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Cambridge Waste Water Treatment Plant Relocation Project

Preliminary Environmental Information

February 2022

Agricultural Land and Soil Resources

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Summary

In the development of the Cambridge Waste Water Treatment Plant Relocation (CWWTPR), we have considered potential impacts on agricultural land and soils during both the construction and operational phases.

The key impacts during the construction phase will be the temporary loss of agricultural land to farm businesses and the potential for construction practices to adversely impact soil quality, which could affect soil reinstatement. To mitigate this impact, an outline Agricultural Land Classification (ALC) and Soil Management Plan (document reference 100102041-MML-XX-ZZ-RP-AG-0101002, herein referred to as the '**SMP**') will inform sustainable soil handling during construction.

Taking account of the application of the soil management measures, as well as the assumption that farm accesses will be retained and no land parcels will be severed, no likely significant impacts to soil resources are identified in relation temporary use of the land during construction.

Land required for the proposed WWTP and the **Landscape Masterplan** will result in the loss of land permanently from agricultural businesses. This represents the main impact to agricultural land and soil resources. The **Phase Three Community Consultation Leaflet** explains more about why this land is required and details the multi-functional purpose of the **Landscape Masterplan**, which is intended to integrate the proposed WWTP into the landscape, provide an area for new habitats to increase biodiversity and provide different options walking and cycling.

As part of our survey programme, an ALC survey was completed within the area of land required for the proposed WWTP and landscape proposals. This identified 30 hectares of Grade 2 ('Very Good'), 50 hectares of Grade 3a ('Good') and 20 hectares of Grade 3b ('Moderate') land. While this land will be required permanently and will therefore be lost to agricultural businesses, the **SMP** will inform sustainable soil handling practices in order to reuse soils in landscaping proposals.

For both the construction and operational phases, potential impacts on agricultural businesses – associated with aspects such as farm size, structure, accessibility, husbandry and infrastructure – will be assessed through consultation with landowners and tenants. This will enable the project to evaluate bespoke impacts to each agricultural business impacted by the project and to inform required mitigation during construction.

Document purpose

The agricultural land and soils environmental information paper describes the preliminary assessment of the construction and operation of the proposed WWTP. The paper sets out the preliminary findings of the agricultural land assessment, including soil survey results, and identifies the potential impacts. It sets out how we intend to develop our proposals to minimise impacts to agricultural activities.

This information paper should be read in conjunction with the Outline **Code of Construction Practice** (document reference WW01003-CAMEST-ATO-07-XX-RP-X-0003, herein referred to as the **CoCP**) and **SMP** (100102041-MML-XX-ZZ-RP-AG-0101002).

This information paper comprises figures illustrating:

- The distribution of ALC grades across the area required for the proposed WWTP and landscaping proposal, as surveyed during the soil survey
- The distribution of soil types across the area required for the proposed WWTP and landscaping proposal, as surveyed during the ALC survey
- A high-level overview of the respective areas required both temporarily and permanently be the project
- Potential impacts and mitigation figure outlining the current earthworks design, soil stripping plan and landscape planting areas.

Limitations

The acquisition of land or rights in land needed for the Proposed Development, either temporarily or permanently, will be governed by the compulsory purchase order contained within the DCO. If the acquisitions are not carried out by agreement, any resultant compensation claims will be settled in accordance with the Compulsory Purchase Compensation Code.

Agricultural land and soil resources overview

Soil resources

To understand the nature and extent of soil resources within the area of land required for the Proposed Development, we have collected existing information available on the soil resources present. We have also completed an ALC survey (Figure 1) to determine the key soil types and quality of agricultural land situated within the area of land required for the proposed WWTP and landscaping proposals. The soil physical properties examined during the survey allowed the derivation of the various ALC grades (Figure 2) and soil types (Figure 3) across the area of land required for the proposed WWTP and landscaping masterplan. These data also work to tailor soil management guidance, as delivered within the **SMP** (100102041-MML-XX-ZZ-RP-AG-0101002), as part of the process of completing our proposals.

Figure 1*:* ALC survey conducted in Autumn 2021.

Figure 2*:* Distribution of ALC grades across the area required for the proposed WWTP and landscaping proposal.

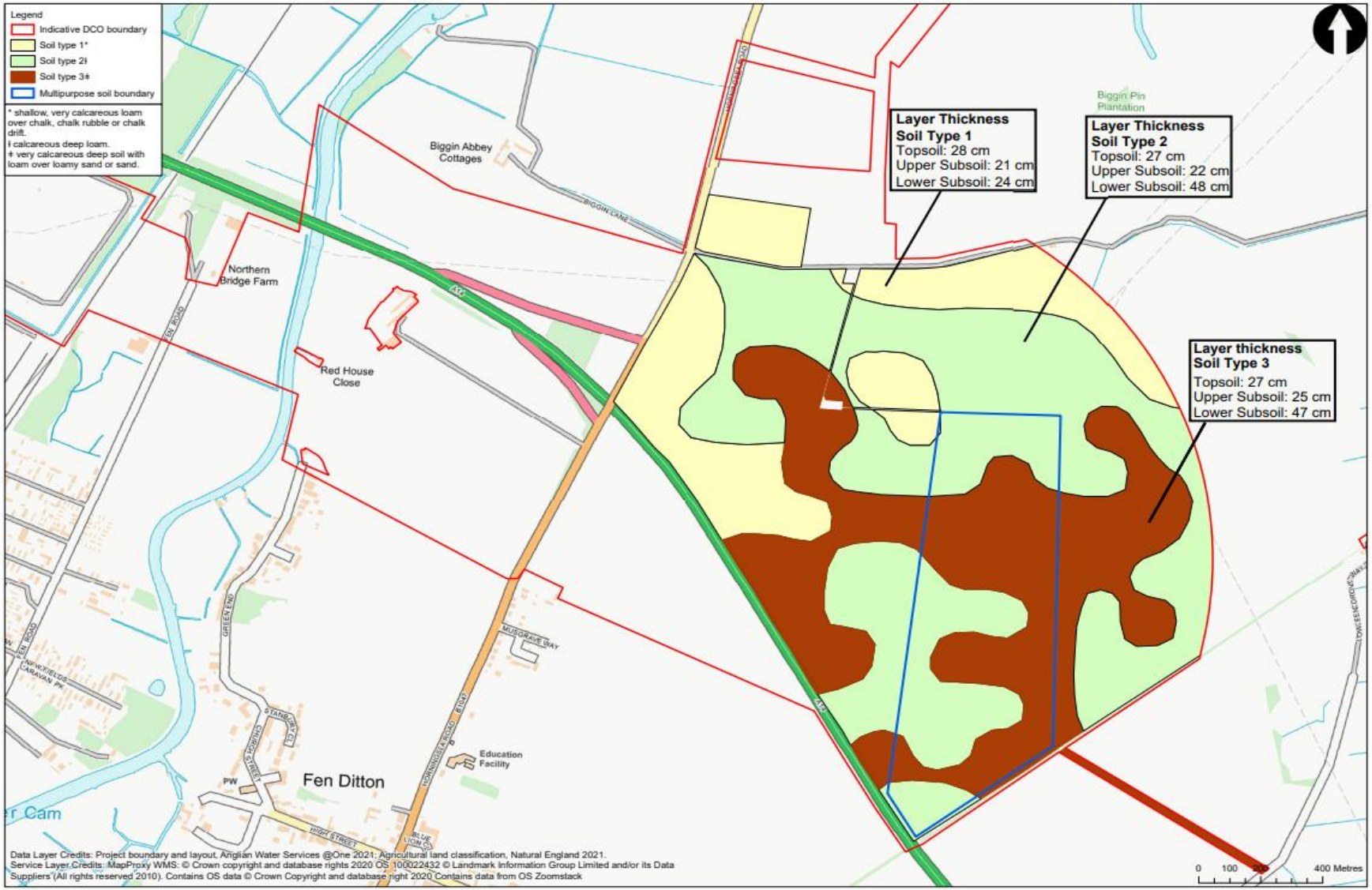


Figure 3: The distribution of soil types across the area required for the proposed WWTP and landscaping proposal, as delineated during the late 2021 survey.

Agricultural land

The area of land required for the proposed WWTP and landscaping masterplan will be acquired for permanent use. Land required for the construction of transfers will be temporarily required during construction. Figure 4 gives a high-level overview of the areas of land required temporarily and permanently by the project. Please note that all pipeline tunnel routes are indicative.

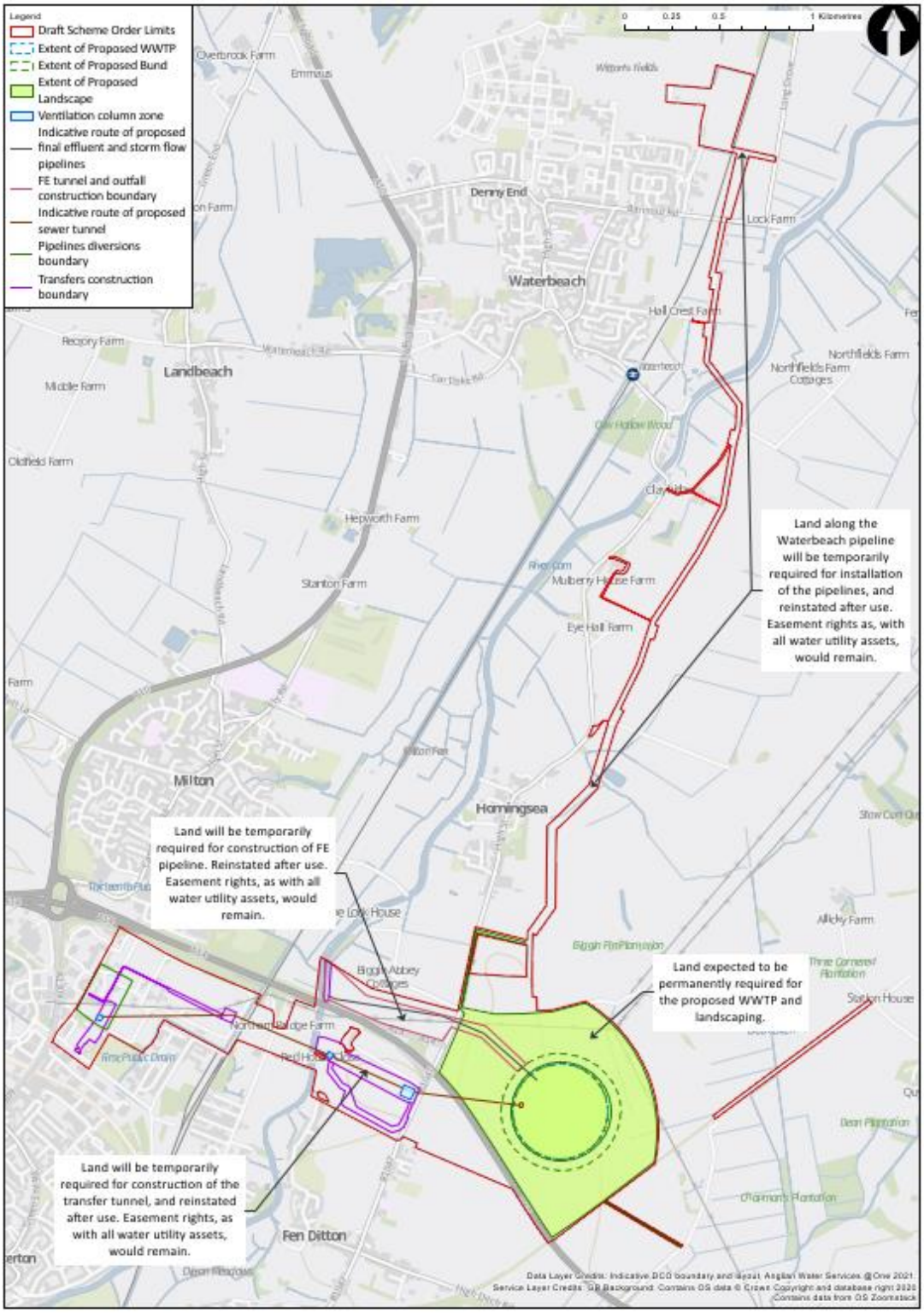


Figure 4: Overview of land requirements (all pipeline tunnel routes are indicative).

Once we have defined in more detail how we will use land for the Proposed Development, we will complete Agricultural Impact Assessment (AIA) surveys with landowners and tenants. Our preliminary assessment indicates that there may be up to 16 agricultural businesses affected. These surveys will give us an understanding of the key characteristics of agricultural businesses, including how the land is currently being used, allowing us to identify potential impacts on farm holdings.

The outputs from these surveys will then be used to assess the severity of impacts on agricultural businesses wholly or partly within the area of land required for the Proposed Development. Such impacts may relate to factors such as farm size, structure, land parcel accessibility, husbandry, and any potential effects on buildings and other fixed equipment.

Please refer to the **Community Information Papers** for preliminary assessment of socio-economic changes to non-agricultural businesses.

How will the proposed relocation of Cambridge Waste Water Treatment Plant change the agriculture and soils environment during construction?

Soil resources

Where soils will be reinstated, there is the potential that soil quality could be damaged during construction. Changes to soils are dependent on the types and techniques of construction activities, as well as the physical characteristics and associated structural resilience of the soils.

During the construction of the Proposed Development, the following impacts have the potential to damage soil resources. The potential impacts are set out below:

- Soil compaction
  - The use of construction vehicles within the works area, as well as across fields where temporary accesses are created, may result in the compression of soil pores and heightened soil density. This deterioration of soil structure can inhibit water and air transport, causing oxygen deficiency and impeding nutrient uptake.
- Soil stripping
  - Ground clearance requiring the removal of soils (termed soil stripping) and vegetation to allow construction works to proceed has the potential to damage soil structure if undertaken incorrectly or during poor weather conditions.
- Soil stockpiling
  - Soil quality and overall agricultural land capability may deteriorate if soils are not appropriately stockpiled. This may mean stockpiling during poor conditions, storing soils to unsuitable heights or dimensions, or not appropriately maintaining stockpiled soils to the required standard[1].

[1] Department for Environment, Food and Rural Affairs (DEFRA), 2009. Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

- Soil reinstatement
    - Following the construction phase, there is the potential for the incorrect reinstatement of stockpiled soils in areas temporarily disturbed by construction. This would result in altered or unnatural soil profiles, which could lead to vast reductions in agricultural land capability and overall soil quality, reducing crop yields and permanently changing ALC grades in the area.

Agricultural land

The area of land that will be required temporarily during the construction phase will be associated with construction of the Waterbeach pipeline, final effluent transfer and the areas required for launch and recovering shafts for transfer pipeline installation. These locations are described in the **PEI Introductory Paper of the PEI**. In these locations agricultural activity will cease until land has been reinstated.

Based on preliminary information, there may be temporary impacts on the functioning of up to 16 agricultural businesses. During the construction of the Proposed Development, the following have the potential to impact agricultural operations:

- Land usability
    - The temporary use of land during construction will temporarily reduce the availability of land used by agricultural businesses. This will reduce the land available for crop production. Where land is to be obtained through compulsory acquisition, this will remove the land permanently from existing holdings.
- Dust generation
    - Construction activities such as earthworks and excavations, particularly during drier months, may result in the generation of dust which may deposit on nearby crops. The deposition of dust on crops may decrease plant productivity, reducing both the quality of produce and overall crop yields.
- Farm infrastructure
    - There is the potential that construction activities will directly disturb existing farm infrastructure, such as access tracks, hard-standing areas or drainage networks. Disturbance may result in the loss of infrastructure or damage so that it can no longer be effectively used to support agricultural activities once construction has ceased. With regard to disturbance to land drainage, there is a project commitment to reinstate all land drainage (as set out in the outline **CoCP**).

Based on our preliminary assessment, the temporary loss of agricultural land for crop production represents the main impact during the construction of the Proposed Development. Based on our preliminary understanding, the loss of the ability to grow crops in areas of land temporarily required is not expected to impact the viability of the wider farm holdings.

Potential impacts on agricultural businesses will be further assessed as part of ongoing assessment activities which include AIA surveys to be completed post-consultation in early 2022.

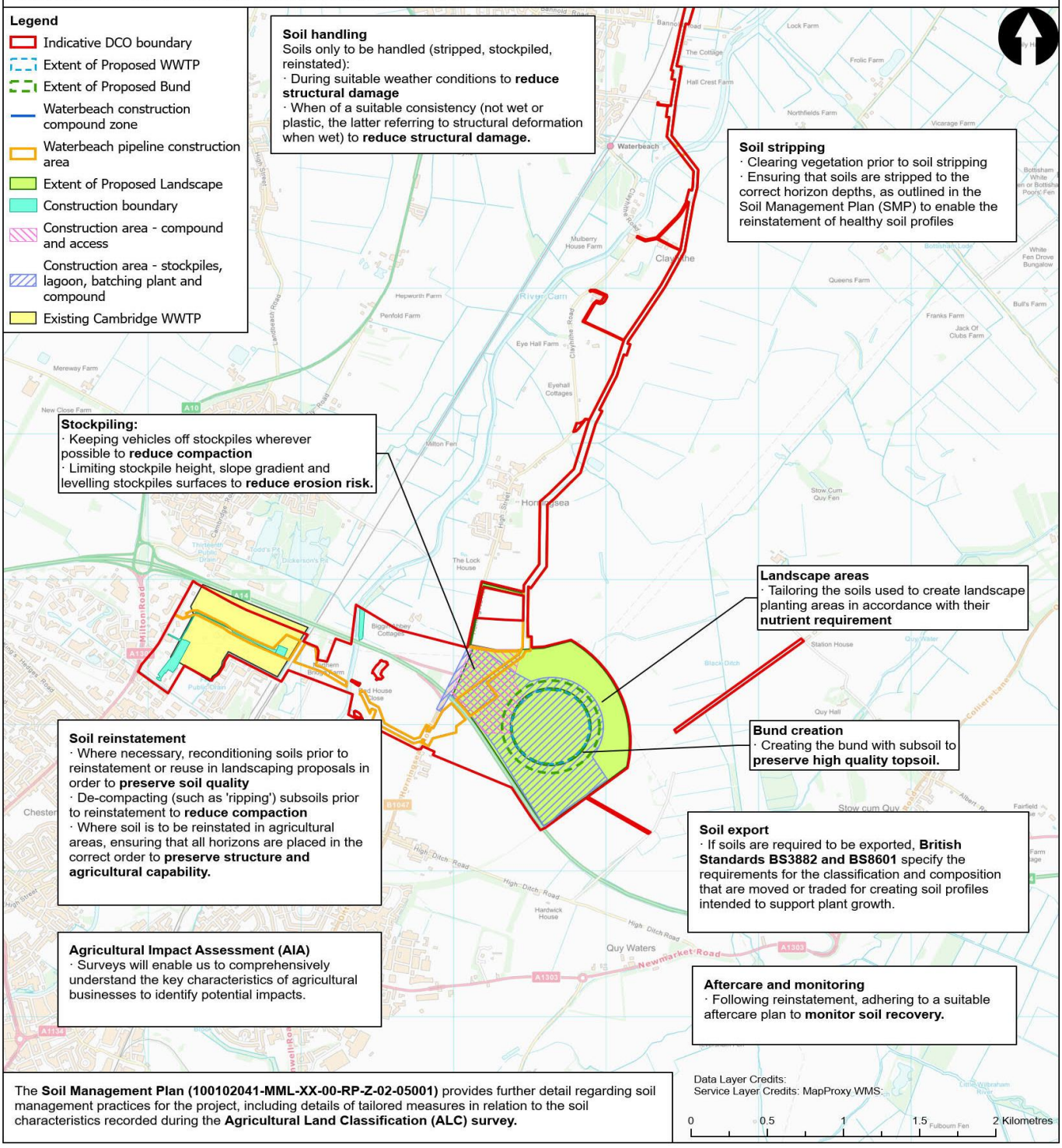
Figure 5 shows the Proposed Development and an overview of the main impacts and mitigation practices proposed to be employed. Impacts during the construction period will be focussed on the areas to be temporarily required (Waterbeach corridor, final effluent transfer and the areas required for launch and recovering shafts for transfer pipeline installation).

Key impacts during construction

· **Temporary loss of agricultural land** in areas temporarily required by the project, such as the Waterbeach corridor, FE transfer and areas required for launch/recovering shafts for transfer tunnel installation.
· **Soil compaction.** The use of construction vehicles may result in the compression of soil pores and heightened soil density. This deterioration of soil structure can inhibit water and air transport, causing oxygen deficiency and impeding root growth.
· **Soil stripping.** Ground clearance requiring the removal of soils (termed soil stripping) and vegetation to allow construction works to proceed has the potential to damage soil structure if undertaken incorrectly or during poor weather conditions. Soil quality may also deteriorate if topsoils and subsoils are mixed.
· **Soil stockpiling.** With the onset of anaerobic conditions if soils are not appropriately stockpiled, soil quality and overall agricultural capability may deteriorate. Inappropriate stockpiling practices may mean stockpiling during adverse conditions, storing soils to unsuitable heights or dimensions, or not appropriately maintaining stockpiled soils during the storage period.
· **Soil reinstatement.** Following the construction phase, there is the potential for the incorrect reinstatement of stockpiled soils in areas temporarily disturbed by construction. This would result in altered or unnatural soil profiles, which could lead to vast reductions in agricultural capability and overall soil quality, reducing crop yields and permanently changing ALC grades in the area.
· **Agricultural businesses.** Land unavailability during construction, dust generation (resulting in deposition on land and crops), temporary land severances, and disturbed farm infrastructure all have the potential to impact farm businesses during construction.

Key impacts during operation

· **Permanent loss of agricultural land.** The area to be lost includes all land compulsorily purchased, including those for which soils will be reused in landscaping proposals around the WWTP. For the core zone, the Agricultural Land Classification (ALC) survey indicated that this comprises **30 hectares of Grade 2 ('Very Good'), 50 hectares of Grade 3a ('Good'), and 20 hectares of Grade 3b ('Moderate')** land. Grades 2 and 3a represent **Best and Most Versatile (BMV) land.**



The **Soil Management Plan (100102041-MML-XX-00-RP-Z-02-05001)** provides further detail regarding soil management practices for the project, including details of tailored measures in relation to the soil characteristics recorded during the **Agricultural Land Classification (ALC) survey.**

Figure 5: Agricultural land and soil resources - impacts and mitigation.

Once operational how will the proposed relocation of Cambridge Waste Water Treatment Plant change agriculture activities and soils?

Soil resources

Our preliminary assessment indicates that the following areas of ALC grades will be lost permanently from the area of land required for the proposed WWTP and associated landscape masterplan:

- 30 hectares of ALC Grade 2 land (30% of area required for proposed WWTP and landscaping proposal)
- 50 hectares of Grade 3a land (50%)
- 20 hectares of ALC Grades 3b land (20%).

This means that 80% of land to be lost permanently from the land required for the proposed WWTP and landscaping constitutes best and most versatile (BMV) land. The reinstatement of soil resources stripped during construction will enable soil to be reused in the operational phase, including as part of landscape planting and habitat creation.

Agricultural land

The main impact during the operational period will be the permanent loss of agricultural land. This will be associated with changes in the way land is used due to the permanent aspects of the Proposed Development. These include the proposed WWTP, the new access road and a vent shaft. Furthermore, the landscaping and habitat creation plans will also mean a permanent change to the way land will be used. In addition to these areas, there will be some areas with residual easement rights, although this will not affect the ability to use the land in an agricultural capacity.

The acquisition of land or rights in land needed for the Proposed Development, either temporarily or permanently, will be governed by the compulsory purchase order contained within the DCO. If the acquisitions are not carried out by agreement, any resultant compensation claims will be settled in accordance with the Compulsory Purchase Compensation Code.

How will we manage our development activities to avoid, reduce or offset adverse changes?

In developing our proposals, we have sought to avoid and reduce impacts to agriculture land and soil resources by incorporating a variety of measures. The protection of agricultural land and soil resources primarily relates to how we will manage our activities in construction. For agricultural land this relates to mitigation to avoid or reduce impacts to the continued use of agricultural land. The construction phase activities can be the most disruptive to soils as a result of earthworks and the need to handle soil.

The **PEI Introductory Paper** sets out how the Development Consent Order (DCO) would secure mitigation in both construction and operation. In relation to construction this includes the use of a **CoCP** and subsequent plans that the appointed contractors(s) would be

required to prepare and implement. These provide a consistent approach to the management of construction activities.

Furthermore, our activities would be subject to specific regulations for some activities in construction as well as the Environmental Permits required in operation.

The following sets out how we intend to mitigate our development proposals during construction (including commissioning and decommissioning activities) and once the proposed WWTP is operational.

This section sets out our proposed mitigation proposals for agricultural land and soils and is in line with the National Policy Statement (NPS)[2] for waste water, which makes reference to agricultural land in the following paragraphs:

- Paragraph 4.8.8: Retention of the best and most versatile land within the agricultural industry. Proposed developments should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification), and preferably use land in areas of poorer quality (grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations
- Paragraph 4.8.16: The decision maker should ensure that justification is provided where applicants site their scheme on the best and most versatile agricultural land. It should give little weight to the loss of poor quality agricultural land (in grades 3b, 4 and 5), except in areas (such as uplands) where particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy.

The outline **CoCP**, **SMP**, and **Landscape and Ecology and Recreation Management Plan (LERMP)** are included as part of the PEI.

This section sets out our proposed mitigation proposals for agricultural land and soil resources.

Soil resources

Primary mitigation (inherent mitigation)

Measures intended to avoid direct impacts to soil resources (as also outlined in Figure 5):

- Minimising land required
    - minimising the footprint of the Proposed Development so as to reduce the land permanently acquired to the minimum. Wherever possible we have sought to reduce the overall footprint of our proposals in order to reduce the extent of disturbance (to both agricultural land and the wider environment).
- Siting and planning of activities

[2] The National Policy Statement for Waste Water, 2012. Available at: https://www.gov.uk/government/publications/national-policy-statement-for-waste-water (Last Accessed: February, 2022).

- arranging the Proposed Development to avoid more sensitive locations entirely or by reducing the extent of the area affected. In the case of agricultural land, by routing elements where possible so as to avoid bisecting farm holdings.

Secondary mitigation (foreseeable)

Adherence to the measures outlined in the **SMP** will be crucial to ensuring that soil quality in the operational phase is equivalent to before construction. The **SMP** will be delivered in addition to the LERMP as discussed in the **Environmental Information Paper: Biodiversity** and **Environmental Information Paper: Landscape and Visual Amenity**. The management of soil resources in relation to the **LERMP** and delivery of our landscape and habitat creation proposals will be critical to appropriately managing newly created habitats and landscaping, including soils, to prevent them being detrimentally affected if not adequately managed.

In the first instance, measures to mitigate adverse impacts to agricultural land and soils include the following (as also outlined in Figure 5):

- Siting and planning of activities
  - Construction works will be planned and sequenced, wherever possible, to reduce adverse impacts and overall disturbance to agricultural businesses and activities. An example of this has been the timing of intrusive survey works, which have been arranged to avoid crop disturbance, such as after harvests.
- Creating the landscape bund from subsoil to preserve high quality topsoil.

Construction will be delivered in compliance with the obligations within the DCO. The **CoCP** together with associated management plans will be followed by the contractors appointed to complete the works.

The outline **CoCP** and the **SMP** include a range of control and monitoring measures. The measures relevant to the protection of soil resources will be tailored according to the characteristics of on-site soil resources. Alongside a range of tailored soil management guidelines, these will include the following industry best-practice practices:

- Ensuring that soil handling only occurs during suitable weather conditions to preserve soil structure
- Application of de-compaction measures (specifically 'ripping') to limit soil compaction and preventing damage to soil structure
- Keeping wheeled machinery off topsoil and stockpiles (except during stockpile creation and removal), adhering to designated haul roads, to limit soil compaction
- Limiting the height of stockpiles and setting the gradient of slopes to minimise damage to soil structure and to reduce the risk of erosion
- Management of stockpiles that are to remain in place for more than six months, including using controlled heights, slopes and levelling stockpile surfaces

- Ensuring that where necessary (such as where soils are wet or plastic[3]) soils are reconditioned to restore structure prior to reinstatement and/or reuse within landscaping proposals
- Ensuring that in all areas where soils are to be reinstated following construction, soil horizons are replaced in the correct order
- Preparation and implementation of a suitable aftercare plan to monitor soil recovery following reinstatement
- For any project requirements pertaining to the export of soil, British Standards BS3882[4] and BS8601[5] specify the requirements for the classification, composition and use of soils that are moved or traded for creating soil profiles intended to support plant growth.

Agricultural land

It is recognised that ongoing coordination and discussions with landowners and tenants are essential in planning and delivering our proposals to avoid and minimise adverse impacts to farm holdings. We will continue to consult with landowners and tenants to understand how the construction activities can be delivered in a way that reduces disturbance to agricultural businesses wherever practicable. The information gained during the structured discussions of the AIA will help to inform ongoing liaisons by setting the baseline characteristics of each agricultural business prior to the development.

Once impacts are better understood, required mitigation measures can identified which may include:

- Minimising the duration of any temporary possession where possible.
- The use of fencing in locations where construction might result in disturbance to crops, livestock or horses. This would be secure to establish safe working areas and ensure crops and animals in areas of land unaffected by the works are protected.
- The reinstatement of land and surface water drainage affected by the construction works to a functional state.
- The provision of temporary alternative access routes to allow farming activities to continue.
- The sequencing of works to maintain at least one access to enable farming activity to continue.

What might the likely significant effects to agriculture and soils be in relation to the proposed relocation of Cambridge Waste Water Treatment Plant?

The loss of some agricultural land permanently comprises the main likely significant effect of the Proposed Development on agricultural land. Although it is possible to estimate the constituent ALC grades of the land to be lost within the area of land required for the

[3] Plastic soils are those that, within a certain moisture limit range, are capable of being moulded or deformed without the structure rupturing.
[4] British Standards Institution, 2013. BS 3882: Specification for topsoil
[5] British Standards Institution, 2015. BS 8601: Specification for subsoil and requirements for use

proposed WWTP and landscaping (30 hectares of Grade 2, 50 hectares of Grade 3a, 20 hectares of Grade 3b), our ongoing surveys will help to contextualise this loss of land for each agricultural business. In this manner, this impact will be verified through our remaining survey programme and reported within the ES.

Our preliminary assessment does not identify likely significant temporary impacts to agricultural land required temporarily during construction, as it is assumed that farm access will be maintained and that no land parcels will be severed. The absence of likely significant impacts during construction also takes account of the application of soil management measures within the outline **CoCP** and **SMP**. The requirement for any temporary mitigation will be identified through the completion of the AIA.

References

Defra (2012) The National Policy Statement for Waste Water, 2012. Available at: https://www.gov.uk/government/publications/national-policy-statement-for-waste-water (Last Accessed: February, 2022).

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Department for Levelling Up, Housing and Communities (2021) Compulsory purchase and compensation: guide 3 - compensation to agricultural owners and occupiers Available at: https://www.gov.uk/guidance/compulsory-purchase-and-compensation-guide-3-compensation-to-agricultural-owners-and-occupiers (Last Accessed: February, 2022).