figure 3-3, Alternative Layouts for the Carbon Capture Facility (APP-072 and updated at AS-0021, 'ES Figure 3-3').
- 1.1.3. In Action Point vii in section 8 of Annex B to the Rule 8 Letter published on 18 November 2024 (PD-006) the ExA requests a 'explanation of the timing and phasing of the scheme development and optioneering exercises with reference to the size, scale and area of anticipated development considered for options for alternative siting'. This note has been prepared to respond to those requests, giving an overview of the terrestrial site assessment process, the stages reached at key times and the relevance of ES Figure 3-3.

### 1.2. TIMING AND PHASING OF PROPOSED SCHEME DEVELOPMENT AND OPTIONEERING

- 1.2.1. Project optioneering, for both the Carbon Capture Facility (reported in the TSAR and TSAR Addendum) and the Proposed Jetty (reported in the Jetty Site Alternatives Report, APP-126) commenced in early 2022. 'On the basis of the early stage engineering feasibility studies, a preliminary understanding of the site area required for the Carbon Capture Facility was around 4 hectares (ha). Consequently, and further to the objectives, initial consideration was given to nine preliminary site parcels of this size; eight on land and one within the River Thames. At this point a site size of 4 hectares (ha) was assumed for the terrestrial site assessment.' (TSAR, paragraph 2.4.1)
- 1.2.2. The Preliminary Environmental Information Report (Document Reference: 0.2, PEIR) was published in October 2023 as a key document of the statutory consultation undertaken at this time. Following ongoing design evolution, the PEIR confirmed at paragraph 3.3.2 that a footprint of approximately 7 hectares would be required to provide sufficient land to house all aspects of the Carbon Capture Facility as described within that document (at Chapter 2). This is explained at Section 2.6 of the TSAR (APP-125).
- 1.2.3. The preliminary optioneering process assessed nine Development Area Options (A –I) for the Carbon Capture Facility. The PEIR confirms (at paragraph 3.3.6) that Development Area Options A, B, D and H were selected 'for the following reasons:
  - to form a single homogenous area with sufficient space for the necessary footprint of the Carbon Capture Facility;



- close proximity to Riverside 1 and Riverside 2 for connection of the flue gas ducting and further utilities;
- the ability to consolidate the direct loss of Crossness LNR land, Erith Marshes SINC land and land designated as MOL; and
- avoiding adverse environmental impacts associated with works within the River
   Thames above and beyond those required for the Proposed Jetty.'
- 1.2.4. Paragraph 3.3.7 of the PEIR confirms that further design development was on-going and that further information on the optioneering process would be provided in the submission documents.
- 1.2.5. At paragraph 3.3.12, the PEIR confirms that Development Option A was selected as the preferred location for the Proposed Jetty recognising the limited impacts on current maritime operations and minimal engineering constraints. This preferred location has not changed, it is the location presented in the Works Plans (AS-007) and was an important fixed element that informed the ongoing terrestrial site assessment.
- 1.2.6. As can be seen at Appendix A of the TSAR (APP-125), the 4 ha Development Area Options first considered were simple blocks representing that area of land. They were intended to test outcomes without being tied to any particular field boundaries or other existing landform.
- 1.2.7. Following the preliminary optioneering and as reported in the PEIR, the optioneering process was developed. The process was structured to define the Project Principles, Optioneering Principles and Design Principles to support the governance of option and design development. A first iteration of these principles was discussed with London Borough of Bexley in September 2023; feedback on the Design Principles was also sought through the formal consultation undertaken in Autumn 2023. The Optioneering Principles (Section 2.8 of the TSAR) were used to assess the North, East, West and South Development Zones, as described at Section 2.7 of the TSAR and Section 2 of the Design Approach Document (APP-044).
- 1.2.8. Each Development Zone was sized at approximately 8ha and, crucially, were defined with reference to existing field boundaries, plot boundaries and other existing features. Paragraph 2.6.4 of the TSAR (APP-125) sets out the factors that increased footprint demand to approximately 8ha (general site operation efficiency, onsite buffer storage for the carbon dioxide and the need for standalone water storage).
- 1.2.9. The Optioneering Principles were applied fresh to the eight, 8ha Development Zones. The optioneering assessment identified the preferred Development Zone South Zone 1, with the Design Principles used to validate the process and preferred option conclusion.
- 1.2.10. The preferred Development Zone option formed the basis for consideration of layout options. Section 5 of the DAD (APP-045) illustrates the key layout influences. Section 5 also illustrates the diffused and compact layout options explored within the preferred Development South Zone 1 (see Figure 5.3 Diffused Layout and Figure 5.4 Compact



Layout). The compact layout formed the basis of the illustrative masterplan which informed the project parameters.

- 1.2.11. ES Figure 3-3 comprises a set of three diagrams prepared only to support the text within Chapter 3 of the alternatives considered; it was not intended to be used as the basis for any site area measurement. ES Figure 3-3 (APP-072) was updated at AS-021 as the full extent of the intended colouring for Option 2 was missing (it had been erroneously cropped short in the original version). In reality, these Figure 3-3 oversimplify the options considered and do not properly reflect the diffused and compact layout options and the consideration of an option that explores the retention of the Munster Joinery site. A revised ES Figure 3-3 has been prepared to more accurately illustrate the alternative layouts considered within the DAD; this is appended (Annex A).
- 1.2.12. As shown more clearly in the revised ES Figure 3-3 (Annex A) Option 2 (Compact) could be accommodated within a range of site size (some 6.3ha to over 8ha) dependent upon various factors. The revised ES Figure 3-3 (Annex A) indicates the focus areas of flexibility sought, with the areas indicated potentially to be used for any (or all) of LVIA, water environment, ecological and operational drainage functions. These are a limited part of the overall CCF area that will be developed during detailed design and are an appropriate and necessary part of the Proposed Scheme
- 1.2.13. The crucial point in considering these figures is that all three options were illustrative of a scheme that could be developed within South Zone 1; subject to testing against established Design Principles and more detailed layout considerations. Option 3 (Munster Retained), would, in theory, require greater land area and land take to provide the required site area ignoring the in-principle matter of the Applicant's operational requirement for a contiguous site layout. The theoretical additional area would require additional land take from the adjacent Crossness Local Nature Reserve, SINC and Metropolitan Open Land (MOL) to facilitate all operational requirements. This is clearly demonstrated in the revised ES Figure 3-3 at (Annex A).
- 1.2.14. This is not a novel conclusion and has been reported in Chapter 3 Consideration of Alternatives of the Environmental Statement (APP-052) at the third bullet of paragraph 3.4.3:
  - 'Option 3 Retention of Munster Joinery: In light of ongoing engagement, which was also reflected in statutory consultation feedback, the Applicant has sought to understand whether it is feasible, or not, to have a layout that retains Munster Joinery. As a starting point, in order to maintain the eight hectares operational requirement, such a layout would involve development within the Norman Road Field (Accessible Open Land) and thus outside the chosen development zone. If this was sought to be avoided this would mean all the operational requirements will not be able to be met within the Carbon Capture Facility. Even with this said, an arrangement that retains Munster Joinery (0.8 hectares) would lead to a fractured development whereby much of the Supporting Plant is separated from the rest of the Carbon Capture Facility. Severance would compromise operational efficiency, site security and safety and



reduce the potential for enhancement within/at the edges of the Carbon Capture Facility. For example, lack of visibility from the Control Room to the Carbon Capture Facility and also a lack of safe and secure access from the Gatehouse to the Carbon Capture Facility.'

- 1.2.15. Paragraph 3.4.4 confirms 'Option 2 (Compressed Layout) [Compact Layout] has been selected, providing a contiguous plant layout that optimises opportunities for buffer planting, and environmental mitigation.'
- 1.2.16. Further, it is also pertinent to note that although the area occupied by the Indicative Equipment Layout (DAD Figure 4.14, APP-045) is 7.4 hectares, this does not abrogate the need for the Landsul/Munster Joinery site, because to retain it, would result in a fractured development that does not meet the Proposed Scheme's operational requirements in the context of providing a single facility with a contiguous plant layout.
- 1.2.17. The TSAR Addendum (AS-044, and its Annex A (AS-062)) were prepared over the summer of 2024, in direct response to the relevant representations received. Seven additional Development Zones, all of 8 hectares in size (see **Annex A** to the **TSAR Addendum (AS-062)**) were considered:
  - North Zone 1, responding to LBB's suggestion for a more detailed consideration of this area;
  - East Zones 1-3, responding to requests to consider the Belvedere Industrial Area further and recognising that LBB has confirmed that development of the Carbon Capture Facility within land allocated as Strategic Industrial Land would be considered policy compliant; and
  - West Zones 1-3, for completeness.
- 1.2.18. The TSAR Addendum was submitted to the Examining Authority on 25 September 2024 along with the Applicant's Response to Relevant Representations (AS-043) which addressed the site assessment matters raised in relevant representations and presented RAG charts for all development zones (the original eight from the TSAR and the additional seven in the TSAR Addendum).
- 1.2.19. Importantly, none of the conclusions of that assessment work would be affected even if the figure used was 7.4 hectares (noting that the East Zone Connectivity Note, Appendix D of the Applicant's Summary of Case)) indicates it would likely need to be more than this to account for more internal roads). The consequences (including particularly in the East Zone, the need to remove Iron Mountain and at least one other building within the Belvedere Industrial Area and the complexity and impacts of connecting that zone to the existing Riverside Campus) would still be the case with that slightly smaller site area.
- 1.2.20. For the avoidance of doubt, it is also the case that a 7.4ha site would not change the conclusions of the analysis of the different south zones. This is because, not least:



- South Zone 2 would still require much of the West Paddock (c. 2.6ha) in addition to the East and Stable Paddocks, resulting in greater loss of the Crossness LNR, MOL and SINC.
- South Zone 3 would still require most of the land in Norman Road Field (c. 3.2ha) resulting in a greater loss of MOL in area and a direct impact on its primary function 'as a break within the built-up area' (paragraph 5.56, Bexley Local Plan). It would also mean loss of Accessible Open Land and a break in the public footpath routes in this area. Development in this Zone would require the Flue Gas Ductwork to oversail the Crossness LNR, MOL and SINC. In addition, this Zone would still require the Munster Joinery/Landsul land parcel.
- South Zone 4 would still require most of the land in Norman Road Field (c. 2.8ha) resulting in a greater loss of MOL in area and a direct impact on its primary function 'as a break wtihin the built-up area' (paragraph 5.56, Bexley Local Plan). It would also lead to the greatest loss of the SINC and to loss of Accessible Open Land and a break in the public footpath routes in this area.
- South Zone 5 would still require most of the land in Norman Road Field (c. 4ha) resulting in a greater loss of MOL in area and a direct impact on its primary function 'as a break wtihin the built-up area' (paragraph 5.56, Bexley Local Plan). It would also lead to a greater loss of the SINC and the greatest loss of Accessible Open Land and a break in the public footpath routes in this area. Development in this Zone would require the Flue Gas Ductwork to oversail the Crossness LNR, MOL and SINC and other connections to oversail the Munster Joinery/Landsul land parcel, albeit is retained.
- 1.2.21. As such, South Zone 1 remains the appropriate location for the Carbon Capture Facility, and the only reasonable alternative that meets the Project Objectives. This has been further affirmed through the more detailed consideration of issues with connecting to the East Zone, as set out in East Zone Connectivity Note (Appendix D of the Applicant's Summary of Case).

### 1.3. CONCLUSION

- 1.3.1. The Applicant has undertaken a structured, iterative and proportionate site assessment process to identify the preferred site and layout approach for the Proposed Scheme. A structured optioneering process has been undertaken guided by optioneering principles that have been rigorously applied and recorded. The optioneering process has evolved during the life of the project development process and has enabled the assessment to be refreshed at appropriate times and rooted in all the Project Objectives and Optioneering and Design Principles.
- 1.3.2. Having established the relevant Project Objectives, recognising (as advised in NPS EN-1) that site options that cannot meet these objectives are not reasonable alternatives, section 2.3 of the TSAR (APP-125) confirms the terrestrial site assessment process undertaken has been iterative, using various points along the way to review current understanding and to test assumptions.



1.3.3. At paragraph 4.3.22, NPS EN-1 states:

'Given the level and urgency of need for new energy infrastructure, the Secretary of State should, subject to any relevant legal requirements (e.g. under the Habitats Regulations) which indicate otherwise, be guided by the following principles when deciding what weight should be given to alternatives:

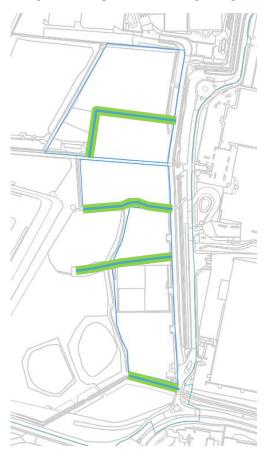
- the consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner; and
- only alternatives that can meet the objectives of the proposed development need to be considered.'
- 1.3.4. Each of these elements of NPS EN-1 policy: the proportionate response to legislative and policy requirements; and identification of the key principles for an alternative to meet the objectives of the Proposed Scheme, have been rigorously considered within the terrestrial site assessment process set out above and undertaken by the Applicant since early 2022. The process has demonstrated that South Zone 1 is the only site that can meet the objectives of the proposed scheme and is an appropriate site for the Carbon Capture Facility.

### **ANNEX A**

### **ES FIGURE 3-3: REPLACEMENT ILLUSTRATION**

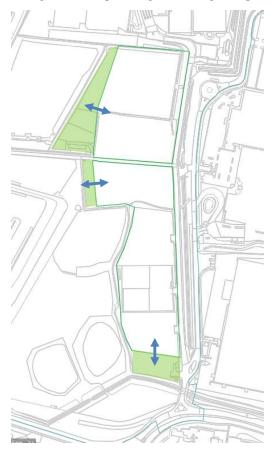
The below sketch more clearly shows the differences between Options 1, 2 and 3.

### Option 1 (diffused layout)



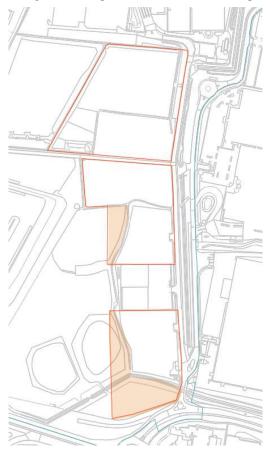
Ditches retained

### Option 2 (compact layout)



Potential flex for green buffers by omitting ditches

### Option 3 (Munster retained)



8Ha impact on ditches, MOL and SINC



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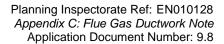
### APPENDIX C:FLUE GAS DUCTWORK NOTE

### **Cory Decarbonisation Project**

PINS Reference: EN010128

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1.1.	Flue Gas Ductwork	П

Annex A Existing Riverside Campus, Bird's Eye View



### 1.1. FLUE GAS DUCTWORK

- 1.1.1. During Issue Specific Hearing (ISH) 1 Miss Berry explained, with reference to Section 2.4 of the Applicant's Response to Relevant Representations (AS-043) and Appendix E (AS-044), that there is no space available within the highly developed Riverside Campus site to accommodate a large above ground flue gas pipework corridor and its associated infrastructure.
- 1.1.2. Mr Alderson set out the technical limitations in greater detail, as recorded in the Written Summary of the Applicant's Case.
- 1.1.3. An additional view point of the Riverside Campus has been prepared, to show the bird's eye view of the site (Annex A to this note). This demonstrates the range of structure heights distributed throughout the Riverside Campus, not just the main buildings of Riverside 1 and Riverside 2 energy from waste facilities but also their associated infrastructure buildings (air cooled condensers, sub stations, heat transfer provision etc). The elevated access ramps, particularly the one leading to Middleton Jetty, which crosses the flood bank, is a particular major constraint on the northern elevation. As is the Environment Agency's flood embankment; a protected asset upon which development is robustly restricted. Requirement 28 of the Riverside Energy Park Order states:

'No building will be erected within the area defined by the red dotted line annotated as '16m FRAP Line' on the FRAPA drawings and no material will be stored, within the area defined by the red dotted line annotated as '16, FRAP Line' on the FRAPA drawings, which could create a risk of damage to the integrity of the flood defence structure within this area.'

- 1.1.4. The Environment Agency has consistently rebutted proposals for even light weight construction or material storage in this area, not only to maintain the integrity of the flood defence structure, but also to allow ready maintenance of it.
- 1.1.5. Vehicular access is required around the site, daily for waste deliveries and staff movements and regularly for operation and maintenance of the facilities. Whilst the Flue Gas Ductwork is proposed on pipe racks at height, they will require ground-based support, which would prevent the free movement of vehicles associated with waste management. There is also a 24/7 requirement for emergency vehicles to be able to access all areas of the Campus.
- 1.1.6. Throughout the Campus there is a dense network of supporting plant, equipment and utilities (both buried and above ground) including electrical 132 kV substations, water, media and other pipes/cables. The protection (i.e. needing to avoid buried utilities in placing ground support structures) and maintenance (i.e. requiring ready access) of these assets would further restrict where the ground-based support required for the Ducting could be located.

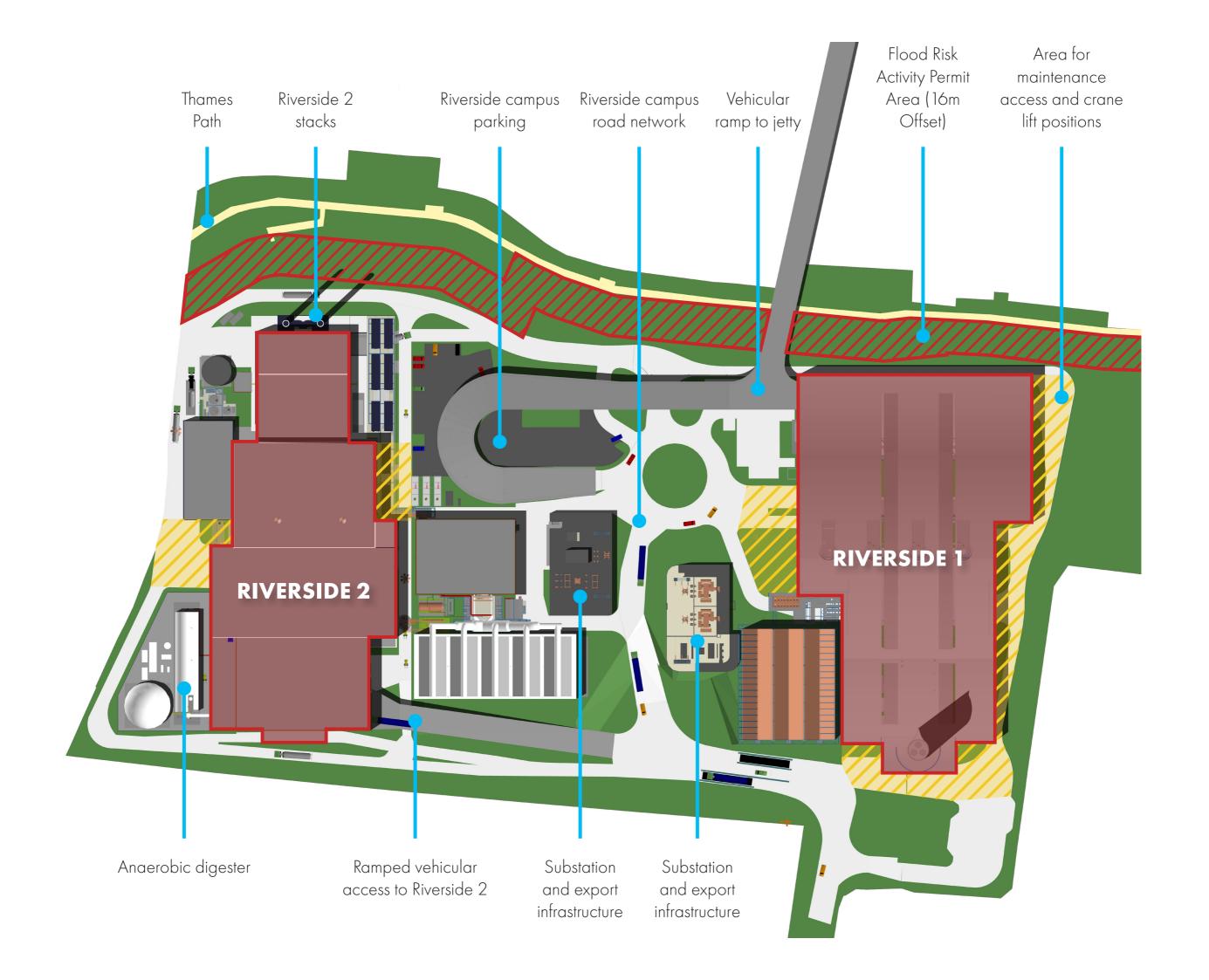


1.1.7. As noted in Section 2.4 of the Applicant's Response to Relevant

Representations (AS-043) it is also not feasible to place the Flue Gas Ductwork on the rooves of the energy from waste facility buildings. They are not constructed or specified for this purpose in terms of weight load and fire risk. Furthermore, sections of the roof are designed to be peeled and removed to allow access through the roof for maintaining and replacing large sections of plant during planned outages. As an example, Cory uses 750t cranes (with a super lift for the reach) to remove superheaters from within the plant. Figures 1 to 3 below show these cranes in operation. These cranes currently need full access and air space around the perimeter of both Riverside 1 along the circulation roads as well as clear access to manoeuvre and operate. The same operational maintenance capability will be needed for maintenance of the larger plant within Riverside 2 when operational (due 2026).

- 1.1.8. The Flue Gas Ducting is some 3 to 4 metres in width, resulting in constraints where it can be routed, and therefore routing this to go around, over or under other structures is particularly challenging. A contorted run of ductwork would be required to navigate all of the infrastructure that is, and shortly will be, operating within the existing Riverside Campus.
- 1.1.9. Further, clear access is required to all sides of the energy from waste facilities to ensure they can be maintained for optimal performance. Not only would that complex ductwork routing reduce the ability to operate Riverside 1 and 2 effectively (which are themselves strategically important infrastructure and the reason for the Proposed Scheme) it would present undue operational challenges in effectively transferring the flue gases to the Carbon Capture Facility.

### **ANNEX A**





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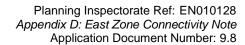
## APPENDIX D: EAST ZONE CONNECTIVITY NOTE

### **Cory Decarbonisation Project**

PINS Reference: EN010128

**November 2024** 

Revision A





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1.1.	East Zone Connectivity Note	. 1

Annex A Figures to illustrate Indicative Equipment Layout at East Zone



### 1.1. EAST ZONE CONNECTIVITY NOTE

- 1.1.1. During Issue Specific Hearing (ISH 1), the Examining Authority (ExA) sought to understand the Applicant's concerns about the impacts that would be experienced, particularly at footpath (FP) 4, as result of developing the Carbon Capture Facility in the East Zone (comprising plots currently occupied by Iron Mountain and Lidl).
- 1.1.2. In action point ii in section 8 of Annex B to the Rule 8 Letter published on 18 November 2024 (PD-006) the ExA requested an explanation of what vehicle movements would be between the existing Riverside Campus and the Carbon Capture Facility including the implications of those movements for the options separated by FP4 mentioned by Miss Berry, on behalf of the Applicant, during the hearing.
- 1.1.3. Chapter 18 Landside Transport of the Environmental Statement (APP-067) estimates (at paragraph 18.4.25) 'up to 1,000 workers onsite per day' at the construction peak. The full Construction Traffic Management Plan would manage the number of vehicles used by construction staff on site, but deliveries would be made constantly throughout the construction period. Paragraph 18.4.22 assumes '25 HGV deliveries (50 two-way movements) per day' at the construction peak. In the scenario where the Carbon Capture Facility was located at the East Zone, and access to the Carbon Capture Facility was to be from Norman Road and the existing Riverside Campus, the volumes of construction traffic (staff and HGV) mean it would be neither efficient nor safe for FP4 to remain open during construction. It would be likely that FP4 would need to be closed during the construction period (up to 60 months (ES, Chapter 2, paragraph 2.4.1 (APP- 051)) rather than the proposed approach of keeping existing footpaths open wherever possible through using a banksman and other measures to avoid the need for a temporary diversion (ES, Chapter 14, paragraph 14.7.1 (APP-063)).
- 1.1.4. During the operation phase, **ES Chapter 18** assumes a worst-case scenario of 12 deliveries (24 two-way movements) each day, although Table 18-8 indicates that these are likely to be spread out over a longer period. In respect of operational staff movements, paragraph 18.4.33 sets out how there will be 27 full-time equivalent staff, resulting in a total of 26 two-way movements anticipated daily (assuming that 48% (13) of the staff will use a private vehicle to get to work). The staff will be working on shift patterns and would require access to the Carbon Capture Facility throughout a 24-hour period. There is also expected to be some level of vehicular movement (albeit is likely to be low) between the Riverside Campus and the Carbon Capture Facility (for example to monitor and maintain the connecting pipework) required on a 24/7 basis and in case of an emergency. In its proposed location (at South Zone 1) these vehicular movements would use Norman Road, a public highway but with limited users. However, if the Carbon Capture Facility were located on the East Zone the most efficient route would be to cross FP4.

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- 1.1.5. Annex A to this note contains two figures that have been prepared by placing the Indicative Engineering Layout [(AS-053) for the Proposed Scheme over both an aerial view and mapping background of the East Zone. It should be noted that a two-way road and footway has been added alongside the Indicative Engineering Layout in these figures (thus the overall footprint is larger as a consequence). This is to reflect the fact that the Proposed Scheme as submitted uses Norman Road (and the public highway land associated) as a spine running up the eastern flank of the development zone providing controlled access and a utilities corridor.
- 1.1.6. The figures at **Annex A** demonstrate that access to a carbon capture plant located on the East Zone would be accessed via the existing Riverside Campus. This would provide an access that would physically connect the two operating areas. Technically, it may be possible to use the private spur road that currently leads off the southern end of Norman Road up to Asda and the Iron Mountain records storage facility, but this would likely require further compulsory acquisition of rights powers for the Applicant, and have additional impacts on local businesses in contrast to using the adopted public highway network including Norman Road. It might also be possible from an engineering perspective to construct a new spur off the roundabout on that access, to join with Norman Road. However, the technical feasibility and highway safety of this proposal has not been tested, and it would have an adverse impact on the ditch in this location, which is a part of the Belvedere Dykes SINC. In any event it would also cross over the footway provided on the east side of Norman Road, which leads to FP4. Further, neither of these potential technical options would offer any of the benefits of the access as indicated in the Annex A figures.
- 1.1.7. In the Applicant's experience, having a footpath located within an operational area and frequently crossed by moving traffic would pose an unacceptable risk, both to the operator and to those using the footpath. However, vehicle movements across FP4 just one factor amongst several that would affect the use of this route, and which are set out below.
- 1.1.8. Annex A also shows the Flue Gas Ductwork and steam condensate pipes that would, necessarily need to cross over FP4. The Flue Gas Ductwork is some 3 to 4 metres in diameter, with two supply ducts required to cross FP4 (one each for Riverside 1 and 2). The steam condensate pipes and other utilities would likely be attached to the same racking, resulting in a substantial structure crossing the public right of way.
- 1.1.9. Further, the LCO2 needs to be piped from the Carbon Capture Facility to the Jetty for onward transport to its final storage destination. Annex A shows this pipework crossing FP4 to connect with the Jetty Access Trestle attached to Riverside 1, as proposed. It may be possible to connect the LCO2 pipework directly to the Jetty or elsewhere on the Access Trestle to avoid FP4, however this option is likely to result in additional pipework crossing the Thames Path, which forms part of a national trail. With the Carbon Capture Facility in the East Zone, it may also be possible for the

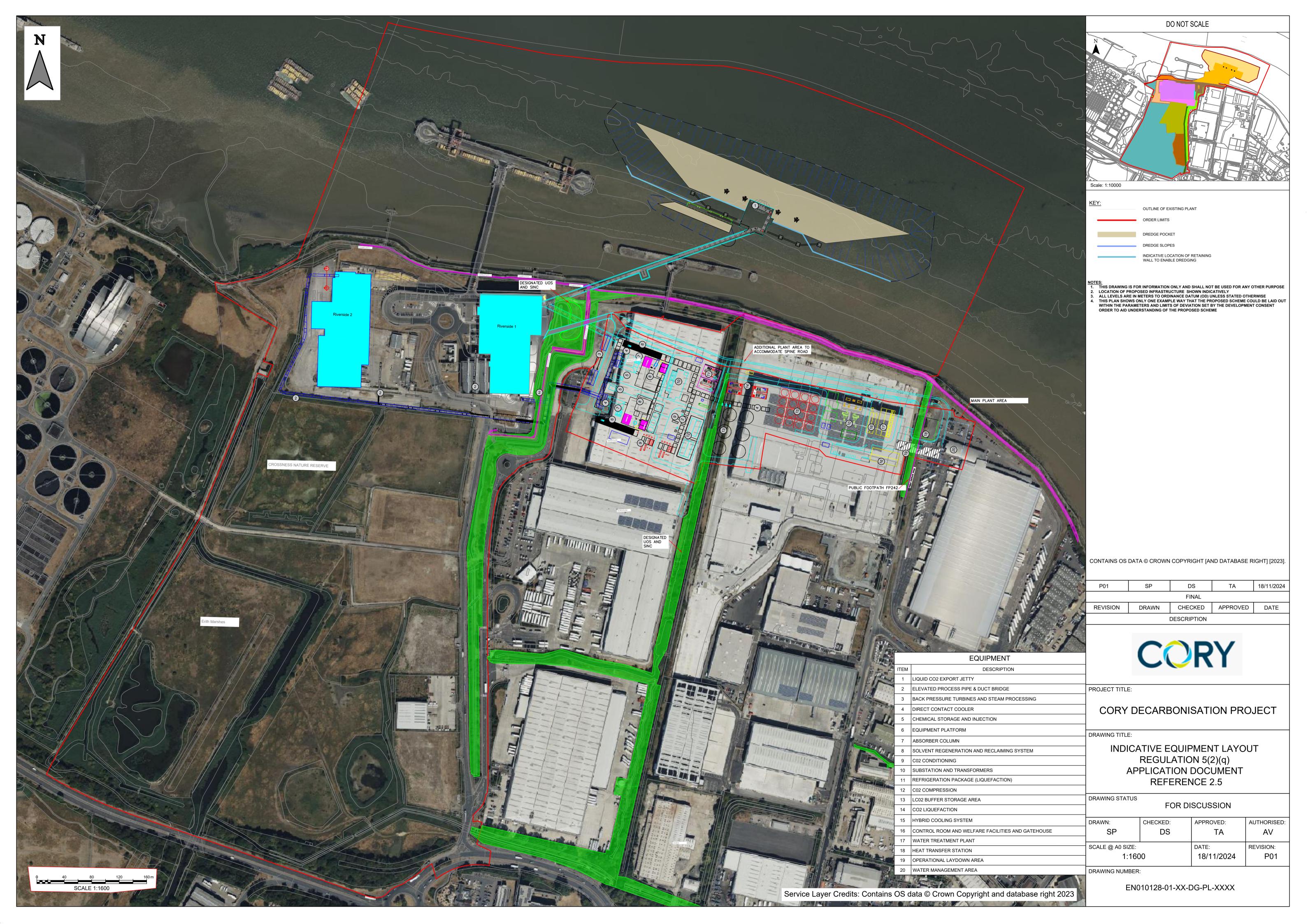
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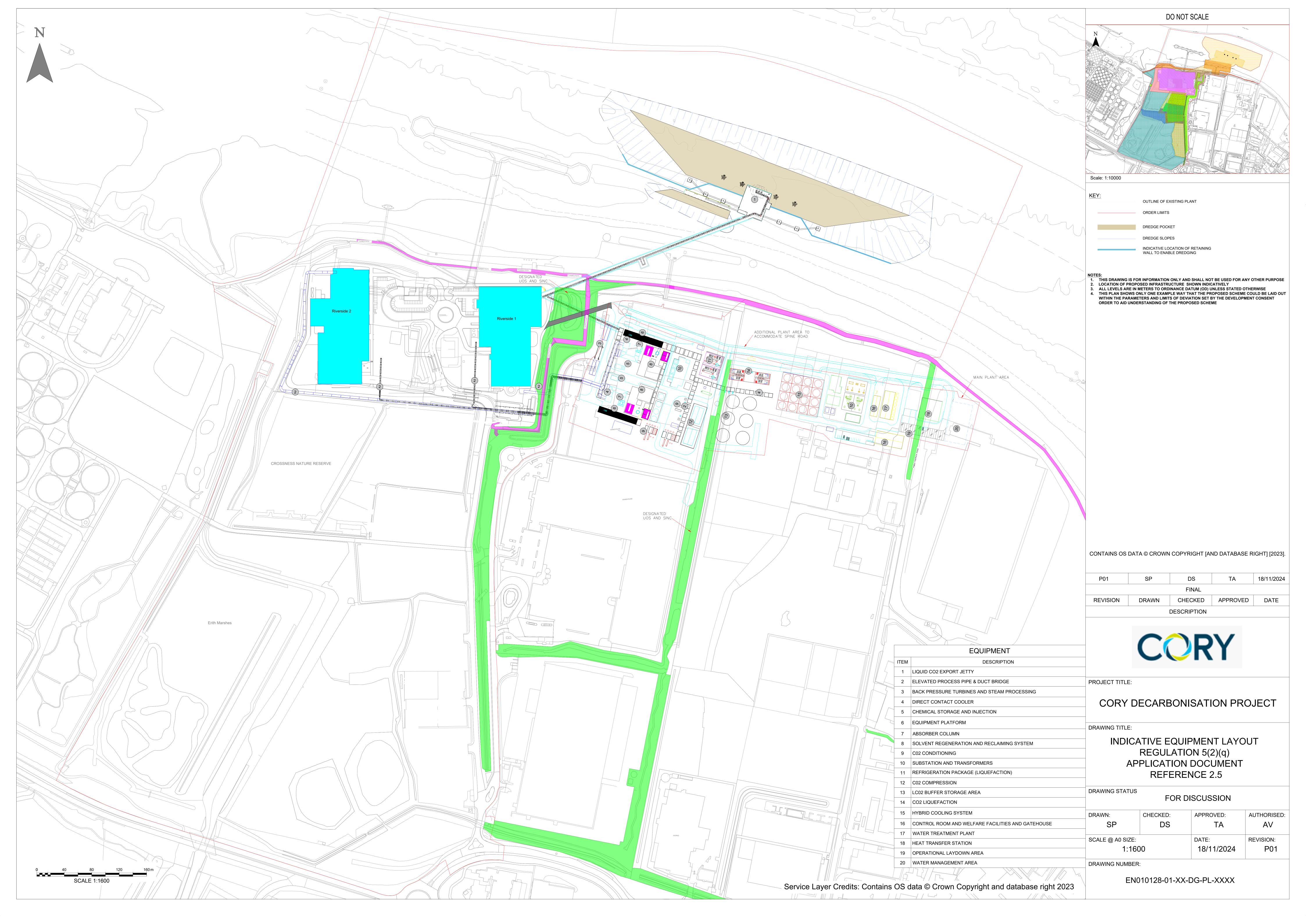


Access Trestle to be located within the East Zone, with the LCO2 pipes attached to it. This would avoid an additional set of pipework crossing either the Thames Path or FP4 separate to the Access Trestle; however, it would likely generate more vehicle movements over FP4 as they seek to access the Jetty, should access be via the existing Riverside Campus.

- 1.1.10. The linear (north-south) green and blue infrastructure (Urban Open Space and SINC) located between the existing Riverside Campus and Iron Mountain and Lidl Warehouses would also be affected by use of the East Zone for the Proposed Scheme. Even if protected this could be compromised by the need to lift platform levels and through the creation of new access and duct route crossing points, leading to a need for further mitigation. Whilst the figures at **Annex A** show the Carbon Capture Facility overlaying FP242 (to the east of Lidl) and the associated area of Urban Open Space, it is acknowledged that the layout may be amended to avoid them and the SINC.
- 1.1.11. Further, locating the Carbon Capture Facility on the East Zone and retaining FP4 would raise security concerns as anybody using that route would have some level of access to the plant and equipment unless it was fenced off/protected by barrier. The path is currently fenced, but it would mean that a contiguous site is not achieved.
- 1.1.12. FP4, is an important connection to the River Thames. If the Proposed Scheme were built in the East Zone, it would feel significantly more industrial in character, with frequent interruption by road crossings, and large scale and overbearing built form in close proximity. The effects on footpaths in the vicinity of the site is reported in Chapter 14 Population, Health and Land Use of the Environmental Statement (APP-063) and Appendix 14-1 Public Rights of Way and Public Open Land Surveys Report (APP-111). This indicates that the routes are predominantly used by pedestrians rather than cyclists (with the exception of the Thames Path (now a part of the King Charles III England Coast Path)) and appeared to be mainly used for recreational purposes (paragraph 14.6.28 and 14.6.29).
- 1.1.13. A strategy for improving the user experience on public rights of way in the area is set out at Section 10.2 of the Outline LaBARDS (being updated alongside this submission). Not least, the Proposed Scheme as submitted includes provision for a new connection on Norman Road Field that would enable a circular walk encompassing the former Thamesmead Golf Course and the River Thames; FP4 would be a key element of that recreational route. Development of the Carbon Capture Facility at the East Zone would erode those benefits sought to be achieved through the Proposed Scheme as well as leading to operational and security issues for the project through the severance caused by FP4. The Applicant has set out the many and robust reasons why a single site is necessary for the Carbon Capture Facility (not least with the submitted Summary of Case). This clearly would not be achieved with FP4, a public right of way, being left in position and the Proposed Scheme built in the East Zone.

### **ANNEX A**







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### APPENDIX E: ECONOMICS CONSIDERATIONS APPROACH NOTE

**Cory Decarbonisation Project** 

PINS Reference: EN010128

**November 2024** 

Revision A



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### 1.1. INTRODUCTION

- 1.1.1. During Issue Specific Hearing (ISH) 1, the Examining Authority sought clarity on the analysis of economic impacts that has been undertaken within the terrestrial site assessment process, and as reported in the Terrestrial Site Alternatives Report (APP-125, TSAR) and TSAR Addendum (AS-044) (submitted as Appendix H of the Applicant's Response to Relevant Representations (AS-043)).
- 1.1.2. In response, during the hearing, the Applicant confirmed that a proportionate assessment was undertaken of economic effects through the consideration of Optioneering Principles 3 and 6, which are set out below.
  - Optioneering Principle 3 (OP3): Seek to avoid or minimise the level of adverse impact on existing businesses/third party landowners.
  - Optioneering Principle 6 (OP6): Seek to minimise engineering complexity and consequent cost.
- 1.1.3. This note has been prepared to give the Examining Authority further explanation of the consideration given to these Optioneering Principles.

### 1.2. OPTIONEERING PRINCIPLE 3

- 1.2.1. As is reported in the TSAR (APP-125) (particularly at Tables 3-1 to 3-3, and 3-5 to 3-9) and the TSAR Addendum (AS-044) (particularly at Table 4-1, 5-1, and 6-1) a number of relevant factors were considered in OP3 focussing both on the size and complexity of any existing business and on understanding the business of any third party landowner.
- 1.2.2. For example, in relation to the East Zone reported in the TSAR (APP-125, Table 3-2) the following matters are observed:

'The land would be required in order to deliver and house the plant and infrastructure for the Proposed Scheme (in particular, the Carbon Capture Facility).

Both of the warehouse sites occupied by Lidl and Iron Mountain are developed out with large, modern buildings. It is understood that Iron Mountain currently employs approximately 55 staff and Lidl, following its acquisition of a further 25 acres off Crabtree Manorway to double the capacity of its warehouse operation in Belvedere<sup>6</sup>, and it aspires to grow its number of employees from 300 to 400 members of staff at its site<sup>7</sup>.

Acquisition of this zone would lead to at least two businesses (i.e. Iron Mountain and Lidl) needing to relocate their operational functions. The acquisition and consequent relocation of these larger, fully developed sites, would be expected to attract a high level of disturbance, including the most acute impact on employment of the Development Zones considered. Further, the acquisition of part of Lidl's operation, being the larger of its two warehouses off Crabtree Manorway, might lead to



permanent impacts even in the event of a successful relocation or the need to acquire a larger site at cost.'

- 1.2.3. The information used in the consideration of OP3 was gained from across the project team including from Ardent Management Ltd (Ardent) acting as Land Agent for the Proposed Scheme. Ardent held the same role for the Riverside Energy Park Order application; it has been working on land and property matters with the Applicant since 2018 on projects in this location and engaging with many of the same landowners and business premises. Consequently, Ardent is familiar with those existing businesses and third-party landowners and, through its engagement with them, is well placed to advise the terrestrial site assessment process on this matter.
- 1.2.4. As an example of that local familiarity, Ardent is able to update the information provided in Table 3-2 and advises that Lidl envisages staff numbers to increase to a total nearer 800 employees once the second distribution centre comes online.

### 1.3. OPTIONEERING PRINCIPLE 6

- 1.3.1. As is reported in the TSAR (APP-125) (particularly at Tables 3-1 to 3-3, and 3-5 to 3-9) and the TSAR Addendum (AS-044) (particularly at Table 4-1, 5-1, and 6-1) a number of relevant factors were considered in OP6 considering the likely deconstruction and construction outcomes that would be experienced at each zone.
- 1.3.2. For example, in relation the East Zone reported in the TSAR (Table 3-2) the following matters are observed:
  - 'Site access can be via the existing access road spur from Norman Road. In terms of laydown areas, the Applicant owned (Borax) sites could potentially be utilised for the construction laydown area, moving equipment between the two via Norman Road. There are no unique challenges with respect to ground conditions in comparison to the surrounding sites. The land is brownfield thus likely easier to develop in comparison to greenfield. The existing Iron Mountain warehouse located on the Site would be required to be demolished prior to commencement of construction. The existing warehouse foundations are unlikely to be suitable for re use, thus would require replacement.'
- 1.3.3. The information used in the consideration of OP6 was gained from across the project team including the Engineering Team within WSP, a multi-disciplinary team which has considerable relevant experience in site assessment, optioneering studies, feasibility studies and design optimisation, gained across a range of comparable projects. Consequently, WSP is familiar with the aspects of the site assessment that would impact project engineering complexity and cost and is therefore well placed to advise the terrestrial site assessment process on this matter.
- 1.3.4. Further, it is relevant to note that a conservative assessment was undertaken of the East Zone. The consideration of demolition in the TSAR focusses only on the site and warehouse occupied by Iron Mountain; which misses out consideration of the



plot occupied by Lidl. Development of the East Zone would require at least some of the Lidl land parcel and would require at least partial demolition of its newly constructed warehouse and regional distribution centre. It is likely technically prohibitive to achieve a partial demolition; the Applicant anticipates the building will have been designed with a single operation in mind with internal configuration to suit the warehouse's operational requirements (i.e. configurations of refrigeration, offices, freezers, separation of food types as well as administrative and welfare facilities). It is to be expected that the whole building would need to be demolished to make way for the Carbon Capture Facility, and any reduction in the amount of space available to Lidl would likely be contrary to their current plans to expand. This is a building recognised by London Borough of Bexley in its relevant representations (RR-124, on page 19) to be 'a newly constructed development, which provides a significant number of jobs.'

### 1.4. CONCLUSION

- 1.4.1. The analysis undertaken within the terrestrial site assessment process (and reported in both the TSAR and TSAR Addendum) has been appropriate to gain a relevant level of understanding of the different outcomes likely to accrue from locating the Proposed Scheme in each development zone. A proportionate assessment has been undertaken to understand the extent to which each development zone would deliver the project objectives.
- 1.4.2. It is important to note that there is no site option that avoids any impact on existing businesses or third-party landowners; there is no option that would avoid compulsory acquisition.
- 1.4.3. South Zone 1, the proposed location of the Carbon Capture Facility, is the site option that has smallest land take in terms of compulsory acquisition because it incorporates the land plots known as Borax North and South that already fall within the Applicant's ownership (although it will result in limited impacts on/ losses to the policy designations of Metropolitan Open Land, Site of Importance for Nature Conservation and local nature reserve).
- 1.4.4. The existing businesses/third party landowners that are affected by South Zone 1 comprise:
  - Existing businesses: Munster Joinery Ltd
  - Third party landowners:
    - Thames Water (East and Stable Paddocks are non-operational land);
    - Riverside Resource Recovery Limited (Borax North and South are leased to Riverside Energy Park Limited, both organisations are within the Cory Group along with the Applicant);



- Gannon and Creek Side, both of whom lease their undeveloped land parcels to Riverside Energy Park Limited, a company within the Cory Group alongside the Applicant);
- Landsul Ltd (who is the owner of the land occupied in part by Munster Joinery Ltd); and
- Peabody Trust (whose undeveloped land is intended to form part of the Enhancement and Mitigation Area).
- 1.4.5. The effects to these existing businesses and third-party landowners will be less than those of the East Zone (which would avoid the policy designations of Metropolitan Open Land, Site of Importance for Nature Conservation and local nature reserve).
- 1.4.6. The existing businesses in the East Zone are, as described in the TSAR (APP-125) and TSAR Addendum (AS-044) as being of a greater scale and complexity than those within South Zone 1. The proportionate assessment undertaken in the terrestrial site assessment process has been appropriate to identify those differences, underpinning the red score ascribed to OP3 for East Zone in Tables 2-1 and 2-3 of the Applicant's Response to Relevant Representations (APP-043). Table 2-1 (and repeated at Table 2-3) has an amber score for OP6 for the East Zone; however as identified above the assessment focusses only on the site and warehouse occupied by Iron Mountain. This misses out consideration of the plot occupied by Lidl, and the likelihood of all that newly constructed warehouse and regional distribution centre requiring demolition.
- 1.4.7. The North Zone (as considered in the TSAR) similarly scores amber in the RAG chart at Table 2-1 of the Applicant's Response to Relevant Representations (APP-043). However, this development zone has a red score for Optioneering Principles 1, 2 4 and 6. North Zone 1 (as considered in the TSAR Addendum) scores red for OP3, because the development zone incorporates land currently occupied by Iron Mountain. Indeed, North Zone 1 scores red for all Optioneering Principles except OP5.
- 1.4.8. The West Zone (as considered in the TSAR) and West Zones 1 and 2 (as considered in the TSAR Addendum) all score red for OP3, recognising these land parcels lie within the operational land of a statutory undertaker. Table 2-2 of the Applicant's Response to Relevant Representations (APP-043) also scores West Zone 3 red for OP3. This could be amended to green, as it would only affect the landowner (Thames Water Utilities Ltd) as currently non-operational land and no existing businesses. However, West Zone 3 scores red on all other Optioneering Principles recognising the potential for: substantial adverse impact on locally important biodiversity sites, protected species, MOL and footpaths (OP1, 2 and 4); and lack of ease for connections with existing Riverside Campus and Proposed Jetty and engineering complexities (OP5 and 6).



- 1.4.9. Further, and as touched upon in the consideration of OP6, is the practical application of Project Objective 3, that the Proposed Scheme be 'deliverable in a timely manner' (paragraph 2.2.26, TSAR (App-125)).
- 1.4.10. Regardless of the compulsory acquisition process (and time required to relocate the specialist operations of the businesses within the East Zones), there would be a delay in delivery of the Proposed Scheme if it were placed at any of the East Zones.
- 1.4.11. All of the East Zone land parcels have operational buildings located on them that utilise a substantial area of the plots. Those buildings, and potentially their foundations, would need to be demolished prior to construction of the Proposed Scheme being able to commence. Conversely, construction would be able to begin at the northern end of South Zone 1 immediately; the premises occupied by Munster Joinery could be demolished whilst those construction works are underway, thereby enabling the operating plant of the Proposed Scheme to be delivered early in the project.
- 1.4.12. It is therefore demonstrated that South Zone 1 remains the only site able to deliver the project objectives and therefore the only suitable site.



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