1 Introduction

1.1 This is the Written Representations of Save Honey Hill Group (SHH) (Ref 1), a community group formed in 2020 in response to the proposed relocation of Cambridge Waste Water Treatment Plant ('CWWTP'). It expands on the issues raised in our Relevant Representation submitted 18 July 2023 (RR-035).

1.2 References to the DCO Application documents within the text are in the form 'AW X' where 'X' is the document number given by the Applicant. The document number from the Examination Library is also given, where available. Other documents referenced are listed as footnotes.

2 Structure of this Representation and Summary

The remainder of this WR is structured as follows:

Section 3. Principle of Development.

Section 4. Need for Relocation.

Section 5. Assessment of Alternatives.

Section 6. Compliance with National and Local Planning Policy.

Section 7. Green Belt.

Section 8. Design, Engineering and Landscape.

Section 9. Carbon.

Section 10. Environmental Impacts and Mitigation.

Section 11. Funding.

Section 12. Planning Balance.

Section 13. DCO Powers and Provisions.

Summary

A summary of the Written Representations is provided as SHH 14

Appendices

The following have been sent with, and form part of, the Written Representation:

SHH 05 WR Appendix A Health Survey Methodology & Results

SHH 06 WR Appendix B Demolition Carbon Report by Cambridge University Dept. Engineering.

SHH 08 WR Appendix C Design Critique

SHH 09 WR Appendix D Maps (for reference at Sections 7.5 and 7.5.1)

SHH 10 WR Appendix E1 and E2 Additional Reference Documents

SHH 14 Written Representations Appendix F Summary

3 Principles of development

3.1 The principle of development is discussed in detail in Sections 3 and 4 of SHH's RR-035 and were the subject of ISH 2 on 18 November 2023. Points made by SHH are set out in SHH 13. The following additional points of detail arise from discussions at ISH 2 and the Applicant's concessions since the submission of the application.

3.2 Whether s.104 or s.105 of the Planning Act 2008 ("PA 2008") applies

3.2.1 As conceded by the Applicant at ISH 2, the proposed development is not an NSIP as it falls below the threshold in ss.14 and 29 PA 2008 and there is therefore no presumption that development consent should be granted for the proposed development nor a presumption of need under NPSWW. The effect of these concessions is to bring the proposed development within the decision-making framework under s.105 PA 2008, rather than s.104. The applicability of s.105 PA 2008 means that the primary consideration when determining the application should be the adopted development plan. That was the approach taken by the Examining Authority in *EFW* and there is no good reason for taking a different approach in the present case. (see SHH 013 Summary of oral submissions at ISH 2, paras.2.2-2.3 and 2.6-2.10; *EFW Group Limited v Secretary of State for Business, Energy and Industrial Strategy* [2021] EWHC 2697 (Admin) at paras.17 and 23, see AS-126 PDF pp.15-16 and 21-22). Indeed, in *EFW* Dove J confirmed that under s.105 the NPS is not "*the primary decision-making tool in the assessment of the application*" (*EFW* at para.64, see AS-126 PDF p.45).

3.2.2 Understood correctly, the decision in *EFW* only establishes that a s.35 direction is incapable of turning a project into an NSIP or subjecting it to the decision-making process under s.104 PA 2008 where it is below the thresholds set in Part 3 PA 2008. It does not say anything about whether an NPS is capable of determining whether a project should fall to be determined under s.104 or s.105. The relevant part of the judgment – paras.58 to 62 – says nothing about whether an NPS can itself determine whether it "has effect" or not. That was a submission made by the Defendant in *EFW* (see para.54 of the judgment) but was not adopted by Dove J. Contrary to the Applicant's submissions at ISH 2, the relevant part of the judgment in fact says nothing about construing the NPS at all.

3.2.3 As explained at ISH 2, the better view is that the PA 2008 determines whether s.104 or s.105 applies to the determination of an application, rather than leaving it to the designation of an NPS. Nowhere does the PA 2008 say that whether an NPS "has effect" is to be determined by the interpretation of the NPS. The focus of the development consent process in PA 2008 is on NSIPs for which the thresholds in Part 3 of the Act are crucial; this is the obvious distinguishing feature for determining whether s.104 or s.105 applies, in areas where a NPS has been designated. S.104 should therefore only apply to projects which Parliament has determined

are nationally significant, and it should not be possible to expand the scope of s.104 through a policy statement.

3.2.4 Even if, which is disputed, it is necessary to look to the NPS to determine whether s.104 or s.105 applies, there is nothing in the NPSWW to indicate that it "has effect" for development which is not an NSIP. Even in relation to the Thames Tideway Tunnel, which is explicitly mentioned in the NPSWW, amendments were made to the PA 2008 in order to bring this within the scope of waste water NSIPs under s.29 PA 2008. The Applicant's legal submissions (AW 7.15, AS-126) as to why it considers s.104 applies are brief – set out in three short paragraphs (paras.3.5 to 3.7) within 8 pages of submissions – and rather equivocal. For example, at para.3.3 of AS-126 the Applicant recognises that "the NPSWW therefore clearly 'has effect' in relation to projects which exceed the threshold in s.29(1) of the 2008 Act" but no similar statement is made in respect of projects that are subject to a s.35 direction. The Applicant has also now abandoned the submission made in its Planning Statement that the fact that the direction identifies the project as "nationally significant" brings it into the s.104 decision-making framework (SHH RR, RR-035 pp.2 and 4). The brief submissions relied on by the Applicant to argue that the NPS does have effect are wrong for the following reasons.

3.2.5 The Applicant first relies in para.3.5 on the claimed "synergy" between the wording of the s.35 direction and footnote 6 to the NPSWW. What is meant by this "synergy" is not explained. However, any similarity between the wording of the s.35 direction and footnote 6 is unsurprising as footnote 6 simply quotes the words of s.35(2)(c)(i) which sets out one of the factors that must be considered by the Secretary of State when giving a direction. Any finding that a reference to the wording of s.35 is sufficient to bring a project within the scope of s.104 PA 2008 is in clear conflict with the binding ratio of *EFW*.

3.2.6 The Applicant's submission at para.3.6 that the purpose of the footnote is to clarify an alternative way in which a project can fall within the scope of infrastructure covered by the NPSWW is an obviously incorrect reading of that NPS. Para.1.2 NPSWW clearly sets out infrastructure covered by the NPS at paras.1.2.1-1.2.3. If it was intended to extend to development under the threshold for an NSIP but subject to a s.35 direction, it would specify this in the main body of the text. Paras.1.2.2-1.2.3 explicitly state that the NPS will be the primary basis for decision-making on associated development and ancillary matters – no such statement is made in respect of footnote 6. The Applicant also fails to quote the full footnote 6. The first sentence of footnote 6 is "Part 3 Planning Act 2008", which is whether the threshold for NSIPs is set out, as referred to in the main body of the text. That is a different Part of PA 2008 to that in which s.35 PA 2008 is found.

3.2.7 Furthermore, contrary to the Applicant's arguments at para.3.7 the footnote is not unnecessary or misleading. It does not state that infrastructure subject to a s.35 direction is also infrastructure covered by NPSWW or that the NPS will be the primary basis for decision-making for such development. It is simply clarifying that an application can be treated as an application for an order granting development consent – in other words, that it will follow the process for development consent under PA 2008 – if subject to a s.35 direction.

3.2.8 As explained ISH 2, SHH's interpretation – that the NPSWW does not have effect for development below the threshold of an NSIP – is also supported by other paragraphs in the NPSWW (see SHH 013 Summary of oral submissions at ISH 2, para.2.9).

3.2.9 The NPSNN and the other DCO decisions mentioned in the Applicant's legal submissions (AW 7.15, AS-126) are of limited relevance to this issue. The NPSNN is worded very differently to the NPSWW. It explicitly states that development subject to a s.35 direction "would need to be considered in accordance with this NPS" (AW 7.15, AS-126 para.1.13.1). If anything, this wording supports SHH's interpretation of NPSWW given there is no similarly explicit statement in NPSWW. The other DCO decisions were all determined prior to *EFW* and in all cases the approach of the Examining Authority to advise the Secretary of State to determine the applications under s.104 was based on the specific wording of NPSNN.

3.3 **Scope of the Proposed Development**

3.3.1 It was clear at ISH 2 that there is a lack of clarity in the Applicant's position regarding how many office staff will be located in the Proposed Development and from where office staff would be relocated. Submissions made by Leading Counsel on behalf of the Applicant at ISH 2 confirmed that some of the staff that would be working at the relocated works would be "performing functions which range wider than just [the area] to do with the Milton works" and would be managing the sludge recovery process more generally, not just for Cambridge but also for Waterbeach and other parts of the area for which Anglian Water is responsible, including disposal and sale of end products. Given the need to demonstrate very special circumstances for development in the Green Belt, there should not be any office provision for non-operational staff (for example, those managing Anglian Water's corporate sludge business) who have no locational reason to be stationed at the relocated works. This element of the development is well capable of being accommodated outside the Green Belt, in the absence of any proper justification for it being located within the Green Belt.

3.4 **Inadequacy of the Environmental Statement**

3.4.1 The Environmental Statement (ES) is legally inadequate in a number of regards, namely (i) the failure to assess and report alternatives including retention on site (discussed in RR-035 at section 5.4), (ii) the failure to assess the entire project, properly understood, either in the main body of the report or the cumulative effects chapter, (iii) the use of incorrect parameters and powers to deviate in the dDCO which undermine the ES, which should assess the reasonable worst case that the Applicant is seeking consent to construct; and (iv) the failure to deal with socio-economic impacts in the ES, even though the Applicant believes that the Proposed Development will facilitate or create substantive economic benefits by promoting employment-led growth in the local economy.

Failure to assess the entire project, properly understood.

3.4.2 The definition of the proposed development, its scope and whether this has been sufficiently addressed and assessed was not discussed at ISH 2 due to time constraints; this section sets out the points SHH would have wished to raise under that heading. In short, the ES is legally

flawed as it fails to assess the likely significant effects of part of the project, namely the demolition, site clearance, remediation and redevelopment of the existing CWWTPR site for housing (SHH RR, RR-035 at section 5.2).

3.4.3 Without the claimed need to redevelop the CWWTP site for housing, there is no justification for relocating the existing CWWTP, especially onto a Green Belt site. As Leading Counsel for the Applicant emphasised on multiple occasions at ISH 2, the vacation of the site and its utilisation in other ways, including for housing, is "inextricably bound in" with the relocation of the existing CWWTP. She also described the relocation is enabling development for the proposed housing. It is in the ability of the cleared site to be developed for housing that the national significance of the project lies.

3.4.4 The question as to what constitutes the "project" for the purposes of environmental assessment is a matter for the authority determining the application, in this case the Secretary of State on the advice of the Examining Authority. It is no answer to say – as the Applicant argued at ISH 2 – that PINS has accepted the application and its ES: if the ES is legally flawed then any grant of development consent will be susceptible to legal challenge.

3.4.5 The scope of the application for development consent does not determine the scope of the project for the purposes of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 SI 2017 No 572 ("the EIA Regulations"). Where the application forms part of a larger project an ES will need to consider that project rather than simply the development for which consent is sought, even if the details of the larger project are not yet finalised (*R (Wingfield) v Canterbury City Council* [2019] EWHC 1975 (Admin) at para.64; *R (Ashchurch Parish Council) v Tewkesbury Borough Council* [2023] EWCA Civ 101 at para.88).[1]

3.4.6 Relevant factors for the present case include whether the relocation "clearly forms an integral part of an envisaged wider future development, without which the original development would never take place" (*Ashchurch* at para.88) and whether it "is justified on its own merits and would be pursued independently of another development" (*Wingfield* at para.64; *Ashchurch* at para.81). On the Applicant's own case as made at ISH 2, the relocation is not a stand-alone development, is not justified on its own merits and would not be pursued independently of the redevelopment of the released site for housing. This is further evident in the fact the Applicant relies on "decommissioning and release of the existing WWTP site" to enable regeneration as a benefit of the development (AW 7.5, AS-128 para.6.2.13) and the need for relocation to release the site for housing and employment is part of the Applicant's very special circumstances case to justify development in the Green Belt (AW 7.5, AS-128 para.6.2.4).

3.4.7 Therefore, when the Examining Authority and Secretary of State ask themselves the question "is the application part of a larger project?" the only rational answer is that it is part of a larger project, which includes demolition, site clearance, remediation and redevelopment for housing. The likely significant environmental effects of that project

[1] https://www.bailii.or/ew/cases/EWCA/Civ/2023/101.html

needed to be assessed under the various topics in the main body of the ES in accordance with reg.5(2) and schedule 4(4) of the EIA Regulations. It is not lawful to simply rely on a high-level assessment of cumulative effects.

3.4.8 Even if, which is disputed, it was sufficient for the effects of demolition, site clearance, remediation and redevelopment of the site to be considered simply by reference to their cumulative effect with the development for which development consent is sought, what has been undertaken in ES Chapter 22 is inadequate (AW 5.2.22, AS-44). As held in *R (Finch) v Surrey County Council* [2022] EWCA Civ 187 at para.15(6)[2], environmental assessment of indirect effects – and by analogy, cumulative effects – must be sufficient, as a matter of law. Leading Counsel for the Applicant referred at ISH 2 to paras.3.9.1-3.9.2 on pp.52-53 of ES Chapter 22 (AW 5.2.22, AS-44). These paragraphs discuss the demolition of the existing Cambridge WWTP but do not involve any consideration or identification of likely significant effects on the environment. There is no assessment of the likely significant effects arising from redevelopment of the existing site for housing. The assessment of cumulative effects of NECAAP and the development for which development consent is sought at pp.78-86 is too general and high-level to offer any meaningful opportunity for the Examining Authority and Secretary of State to consider the environmental effects of redevelopment of the existing site.

Incorrect description of parameters and powers to deviate in dDCO

3.4.9 SHH has raised at ISH 1, and in document SHH 11, which is with the Applicant, a substantial number of errors and inconsistencies in the way in which powers to deviate and parameters are defined in the dDCO. Some of those powers, if implemented, would give rise to significant environmental effects which are clearly not assessed and reported in the ES. There is no explicit assessment of the use of the powers to deviate in the ES and as such it does not meet the Rochdale tests that an ES must assess the 'reasonable worst case' development for which consent is being sought.

4 Need for Relocation

4.1 Introduction

4.2 SHH notes the important concession at ISH 2 that the Applicant now accepts, as it had to, that it must demonstrate the need for relocation and its acceptance that there is no operational need to do so. SHH's submissions on the lack of any need for relocation are summarised in SHH's RR (RR-035) at Section 4, pp.5-11 and at SHH 013 Summary of oral submissions at ISH 2, paras.2.17-2.26). In short, SHH maintains that weaknesses in the Applicant's case on housing and employment development in NECAAP as well as the lack of certainty around the future spatial strategy of Greater Cambridge show that – as well as there being no operational case for relocation – there is also no 'development or planning need' case for release of the site. There is an inherent contradiction of the proposed

[2] https://www.bailii.org/ew/cases/EWCA/civ/2022/187/html

development with the fact that in emerging local planning policy, the local authorities have committed that there will not be significant Green Belt releases for housing. Indirectly, this proposal involves exactly that.

4.3 **Emerging Greater Cambridge Local Plan and NECAAP**

4.3.1 The weight to be given to the emerging Greater Cambridge Local Plan (GCLP) and NECAAP in the determination of this application is (if any) very limited, given their early stage of preparation and the uncertainty surrounding the future spatial strategy in greater Cambridge as a result of identified constraints on water resources and housing supply (SHH 013 Summary of oral submissions at ISH 2, paras.2.11-2.15). This accords with the Local Planning Authority's own position on the weight to be given to emerging policy in planning applications, as evident in officer's reports on development in the NECAAP area. For example, the Officers Report to Joint Development Control Committee of Greater Cambridge Shared Planning on the Merlin Place application 23/00835/FUL states at para 5.15: 'The Proposed Submission AAP has not been the subject of publication and consultation, it therefore currently attracts "limited" (i.e. little) weight as a material consideration in planning decision making and advice'. Any suggestion by the LPAs at ISH 2 that greater weight should be given to the emerging NECAAP in the context of this application for development consent is therefore inconsistent with their recorded position in live planning applications.

4.3.2 Progress on the GCLP has been further paused as a result of the water resources crisis in Cambridgeshire with a Task Force appointed by Government to address this as confirmed by Stephen Kelly for GCSP at ISH 2. Planning applications are also being refused or paused as a result (see, for example, the Officers report to Joint Development Control Committee, 22/02528/OUT application for up to 1,000 dwellings at Darwin Green, at paras.16.34 and 27.1). The LPAs have confirmed that a new Local Development Scheme setting out the timetable for the local plan process will only be issued one there is greater certainty about the water supply issue. The LPAs had stated that this would not be before September 2023[3]. Two months later there is still no update on the position. At ISH 2 the LPAs were unable to confirm, in response to questions from the Examining Authority, that the water supply issue would be resolved by the time the examination closed. The lack of firm plans for and long timescales for delivery of large-scale new water supply which is necessary to support further growth in Cambridgeshire further reduces the weight to be given to the spatial strategy in emerging policy, which is likely to be subject to change as a result.

4.4 **Response to Points raised by the Applicant on Need at ISH 2**

4.4.1 The Applicant made a number of specific points when discussing the need for the proposed development at ISH 2 which SHH wishes to rebut or draw attention to.

[3] https://www.greatercambridgeplanning.org/emerging-plans-and-guidance/local-development-scheme/

4.4.2 First, Leading Counsel for the Applicant confirmed in response to question from the Examining Authority that the NPSWW does not "as such" make provision for development to satisfy any alternative need or desire beyond operational need. Leading Counsel however also sought to rely on section 4.15 and in particular para.4.15.1 on socio-economic effects, but these paragraphs are concerned with assessing the impacts of any proposed new waste water NSIPs (see NPSWW paras.4.1.1-4.1.2) and not a justification for granting consent or evidence of need for such infrastructure. Nothing in section 4.15 suggests that "need", as considered in NPSWW, includes an alleged need to release land on which an existing waste water treatment plant is located.

4.4.3 Second, the Applicant's planning consultant, Mr Bowles, noted that one element of the scheme was to provide additional capacity to meet needs in Waterbeach. In relation to that aspect, he confirmed there was a need for additional capacity. However, he recognised that one solution to this issue would be to connect the Waterbeach development into the existing waste water treatment plant at Milton. Again, this factor does not demonstrate any need for the proposed development.

4.4.4 Finally, Mr Bowles confirmed in response to a question from the Examining Authority that in his view there was nothing in the NPS that supports enabling development, i.e. the relocation of waste water infrastructure is not required in order to facilitate redevelopment of the site for housing.

4.5 **No need to move.**

Examples of Upgrading and Extension of Existing Waste Water Treatment Plants Allowing Residential Development

4.5.1 **Introduction**

The Applicant has failed to properly consider retention of the works on the current site. The National Planning Policy Framework expects all reasonable options to be assessed before land is released from the Green Belt. This has clearly not been carried out by the Applicant.

No proper consideration has been given by the applicant, or information published, regarding the range of options considered, the forms that are retained or modified works could take and how this could be delivered. The further representation races significant questions regarding this material omission.

Retention of the Cambridge Water Recycling Centre (WRC) on the existing site would be more cost effective, more environmentally friendly and could still free up the majority of the Milton site for housing redevelopment. In particular, the Applicants submission ignores the benefits of using new and environmentally friendly technology which is being used elsewhere in the United Kingdom for larger plants and could significantly reduce the footprint of an upgraded WRC.

Comprehensive upgrade programmes have been conducted on both similar size and larger works, while fully operational and with housing in close proximity to the works, or developed

subsequently.

For example, Riverside Sewage Treatment Works (STW) at Rainham is notable due to the upgrades being performed while fully operational, with substantial housing developments introduced subsequently in close proximity to the site, since designated as a strategic development area in Policy 2 of the Adopted London Borough of Havering Local Plan.

Deephams STW, which has housing adjacent to the works, conducted the entire upgrade while fully operational and consolidated the footprint of the works by a third to allow capacity for future upgrades. Prior to the upgrade a strategic assessment was conducted which considered 22 potential relocation sites, then down selected to 5, but chose to upgrade the works on its existing site.

Stoke Bardolph STW has undergone substantial upgrades on site to increase both capacity and its capability for the production of renewable energy. The surrounding land is now undergoing substantial housing development with strategic housing and employment allocations in close proximity to the site.

These three examples are summarised in Table 1 and expanded further below.

Facilities considerably larger than Cambridge have also been upgraded in situ, while fully operational. For example, Daveyhulm STW, in Greater Manchester, with a Population Equivalent (PE) of 1.3 million and Mogden STW, in the London Borough of Hounslow, with a PE of 3.9 million, both of which have adjacent housing and have made significant improvements to their works in recent years.

Introduction of current technology requiring a much reduced area, as implemented at Blackburn and Kendal STWs, has allowed substantial consolidation of the operational works in addition to providing increased capacity and an efficient, sustainable and environmentally compliant solution which delivers improved water and effluent standards.

Examples also exist, albeit for a lower PE, of indoor works constructed on a much-reduced footprint, such as Liverpool STW, adjacent to the new Everton Football Stadium under construction at Sandon Dock and Woolston STW at Southampton, that both offer low odour risk.

There are other examples of developments that provide an integrated optimal solution such as the Peacehaven STW, relocated to a suitable non green belt site, or the Guildford STW being relocated to the nearby Slyfield Industrial Estate. Both examples benefitted from a strategic approach and wider stakeholder involvement in the solution design that is not present for the Cambridge WRC, where primary responsibility for the proposed solution remains with the statutory provider as the Applicant.

No reference sites are apparent where the applicant has sought a Development Consent Order to relocate an operational Waste Water Recycling Centre from its existing urban site to a nearby city edge green belt location, proposing largely conventional technology and utilising

cost, including the future operational cost that will be borne by the applicant, as its primary site selection criteria.

Major utility companies typically have encroachment policies designed to protect their facilities and there are normally policies in local plans which require the risk assessment of sensitive housing developments before they are permitted within this zone. For example, Thames Water maintains an encroachment area of 800m from a sewage works, within which they look closely at any proposals and consider the nature of the development and the scale, impact and location of the proposal. In the case of the Stoke Bardolph STW, the Nottingham & Nottinghamshire Waste Local Plan Adopted January 2002 includes a “cordon sanitaire” site specific area of between 25 and 400m, within which proposed developments should be discussed with the water company that operates the site, which is also reflected in the Nottingham and Nottinghamshire emerging Pre-submission Draft Waste Local Plan dated August 2023.

For the following examples, strategic allocations have been made and / or planning consent granted for the surrounding residential developments.

Table 1 – Examples of Upgrading and Extension of Existing Waste Water Treatment Plants

Plant and Operator	Location	Site Area	Date (Permission Granted - Construction Completed)	Cost of Upgrade	Capacity (Population Equivalent)		Summary
					Pre Mod	Post Mod	
Riverside STW, Thames Water Utilities Ltd	Rainham, London Borough of Havering	30Ha	2008 - 2012	£64m	400,000	415,500	Re-introduction of sludge processing at Riverside, including new sewage sludge digestion facility, refurbishment of existing digesters, reception tanks; thickening, thermal hydrolysis and anaerobic digestion plant, sludge dewatering and storage facilities, combined heat and power and odour control plant. The Rainham and Beam Park has subsequently been identified as a Strategic Development Area in close proximity to the Riverside site, with a range of residential development already underway.
Deephams STW, Thames Water Utilities Ltd	London Borough of Enfield	34Ha	2015 - 2018	£252m	891,000	989,000	Substantial upgrade to replace old plant, cater for growth, address storm flows, reduce odours, meet new wastewater quality standards and improve the quality of discharges. Replace the CHP engines to produce more renewable energy. Substantial housing exists in close proximity to the North and West of the site.
Stoke Bardolph STW, Severn Trent Water Ltd	Gedling, Nottingham	38Ha	2010 - 2013	£40m	620,000 – PE, 1.4 million – Regional Sludge Centre		AMP5 upgrades included a significant programme of work including the Inlet works, a new activated sludge plant (ASP), concentrate treatment works, modifications to existing ASP lines and primary sludge treatment, along with associated works. A range of mixed development is underway in close proximity to the site following strategic allocations within the Local Plan.

4.5.2 Riverside Sewage Treatment Works:

Located in Rainham, in the London Borough of Havering, the Riverside Sewage Treatment Works (STW) occupies a site of circa 30 Ha, of which around 20 Ha represents the operational plant and the remaining 10 Ha made up of creek land recognised as being important for nature conservation.

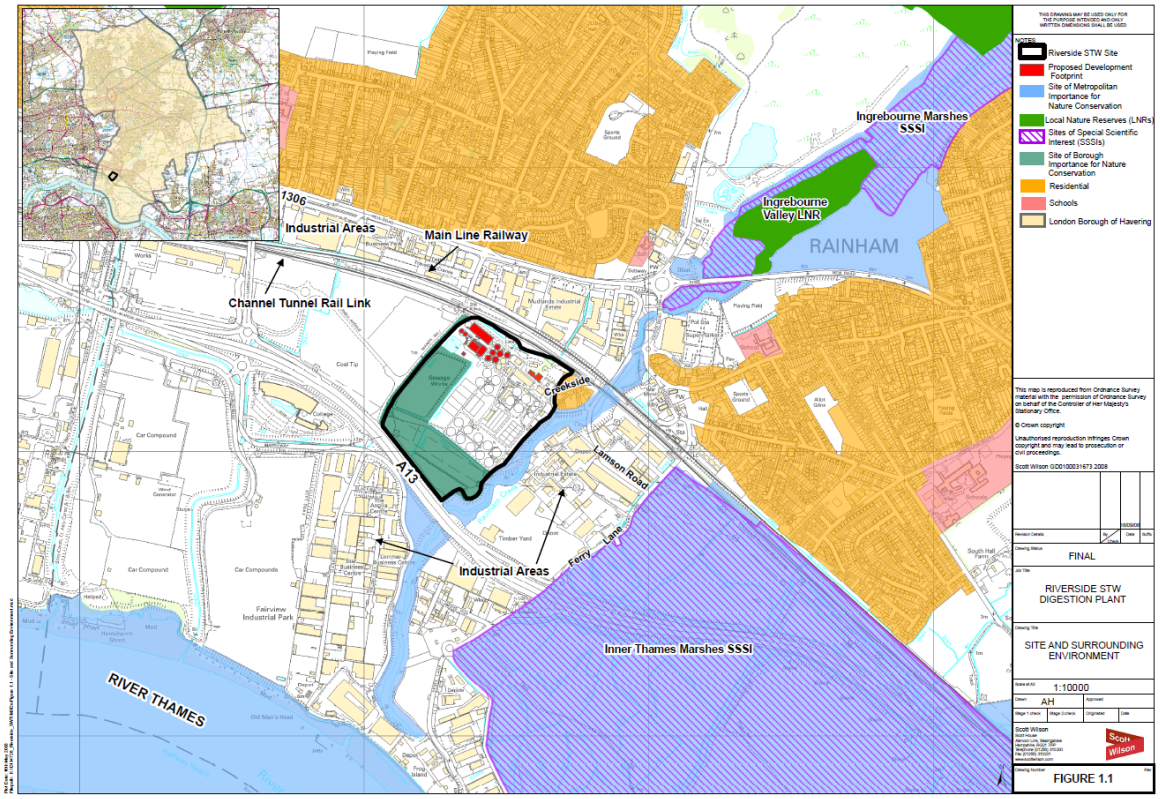

Figure 1 - London Borough of Havering Planning Application U0005.08 – Site context

Planning consent was granted in 2008 by the London Borough of Havering for a comprehensive upgrade to re-introduce the sludge digestion process back to the Riverside STW and to increase capacity to meet predicted increases in flows.

The upgrade comprised of a new sewage sludge advanced digestion facility, including refurbishment of existing digesters, sludge reception tanks; thickening plant, thermal hydrolysis plant, anaerobic digestion plant, sludge dewatering and storage facilities, combined heat and power plant, waste gas burner, odour control plant and associated works and structures.

When completed in 2012 the plant supported a PE of 415,500 while also allowing processing of additional sludge from Beckton.

A further upgrade is planned for Riverside STW[4]. This will improve its ability to treat the volumes of incoming sewage, reducing the need for untreated discharges in wet weather.

[4] https://www.thameswater.co.uk/about-us/performance/river-health/frequently-asked-questions/information-about-specific-sites#r

The scheme is due to complete in 2026.

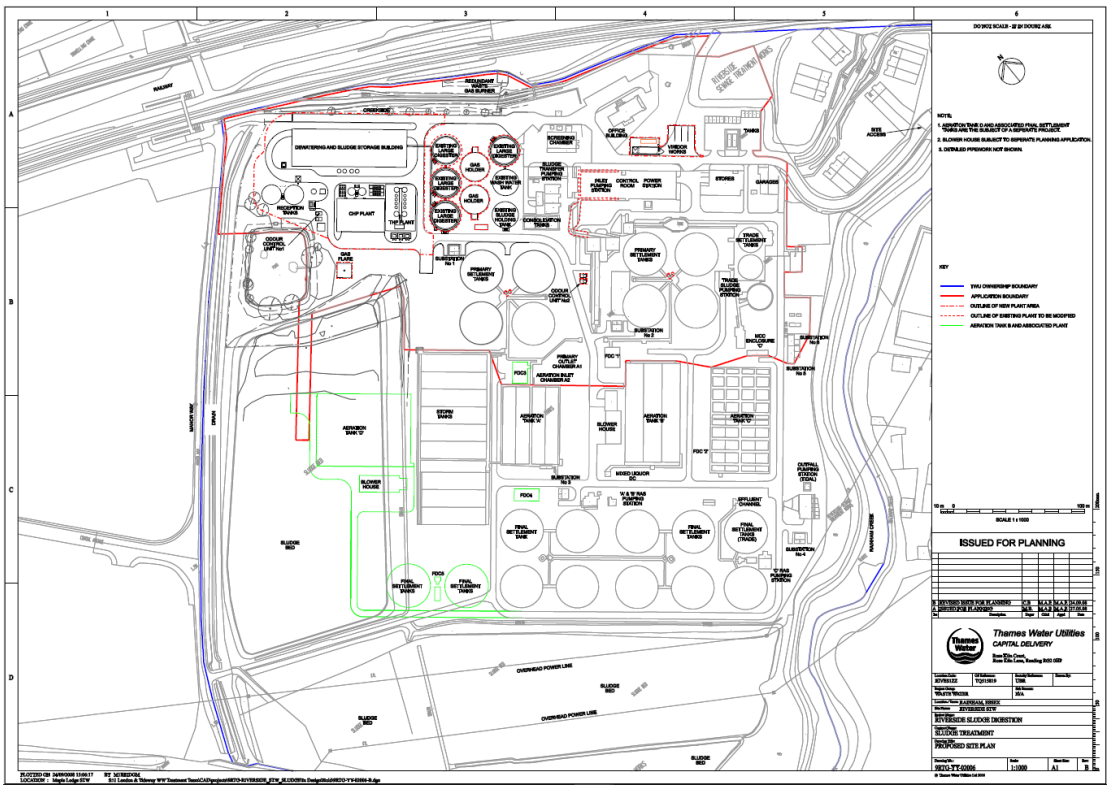

Figure 2 - Planning Application U0005.08 – Upgrade Proposed site plan.

Following completion of the comprehensive upgrade in 2012, a bid was submitted by Havering Council to the Greater London Authority (GLA) and in June 2015 Rainham and Beam Park was identified as one of the GLA's new 'Housing Zones'[5], an area focussed funding programme to expand the number of homes being built.

Figure 3 – Greater London Authority Housing Zones

[5] https://www.london.gov.uk/sites/default/files/housing_zones_brochure_march_2016_5.pdf
[6] https://www.havering.gov.uk/download/downloads/id/5626/rainham_beam_park_planning_framework.pdf

In 2016 the Rainham and Beam Planning Framework Final Report[7] was published establishing a development framework for the area north of the Riverside STW. The Framework strategy document assists the Council in prioritising investment, to guide and shape the quality of development, form part of the evidence base of the Local Plan and to inform area specific policies.

Figure 4 shows the Riverside STW in the context of the Framework Location Plan, including existing locations surrounding the works.

Existing land used within the framework north of the STW is primarily light industry and employment, with Rainham Village, retail, community and residential applications further to the east.

The proposed land-use is predominantly residential with a District Centre surrounding the station, education the form of Havering College and a Local Centre incorporating the proposed Beam Park station to the north east.

Figure 4 – Rainham and Beam Planning Framework – Location Plan

FIGURE 2.1 LOCATION PLAN

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[7] https://www.havering.gov.uk/download/downloads/id/5626/rainham_beam_park_planning_framework.pdf

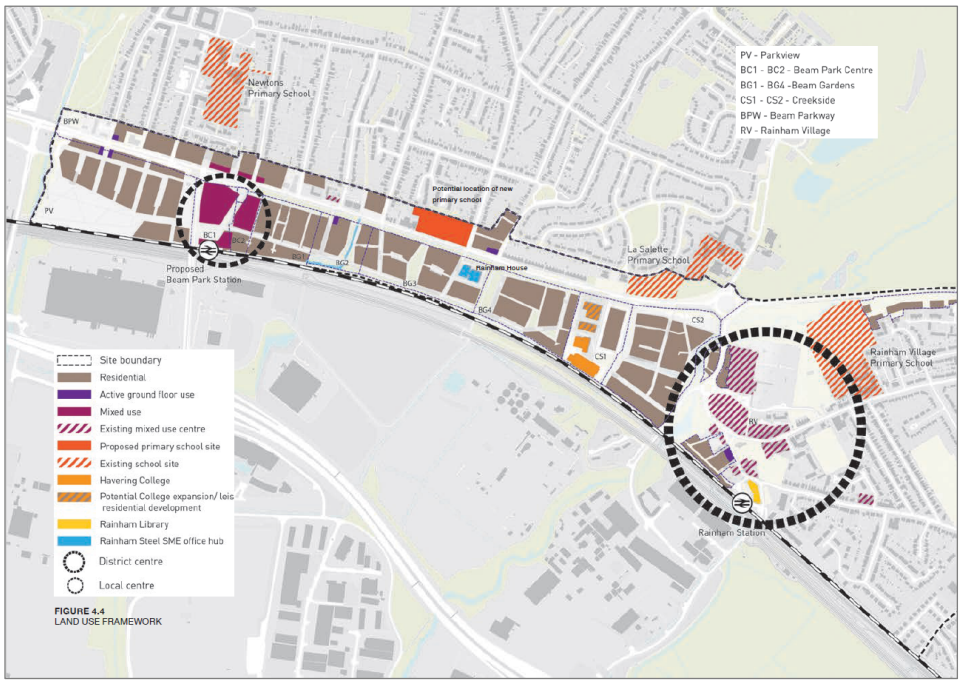

Figure 5 - Rainham and Beam Planning Framework – Proposed Land Use

The illustrative masterplan below shows the extent of the Rainham and Beam framework with the adjacent Riverside STW to the south of Beam Gardens and the Creekside developments:

Figure 6 – Rainham and Beam Planning Framework – illustrative Masterplan

4.5.3 Air quality

Section 2.2 of the Rainham and Beam Planning Framework addresses development constraints, including section 2.2.5 on page 32, which focusses on air quality and more specifically, potential odour impacts associated with the Riverside Sewage Treatment Works. As set out in the extracts below, following assessment, the Council considered that odours generated by Riverside STW should not provide any constraint to the development of residential properties at any of the proposed development sites.

Air quality and odour assessment:

"An air quality and odour assessment has been carried out by Air Quality Consultants Ltd on behalf of the London Borough of Havering to serve as an evidence base for the Planning Framework and will assist in the delivery of a co-ordinated approach in the development area.

The operational impacts on future air quality within Rainham that might result from the development proposals within the masterplan have been assessed. In addition, an odour risk assessment has been carried out which identifies the potential odour impacts associated with the Riverside Sewage Treatment Works (STW)."

"In terms of odour, the Riverside STW has been identified as a potential source of odour which may impact on the proposed development. The odour assessment has concluded that Riverside STW will lead to insignificant odour effects at all of the proposed development plots. The judgement that the odour effects are insignificant acknowledges the conclusions of the odour risk assessment, sniff-testing, and complaint record data provided by the Council. It is therefore considered that odours generated by Riverside STW should not provide any constraint to the development of residential properties at any of the proposed development sites."

4.5.4 Adopted Local Plan

In November 2021, the London Borough of Havering Local Plan[8] was adopted covering the period 2016-2031, including Policy 2, the Rainham and Beam Park, as a Strategic Development Area. This major growth and regeneration area provides the opportunity to establish an exciting new residential neighbourhood.

Despite the close proximity to the development area and the nearby green space access, it is intended for the Riverside STW to remain in situ, as the most suitable location, with the surrounding area including the STW designated as a Strategic Industrial Location (SIL) which the Local Plan intends to retain for industrial uses.

The following image shows the Rainham and Beam Park Strategic Development Area and Strategic Industrial Locations (SIL), from the 2021 London Borough of Havering Adopted Local Plan.

[8] https://www.havering.gov.uk/download/downloads/id/5300/havering_local_plan_2016_-_2031.pdf

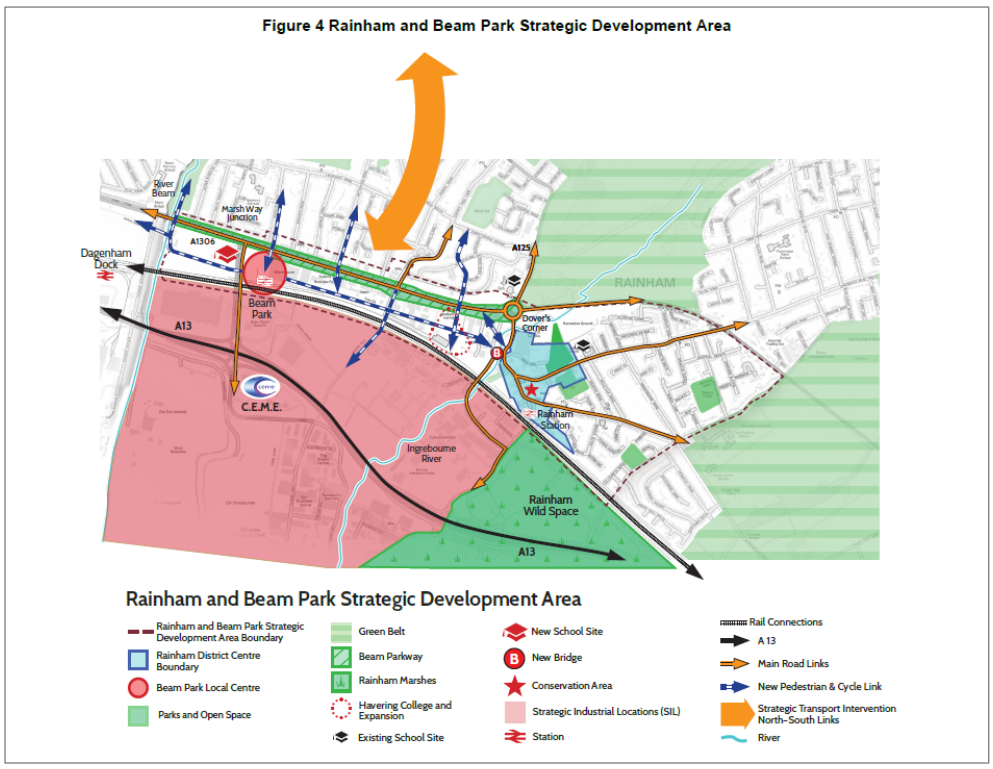

Figure 7 – Havering 2021 Adopted Local Plan – Policy 2 Strategic Development Area

4.5.5 Riverside Sewage Treatment Works: Rainham and Beam Park development

Since adoption of the 2021 Havering Local Plan a significant amount of development has already commenced in close proximity to the Riverside STW as shown in the following illustrations:

Figure 8 - Aerial illustration of the Riverside STW and part of the Beam Park development area – March 2022 (Image by Google – No additional data attributions)

Key:

STW Riverside STW – Upgrade completed 2012

A Dovers Corner/Knightswood Place development – Application decided 16/10/2017 – construction nearing completion

B Passive Close – Application decided 02/07/2013 – construction completed in 2015

C Napier and New Plymouth House development – Application decided 06/04/2020 – construction in work at 2022

D Rainham Construction and Engineering Campus - Application decided 27/04/2018 – construction complete

E Development area identified as BG4 in the 2016 Rainham and Beam Planning Framework

A Dovers Corner/Knightswood Place (Site A)

The development located at Dovers Corner, subsequently named Knightswood Place, comprises 394 residential dwellings homes in a mix of 175 houses and 219 apartments, including 26 units for affordable rent and 25 for shared ownership. At its nearest point, the

development site is located approximately 100 metres from the Riverside STW boundary.

The Knightswood Place development comprises 2 / 3 storey houses and 4-5 storey apartment blocks.

Figure 9 - Planning Application P0922.15 - Storey Heights and Site Plan

Passive Close (Site B)

Passive Close is a certified passivhaus development of 51 homes in 3 storey terraces

Figure 10 – Planning Application P1534.12 – Passive Close Location Plan

At the nearest point, the development is located approximately 150 metres from the Riverside STW boundary.

Napier and New Plymouth House (Site C)

The Napier and New Plymouth House regeneration project comprised the demolition of existing buildings on the site, to be replaced by a mix of apartments in blocks between 3 and 10 storeys totalling 197 apartments, located approximately 300 metres from the Riverside STW site. Construction on site was underway in 2022.

Planning Application P0751.19 – Drawing View

Rainham Construction and Engineering Campus (Site D)

A new building has been completed and an existing building refurbished for the Rainham Construction and Engineering Campus, forming part of the New City College Group. An additional area north of the new college building is identified in the Rainham, and Beam Park Framework for further college expansion or residential development.

Beam Gardens (Site E)

Directly north of the Riverside STW, the development area identified as BG4 in the 2016 Rainham and Beam Planning Framework is planned for a mix of apartments and houses, providing a gradual transition from the urban character closer to the centre, to a family living neighbourhood.

Riverside Sewage Treatment Works: Conclusion

In conclusion, substantial housing has been permitted as close as 150m of the Riverside STW site, which was upgraded in 2012, along with an extensive strategic development area allocated north of the STW for the Rainham and Beam Park Planning Framework which aims to create a sustainable neighbourhood, a great place to live, a place with a strong identity, an accessible place and a place with quality open spaces.

5.4.6 **Deephams Sewage Treatment Works**

Deephams Sewage Treatment Works (STW) is Thames Water's fourth largest Sewage works and the ninth largest in England, serving a PE of 989,000. It is located in Enfield off of Picketts Lock Lane, approximately 0.7 miles east of Edmonton Town Centre.

The 34 hectare site is bounded by adjacent residential development at Pickett's Lock Lane and the Lee Valley Regional Park to the North, the Lee Navigational Canal and William Girling Reservoir to the east; Ardra Road Industrial estate at Central Leeside to the south and to the west separated from the site by Meridian Way and main railway line is a substantial area of housing which at its closest lies less than 100m from the western edge of the sewage works site. The redevelopment to the west comprised 466 residential dwellings over two phases, both granted in 2000 and built out over the following years. Phase 1 included 120 flats and 120 houses, while phase 2 comprised 66 flats and 158 houses, with the houses from both phases being a mix of 2, 3 and 4 bedroom units.

Approximately 150 metres North West from the site boundary, an earlier development was granted in 1990 for a development of 442 flats.

Figure 11 – London Borough of Enfield Planning Committee Report dated 18 November 2014 – Location Plan

The STW was largely constructed on the current site in the 1950's and 1960's, with substantial upgrades taking place in 1980, mid 1990 and 2011-2012. Following identification in the March 2012 National Policy Statement for Waste Water (NPSWW) as needing considerable improvement, the resulting major upgrade that took place between 2014 and 2018 had multiple objectives:

- To replace the existing old plant
- To significantly reduce odours

- Meet new wastewater quality standards and improve the quality of discharges into Salmons Brook
- To cater for predicted population growth to at least 2031
- To address storm water flows and cope with predicted weather variations due to climate change.
- Replace the existing CHP engines on site with two new CHP engines, to produce more renewable energy from the Upgrade than the current sewage works

The NPSWW (para 2.6.2) identified the Deephams scheme as a potential Nationally Significant Infrastructure Project (NSIP).

Following a strategic analysis of options, the most appropriate solution for delivering the necessary improvements in the quality of the treated wastewater was identified as either upgrading the treatment facilities on the existing Deephams STW site, or through building a new sewage works on a new site elsewhere. An initial long-list selection of twenty two sites was reduced to a shortlist of five.

Figure 6: The assessment methodology

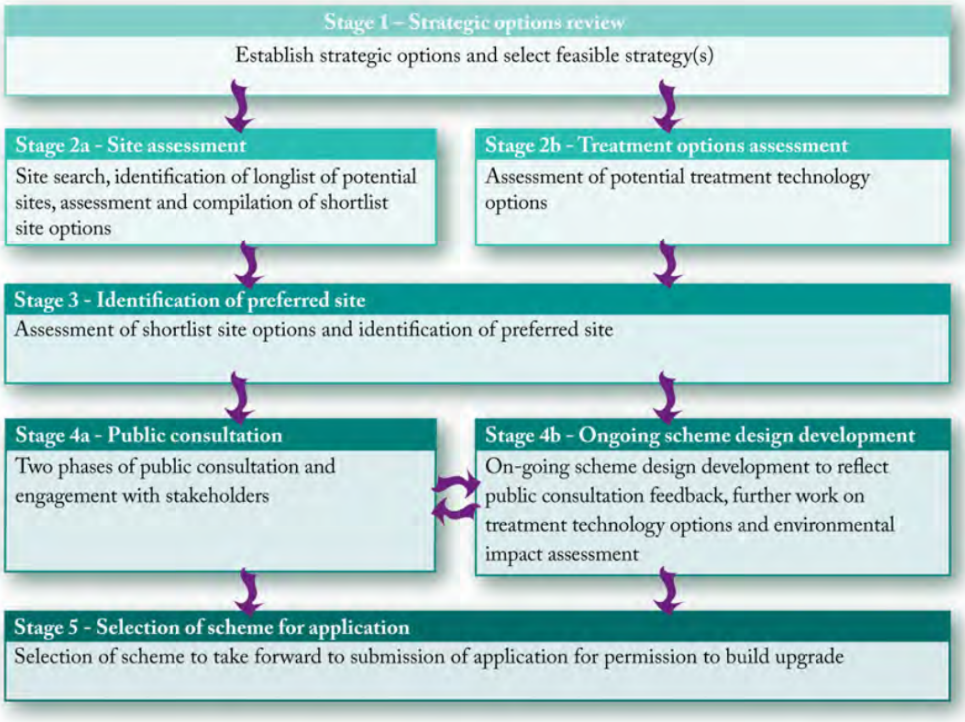

Figure 12 – Thames Water Project Report – Phase 2 Consultation Version 2014 – Methodology

Following a more detailed assessment of the shortlisted sites it was concluded that the existing Deephams STW site was the preferred development location.

A DCO was not sought and planning consent was granted for the upgrade by the London Borough of Enfield on 20 February 2015. This included replacement of the 3 existing treatment “streams” with 2 new streams, each comprising primary settlement tanks, aeration lanes and final settlement tanks. Introduction of covers to primary settlement tanks, inlet works, anoxic zones and secondary digesters, along with odour control units. Replacement of the existing Combined Heat and Power (CHP) engines with two new CHP engines provided additional renewable energy capacity.

The upgrade was phased in three spatial phases to take place while the plant remained fully operational as shown in Figures 13 and 14.

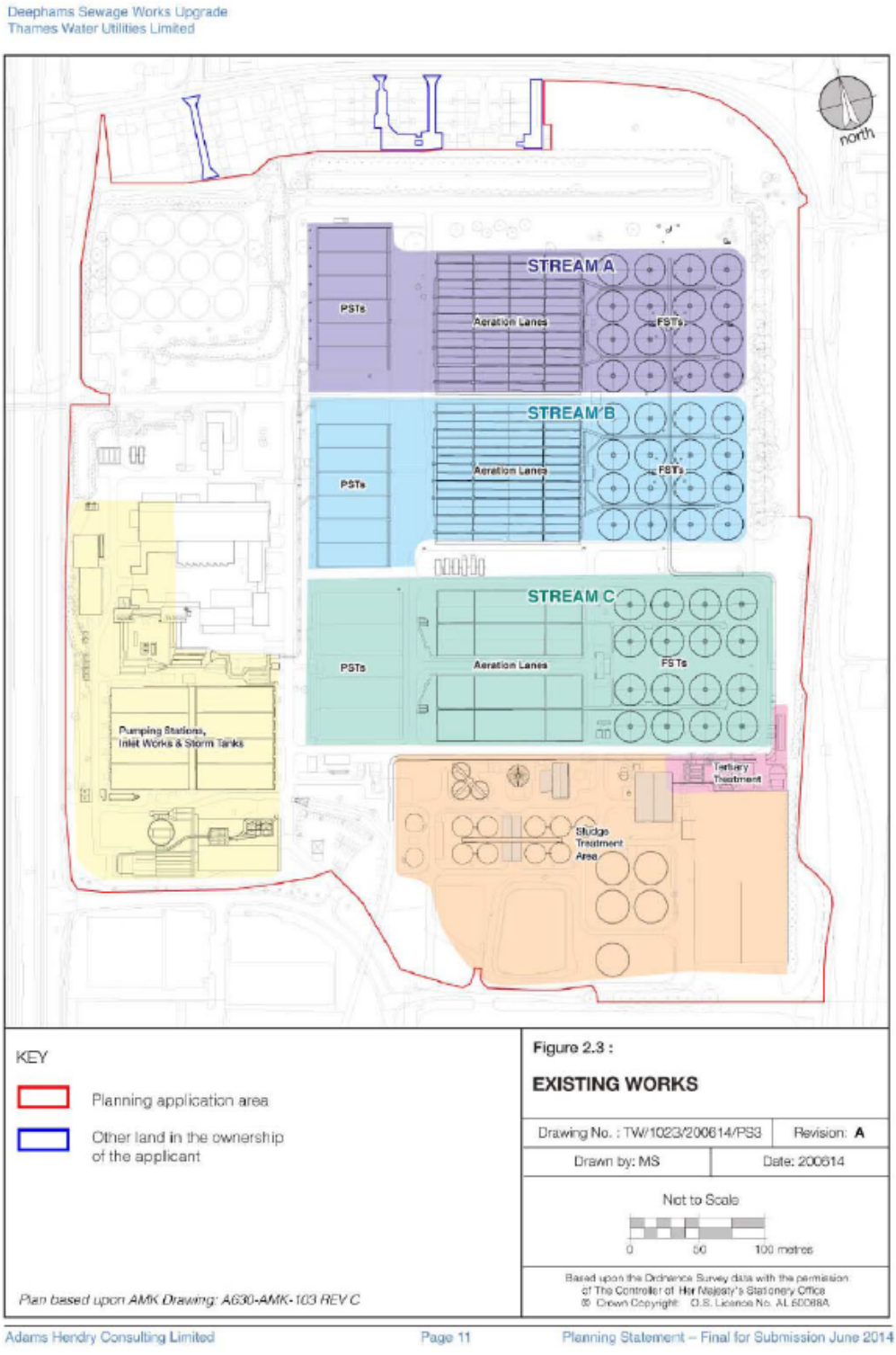

Figure 13 – Application 14/02612/FUL – Planning Statement – Existing Works

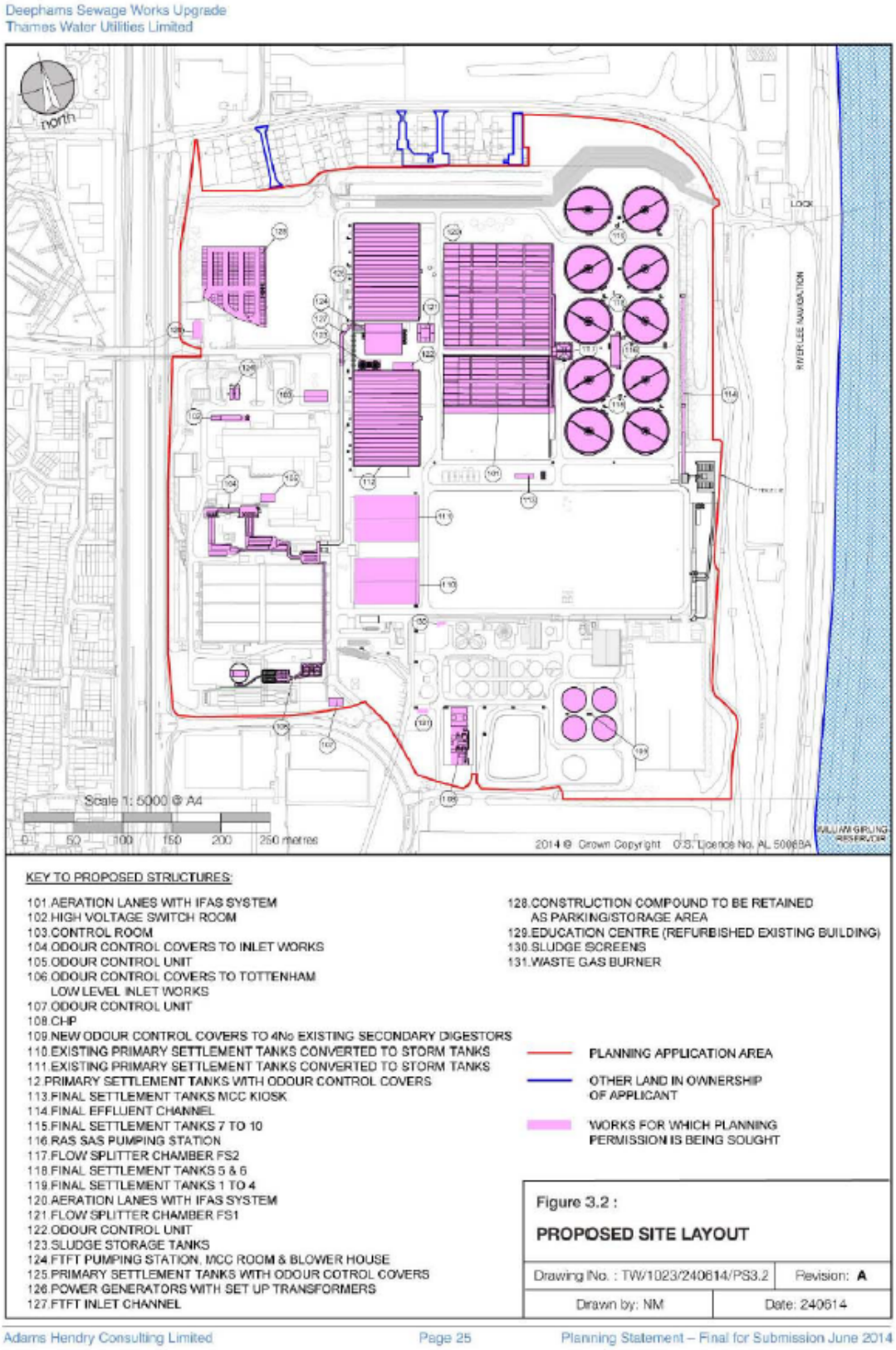

Figure 14 – Application 14/02612/FUL - Planning Statement – Proposed Site Layout

All modifications were conducted on the existing site, reducing the footprint by a third, leaving space for future resilience plans and a growing population, along with the introduction of covers and odour control units to minimise odour.

Figure 15 - Illustration of the progressive upgrade on site during full operation

The resulting site offers significant improvements to the quality of the final effluent leaving the works helping the downstream river environment and aquatic life. On average, two-thirds of the energy for the site is now self-generated using renewable sources and odour has been dramatically decreased, achieving a 99% reduction in odour emissions, as a result of covering the entire inlet works and most sources of odour.

Figure 16 - Illustrative view of the Deephams STW – March 2022

4.5.6 Stoke Bardolph Sewage Treatment Works: Upgrade

The Stoke Bardolph Sewage Treatment Works (STW) occupies a site of approximately 50 hectares on the edge of the built-up area on the eastern side of Nottingham, approximately 6km from the city centre. Of the 50-hectare site area, approximately 38 hectares is utilised for the main plant and the remaining 12 hectares to the east for the anaerobic digestion plant and biomethane production. The STW supports an equivalent population of 620,000 and is a regional sludge processing centre for a population equivalent of 1.4 million.

In recent years, a number of upgrades have been conducted progressively on the site. In 2013 a £44.5m programme of works was conducted as part of the OFWAT approved AMP5 programme, including substantial upgrades to the Inlet works, a new activated sludge plant (ASP), concentrate treatment works, modifications to existing ASP lines and primary sludge treatment, along with associated works. 2018 saw an expansion of the anaerobic crop digestion plant to 4 processors, along with refurbishment of the three plants installed in 2010 and 2012. The plant processes crops grown on contaminated farmland to generate electricity and heat for the anaerobic digestion process. This generates an electrical equivalent of 44 GWh per annum. In parallel a new plant was installed to upgrade biogas to biomethane for use in the gas grid.

The most recent upgrade, completed in July 2021 introduced a new advanced anaerobic digestion process to increase overall capacity, maximise biogas production and improve the quality of the sludge cake product all within the existing site footprint.

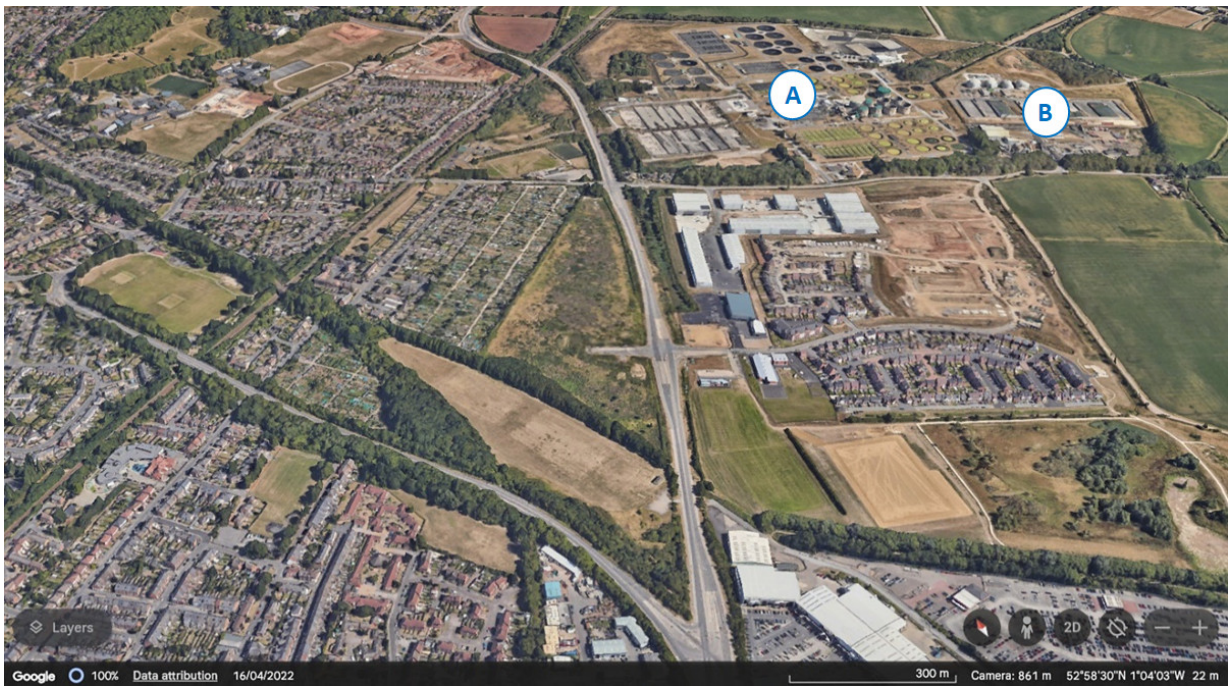

Figure 18 - Aerial illustration of the Stoke Bardolph STW and its environs - Apr 2022
(Image provided by Google – No additional data attributions)

Key:

A Stoke Bardolph STW

B Anaerobic crop digestion facility

4.4.8 Stoke Bardolph Sewage Treatment Works: Permitted Residential Development

A significant amount of residential and mixed use development has taken place to the South West and North West of the STW.

The Greater Nottingham Aligned Core Strategies (Part One Local Plan) Adopted September 2014[9] includes the Teal Close site as a strategic allocation incorporating 830 housing units and an area of 7 hectares for employment development.

In turn, the Gedling Borough Council Local Planning Document (Part 2 Local plan) adopted July 2018[10], includes the Teal Close site as Spatial Strategy Policy ACS 2, with employment allocations made under Policies E4 and LPD71. The Local Plan also includes allocation H4 for housing development of 115 homes at Linden Grove, since promoted as Bonnington Grange. These are shown in the extract from the Local Plan Interactive Policies Map below:

[9] https://www.gedling.gov.uk/media/gedlingboroughcouncil/documents/planningpolicy/ACS%20Main%20Publication%20First%20Draft%20(August%202014)%203-9-14.pdf

[10] https://www.gedling.gov.uk/media/gedlingboroughcouncil/documents/planningpolicy/acsandlpd/LPD.pdf

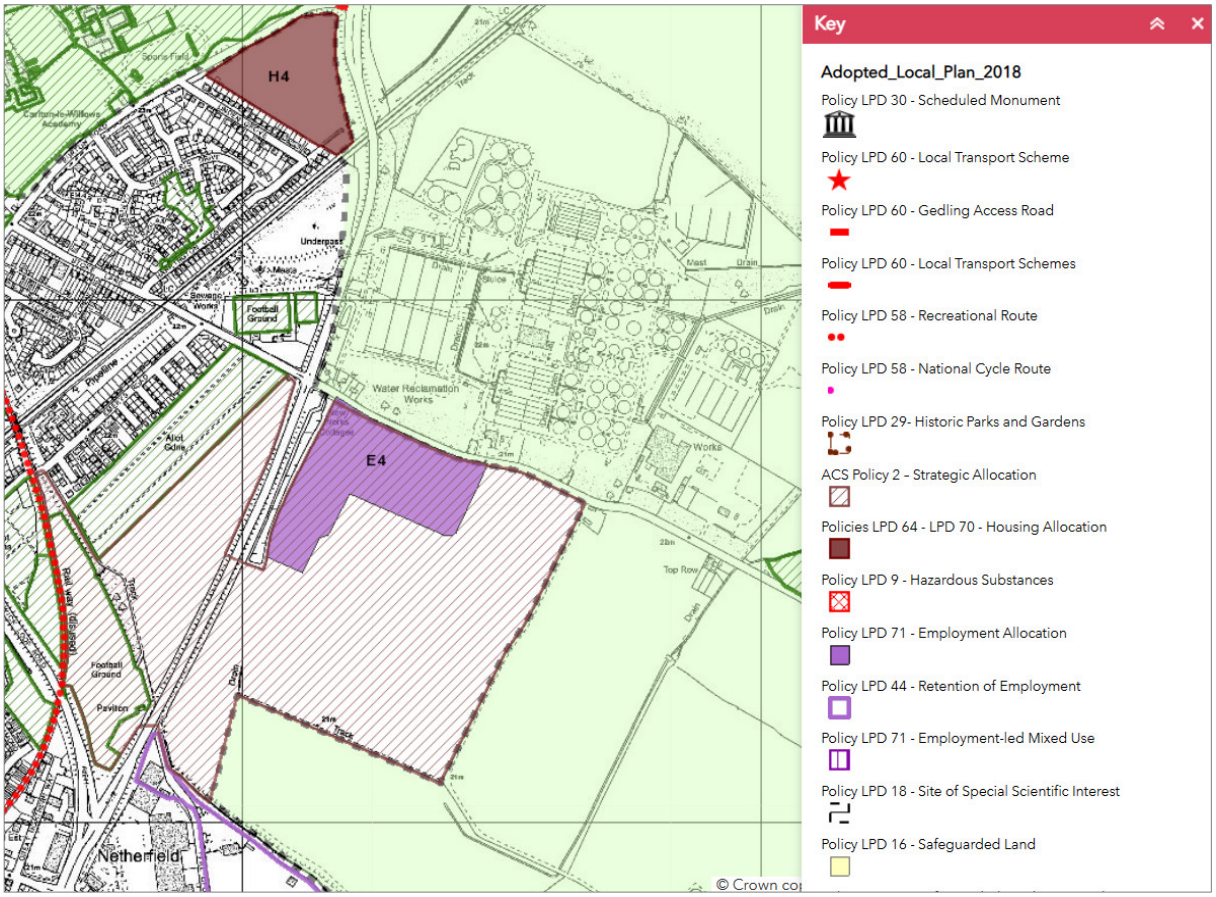

Figure 19 – Teal Close: Gedling Borough Council Local Plan Interactive Policies Map – Local Extract

The Teal Close allocation comprises of residential development (up to 830 units), employment uses (Use Classes B1/B2/B8), a community hub (Use Classes A1-A5 and D1), primary school, hotel (Use Class C1), care home (Use Class C2), playing pitches and changing facilities, public open space, allotments, structural landscaping, access arrangements and an ecology park.

The initial Indicative Phasing Plan showed the whole Teal Close site being developed in two stages as per the following phasing plan.

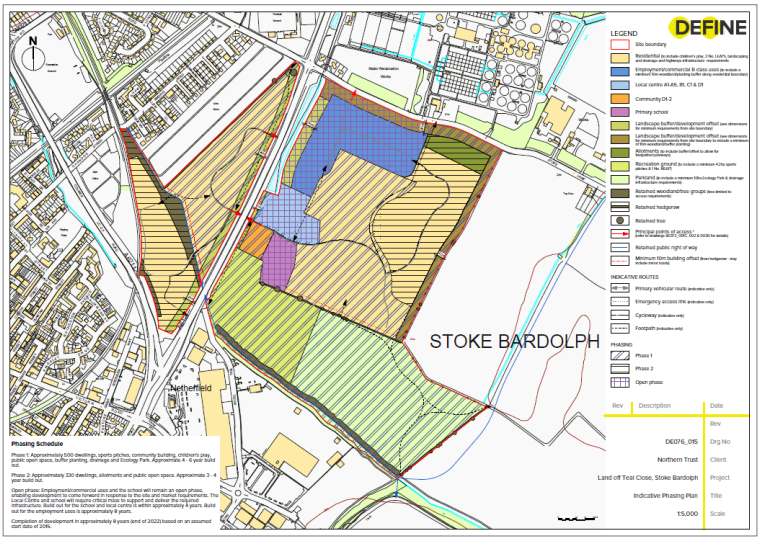

Figure 20 - Gedling Borough Council – Outline planning application 2013/0546 – Indicative Phasing plan

Residential development is being allowed within 150m of the STW boundary on the area cross hatched yellow on Figure 20 and shown as C on Figure 21. Progress with residential development in 2022 is shown on Figure 21.

Figure 21 - Aerial illustration of the surrounding developments – April 2022 - (Image provided by Google – No additional data attributions)

Key:

A Stoke Bardolph STW

B Anaerobic crop digestion facility

C/D In combination represents the 'Teal Close' development 0 since re-phased as set out below

E Borrington Grange

Further background to these developments is provided below:

Area C – Comprises 554 residential homes, mostly a mix of 2 and 3 storey houses The illustration at Figure 21 shows Phase 1 already completed in the foreground, and Phases 2 and 2a, below, are at varying stages of progress.

Figure 22 – Bardolph View – Phases 2 and 2a

Area D – 'Teal Close' – Later Phase

The remainder of the 'Teal Close' strategic allocation is now following on, with reserved matters having been conditionally approved by Gedling Borough Council in 2019 for 255 dwellings including 13 affordable units.

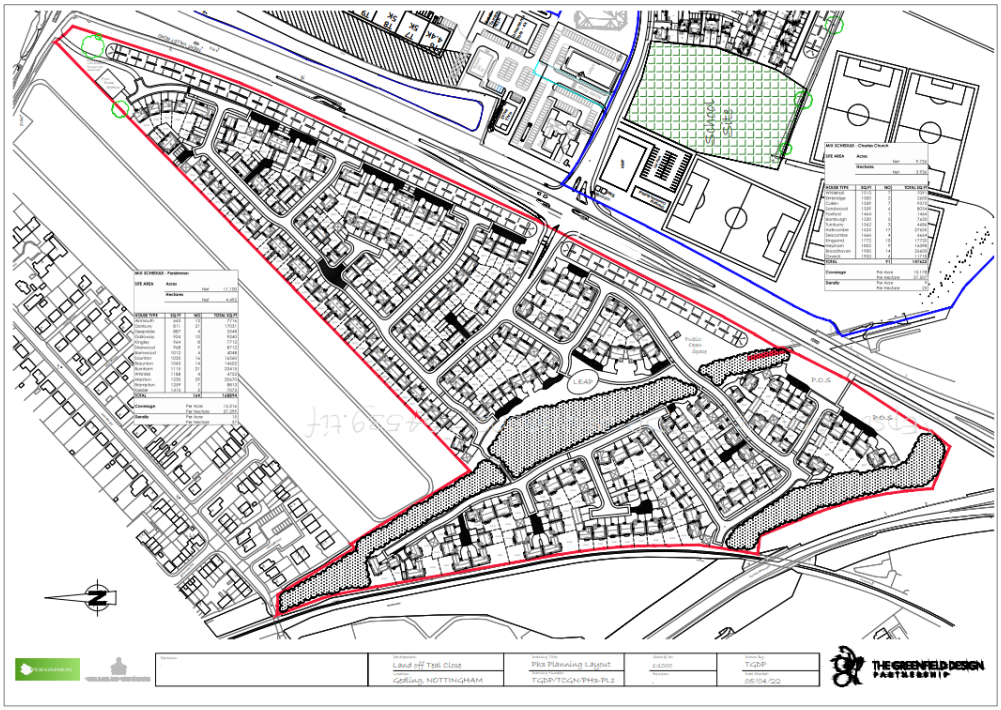

Figure 23 - Gedling Borough Council Application 2019/0560 - Planning Layout

Area E – Bonington Grange

Outline consent was granted in 2019 under application 2019/1186 and comprises 120 dwellings.

Figure 24 - Pictorial image of Bonington Grange development

Stoke Bardolph Sewage Treatment Works: Conclusion

The Stoke Bardolph STW has been progressively upgraded and is now supporting a PE of 620,000, in addition to operating as a regional sludge processing centre for a population equivalent of 1.4 million. Strategic development allocations have been made and planning consents granted to the South and West of the STW site for both residential and mixed development, as close as 150 metres to the STW, that are being progressively built out.

4.5.9 Conclusion on Upgrading of Waste Water Treatment Plants in-situ to Allow Residential Development in Close Proximity

With very limited technical resources, SHH has identified and discussed three substantive examples of in situ upgrading of major urban WWTPs all larger than Cambridge to allow high quality residential development as set out in Local Plans in close proximity to operational works. The range of examples provided including upgraded facilities, integrated solutions, consolidation of sites and technology enhancements, all clearly demonstrate the potential for consolidation of the Cambridge WRC on the current site and that there is no need to move. There are numerous other works which could have been cited as examples, including those where highly innovative state of the art

technology has been used to reduce site footprints and to overcome persistent odour or other operating constraints.

4.6 Technology and Design Standards

This section gives some examples of modern technologies used in the UK for upgrading and extending existing Waste-Water Treatment Plants and the design standards that can be achieved. The Applicant's submission (AW 5.2.2, APP-034) describes the use of a multi stage process including Primary Settlement, Secondary Treatment and Tertiary treatment to achieve the discharge permit requirements. Within these stages, the Applicant's submission describes some specific technologies. Primary Settlement would be by gravity with some dosing to reduce phosphorous. Secondary treatment would comprise two components – Activated Sludge Process (ASP) through (AW 5.2.2 para 2.3.26) '… a modern Membrane Aerated Bioreactor (MABR)' and Final Settlement Tanks (AW para 2.3.27) in the form of circular clarifiers (AW para 2.3.28). A key point made is that '…the selected technology and its final configuration will be confirmed in the final detailed design process.'

4.6.1 report on other configurations that could be used, and what impacts are these likely to have on energy consumption. SHH suggests that that the scope of reporting should also include other aspects such as the site footprint and height of vessels, use of chemicals, effectiveness of phosphorus recovery into biosolids, capital and operating costs, reliability, commissioning time, and, in the case of the alternative of staying on site, ability to incorporate existing tanks etc.

4.6.2 SHH would welcome the Applicant's comments as to whether they have evaluated the Nereda process (two examples are described below) as one of the other configurations. Many benefits were reported in 2015[11] for the process as used in several countries. Principally, it saves money and is more environmentally friendly but also that it is more space efficient. There are more recent UK examples, such as at Kendal WRC where the smaller footprint of the final WRC is noticeable. The Blackburn WRC was built with a capacity of 400,000 PE[12]; this is greater than the PD would be with Phase 2 in operation.

Kendall WRC Upgrade

4.6.3 The following plans from South Lakeland District Council Planning Consent reference 5/16/9012 show the extent of the works prior to consolidation and the proposed layout.

[11] Water Practice and Technology (2015) 10 (4): 799–805. NEREDA®: an emerging technology for sewage treatment. https://doi.org/10.2166/wpt.2015.098

[12] United Utilities - <Europe's largest Nereda wastewater treatment plant now online to boost Fylde coast bathing waters>

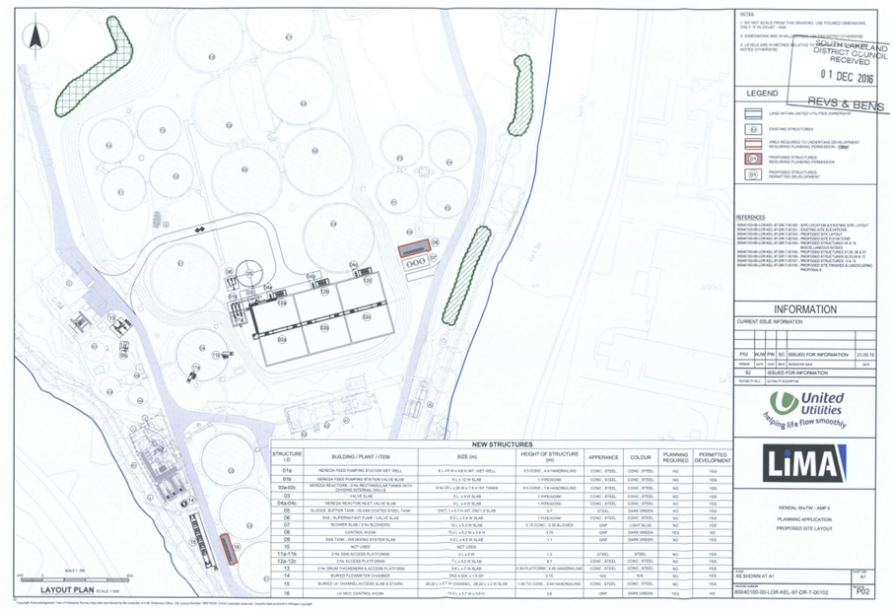

Figure 25: Kendal WRC: Planning Consent 5/16/9012 – Site Location & Existing Site Layout

4.6.4 Consolidation of the works and the introduction of modern technology has also been beneficial to the local community, with residential housing directly adjacent to the plant to the north of the site and immediately beyond the River Kent to the East, which is better appreciated from the aerial illustration below.

Figure 26 - Aerial illustration of Kendal WRC following consolidation

Blackburn WRC Upgrade

4.6.5 The Blackburn WRC upgrade completed in 2022 demonstrates the potential for a high level of consolidation, through which United Utilities has sought an evolutionary step in its waste water technology[13]. The plans below from South Ribble Borough Council Planning Consent LCC/07/2018/0018, approved on 21st May 2018 show the existing and proposed layout, with the new installations to the North and West.

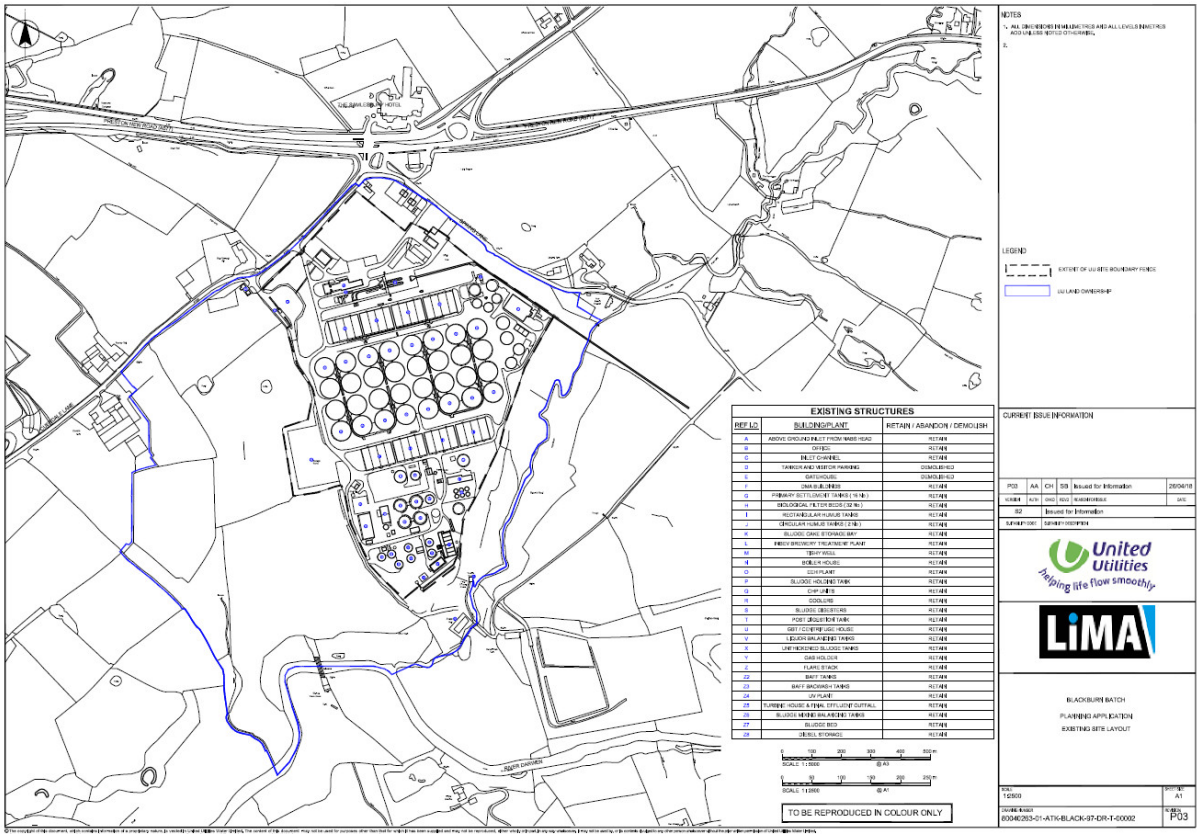

Figure 27 – Blackburn WRC: Planning Consent LCC/07/2018/0018 – Existing Site Layout

[13] United Utilities - <Europe's largest Nereda wastewater treatment plant now online to boost Fylde coast bathing waters>

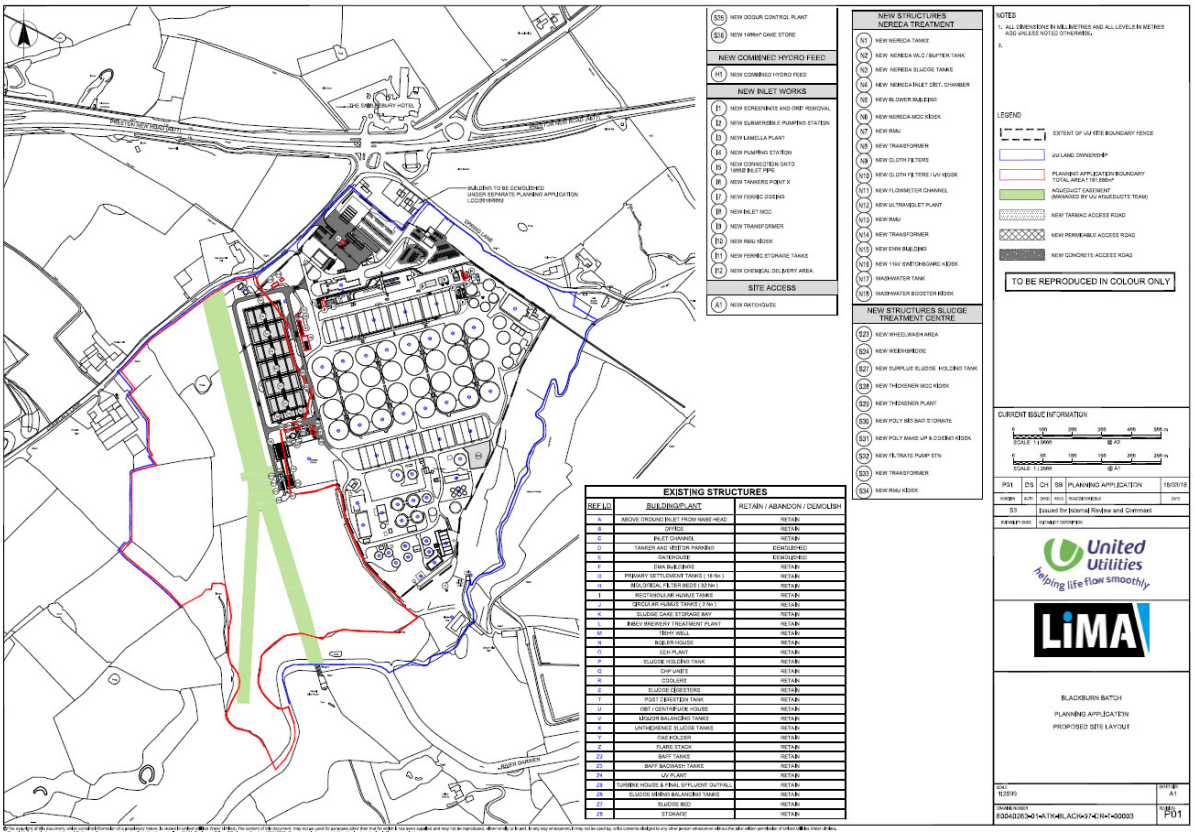

Figure 28 – Blackburn WRC: Planning Consent LCC/07/2018/0018 – Proposed Site Layout

4.6.6 The aerial view shows the Nereda plant alongside redundant assets. The original plant remained in service during the upgrade to provide continuity and therefore has not yet reached the stage of the Kendal example whereby the redundant assets have been removed.

Aerial view of the Nereda® plant and tertiary treatment plant at Blackburn WwTW - Courtesy of United Utilities

Figure 29 – Aerial view of the Blackburn WRC Nereda plant[14]

4.6.7 A subsequent South Ribble Borough Council Planning Consent LCC/07/2020/0016, May 2020, approved the introduction of tertiary filter process and ultraviolet treatment to improve water quality and reduce contaminants. Chapter 3, Site selection, of the corresponding Design and Access Statement[15] outlined the requirement for United Utilities in AMP7 to deliver an improvement to 'moderate' of 7km of the River Darwen by 22/12/2024, which involves achieving annual average phosphorus levels of 0.25mg/l. Working in harmony with the earlier upgrade, this new introduction offers a significant benefit to water quality. The following views show the proposed layout and finished installation.

[14] https://waterprojectsonline.com/custom_case_study/blackburn-2022/

[15] LCC_07_2020_00016-PLAN_APP_-_DESIGN___ACCESS_STATEMENT-63376.pdf (southribble.gov.uk)

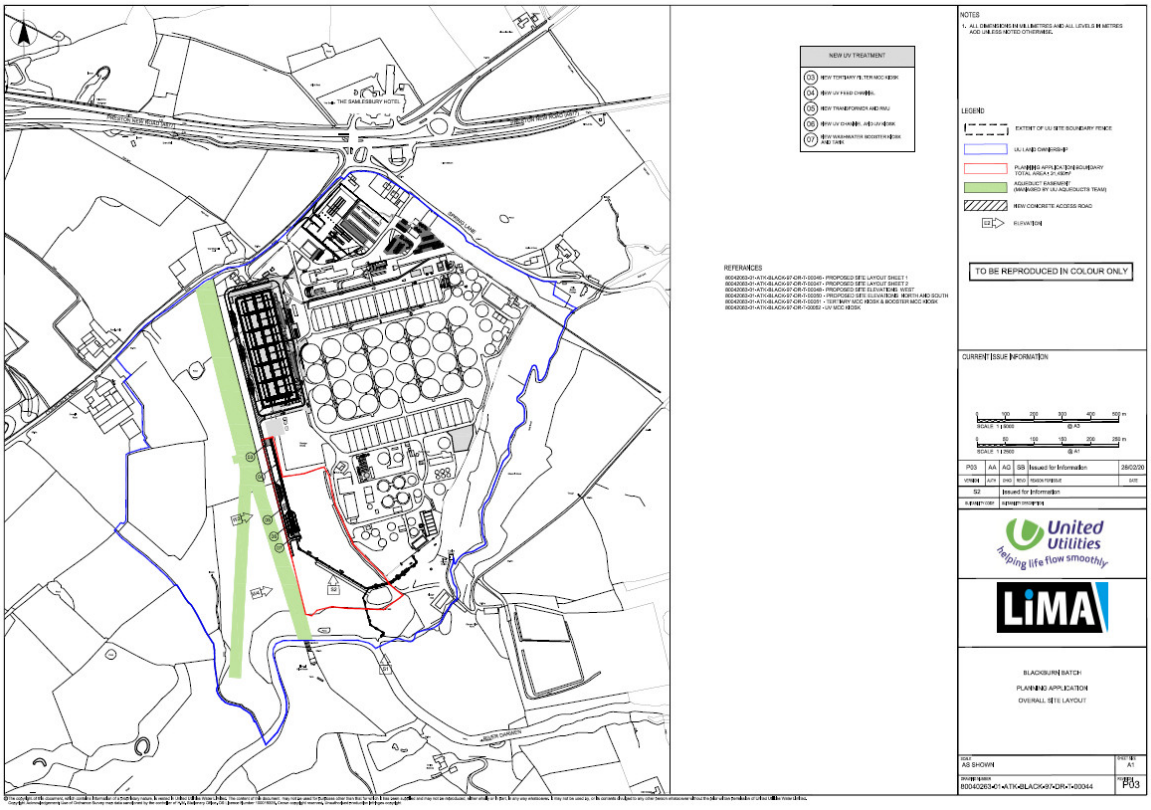

Figure 30 – Blackburn WRC: Planning Consent LCC/07/2020/0016 – Proposed Site Layout – Filter/UV Plant

Blackburn WwTW: New UV plant - Courtesy of United Utilities

Figure 31 – Aerial view of the Blackburn WRC additional tertiary treatment installation

4.6.8 SHH notes that:

- The DCO application documents show the Applicant 'intends to build a modern, low carbon water recycling Centre for Greater Cambridge';
- The application does not describe especially modern technology in that ASP has been in use for many years although there is a stated preference to incorporate a modern MABR subject to the final design; and
- The potential to use 'state of the art' technology is not covered in the DCO application ES or DAS. In contrast, the HIF funding document suggests that the proposed works will be conventional technology.

The Applicant should be asked specifically to respond to these concerns. Any's responses on choice of technology should also cover the ability to be modified or extended if more restrictive operational or discharge permits are introduced in future.

4.6.9 **Recent Upgrades of Existing Cambridge WRC at Cowley Road**
Further to ExAQ1 2.22 (PD-008), SHH has pieced together some steps in the recent upgrade history of the existing plant at Cowley Road in order to understand better the PD and which should be covered in more detail by the Applicant.

4.6.10 Petrie and Hobden[16] (1998) report that by 1993 the Cambridge Riverside Tunnel Project was completed. The tunnels connect areas of the Cambridge drainage catchment through to the Cowley Road site and "…will greatly reduce the incidents of storm water overflow and subsequent discharge to the River Cam. The tunnel system has been designed to prevent surcharge under the 1:10 year event and flooding for a 1:30 year event. The tunnel will also allow for future development." The 2.12 m ID tunnel section leading to Cowley Road is also referred to in para 2.6.3, AW 5.2.2 (APP-034).

4.6.11 Inspection of satellite images show that by December 1999, the "A", "B" and "C" works were present, by September 2012 parts of the future "D" works are no longer greenfield and a third circular tank has been added to the "C" works as shown in Figure 31.

[16] Petrie JL and Hobden CJ (1998) CAMBRIDGE RIVERSIDE TUNNEL PROJECT - A CASE HISTORY, ISBN: 1-86081-251-1

FIG 32 Cambridge WRC: Google Earth Image from September 2012

4.6.12 In April 2015, the rectangular activated sludge tanks and circular FSTs of the "D" works are visible with aeration operating in 2 lanes. In May 2017 all 4 aeration lanes in the "D works can be seen functioning and the access roads, hard-standings and landscaping around the FSTs looks complete. Vegetation appears in parts of the "A" tanks as shown in Figure 32.

FIG33Cambridge WRC: Google Earth Image from April 2015

4.6.13 The Anglian Water Annual Report for the period to 31 March 2015[17] describes an increase in capacity at Cambridge WRC. A Cambridge News YouTube video clip[18] from inside one of the 4 FSTs in Stream "D" from this period gives a figure of £20m for the upgrade; interviewees describe an anticipated reduction in the 'Milton Pong' and the representative of Anglian Water describes how the upgrade in capacity will improve resilience for 20 to 30 years in the face of the rapidly growing population.

The Applicant should be asked to provide details of any other steps taken, apart from the abandonment of trickling filters in favour of ASP, to reduce odour as part of the information to be provided about recent improvements.

4.7 Application of Odour Safeguarding/Encroachment Policies

Introduction

4.7.1 The Applicant in common with the other regional waste-water utility companies maintains an Encroachment Policy and corresponding Risk Assessment methodology requiring an odour risk assessment for planning applications made within 400m of any of their WRCs. This requirement is generally reflected as a Consultation Area (CA) or Safeguarding Area (SA) within the applicable Minerals and Waste Development Local Plan and corresponding Local Plans.

However, at Cambridge the CA/SA has been incorrectly treated by the LPAs and Anglian Water as an exclusion zone, limiting the potential for retention of the Cambridge WRC on its existing site and thereby influencing the proposed relocation and corresponding PD.

Limited evidence is available to suggest that retention on site has been properly considered and the feasibility studies in the Adopted Local Plans delivered.

There is a conflict between the Applicant's submission and the odour map currently being used as material evidence to assess development proposals within the CWRC odour contours and the corresponding 400m CA.

From the Applicant's submission, odour is understood to have reduced considerably around the existing CWRC following upgrades between 2012 and 2015 and there is evidence to suggest the 400m zone is now highly precautionary, particularly to the south and west of the existing site, yet the odour map being used by the Local Planning Authorities to inform planning advice and decisions does not reflect this.

Encroachment policies maintained by other Utility Providers / Local Authorities have successfully managed upgrades within these zones permitting subsequent residential

[17] awg-annual-report-march-2015.pdf
[18] https://www.youtube.com/watch?v=zy9diouD4so

development and strategic housing allocations in close proximity to STWs, as set out in this WR at Section 4.4 above.

As a consequence of the potential for retention of the site on the existing works has not been properly investigated to justify relocation of the CWRC to a Green Belt location.

The issues relating to the 400 metre Encroachment Policy / CA are explored further below:

Anglian Water Encroachment Policy

4.7.2 The Applicant maintains an Encroachment Policy[19] and corresponding Asset Encroachment Risk Assessment Methodology: Guidance Document[20], setting out its approach towards proposals for development around its assets.

A risk assessment process is used to consider any planning application within 400 metres of a water recycling centre. The Applicant may increase the size of this 'consultation zone' if the treatment works serves a population greater than 50,000 people.

The Policy recognises '*there cannot be a simple presumption against all developments*', that '*there needs to be dialogue and an objective way to decide between conflicting demands for land*' and sets out its approach towards this assessment. It continues stating '*While the results of the assessment will not decide the outcome of a planning application, it will inform potential developers and provide planning officers and elected councillors with evidence based findings to help inform their planning decisions*.'

The risk assessment methodology identifies the population served by the works and the distance of the proposed development from the works to establish a risk category. Proposed developments falling in the Medium to High categories require consideration of a range of factors, including the planning status of the land, the history of complaints at the works, the number of properties currently at the same distance and the nature of the proposed development. The Risk Assessment Methodology also sets out the Applicant's commitment to supporting development as follows:

Anglian Water is committed to enabling development whilst protecting our ability to operate effectively for our current and future customers. This guidance document seeks to outline the process we follow in determining encroachment risks of development proposed near our Sewage Treatment Works. We encourage early engagement particularly on encroachment issues and recommend discussion before submitting a planning application. We provide a pre-planning service https://www.anglianwater.co.uk/developing/planning--capacity/planning-services/ specifically to inform the planning process, this service includes our asset encroachment risk assessment.

[19] https://www.anglianwater.co.uk/siteassets/developers/new-content/pre-dev/aws-assest-encroachment-sm.pdf
[20] https://www.anglianwater.co.uk/siteassets/developers/new-content/pre-dev/aws-asset-encroachment-risk-assessment-methodology-sm.pdf

The Applicant's Encroachment Policy is also reflected in the relevant Local Authorities' Minerals and Waste Plans and Local Plans for the catchment area.

Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021 Consultation Areas

4.7.3 The Cambridgeshire and Peterborough Minerals and Waste Local Plan 2036 Adopted July 2021[21] (MWDLP) provides, in Policy 16, essential protection for Water Recycling Centres (WRCs) as well as introducing Consultation Areas (CA) by way of a 400m buffer intended to offer protection from development that may prejudice operations of WRCs within the area and to protect developments and amenity that may be adversely affected by such operations.

Paragraph 5.4 of the supporting text to Policy 11 stresses the importance that *'the operation of existing facilities can, as appropriate, be maintained, improved, extended and / or relocated.'* The lack of appropriateness of relocation of the WRC and the corresponding PD is addressed elsewhere within the SHH representations; Policy 11 identifies WRCs as essential infrastructure and states that proposals '*including the improvement or extension to existing WRCs…will be supported in principle*' where they are needed for operational reasons.

For extensions to an existing site less than 400 metres from existing buildings normally occupied by people, Policy 11(b) requires an odour assessment demonstrating that the proposal is acceptable together with appropriate mitigation measures. Policy 11(d) also states that proposals must demonstrate that '*adequate mitigation measures will address any unacceptable adverse environmental and amenity issues raised by the proposal, which may include the enclosure of odorous processes*'. In combination, these policies clearly envisage upgrading of works by enclosing odorous processes, specifically to facilitate nearby residential development within the CA.

MWLP Policy 16 establishes the 400 metre Consultation Areas (CAs) around Water Recycling Areas (WRAs), within which the Minerals and Waste Planning Authority must be consulted on all planning applications, except householder applications and advertisements.

Under Policy 16, development within a CA will only be permitted where it can be demonstrated that the development will not:

'(c) prejudice the existing or future use of the WRA for which the CA has been designated; and (d) will not result in unacceptable amenity issues or adverse impacts to human health for the occupiers or users of such development, due to the ongoing or future use of the area for which the CA has been designated.'

[21] PCC Planning Policy Public Data - 1) Minerals and Waste Local Plan Adopted July 2021.pdf - All Documents (sharepoint.com)

In these cases where development is proposed within a CA the application must be accompanied by a satisfactory odour assessment report which considers odour emissions of the WRC at different times of the year and in a range of different weather conditions.

Within a CA which surrounds a WRA, and unless convincing evidence to the contrary is provided via an odour assessment report, there is a presumption against allowing development which would, as set out in Policy 16 d) and e), be buildings regularly occupied by people or land set aside for community use.

This is an entirely sensible policy if properly applied by the Applicant and by the relevant Local Planning Authority when preparing Local Plans and when considering individual residential development proposals.

Cambridge City Council and South Cambridgeshire District Council Local Plans

4.7.4 Both Local Plans adopted in 2018 reflect the 400m safeguarding area around CWRC, in addition making special provisions for consideration of the CWRC as part of the Cambridge Northern Fringe East and new railway station Area of Major Change (Policies 15 and SS/4 respectively, which are broadly similar).

These Policies state:

All proposals should:

4(b.) demonstrate that environmental and health impacts (including odour) from the Cambridge Water Recycling Centre can be acceptably mitigated for occupants

These Policies also set a clear expectation that feasibility studies will be conducted and identify that residential development could be an option:

Para 3.34 and 3.35 Exploration in respect of the viability and feasibility of redevelopment of the Cambridge Water Recycling Centre to provide a new treatment works facility either elsewhere or on the current site, subject to its scale will be undertaken as part of the feasibility investigations in drawing up the AAP. If a reduced footprint were to be achieved on the current site, this could release valuable land to enable a wider range of uses. Residential development could be an option, subject to appropriate ground conditions, contamination issues and amenity and air quality.

The feasibility studies envisaged by the Adopted Local Plan have not been published nor is there any evidence they have been carried out with any level of rigour. This was addressed substantively in sections 5.4 and 5.5 of the SHH RR 035.

NECAAP

There is also no evidence that the LPAs in preparing the NECAAP had any substantive discussions with the Applicant about how the odour footprint of the existing WRC could

be reduced by cost-effective improvements, which could, for example, have been funded from the enhanced land value that owners would secure by achieving residential planning permission replacing an existing poor-quality light industrial or other business use.

Cambridge WRC odour footprint

4.7.5 Significant inconsistencies exist between the available odour assessments and the corresponding reports as set out below:

4.7.6 In August 2012 Anglian Water published Cambridge Sewage Treatment Works – Odour Dispersion Modelling Report[22] following development of a model to assess the odour impact of the works on the surrounding area and corresponding development risk. The report noted the Sewage Treatment Works (STW) as supporting a PE of 200,000.

The report acknowledges that at the time of the assessment the planned sludge treatment centre was not operating and that *'the impact of the odour nuisance will be greater when the sludge treatment centre at Cambridge STW is operational'* and therefore the report may not be definitive and probably underestimated the odour potential. Despite this omission, '*the results show that based on the 98th percentile of hourly average odour concentration (OU/m3), all areas within the 665m radius from the site centre X=547460, Y=261670) could be affected by the 5-odour unit contour.*'

The following plots were provided:

[22] Cambridge odour report final (scambs.gov.uk)

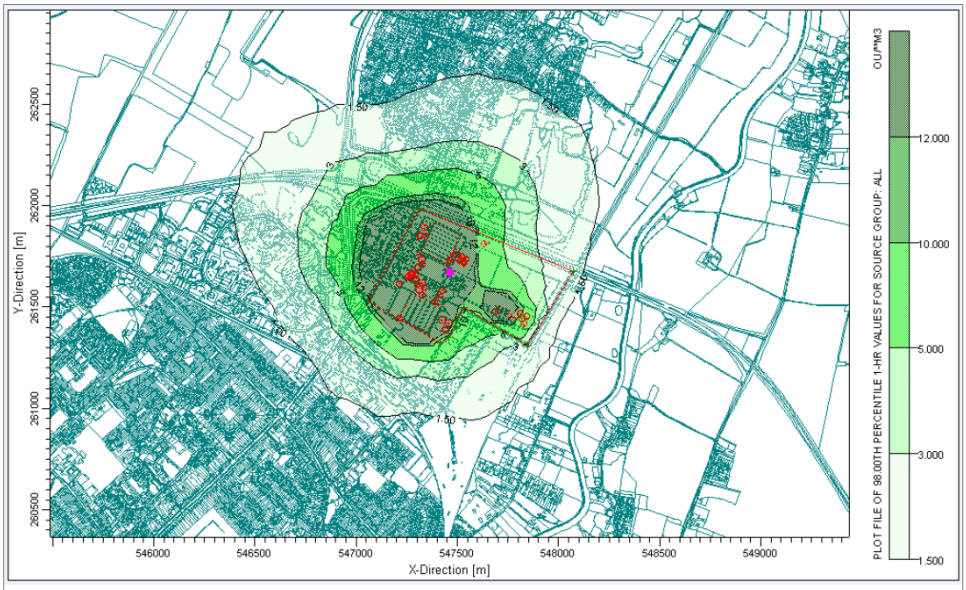

Figure 5: Cambridge STW 98%ile hourly means odour contour map (year 2011). Based on UKWIR typical emission rates

Figure 34 – 2012 Survey Plot based on UKWIR emission rates

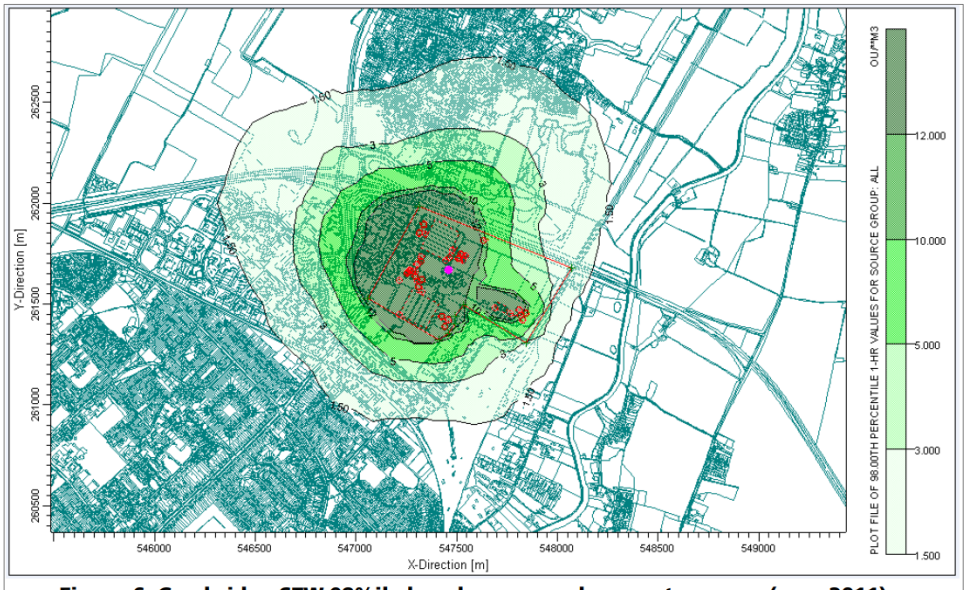

Figure 6: Cambridge STW 98%ile hourly means odour contour map (year 2011) Based on emission rates from CERC report 17/05/2012

Figure 35 – 2012 Survey Plot based on emission rates from a CERC Report

4.7.7 In 2014 a Comparative Odour Potential Assessment for Cambridge WRC[23] was published evaluating the impact on odour potential of a proposed upgrade to the treatment process. An AERMOD (version8.2.0) odour model of Cambridge WRC was developed using emission rates based on olfactometry analysis undertaken in 2012 and standard emission

[23] aw-cambridge-wrc-comparative-odour.pdf (scambs.gov.uk)

rates published in the UKWIR Technical Report (Odour Control in Wastewater Treatment) Ref. 01/WW/13/3, were used for the modelling studies.

'*The results indicated that the predicted odour impact range would noticeably reduce as a result of the planned changes to the WRC process*.' It was also noted that '*the planned changes and improved reliability will also reduce the potential for short duration, peak odour emissions*.'

The following results and odour contour plots were provided:

Table 2 below details the emission plume radius and area by odour concentration for each scenario.

Existing WRC process			Planned WRC process		
Odour concentration			Odour concentration		
OU/m^3	Area (m^2)	Radius (m)	OU/m^3	Area (m^2)	Radius (m)
1.5	2317706	1150	1.5	1539755	897
3	1153522	788	3	801534	633
5	716054	635	5	519854	525
10	401011	510	10	281825	413

Figure 36 – Extract from 2014 survey showing planned improvements

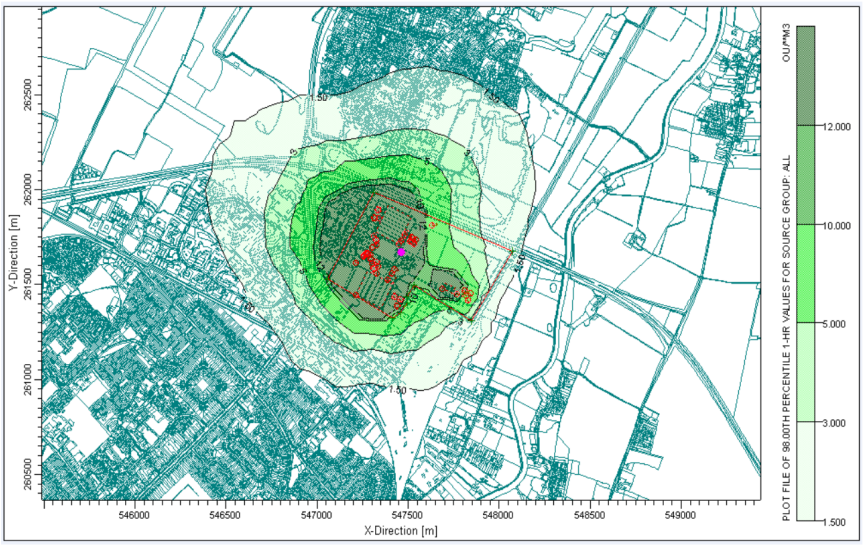

Figure 1: Existing WRC odour potential in 2011 met data

Figure 37 – 2014 survey plots for the existing plant

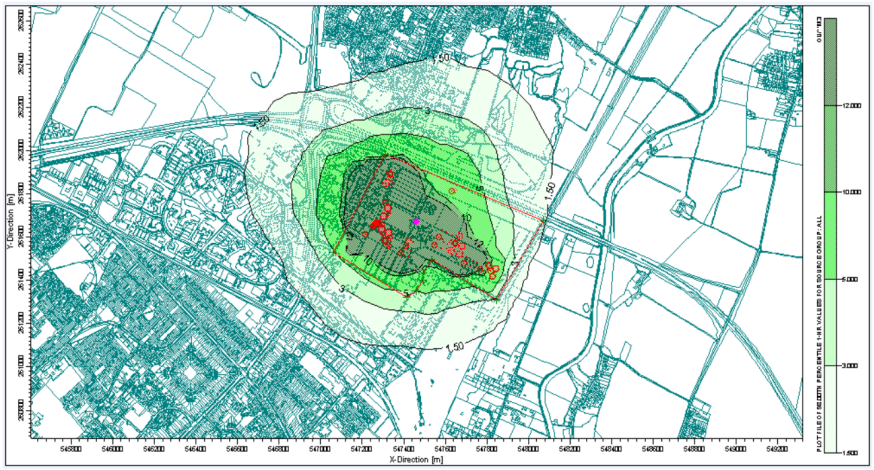

Figure 2 Odour potential of planned WRC in 2011 met data

Figure 38– 2014 survey plots for planned improvements

4.7.8 Following completion of the CWRC upgrade by the Applicant in 2015, in 2017 Cambridge City Council commissioned a study from Odournet UK Ltd (now trading as Olfasense UK Ltd), with the resulting Odour Impact Assessment for Cambridge Water Recycling Centre[24] issued October 2018. The overall objective of the study was to assess the level of odour impact risk posed by the WRC in the surrounding area to inform the Council's ongoing and future planning decisions and policy. Then study identified the PE for the CWRC as approximately 165,000.

The scope of the study was as follows:

- *To clarify the current WRC configuration and operations.*
- *To undertake an odour survey and define odour emission estimates for each of the key elements of the treatment process at the WRC.*
- *To undertake odour dispersion modelling of the WRC under the current operational conditions and assess the extent of potential odour impact risk in the surrounding area.*

The key findings included identification of a range of odour sources, the estimated summer odour emissions from the WRC broken down into the key contributors, identification of the largest contributors and provision of dispersion modelling results.

The report provided modelling for 5 years from 2012 to 2016 and considered that 2013 is likely to be the worst year, the plot for which is shown below.

[24] https://www.greatercambridgeplanning.org/media/1247/odour-impact-assessment-for-cambridge-water-recycling-centre-2018.pdf

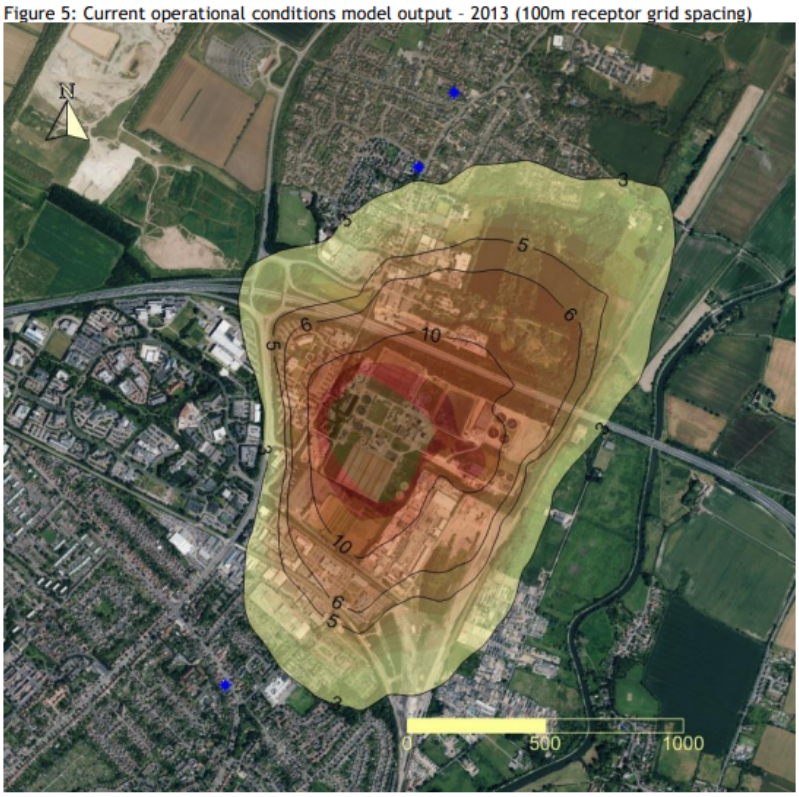

Figure 39 – Odournet 2018 report odour map for 2013 met data

Discussion of the model output in chapter 7.3 concluded that:

Review of the model output presented above indicates that under the likely foreseeable long term operations at the WRC, predicted odour exposure levels in the area immediately surrounding the works exceed the C98, 1-hour = 3, 5 and 6 ouE/m3 criteria discussed in section 2.3. On this basis any residential developments in these areas are likely to be at risk of odour impact. For any commercial or industrial developments in these areas, the degree to which odour impact is likely to occur is less clear for the reasons discussed in section 2.3.

This plot is noted as being worse than the predicted contour reported in the 2014 assessment. It is unclear if this is due to the 2018 assessment being incorrectly high, or the 2014 assessment prediction being conservative, or as a result of the 2012 data used.

Notably, chapter 4.2 and table 2 of the report, identify the odour sources, including the nature of the odorous material and the level of enclosure, which clearly shows many of the processes, including those processing raw sewage, to be open and that measures taken to further reduce odour impact have been limited.

Examples of other STWs are provided within this WR where odour improvements have been progressively implemented within their AMP regime to reduce the potential for odour and permit development nearby.

4.7.9 In December 2020 Olfasense UK Ltd provided an Addendum to South Cambridgeshire District Council[25], updating its 2018 survey report, to provide '*updated odour dispersion modelling which has been undertaken to assess the risk of impact of the odour emissions from the Cambridge Water Recycling Centre Centre*.'

The addendum incorporated improved model performance '*for sources that generate peak exposure concentrations under low wind, stable atmospheric conditions, and to address potential overestimation of impacts from near-ground-level emissions sources. For newer modelling studies which use the updated software the predicted level of impact is typically lower.'*

[25] https://www.greatercambridgeplanning.org/media/2281/addendum-report-updated-odour-dispersion-modelling-for-cambridge-water-recycling-centre-2020.pdf

In all other respects the approach applied matched the 2017 survey reported in 2018. The updated model was just run for the 2013 conditions and the following output provided:

Figure 40 – Olfasense 2020 Addendum report odour map for 2013 met data

The addendum concluded that; '*The updated model output indicates a reduction in the extent of the odour isopleths in comparison to those produced in 2017'*, and '*The original model output from the 2017 Odournet study is therefore superseded by the model output presented within this report'*.

Local Authority Technical Note

4.7.10 A document entitled '*Technical note on interpretation of 'Odour Impact Assessment for Cambridge Water Recycling Centre' Report / Study (Odournet, October 2018 – ref. CACC17A_08_final) as a material consideration in determining Planning Applications in the vicinity of Cambridge Water Recycling Centre (CWRC)*'[26], version – Final: 20-05-21, has been published by SCDC, CCiC and GCSP, setting out how officers intend to interpret the

[26] https://www.cambridge.gov.uk/media/7334/cambridge-water-recycling-centre-odour-impact-assessment-technical-note.pdf

results of the Odournet UK Ltd October 2018 survey, as modified by the Olfasense UK Ltd December 2020 Addendum Report.

Paragraph 2 states that '*The Odournet / Olfasense study will be a material consideration in determining planning applications, alongside all other material planning considerations, for all development (including change of use) which will be regularly occupied or used, but does not apply to householder applications.'*

The Technical Note sets out the applicable policy and includes Table 1) which sets out '*Acceptability of development within different odour exposure contours in the vicinity of CWRC'*, based on the Odour Map shown below:

Figure 1: Odour Exposure Contours around Cambridge WRC
(Updated dispersion modelling output - Olfasense Addendum Report, 21 December 2020)

Figure 41 – GCSP Technical Notes – Odour map inclusion

The Technical Note addresses risks associated with the CWRC based on the Olfasense UK Ltd addendum report, which other than the model updates referred to above, in 2020, is

otherwise based on the Odournet UK Ltd 2018 report and therefore falls short of addressing the potential for redevelopment or modification of the CWRC, other than to reiterate the MWDLP policy requirements (2011 Adopted Minerals and Waste Local Plan) for appropriate risk assessments within the CA.

Housing Infrastructure Fund Business Case – Safeguarding area

4.7.11 Housing Infrastructure Fund Business Case HIF/FF/000069/BC/01 - Cambridge Northern Fringe East (CNFE) submitted to Homes England by Cambridge City Council incorporates the 2018 Odournet UK Ltd Survey as Appendix E.

The business case also includes the following statements:

Page 2: '*Without HIF funding no housing can be developed due to the odour zone.'*

Page 3: *'Odour from the CWRC restricts land use within the vicinity of the plant to industrial uses and, further away, office and recreational use.'* This statement is understood to refer to appendix E for the report.

Page 10: *At 47 hectares it is the largest undeveloped brownfield site in the Cambridge area. But its potential as a site for residential development cannot be realised without intervention. A Waste Water Treatment Safeguarding Area, or odour zone, prevents any residential development within 600 metres of the site and restricts employment land-use to general industrial and office on the fringes. This prevents the consideration of housing development on the surrounding 35 hectares of land.*

NB: It is unclear from the information available if the business case reference to a 600 metre safeguarding area is stated in error or reference made to an as yet unpublished study or risk assessment.

Page 29: -*The option of rationalising the CWRC and retaining it on site was also explored. This would still be at a considerable cost, whilst not allowing the release of any land for residential development on the core Site.*

The business case appears to rely on the Odournet UK Ltd 2018 report submitted as Appendix E and while reference is made to rationalising the CWRC on p29 no supporting evidence has been published.

There is no apparent evidence of 400m CA risk assessments envisaged in the MWDLP or the Applicants Encroachment Policy having been conducted. While the HIF business Case will have been submitted under the previous 2011 Adopted MWDLP regime, the same broad principles applied, that if a new site is less than 400 metres from existing buildings normally occupied by people, an odour assessment and appropriate mitigation were required.

The Applicants request to the Secretary of State requesting S35 direction.

4.7.12 Planning Statement Document [AS-166] includes the aforementioned request, stating on page 102:

However, a waste water treatment safeguarding area, or odour zone, prevents any residential development within 400 metres of the CWWTP and restricts employment land-use to general industrial and office on the fringes. It also prevents the consideration of housing development on 35 hectares of land surrounding the CWWTP. The CWWTP therefore needs to be relocated as part of the plans for the strategic growth of Cambridge.

[AS-166] Page 141, sets out the Present Policy Context for CWWTPR, including paragraph 3 quoting the Local Plan requirements for feasibility studies.

No further evidence is apparent documenting assessments conducted to consider development within the 400 metre safeguarding area or discharge of the Adopted 2018 Local Plan requirement for feasibility studies.

The Applicant's Odour Assessment Report

4.7.13 Document [AS-104] raises a number of serious concerns, including:

a) Within paragraph 4.6.3, the Applicant questions the integrity of the results provided within the 2018 Odournet UK Ltd / 2020 Olfasense UK Ltd (Odournet) reports. The same reports have been used to underpin the HIF Business Case and in turn the Applicant letter to SoS requesting S35 determination, excluding retention on site due to the 'safeguarding area', along with underpinning the corresponding Local Authority Technical Note on determination of said reports.

b) Table 4-5: Odour emission rates shows substantial disparities between the Odournet emission values, comparative survey results (H+M, Silsoe & ARUP as appropriate) and the proposed CWWTRP Odour modelling Inputs, raising concerns regarding both the 2018 Odournet UK Ltd / 2020 Olfasense UK Ltd reports and the Applicants modelling inputs for the proposed CWWTPR.

c) Some modelling inputs for CWWTPR are justified as being lower than 'Odournet', or other survey sources, due to the process being covered at the new CWWTPR facility, when in fact there is equal potential for the odour source to be covered at the existing CWRC.

d) The matter of complaints addressed in [AS-104] suggests that the existing CWRC has had limited odour problems. This suggests that the odour map for the existing works is conservative and the 400m CA could be reduced especially to the south and West, which based on the level of complaints identified, could now be considered highly precautionary.

e) While there is potential for new elements to be introduced into a new build CWWTP, in general terms the technology proposed, and layout is conventional. It is unclear to what extent technology upgrades have been considered for the existing WRC that would have a considerable bearing on the 400 metre CA, explored further within WR section 4.4.

Residential development within the CA

4.7.14 Section 4.4 of this WR provides a selection of examples where upgrades have been conducted to a STW allowing residential development nearby within the CA, including schemes for which strategic allocations have been made.

5 Assessment of Alternatives

5.1 Introduction

As stated in para 1.2.1 of AW 5.2.3, AS-019, the Applicant relies on the need to allow delivery of housing and other development in North East Cambridge to justify the relocation of CWWTP. No operational justification has been presented.

5.2 Initial Site Selection

5.2.1 The six potential options shown in the study area boundary at Figure 2.1 of AW 5.2.3; AS-019 are within the historic boundary of Cambridge and Waterbeach WWTP catchment area and are therefore restrictive. No attempt was made to expand the study area boundary to consider areas further south which would serve areas of recent and planned housing and employment growth to the south of Cambridge. Only one site in the south was identified within the unconstrained areas. It is noted that Option 2 in the drainage catchment South of the existing WWTP performed as favourably as Option 1 in the North.

5.2.2 This resulted in a restricted shortlist for public consultation with no initial consideration of whether such development was inappropriate in the Green Belt. There has been no justification of the decision not to seek sufficient funding to extend the Study Area to consider viable Green Belt locations. The Stage 3 process excluded non green Belt sites A, B and C on unaffordability grounds. Affordability appears to have been a major criterion and given more weight than building an industrial complex on Green Belt.

5.2.3 No consideration has been given to retention of the CWWTP at its current site, options for which should have been included as an integral part the selection process.

5.2.4 As shown in SHH RR-035 at the initial site selection stage and at subsequent coarse and fine screening, the applicant's use of a blanket 400 m buffer around all residential properties seriously compromised the site search (para.2.2.8 of AW 5.2.3, AS-019). Decreasing the buffer and ensuring comprehensive odour control would allow consideration of more non- Green Belt sites, especially those which were otherwise suitable, and where there were few residential dwellings.

5.2.5 The current site at Cowley Road is nearly twice the area of the Proposed Development allowing upgraded equipment to be clustered to the north of the existing site and, if necessary allowing a small buffer zone to new development. The examples given at Section 4.4 of this WR show that consolidation is feasible while an existing works remains fully operational.

5.2.6 In circumstances in which it is evidently a viable technical option for the CWWTP to remain in situ and be upgraded, it is all the more difficult to justify, in sustainability, financial and Green Belt terms, the use of green field land for a new facility.

5.2.7 Retain on site options should have been properly pursued with a complete technical engineering and environmental impact analysis, including the application of state of the art technologies, net zero operational and capital carbon, minimising use of best agricultural land and protection of high quality and important parts of the Green Belt.

5.3 **Final site selection**

5.3.1 As set out in the SHH RR (RR-035) at Section 5.5, the final site selection process undertaken by the Applicant was fundamentally flawed. In particular, at Section 5.5(iii), SHH RR explains that there was a lack of transparency in the weighting of impacts at the final site section stage (Stage 4), which prioritised Site 3 (the site ultimately chosen for the relocated CWWTP) over Site 2. That site selection analysis relied on in ES Chapter 3 (AW 5.2.3; AS-018, see paras.2.3.14-2.3.26) took place in January 2021.

5.3.2 The approach taken to final site selection is summarised in Appendix 3.5 to Volume 4, Chapter 3 of the ES, Stage 4 Site Selection Report (AW 5.4.3.5; APP-078). The comparison between the three sites taken forward to final selection is undertaken in section 6 of that Report. Each factor assessed by the Applicant is indicated graphically by means of a circular icon which has been given a particular location on size depending on the importance attributed to it by the Applicant and the extent to which it is affected by the choice of site (AW 5.4.3.5; APP-078 at para.6.1.2). However, the methodology for attributing size and location to each icon – crucial for determining which site performs better overall – is never properly set out or explained in the report. At para.6.1.2, the Applicant refers to three factors which affect the size of the icon – (i) the importance of the criterion to the Applicant's development team, drawing on their professional judgment, (ii) the prominence of the criterion in consultation feedback and (iii) guidance in planning policy. Nowhere does the Applicant explain how these three factors interact with each other to determine the size of the circle, and the particular sizes and locations chosen for each factor on the graphical representation are difficult to follow.

5.3.3 The final graphical representation of all of the factors (see AW 5.4.3.5; APP-078 Figure 6.14 on p.88) shows the weighting of factors for Site 2 and Site 3 to be reasonably similar, with development on either of those Sites clearly being more acceptable than Site 1. There is no real explanation of how the factors pointing in favour of each of those sites were weighted and why Site 3 was ultimately chosen over Site 2.

5.3.4 Important factors (on the Applicant's assessment) favouring development on Site 2 are impact to the Green Belt and on heritage assets, which would be less in the case of development on that Site. Important factors (on the Applicant's assessment) favouring development on Site 2 include economics and competing land use (see AW 5.4.3.5; APP-078 paras 6.3.6-6.3.9 and paras 6.5.1-6.5.4). The analysis of these factors was based on a proposed extension to Cambridge Science Park coming forward over part of Site 2 at the time of the Final Site Selection Stage which could both limit the developable area and result in higher land acquisition costs. That proposal has since been rejected and did not appear in the Greater Cambridge Local Plan First Proposals in Autumn 2021. That was a material change of circumstance which should have led to a reassessment of those factors in the overall comparison of the three sites. Any adjustment of the circles representing economics and competing land use towards Site 2 as a result would, on the Applicant's own analysis, have significantly affected the balancing of Site 2 and Site 3, as the four most important factors would have pointed towards Site 2 rather than Site 3.

5.3.5 Furthermore, three closely overlapping factors, which are said to favour Site 3 over Site 2, were not used at earlier stages of site assessment, namely competing land use, economics, and future urban growth. These factors are inter-correlated and are all likely to favour Green Belt sites separated from the urban boundary over Green Belt sites close to or contiguous with the urban boundary. The most obvious of these is the likely absence of acceptable competing development giving rise to low acquisition values.

6 Compliance with National and Local Planning Policy

6.1.1 As SHH has explained at ISH 2 and at para.3.2.1. above, given the application is to be determined under s.105 PA 2008 the primary policy framework against which the proposed development should be tested is the adopted development plan. The NPPF and the NPSWW are important and relevant considerations, but there is no requirement under s.105 that development consent be granted where the proposed development is in accordance with NPSWW. Emerging policy is to be given very limited weight given the stage of development it has reached and the level of uncertainty regarding the future spatial strategy for Greater Cambridge.

6.2 Lack of Compliance with the NPPF

6.2.1 As set out at Section 6.2 of SHH's RR (RR-035), the proposed development does not comply with or meet key policies or principles in the NPPF. Crucially, it conflicts with the strong policy imperative in para.147 NPPF not to approve inappropriate development in the Green Belt except in very special circumstances. In this regard, it is noteworthy that the GCLP does not recommend releasing any sites from the Green Belt in order to meet housing need. The Greater Cambridge Local Plan First Proposals sets out the local planning authorities' view at p.39:

We do not consider that our housing needs alone provide the 'exceptional circumstances' required in national policy to justify removing land from the Green Belt on the edge of Cambridge in this Local Plan, having regard to the identification of the proposed emerging strategy that can meet needs in a sustainable way without the need for Green Belt release.

6.2.2 The only substantial site for which a new Green Belt release is being explored in the Greater Cambridge Local Plan is at the Cambridge Biomedical Campus, which is described as being "of national and international importance" with a "local, regional and national role in providing medical facilities and medical research" (Greater Cambridge Local Plan First Proposals pp.88-90). This is because of its proximity to that Campus and the scope to accommodate research facilities, although a substantial amount of housing, number as yet unspecified, will also be provided as part of the allocation.

6.2.3 With regard to other policies in the NPPF, the poor design of the proposed development and its harmful effects on the landscape and visual character of the area conflict with the design and landscape policies in the NPPF, in particular paras 126, 130 and 132-134 and 174(b) NPPF. The less than significant harm to heritage assets must be given significant weight in the planning balance and the public benefits of the proposed development are insufficient to outweigh this harm, given there is no operational need for the development nor a need to release the site for housing. Para 202 therefore also indicates that development consent should be refused. For all the reasons given in SHH's RR and in this WR, the development is not sustainable development as promoted in para.8 and 11 NPPF, as it involves the demolition of a fully functioning waste water treatment plant and the building of a new plant, for no operational purpose, on a greenfield, previously undeveloped site in the Green Belt. The land that is said to be needed for housing can be found elsewhere, including by consolidation of the existing plant on site.

6.2.4 The approach of testing the principle of relocating the CWWTP via the Development Consent Order process also fails to comply with the NPPF, which indicates at paras 20 and 23, that strategic policies should make sufficient provision for infrastructure include waste water management and identify locations for such provision. These paragraphs demonstrate that the Local Plan process would have been the correct forum for determining whether the CWWTP should be relocated and whether Green Belt release is required to facilitate the provision of housing in North East Cambridge.

6.3 **Lack of Compliance with relevant Local Plan Policy**

6.3.1 The proposed development also fails to comply with the adopted development plan, which includes the Cambridgeshire and Peterborough Minerals and Waste Local Plan 2021, the South Cambridgeshire Local Plan 2018 and (to the extent that it applies to the proposed development) the Cambridge City Local Plan 2018. The extent of non-compliance is set out in Annex A to SHH's RR (RR-035) at pp.49-51. There has been no answer by the Applicant on these points (or indeed any assessment of compliance with the adopted Cambridge and South Cambridgeshire Local Plans). Given the significant

number of policies which the proposed development conflicts with, including specific polices on waste water development, important spatial policies on Green Belt as well as policies seeking to protect the natural environment and built heritage in South Cambridgeshire, the proposed development conflicts with the adopted development plan as a whole. There is no policy requirement or support for the proposed development in the adopted development plan.

6.3.2 The proposed development conflicts with the other relevant development plan document for the proposed development, the Minerals and Waste Local Plan in a number of key respects.

6.3.3 It fails to accord with the overarching principle in Policy 1 which requires mineral and waste development to 'play an **active** role in guiding development towards sustainable solutions', as it proposes a fundamentally unsustainable development: the unnecessary relocation of a fully functional waste water treatment plant onto a greenfield site with significant landscape and Green Belt impact.

6.3.4 It also fails to accord with Policy 11, the specific policy on water recycling areas, which indicates that relocation of water recycling centres will be supported in principle where necessary to provide new capacity or operational efficiency. The Applicant has confirmed both in the application documents and orally at ISH 2 that there is no capacity or operational need for the relocation of the CWWTP. There is no policy support in Policy 11 for relocation where there is no operational need. For the reasons given in Section 10 of SHH's RR (RR-035, pp.31-40) the proposed development also fails to include adequate mitigation measures to address the unacceptable adverse environmental and amenity impacts it will cause, in conflict with Policy 11(d). The supporting text to the Policy also emphasises the importance of the Local Plans in planning for water recycling infrastructure and identifying locations for planned new infrastructure (at para.5.4). As explained above, the approach taken in relation to the proposed development, to seek consent for the principle of relocation through this DCO examination rather than the Local Plan process, conflicts with this policy approach.

6.3.5 The proposed development fails to accord with Policy 16, in particular Policy 16(f), as it proposes the use of land for regular community recreational use within the consultation area that would surround the new water recycling centre. Policy 16 does provide a mechanism by which existing waste water infrastructure can be safeguarded while allowing developers to identify and implement measures to mitigate adverse effects of eg odour as part of their development proposals on sites within the Consultation Areas around works.

6.3.6 The proposed development conflicts with almost all of the elements of Policy 17 on design. In particular, it fails to make efficient use of land and buildings by prioritising use of previously developed land; it is not durable, flexible or adaptable due to the artificial and unnecessary constraint of the earth bank; it does not create any visual richness; it is

not sympathetic to local character or history, due to its contrast with the flat fenland landscape and impact on heritage assets and it requires the removal of valuable landscape features and assets, including trees and hedgerows.

6.3.7 It would also conflict with Policies 18, 20, 21 and 23 of the Minerals and Waste Local Plan for the reasons given in Annex A to SHH's RR (RR-035).

6.4 **Emerging Local Plan Policy**

6.4.1 For the reasons given in Section 4.3 of SHH's RR (RR-035, p.7) and expanded orally at ISH 2 (SHH 013 Summary of oral submissions at ISH 2, paras.2.11-2.15), very limited weight attaches to the emerging Greater Cambridge Local Plan and NECAAP. In any event, neither emerging plan provides any policy requirement or support for relocation, as both are predicated on it already having happened before the plans proceed to examination.

6.5 **Compliance with the NPSWW**

6.5.1 The NPSWW is of lesser relevance for the decision on whether to grant development consent as the proposed development is neither an NSIP nor does the NPSWW apply to it. Dating from March 2012, it has also been overtaken by a number of more recent policy documents which are relevant to this application for development consent, the most up to date of which is the NPPF issued in September 2023. The NPSWW therefore has a more limited role to play in the determination of the present application.

6.5.2 Fundamentally, the proposed development does not comply with the NPSWW which only refers to the need for new waste water infrastructure as a result of operational requirements and drivers (see section 2 NPSWW, particularly section 2.3). Absent the proposal to release the land on which the CWWTP is located for housing, there is no suggestion that the existing site is not a suitable location for a waste water treatment plant (see para 2.4.14 NPSWW).

6.5.3 The Applicant has accepted that need for the development is not established by NPSWW and must be demonstrated. It has also conceded that there is nothing in the NPSWW to support enabling development, for example relocation of infrastructure to facilitate housing development. Therefore, the proposal cannot be in accordance with the NPSWW, as there is no need recognised in the NPSWW to outweigh the impact of the development on the Green Belt (see para.4.8.10 NPSWW). The proposed development does not comply with any of the criteria set out in para 4.8.11 for the suitability of nationally significant infrastructure in the Green Belt. It does not involve infilling or redevelopment of major developed sites in the Green Belt, the relocation site has not been identified as the site for the CWWTPR by the local planning authority, and it will not help to secure jobs and prosperity without further prejudicing the Green Belt. Any environmental 'improvement' relied on by the Applicant will simply mitigate to a degree the effects of large new infrastructure on a green field, undeveloped site.

6.5.4 With regard to the generic policies in the NPSWW, these raise similar issues to those in development plan policy and the topics dealt with in the Environmental Statement. For the reasons given above and in SHH's RR (RR-035), Sections 10 and Annex A, the environmental impacts of the proposed development have not been sufficiently mitigated. This is a further reason why the proposed development is not in accordance with the NPSWW.

6.5.5 At ISH 2, the Examining Authority asked which elements of the NPSWW are out of date. The climate change and carbon targets at para.2.2.3 and the failure to refer to more recent policy on biodiversity net gain in section 4.5 are obvious examples where the NPSWW has been overtaken by more recent policy.

6.6 **The Availability of Alternative Housing Sites in the GCLP to replace any Allocation at NECAAP**

6.6.1 This section expands on SHH RR-035 and provides evidence to support the SHH view that sustainable alternatives to the NECAAP housing allocation can be found without the need to identify any new strategic sites, use of greenfield or Green Belt above those already in the adopted local plans or proposed in the GCLP First Proposals.

At ISH 2, SHH indicated that a more detailed view would be provided in the WR of where else sites already identified in the emerging GC Local Plan might be brought forward for housing development if the relocation did not take place. See SHH 13 at para 2.25. Leaving aside the prospect that some housing development can take place at NECAAP under all scenarios, there are substantial allocations of housing sites made in the adopted Local Plans and intended in the GCLP FP which could substitute for those at NECAAP. These are principally sites identified in the housing trajectories for post 2041 development, some of which could be brought forward, within the constraints of realistic rates of housing delivery on particular sites. There is a higher Objectively Assessed Need identified in the GCLP Development Strategy Update, but for a variety of infrastructure and sustainability reasons set out in the SHH RR, this OAN is both flawed and unachievable. In our analysis of available sites, we are just representing the housing trajectories already published as part of the GCLP FP (and the monitoring of housing delivery under the adopted local plans). These are intended to deliver up to 48,000 dwellings between 2020 and 2041, which includes a 10% buffer above the OAN.

An analysis of housing numbers on Strategic Sites excluding North East Cambridge/NECAAP as identified in the GCLP FP is presented in para 6.6.2. This is followed in para 6.6.3 by Current Housing Trajectories as reported in August 2023. An analysis of housing numbers as allocated to NECAAP in the GCLP FP and the availability of strategic sites to replace these is presented in para 6.6.4.

6.6.2 GCLP Allocated and Proposed Development – Strategic Sites

Table 2 below is extracted information directly from the GCLP First Proposals Housing Trajectories.

Strategic Sites (including New Settlements, excluding NEC)	Policy Ref	Existing/New Allocation	Total Allocation	Housing Delivery 2020-41 (GCLP Plan Period)	Housing Delivery Post 2041
Waterbeach New Town[27]	S/NS	Existing	11,000	5,330	5,670
Northstowe[28]	S/NS	Existing	9,323	6,345	2,978
Bourn Airfield New Village[29]	S/NS	Existing	3,500	2,460	1,040
Total Allocations with Permissions			**23,823**	**14,135**	**9,688**
Cambridge East (Airport)[30]	S/NS	New	7,000	2,850	4,150
Total Sites Quantified			**30,823**	**16,985**	**13,838**
Cambourne Expansion [31]	S/NS	Existing and New	TBC	1,950/TBC	TBC Up to 10,000 total
Cambridge Bio-Medical Campus[32]	S/CBC	New	TBC	TBC	TBC Up to 5,000 total

Table 2 Strategic Housing Sites Identified in GCLP First Proposals with Capacity for Delivery in GCLP Area: 2020 to 2041 and Post 2041

As Table 2 illustrates, the GCLP Development Strategy (GCLP DS)[33] identifies 'New Strategic Sites' under development with existing allocations and permissions as providing 23,823 homes for development. Of these, 14,135 are allocated for delivery within the

[27] GCP HT TP Development Strategy Nov 21 p.146 ; GCP Preferred Options Interactive Map and embedded Tables 2021
[28] GCP HT TP Development Strategy Nov 21 p. 145; GCP Preferred Options Interactive Map and embedded Tables 2021
[29] GCP HT TP Development Strategy Nov 21 p. 146; GCP Preferred Options Interactive Map and embedded Tables 2021
[30] GCP HT TP Development Strategy Nov 21 p. 120
[31] GCP HT TP Development Strategy Nov 21 p, 145
[32] GCP HT TP Development Strategy Nov 21 p, 129
[33] Greater Cambridgeshire Local Plan Development Strategy

GCLP plan period to 2041. Leaving a balance of 9,688 for delivery beyond the GCLP plan period post 2041.

Table 2 shows the proposed allocations for a new strategic site at Cambridge East (Airport Site) in the GCLP provide an additional 7,000 homes, of which 2,850 are allocated for the plan period to 2041 and 4,150 post 2041.

Thus, excluding North East Cambridge, the GCLP has identified 13,838 homes for delivery beyond the plan period post 2041, of which 9,688 already have permissions.

In addition, the GCLP proposes housing development at the Cambridge Bio-Medical Campus, now advanced as a strategic site in the GCLP[34]. Housing numbers are yet to be quantified, as Table 2 shows, the GCLP Development Strategy 2021[35] references up to 5,000 homes; some of these would be anticipated within the GCLP period to 2041, the remainder post 2041.

Further, following confirmation by the government of East West Rail the GCLP Up-date has identified strategic scale development as an extension of Cambourne. Housing numbers are yet to be identified however, an assumption of 10,000 homes to full build out has been made in the GCLP DS.

The sustainability credentials promoted by the Greater Cambridge Partnership (GCP) of North East Cambridge / NECAAP are identified in the GCP Development Strategy Report[36] as of equal or similar measure founded on these larger sites incorporating integrated transport infrastructure. Strategic sites close to a number of large employment clusters that encourage and enable the use of active transport, such as Cambridge East (airport) will be, based on transport methods, the most sustainable.

6.6.3 Current Housing Delivery

Housing development is well underway in Greater Cambridge delivering new homes in accordance with the SCLP & CLP. The GCP Quarterly Housing Workstream Report[37] , based on currently known sites, identified housing figures to be exceeding growth targets in the order of 4,174 homes at 2031. Affordable dwellings are anticipated to exceed targets by 80% at 2031; 1,841 affordable homes against a target of 1,000.

6.6.4 Alternatives to NECAAP

As presented in AW Planning Statement (AW 7.5 AS-128) 8,350 homes have been identified for potential development at North East Cambridge (NEC) within a 20 year period. In the event of the WWTP relocating, the GCLP has allocated 3,900 homes at NEC for build out within the plan period to 2041. The GCLP DS has identified 650 of these are for delivery before 2030 and they are not dependent on a relocation of the WWTP. This

[34] GCP Development Strategy Up-date January 2023
[35] GCP TP Development Strategy Nov21
[36] GCP Development-Strategy-Options-Summary-Report-2020
[37] Appendix 4 GCP Quarterly Progress Report 28-08-2023

leaves a balance of 3,250 in the plan period and 4,450 for build out post 2041.

It is evident above that existing and proposed strategic sites, absent NECAAP, will provide a large pool of sites, in excess of 15,000 for build out post 2041, of which 9,688 are already allocated with permissions. As a whole these are more than sufficient to meet the overall GCLP housing requirement for the period to 2041 and could accommodate any additional housing anticipated at NECAAP pre and post 2041.

The 3,250 homes identified for pre 2041 could be reallocated amongst existing and new sites proposed within the GCLP plan period to 2041 without the need to identify any new strategic sites, use of greenfield or green belt above those already in plan or proposed. This number of homes represents just 7% of the housing requirement established as deliverable in Greater Cambridge in the GCLP plan period[38] .

The potential to reallocate the 3,250 homes expected at NECAAP pre 2041 among existing and new sites already proposed is supported by:

- The strength of current housing delivery figures that could enable more adopted allocations to come forward into the plan period.
- Advanced planning now established for Cambridge East (airport) that may enable a larger allocation of homes for delivery in the plan period than so far calculated and or an increased allocation within the site area identified.
- Cambridge Bio-Medical Campus is identified as a strategic site to include sustainable housing, but numbers are not quantified in the First Proposals. Some of these can be anticipated for delivery within the plan period.
- Confirmation of further strategic development at Cambourne. The housing numbers are yet to be quantified, but some would be anticipated within the plan period
- Homes as part of a mixed development at North East Cambridge without a relocation of the WWTP, 650 have been put forward by GCP as above on the basis of existing planning applications, the full potential housing numbers have to-date not been quantified.

7 Green Belt

7.1 In the SHH Relevant Representations, RR-035 (pp.18-24), a strong case is made that the Proposed Development will cause ‘substantial harm’ to the Green Belt, rated as ‘very high’ particularly in terms of spatial and visual impacts on openness. This WR sets out further evidence in relation to Cambridge Green Belt Purpose 2 and provides support to

[38] Housing Delivery Study for Greater Cambridge 2021

the SHH view that the PD as a whole will cause 'substantial harm' to the Green Belt.

7.2 **Policy Position**

7.2.1 As set out section 7.2 of SHH's RR, the entirety of the proposed development is 'inappropriate development' in the Green Belt for the purposes of paras.149 and 150 of NPPF. The Applicant appears to agree with this view, as it assesses the impact of all development associated with the proposed waste water treatment plant that would be visible above ground level (AW 7.5.3; APP-207, paras.2.1.2-2.1.3). We have noted at ISH 1 that in the dDCO, powers of deviation are included which might result in underground parts of the works protruding above ground level. This aspect has not been assessed by the Applicant. In order for development to be permitted, 'very special circumstances must exist which are capable of outweighing the substantial weight that must be given to the harm by reason of the inappropriateness of the entirety of the proposed development' that would be above ground level.

7.2.2 Green Belt Studies [39, 40] supporting the existing South Cambridgeshire Local Plan 2018 (SCLP)[41] and Cambridge City Council Local Plan 2018 (CLP)[42] and emerging Local Plan 2021 (GCLP) [43] concluded any development within the vicinity would cause substantial harm/very high harm respectively to the purposes of the Cambridge Green Belt.

7.2.3 SHH (RR-035) has submitted that the Green Belt assessment undertaken by the Applicant (AW 7.5.3; APP-207) has underestimated the adverse impact the PD would have overall on the Cambridge Green Belt particularly in the context of Cambridge Green Belt Purpose 2, namely 'to maintain and enhance the quality of its setting' and an overestimation of the reduction in harm the mitigation measures will achieve.

7.2.4 SHH takes the view that this harm should be rated as 'very high harm', not 'moderate' as assessed by the Applicant.

7.3 **Cambridge Green Belt Purpose 2, 'to maintain and enhance the quality of its setting'.**

Sixteen qualities of Cambridge and its setting have been identified and incorporated in local Green Belt studies, including the LUC study adopted by the Applicant[44] **Error! Bookmark not defined.**, to assess the contribution of green belt parcels to the purposes of the Cambridge Green Belt and the potential harm of release/development. These qualities/factors were accepted at examination of the Local Plans[45,46] as set out in Table 3.

[39] LDA Design, Cambridge Inner Green Belt Boundary Study, 2015
[40] Land Use Consultants (LUC), Greater Cambridge Green Belt Assessment, 2021
[41] South Cambridgeshire Local Plan 2018 (SCLP)
[42] Cambridge City Local Plan 2018 (CLP)
[43] Greater Cambridge Local Plan (GCLP)
[44] Land Use Consultants (LUC), Greater Cambridge Green Belt Assessment, 2021
[45] Report-on-the-examination-of-the-cambridge-local-plan-2014.
[46] Report-on-the-examination-of-the-south-cambridgeshire-local-plan.

• A large historic core relative to the size of the city as a whole • A city focussed on the historic core. Short and/or characteristic approaches to the hist. core from edge of the city. • A city of human scale easily crossed by foot and by bicycle. • A city of human scale easily crossed by foot and by bicycle. • Topography providing a framework to Cambridge. • Long distance footpaths and bridleways providing access to the countryside. • Key views of Cambridge from surrounding landscape.	• Significant areas of distinctive and supportive townscape and landscape • A soft green edge to the city. • Green corridors into the city. • The distribution, physical and visual separation of the necklace villages. • The scale, character, identity and rural setting of the necklace villages. • Designated sites and areas enriching the setting of Cambridge. • Elements and features contributing to the character and structure of the landscape. • A city set in a landscape which retains a strongly rural character.

Table 3 Qualities/characteristics of Cambridge and its Setting – Cambridge Green Belt Purpose 2 [28] [47]

The current SCLP includes a selection of the qualities at para 2.51:

'A number of factors define the special character of Cambridge and it's setting, which include:

- Key views of Cambridge from the surrounding countryside;
- A soft green edge to the city;
- A distinctive urban edge;
- Green corridors penetrating into the city;
- Designated sites and other features contributing positively to the character of the landscape setting
- The distribution, physical separation, setting, scale and character of Green Belt villages; and
- A landscape that retains a strong rural character.'

The Applicant's Green Belt Assessment methodology at para. 1.2.7 (7.5.3; APP-207) references SCLP[48] and the 'factors that define the special character of Cambridge'. However, these are limited to those it considers 'relevant to the Proposed Development'.

[47] Landscape Design Associates, Cambridge Green Belt Study, September 2002

[48] South Cambridgeshire Local Plan 2018

The list presented by the Applicant excludes from those in the SCLP list: 'Designated sites and other features contributing positively to the character of the landscape setting'.

7.4 **Designated Sites**

The Greater Cambridge Green Belt Assessment, 2021 (LUC) at para 3.96 specifies the factor 'Designated sites and other features contributing positively to the character of the landscape setting:

'All features, sites and areas covered by designation are elements that can contribute positively to the character of the landscape and the setting and special character of Cambridge and people's experience of it. The list includes:…..Conservation Areas covering parts of Cambridge (in particular close to the historic core) and the majority of villages (wholly or partly); ……. Numerous listed buildings, concentrated primarily within the villages; Public Rights of Way (ProW), including long distance trails (such as… the Fen Rivers Way and Harcamlow Way).'

The latter is of great relevance to the PD and surrounding Green Belt. Designated sites in the vicinity of the PD make an important contribution to Cambridge Green Belt Purpose 2. It is SHH's view that excluding this characteristic of the Cambridge Green Belt is a significant omission in the Applicant's Green Belt assessment (7.5.3; APP-207) and impacts the validity of outcomes reported.

SHH has made submissions in relation to the adverse impact of the PD on Historic Environment (HE) and Landscape and Visual Amenity (LVIA) and will not repeat these here (see SHH RR-035- Sections 10.4 and 10.5). HE and LVIA adverse outcomes should be factored into an assessment of harm the PD would have to Cambridge Green Belt Purpose 2.

7.5 **Green Belt Villages** (see SHH 10 Appendix D Figures 1 and 2)

In consideration of the impact on the factor 'distribution, physical separation, setting, scale and character of Green Belt Villages', the text supporting the AW assessment outcome references consideration of the impact on distribution and physical separation of the villages (GB Purpose 3) but makes no reference to the impact of the scale and massing of the PD on factors used in the adopted LUC methodology (See Table 2) of scale, character, identity and rural setting of the villages which, in the case of Fen Ditton and Horningsea SHH consider will be adverse and significant.

There is an overlap in consideration of the impact the PD would have on factors relevant to the villages and assessment of impact on designated assets. The intention here is however to focus on the contribution the scale, character, identity and rural setting of the

villages not otherwise addressed by the Applicant make to the contribution of Green Belt Purpose 2 and the impact the PD would have on them.

The villages of Fen Ditton, Horningsea and Stow cum Quy display all of the key characteristics of the 'necklace villages' surrounding Cambridge as depicted in the Cambridge Inner Green Belt Boundary Study, 2015(LDA)[49] and make a strong contribution to it.

The approaches to the villages by road and PROW and Cycle Way are recognised as important in contributing to the rural setting, open landscape and distant views associated with the setting and character of the villages (LDA para. 4.6.5).

The villages of Fen Ditton and Horningsea are noted as both small and linear in nature and the setting described as a 'strongly rural character, despite the presence of the A14'. The SCLP identified the Cambridge Green Belt as vital to retaining the rural character of land and villages around Cambridge (SCLP para.6.2).

The landscape setting of the villages of distinct Fenland Chalk Edge is identified as contributing to the specific topography, described in Green Belt studies as a subtle but fundamental aspect of the setting of Cambridge; features include long distant open views and historical linear forms (LDA 4.6.5).

There is a strong historical environment and multiple designated historical assets amongst the villages and Conservation Areas (CAs) of Fen Ditton (HE096), Horningsea (HE097) and Baits Bite Lock (HE095). The majority of listed buildings are in the village settlements, circa 50 within Fen Ditton and Horningsea including high grade I and II*. The significance of the CAs to the villages' character, setting and identity is captured by the LDA assessment, describing them as forming 'a protected open setting beyond the immediate historic buildings of the villages' and SCLP described the CAs 'as seeking to conserve and enhance other aspects of a village which make it special.' See SHH 09 Appendix D Figure 1.

The villages are separated by open countryside, principally arable land identified as forming part of the Historic Landscape Character of the area (HLCA22). The villages have a strong relationship and identity with the surrounding open countryside, a fenland landscape with distant views and an extensive PROW network connected with Cambridge and the wider countryside including: Quy Fen SSSI, National Trust permitted rights of Way and Anglesey Abbey II* and Gardens (HE181). There is a unique historical and geographical relationship between and amongst the three villages of Fen Ditton, Horningsea and Stow cum Quy; the Parish Boundaries established in 1412 have an unusual interlocking character and culminate together within a field distance of the

[49] Cambridge Inner Green Belt Boundary Study 2015 (LDA)

shared Common Land of Quy Fen, now an SSSI, from which historical footpaths provide access to the Fen.

The management of Quy Fen is shared amongst the three villages and includes two representatives from each of the Parish Councils. There is a rich shared history of villagers' use and experience of this Common Land.

The open Fen Landscape forms extensive uninterrupted views from each of the Parishes towards Quy Fen, the historical landscape character, views and public rights of way on route to the Fen and beyond from each of the villages are of significant cultural and landscape heritage for the three villages and contribute to their shared sense of place, setting and identity.

The physical relationship of the three villages and Quy Fen, including the open rural landscape between them, is illustrated in SHH 10 Figure 2. The PROW network connecting the villages to each other and Quy Fen and open views are illustrated in Figure 15.1 AW 5.3.15; AS – 048.

Fen Ditton and Horningsea also have a strong identity and history with Cambridge University and the City. Both villages attract visitors and residents from Cambridge City via the Cam River and Ditton Meadows. The network of PROWs forms part of the qualities of Cambridge Green Belt factor 'green corridors that penetrate the City'. They provide circular walks from the City, encompassing Fen Rivers Way and Harcamlow Way and access to the wider countryside including Quy Fen SSSI and Anglesey Abbey II*.

The proximity to Cambridge and the quality of the setting is captured in the LVA that identifies Fen Ditton 'as a very positive element of the setting of Cambridge in that despite being close to Cambridge, it has retained a strong sense of being a village in a rural landscape; the village is easily reached from nearby areas of the city, offering residents and visitors the chance to experience a very different kind of environment.'

Following the Green Belt boundary change in the 2006 Local Plan to accommodate extensive housing within the Cambridge Airport area to the south of High Ditch Road, the remaining Green Belt around Fen Ditton was identified within the Green Belt Study and specified in the Cambridge Local Plan (CLP) as being of high value.

It is evident the scale, character, identity, and rural setting of the villages makes a strong contribution to Cambridge Green Belt Purpose 2.

7.5.1 Harm

The scale of the main site including significant landscaping and industrial buildings exposed above the open fields will be a dominant feature in the landscape and necessarily changes the and affects the extent of visual separation between the necklace villages. It will change the landscape character associated with the area and will have a permanent adverse impact on the physical and visual separation of the villages, their

scale, character, identity and rural setting. The LVA (AW 5.2.15; AS-034) identified permanent adverse significant effect on the Landscape Character Area; The HE (AW 5.2.13; AS-030) identified permanent adverse significant effect on the Historic Local Character Area (HCLA22).

The core site and associated landscaping out scales the size of Horningsea Village and its Conservation Area and impacts the physical relationship between the three villages, introducing a large industrial plant into otherwise open fenland landscape both separating and connecting them via an extensive PROW network to each other and shared common land of Quy Fen. It is of note the National Trust has raised concern about the proposed design approach and its compatibility with the landscape character of the immediate and wider area of relevance to Quy Fen (AW 5.2.15; AS-034 Table 1.5 pg.18). Natural England has raised concerns about the potential adverse effect of increase visitor pressure on Quy Fen (RR-0115).

Appendix D Fig. 1 and Fig 3 illustrates the scale of the plant in relation to the size of the villages, conservation areas and physical relationship to each other.

The PD will have an adverse impact on visual amenity , it will be visible on approach to the villages via car, foot or cycle; from residences within the villages that look directly over the site area e.g. High Ditch Rd, and from within the Conservation Areas and PROW network connecting Cambridge City to the villages and Quy Fen SSSI all of which inform the setting, place, character and identity of the villages and historical assets within them.

The LVA (AW 5.2.15; AS-034) has identified temporary adverse significant effects on visual amenity in the immediate area. SHH has submitted on account of the adverse effects and limitations of the mitigation measures these significant effects should be identified as permanent and applied to other viewpoints. Recommendations have also been made for viewpoints on Horningsea Rd and High Ditch Rd to be considered from a road/cycle/foot users' point of view travelling towards and from the villages (See LVA Section – this WR 8.5).

The PD will have permanent adverse effects on heritage assets with strong historical connections and identity with the villages. SHH have submitted the cumulative permanent slight adverse effect on multiple historical assets is significant (see HE section 10.4 this doc.). Significant adverse effects have been identified on Biggin Abbey II* (HE011) and Baits Bite Conservation Area (HE095) (AW 5.2.13; AS-030).

The introduction of the WWTP into the Green Belt in the area proposed will further erode the Green Belt surrounding Fen Ditton, otherwise identified as of High Value thus reducing its contribution to maintaining separation from other settlements/urbanisation. Appendix D Fig 3 illustrates the Green Belt.

It is evident the PD and associated landscaping will have a significant adverse impact on the distribution, physical separation, setting, scale, character, identity and rural setting of the villages and the contribution they make to Cambridge Green Belt Purpose 2.

7.6 **Conclusion**

The Applicant's Green Belt Study (AW 7.5.3; APP-207) excluded consideration of key features associated with the quality of the setting of Cambridge and of particular relevance to the Green Belt in the vicinity of the PD. The assessment identified that the PD would cause moderate harm to the purposes of the Cambridge Green Belt, differing from more complete local studies which have identified that any development in this area of Green Belt would cause substantial /very high harm.

The relevance of the consideration of the adverse impact on designated assets in an assessment of harm to Cambridge Green Belt has been presented and more than the 'distribution and physical separation of the villages' The relevance of the setting, scale, character, identity and rural setting of the villages. The contribution the latter makes to the purposes of the Cambridge Green Belt in the area has been considered and the adverse impact the PD would have on these features.

The conclusion is that the adverse harm would be significant to these factors contributing to the purposes of Cambridge Green Belt Purpose 2 and should be factored into an assessment of overall harm.

This submission expands on RR-035 in relation to Cambridge Green Belt Purpose 2 and provides support to SHH view that the PD as a whole will cause 'substantial harm' to the Green Belt.

7.7 **Cumulative Impact – Green Belt**

Please see SHH 10 Appendix D Maps Figures 2 and 3. There will be adverse cumulative impact on the purposes of the Cambridge Green Belt in the area of Fen Ditton Village, Fen Ditton Conservation Area and Baits Bite Conservation Area arising from the PD. Appendix 10 Fig. 2 shows the Green Belt in 2002 before the boundary changes and loss of Green Belt to the south of High Ditch Road to accommodate housing development in the Cambridge Airport area. As a result of the boundary changes the remaining Green Belt surrounding Fen Ditton Village is noted in the CLP as of high value (at para 2.54).

Figure 3 shows the current Green Belt, PD and major sites proposed and underway. The Marleigh Development (S/CE/SS/3 (1a) is blocked in yellow and underway. It abuts to High Ditch Road close to the Conservation Area boundary. A narrow band of trees separates the development from the Conservation Area and provides a filtered screen of views from High Ditch Road, the screening is less effective in winter months.

The PD will introduce an industrial plant of scale in relation to the size of the villages and

remove open Green Belt to the north east of Fen Ditton. The proposed developments in the GCLP at North East Cambridge (S/NEC) that would be enabled by the relocation of the WWTP can be seen to the west of Fen Ditton blocked in purple.

The Sustainability Assessment for NECAAP[50] identified protection of Fen Ditton Conservation Area from further harm as being dependent on planning management over the height of buildings and the screening effect from mitigation planting.

It is of note current planning applications at North East Cambridge ahead of the GCLP and NECAAP have been rejected by South Cambridge District Council (SCDC)and now progressed to appeal; SCDC cite the height and massing of buildings as proposed, the impact these will have on the landscape character and visual amenity of the area and heritage assets as the primary reasons for refusal [51]. The areas concerning the Council, in this instance, are the Green Belt along the River Cam and the village of Fen Ditton. The PD has a similar relationship to an even more valuable area of Green Belt. These concerns expressed by the LPA reinforce SHH concerns about the impacts of the PD on the Green Belt north of Fen Ditton.

Further, Historic England objects to the PD on the grounds of the impact on Fen Ditton, Baits Bite Lock and Stourbridge Common (adjoins Fen Ditton CA) Conservation Areas[52].

It is clear that large-scale developments at North East Cambridge pose a significant risk of harm to the purposes of the Cambridge Green Belt including cumulative harm to Fen Ditton and Baits Bite Lock Conservation Areas, when considered alongside the PD.

Far from the remaining Green Belt surrounding Fen Ditton being protected in accordance with the CLP, the effect of the PD would be significant harm to the purposes of the surrounding Green Belt.

8 Design, Engineering and Landscape

8.1 Introduction

While SHH strongly opposes the proposed location of the WWTP to Green Belt at Honey Hill, if the DCO were to be granted the best design for the location should be used to minimise the impact on surroundings and community.

A Design Critique is submitted as SHH 08. It includes comments on the size of land take, the layout of plant components, including the tall digesters, lack of attention to visual impact, poor use of existing landscaping, impact on heritage assets and community and

[50] GCP NECAAP Sustainability Appraisal 2020v22021
[51] Statement of Case SCDC Appeal by Brookgate Land Ltd March 2023
[52] Historic England Advice to GCP Planning App. 22/02771/OUT Land North of Cambridge North Station 5-09-2022

lack of innovative approach to the use of colour and texture.

It also seeks more respect for the sensitivity of the Green Belt on which it would be built and more attention to the views put forward at consultations.

SHH raised substantive concerns about the sizing and capacity of the proposed plant in Section 8.2 of RR-035. This questions both the shape and footprint of the PD and whether it provides for adequate space for enhancing and expanding the facility in future years. None of these concerns have yet been addressed by the Applicant.

8.2 Landscape and Visual Amenity

8.2.1 Introduction

As stated in RR-035 SHH considers there has been an underestimation of the permanent adverse effect the PD would have on the visual amenity value on receptors within 1km of the core site and an overestimation of the effect of the mitigation the landscape proposals and supporting LERMP (AW 5.4.8.14; AS-066) will have at anticipated maturity at '15 years' and following a 4-year construction period.

It is of note SCDC (RR-004 para.71) has expressed the view that the residual adverse landscape and visual effects including in particular those arising from the proposed landscaping have not been fully represented.

8.2.2 The LVA (AW 5.2.15; AS-034) identifies large-moderate adverse significant effects on visual amenity at Year 1 of operation for a number of receptors within 1km. These are maintained as significant impacts for a very few receptors within 500m of the WWTP and reduced to slight adverse and non- significant following mitigation for receptors within as little as 750m from the WWTP at Year 15.

8.2.3 This submission provides supporting evidence to the review of viewpoints submitted in SHH RR-035, where we consider should be recorded as large-adverse (significant) effects and moderate adverse (significant) effects at Year 15 following mitigation and those that have been underestimated at Year 1 and recorded as moderate adverse (significant) at year 15.

8.2.4 SHH has contributed throughout the AW consultation process on the selection of viewpoints. A number of these as described in the LVA have not captured the receptor intended and or the sensitivity rating attributed is too low. These comments are in addition to those submitted in SHH RR-035.

Limitations of Mitigation Planting

8.2.5 Planting on the top of the earthwork banking is described in the LERMP at 3.3.3 (AW 5.4.8.14; AS-066) as hedgerows forming a thicket, reaching a height of 3m in 15 years and

clusters of trees in clusters reaching 8-10m. By Year 15, it suggests that all but the tallest elements of the structures within the proposed WWTP, including the digesters (20m high), the boiler stack (24m high) and the nutrient recovery stacks (18m high) will be screened form most viewpoints.

Fig. 3.5 pg. 20 (AW 5.4.8.14; AS-066) provides a diagrammatic image of the growth rate of the planting and illustrates tree clusters with gaps in between, here the 3m hedge will be the only screen from industrial buildings extending above the top of the 5m bank. This presentation demonstrates that the planting on top of the earth work bank will only provide intermittent screening, industrial buildings not screened by these trees on top of the bank will be visible in addition to the buildings that extend above the tree line.

Further, screening provided in the summer months will be less effective in winter months when there is no foliage on the trees. The extent and density of growth at 15 yrs. is also dependent on there being adequate soil, adequate watering and no significant failures. Replanting might be needed at any time in the management plan period, not just during the initial five year period.

It is of note SCDC (RR-004; bullet point 73) has raised concerns about the suitability of the design approach to the landscape and the sustainability of the planting proposals, particularly in relation to the resilience of planting on the bund.

8.5.6 The LVA (AW 5.2.15; AS-034) does not provide the diameter of the buildings (except the boiler stack at 2m), or present illustrations that would assist to understand the mass of the exposed buildings that will be viewed within and amongst the hedging and tree planting.

The table below shows the height of the tallest buildings as presented in the LVA Table 2.6 (AW 5.2.15; AS-034) and the calculated height these will extend above the 3m hedge line and 8-10 m tree line at maturity as specified in the LERMP (AW 5.4.8.14; AS-066).

Table 3 below demonstrates there will be multiple buildings extending above the height of the screening on top of the 5m earth work bank: 14 above the 3m hedge height and up to 7 above the 8-10m tree line. Views will be filtered but a significant mass of structures will be visible, particularly in the winter months from any visual receptors that retain views across the PD.

Structure Height as identified in LVA Table 2.6	Height above 5m Bank + hedgerow thicket 3m (8m)	Height above 5m bank + Tree Cluster 8-10m (13-15m)
sludge thickening building and blending tank (10m above finished ground level (AFGL));	2m	-

odour control unit vent stack (16m AFGL)	8m	1-3
filtration plant (10m AFGL)	2m	-
X 2 digesters (21.5m AFGL)	13.5m	6-8m
heating, pasteurisation and hydrolysis tanks (15m AFGL);	7m	0-2m
cake storage barn (9m AFGL)	1m	-
liquor treatment plant (9m AFGL)	1m	-
nutrient recovery tower (18m AFGL)	10m	3-5m
biogas holder (16m AFGL);	6m	6-8m
biogas flare stack (15m AFGL)	7m	0-2m
biogas upgrading plant (12m AFGL);	4m	-
boiler building (8.5m AFGL);	0.5m	-
boiler stack (2m diameter and 24m AFGL);	16m	9-11m
gateway building (approximately 9m AFGL);	1m	-
workshop (approximately 10m AFGL).	1m	-

Table 3 Heights of 'tallest buildings' above planting on the top of the earthwork bank

SHH notes that the LVA (AW 5.2.15; AS-034) identifies the tallest buildings as being visible above the tree line, for example at VP 10: 'The taller structures such as the digesters, heating, pasteurisation and hydrolysis plant area, boiler stack and biogas holder will remain visible above the woodland.' AW 5.2.15; AS-034 Table 4-6).

However, on examination of the hedge and cluster tree planting described in the LERMP (AW 5.4.8.14; AS-066) and the heights of the industrial buildings above finished ground level (AFGL) presented in the LVA (AW 5.2.15; AS-034) and tabulated above, there will be a greater massing of industrial buildings visible from many VP's and sensitive receptors, particularly in the winter months than the LVA in its assessment of visual effects presents.

8.5.7 It is evident the LVA (AW 5.2.15; AS-034) has over-rated the extent the mitigation measures will have on mediating the impact of the PD on visual amenity and sensitive receptors in the context of the scale and visibility of the industrial plant, and the significance of the change in view mitigation measures alone will create. It is of note SCDC (RR-004 para.71) have expressed the view that the adverse effects from the proposed landscape mitigation have not been fully represented.

Typically, at Year 15, the LVA (AW 5.2.15; AS-034) considers any impact on the visual amenity at yr. 1 to be mediated by the screening or filtering effect of the mitigation planting. In the case of receptors in very close proximity e.g., VP 17, 18, 24, 25 where in effect the view will be blocked by mitigation planting this does not account for the magnitude of change, loss of view or permanence of change.

Further, where it is anticipated the taller industrial buildings will remain visible above the tree line e.g., VP 10 filtering effect of mitigation planting is referenced as reducing the magnitude of impact on the visual receptor. The latter does not account for the industrial buildings remaining visible above any filtering effect and or those exposed in and amongst the planting during the winter months or the adverse effects of mitigation planting and permanent change in view (AW 5.2.15; AS-034 Table 4-6)

As noted in SHH RR-035 the impacts on visual amenity, where these are reported as large adverse or moderate adverse at Year 1 in the LVA, will not in our view diminish to slight adverse in most locations at Year 15, because the bank top screen will be incomplete and may well suffer loss of or stunted growth of the tree and hedge screen.

As noted in SHH RR-035, notwithstanding the photomontages presented by the Applicant have been undertaken to industry standards, they are not reliable as direct illustrations of the scale of views as would be experienced by the receptor at the viewpoint: a wide-angle landscape view always appears more distant and buildings less prominent than to the naked eye, addressed to an extent in the narrower views presented.

This submission provides supporting evidence of the review of viewpoints submitted in SHH RR-035 that should maintain large-adverse (significant) effects and moderate adverse (significant) effects at year 15 following mitigation and those that have been underestimated at Yr 1 and recorded as moderate adverse (significant) at year 15.

8.2.8 Viewpoints – Please Refer to: AW 5.2.15; AS-034 Table 4-6 and AW 5.3.15; AS-048 Fig 15.1

The following viewpoints should have been assessed or amended. In each case this would make the visual impacts of greater significance than those set out in AS-034:

(i) A VP is required to capture views from the tower/rooftop of Saint Peters Church Grade 1 (HE005) towards the PD. SHH has been informed that St. Peter's PCC has a project to improve access to the tower, with a view to opening the church tower to visitors for views across the local countryside and towards Cambridge.

(ii) A VP is required to capture the visual impact of the new discharge/outfall from PROW 85/6 that runs directly alongside it looking north and 162/1 that will view it across the river looking East towards Biggin Abbey II* (HE011) has been recommended in previous consultations but has not been identified in the LVA. A VP capturing these viewpoints and assessment of impact on the visual amenity of the view is recommended.

(iii) VP 25 should include road users of Horningsea Rd on approach and leaving Horningsea Village and allocated a sensitivity rating of 'high' on account of the role the 'high value views' have on their contribution to the rural setting and landscape character of the village, associated conservation area and historical assets within it (AW 5.4.13.1; AS-079 7.2.2 , 9.4.4: AW 5.3.13; AS-047 Fig 13.4). This VP and 'high value views' as identified in the Historical Environment assessment is also relevant as an approach road informing the setting and character of Biggin Abbey II* (HE011) (AW 5.4.13.1; AS-079 9.3.2)

(iv) VP28 in addition to views from residences as currently specified to reflect views from the footpath/cycleway and road looking south from Horningsea village and within Horningsea Conservation Area on account of 'high value views' contributing to the setting and character of the Conservation Area and listed properties within it. To retain High sensitivity rating as currently allocated.

(v) VP5, VP7, VP9 to provide representative views for road users of High Ditch Road on approach to Fen Ditton Village along the length of High Ditch Rd. To be allocated a sensitivity rating of 'high' on account of the role of 'high value views' in their contribution to the rural setting and landscape character of the village, associated conservation area and historical assets within it and in the case of Fleam Dyke (HE101) non-designated historical assets along it.[53] [54](AW 5.4.13.1; AS-079 7.2.2 ; 9.4.3: AW 5.3.13; AS-047 Fig 13.2).

(vi) VP10 in addition to residences as currently specified to reflect views from users (pedestrians, cyclists, car users) of High Ditch Road looking north from within Fen Ditton Conservation Area on account of 'high value views' contributing to the setting and character of the Conservation Area and listed properties within it. To retain High sensitivity rating as currently allocated.

(vii) VP 28 and 5, in addition to those referenced in SHH RR-035, should also be allocated moderate adverse (significant) magnitude of change at Year 1 and the same at Year 15 on account of the PD forming 'a noticeable feature or element of the view, readily apparent to the receptor /a substantial adverse alteration to key characteristics of the view' and a permanent change (AW 5.2.15; AS-03 Table 2.1 ; Table 2.3).

[53] LDA Design, Cambridge Inner Green Belt Boundary Study, 2015

[54] Land Use Consultants (LUC), Greater Cambridge Green Belt Assessment, 2021

9 Carbon

9.1 Introduction

The Proposed Development both in construction and operation will create unnecessary and avoidable carbon emissions. These matters were raised in Section 9 of the SHH Relevant Representations (RR-035). There are substantial flaws and misleading conclusions drawn in the carbon assessments submitted by the Applicant. This section deals with these under four related headings:

(i) Baseline assessment of carbon emissions from the existing operations

(ii) Carbon emissions from demolition and remediation of the existing Cambridge WWTP

(iii) Review of the carbon assessment presented in Chapter 10 of the Environmental Statement (AW 5.2.10, APP-042); and

(iv) Review of the Strategic Whole Life Carbon Assessment provided in the Planning Statement (AW 7.5.2, APP-206)

9.2 Baseline or Benchmark Assessment of Carbon Emissions from the Existing Operations

9.2.1 In order to consider properly the operational emissions for the Proposed Development, the assessment in Chapter 10 of the ES (AW7.5.2, APP-206) should have set out clearly a baseline (or benchmark) assessment of the operational emissions from the existing Cambridge WRC. This is a point made strongly by Cambridgeshire County Council in RR-001.Although baseline operational emissions are given as estimates at Table 3-3 of AW 5.2.10: APP-042, the Applicant states that maintenance activities would not require significant additional energy or material.

9.2.2 Ideally, this should have included a full mass balance diagram or dataset to enable verification of the subsequent calculations of gross and net carbon emissions.

9.3 Carbon Emissions from Demolition and Remediation of the Existing Cambridge WWTP

SHH has consistently taken the view that the demolition, site clearance and ground remediation of the existing Cambridge WRC site should have been in the scope of the Environmental Statement. This is set out in Sections 5.2 and 9.3 of RR-035. The Applicant has failed to undertake this assessment.

9.4 Review of Environmental Statement Chapter 10 Carbon (AW 5.2.10) and Appendix 10.1 (AW 5.4.10.1)

Introduction

The Applicant's assessment in the Environmental Statement has adopted a conventional methodology for assessing carbon emissions from construction and operation of a waste water treatment facility and has apparently used the appropriate guidance e.g. IEMA 2022 and available data sources. The analysis is, however, flawed and does not present

proper conclusions about the construction, operational and whole life carbon emissions for the Proposed Development.

Scope

A fundamental weakness in the assessment is that it fails to consider the issue of 'avoidable' emissions in the correct way. The assessment should have included a comparative breakdown of emissions from the lowest carbon alternative, which would have been the retention, expansion and upgrading of the existing works on the existing site to deliver operational net zero. Given that the overall capacity of the existing WWTP is close to two thirds of the total Phase 2 capacity for the relocated works, would be reasonable to assume that an upgraded works could be delivered on the existing site for a construction carbon budget of around 17,000 tCO2e, as against the Applicant's assessment of the DCO Design construction emissions of 50,700 tCO2e. The Applicant's own Strategic Assessment (AW 7.5.2, APP-206) on page 14, notes that the embodied carbon for a retained and expanded WWTP would be no more than 11,000 tCO2e, against a comparable 58,000 tCO2e for the proposed development. This helps to confirm that the SHH estimate of 17,000 tCO2e is conservative.

Elsewhere in RR-035, in Section 3.3, SHH has argued that the Applicant has, to date, not demonstrated that the design or footprint for the relocated works at Phase 2 will even meet capacity requirements beyond the late 2030s. It is not made clear from the assessment in AW 5.2.10 and AW 5.4.10.1 whether the DCO Design being assessed is the Phase 1 or Phase 2 Design. The assessment does include what are described as 'capital replacements' in Years 23 and 28, which may or may not be the additional plant required for the Phase 2 expansion. Even if that is the case, the DCO Design appears to be undersized to achieve a sensible design life. These points would need to be addressed in an updated carbon assessment.

In common with the rest of the Environmental Statement, the assessment excludes the carbon emissions that will arise from the demolition and remediation of the existing Cambridge WWTP (and the Waterbeach WWTP). This should have been in scope for the whole of the Environmental Statement.

The assessment in the ES also appears to exclude the carbon emissions associated with construction and pumping operation for the Waterbeach pipeline. Logically, any other carbon emissions arising from operation of the sewers connected to the Cambridge WWTP should also have been included in the assessment.

The assessment also excludes most of the operational transport emissions for the relocated plant, including sludge transport from other WWTPs and tankering of untreated waste to the plant. The Applicant has previously stated its intention to convert its sludge and sewage road tanker fleet to LPG operation, although this will probably not reduce

carbon emissions substantially below that from existing diesel vehicles. All of these elements should have been included in the assessment.

The operational assessment covers a period of 30 years after opening. This is based on matching this to the lifetime of the LERMP. This has not been justified in the assessment and logically the assessment should extend to whole operating design life of the plant. However, SHH does accept that, given the urgency of addressing climate change, it is the construction and early years carbon emissions which are of most concern.

National Policy and AW Corporate Emission Targets

The Applicant correctly notes, in section 1.3 of AW 5.2.10, APP-042, that the requirement of the Climate Change Act 2008 (as amended) is for 'net zero' emissions to be achieved by 2050. The Act requires carbon budgets set for intermediate periods to be met. The UK Government's Sixth Carbon Budget, set out in the Carbon Budget Order 2021, requires a reduction in carbon emissions by 78% by 2035 (compared to 1990 levels), with the 2030 target being a 68% reduction. The NPPF para 152 requires development to 'support the transition to a low carbon future…radical reductions in GHG emissions' especially by 'encouraging the reuse of existing resources' including buildings.

The Applicant has said that it is has adopted Anglian Water's corporate carbon reduction targets i.e., a reduction in construction or embodied carbon by 70% from a 2010 baseline and operational net zero from 2030. No information is provided to compare this target with those set nationally, nor what constitutes that 2010 baseline. In practice, there are particular difficulties in judging what would have been the emissions had the CWWTP new plant been designed and ready to build in 2010.

Generally, given that this is an entirely new build project, as against an upgrade, both targets are lenient and this project should have been designed to could achieve better than this, beating what will be difficult to achieve targets in relation to the rest of the older Anglian Water operational estate.

Construction Emissions

A key flaw in the analysis derives from the choice of baseline design used for the calculation of construction emissions. A sounder analysis would have considered a 'reasonably value-engineered design' as the baseline, that is, one that might have been used to apply for planning consent. As it is, the DM0 design apparently adopted can politely be described as a 'baggy' design which has not been subject to any design refinement. It is therefore a fictional baseline. The Applicant should be asked to produce both the DM0 and DM1 designs for scrutiny. Given that there has been no substantive change in the location or routing of the tunnels and discharge outfalls between the DM0 design and the later DM1 and DCO designs, it is very difficult to understand how the

emissions footprint was able to be reduced from over 96,000 tCO2e at DM0 to 54,600 tCO2e at DM1, most of which is attributed to reductions in tunnel diameters and lengths. This suggests that the tunnels had just been over-sized in the DM0 design and is therefore a spurious claim for the reduction since achieved.

Even given this sleight of hand, the assessment notes that at 50,700 tCO2e, the DCO design only delivers a 48% reduction in carbon emissions, assessed against the Applicant's inflated baseline. To put this in perspective, to achieve the AW corporate target would require a further reduction in construction emissions by 21,900 tCO2e to 28,800 tCOe, which is, itself, a further 43% reduction on the total claimed for the DCO Design at this stage. This is also 5 times the reduction achieved during several rounds of design refinement since DM1. The assessment, on page 31 of AW 5.2.10 (APP-042), sets out, generally, the future carbon reduction actions that the Applicant intends. Included within these is the prospect that low carbon concrete and other materials refinements can deliver a significant element of the further required reductions. This crucial point is not evidenced, despite the statement that these are technologies already in widespread use by the Applicant and on other major projects elsewhere.

At a minimum, the Applicant must be committed, through any DCO, to delivering at least AW's corporate emissions targets and these should be incorporated into the DCO Requirements as binding and enforceable commitments. The Applicant needs to provide a credible plan for how these specific overall targets are to be delivered, which will involve reassessment and carbon reduction at key stages in detailed design, with specific targets to then be achieved in the procurement of materials, plant and construction activities. The Applicant's Outline Carbon Management Plan does not clearly detail either the targets or the process by which these will be achieved, including reporting and verification.

Land Use of Carbon

The assessment has adopted apparently conservative assumptions for sequestration, including that planted trees will only deliver carbon sequestration from Year 11, although SHH remains concerned about how quickly trees will grow given soil and rainfall conditions on this site.

Operational Emissions

The Applicant has made a corporate commitment to operational net zero across its estate by 2030. The assessment has adopted available published Government estimates for electricity grid supply decarbonisation. There are no comparable figures for network gas decarbonisation and the assessment relies on a constant carbon factor for gas, based on present values, for the period 2028 to 2050, after which it is assumed that network delivered gas will miraculously become zero carbon.

There are other serious weaknesses in the Applicant's assessment:

(i) Neither the DCO CHP Design nor the Baseline Design can deliver operational net zero in the early years of operation, although they come close to this, as assessed in the later years of the operational assessment period running up to 2057, as set out in AW 5.4.10.1, APP-206, Tables 2.16 to 2.22 and Figures 2.9 to 2.12. Overall, the DCO CHP Design only manages to achieve +11,090 tCO2e net operational emissions cumulated over the assessment period.

(ii) The DCO Preferred Option, which is the delivery of enriched biogas to the national gas network would deliver operational net zero but is not a commitment as part of the Application. The assessment assumes that the production of bio-methane can be considered carbon neutral, which is conventionally adopted as part of GHG accounting. On the calculations provided, this option delivers net savings from the year of opening 2028 until 2050, in total a large cumulative net carbon emissions saving by 2050. However, this option is reliant on (i) that there is a practicable solution to the export of the gas produced ie it can be injected into a viable domestic gas network throughout this period (ii) the availability and use of 860 tCO2e of propane from fossil fuel sources to enrich the biogas for export to the network and (iiI) the assumption that network gas is not progressively decarbonised in the period to 2050, for example, by blending from low carbon sources. After 2050, assuming that the gas network is fully decarbonised, the Preferred Option ceases to be operationally net zero.

(iii) The Applicant is unwilling to commit to the DCO Preferred Option, presumably because of uncertainties about the future markets for and sources of network supplied gas. Nationally, in order to meet the net zero target required in law by the Climate Change Act, there will need to be the complete decarbonisation of network supplied gas. While the uncertainties about energy markets and the route to decarbonisation for the gas network are mentioned on paras 5.1.5 to 5.1.8 of AW 5.2.10, these are not acknowledged as fundamental constraints on the deliverability of the DCO Preferred Option. Since the majority of network gas is used for domestic heating with no new gas boilers to be installed from 2025, there may, effectively, be no national gas network to which the biogas from this plant can be exported in later years. The capability of the gas network to handle blended low carbon gases from replacement sources is technically unproven at present. These technical issues may well be resolved by National Grid, but are likely to rule out the export of small amounts of high carbon biogas from this site directly into a decarbonised network.

It would not be appropriate for the ExA to consider granting the DCO unless the Applicant has demonstrated that the DCO Design can meet both the Applicant's capital carbon target and that it will be operationally net zero from the year of opening.

The Applicant's Whole Life Carbon Assessment in 5.2.10 Section 4.6

This cannot be accepted as a correct assessment of the Whole Life Carbon Emissions, given that it excludes the matters set out in the Scope section above, where five substantive exclusions from the Applicant's assessment are identified. The Applicant has also not demonstrated that the DCO Design can achieve Anglian Water's own corporate carbon targets or the requirements of the Climate Change Act.

A substantial quantum of construction emissions, around 80% or 47,000 tCO2e based on the Applicant's own Strategic Assessment, could be avoided in the lowest carbon alternative, that of retaining and expanding the existing works with upgrading to deliver a low carbon solution.

Another important consideration, which is constantly being reiterated by the Climate Change Committee and others, is that the climate crisis needs to be addressed urgently and promises of low carbon targets and operational emissions many years into the future are of little value.

Taking the Applicant's assessment as it stands from Table 2-22 of AW 5.4.10.1; APP-109 and presenting the net emissions in 5 year cumulative bands, illustrates this concern very clearly, with 82% of the cumulative emissions, around 56,000 tCO2e, expected to occur in the period before 2034, the mid-year of the UK Government's Sixth Carbon Budget.

Assessment Years	Net Cumulated Annual Emissions tCO2e
0 to 4	+52,877
5 to 9	+3,023
10 to 14	+1,518
15 to 19	+671
20 to 24	+9,301
25 to 29	+890
0 to 29 Total	**+68,200**

9.5 Review of Strategic Whole Life Carbon Assessment in AW 7.5.2, APP-206

9.5.1 The Applicant has submitted a Planning Statement Strategic Whole Life Carbon Assessment (AW 7.5.2, APP-206) which purports to assess the carbon emissions arising from the relocation of the WWTW and the subsequent redevelopment of the NECAAP area as a high density mixed-use neighbourhood. It compares scenarios based of this with a counterfactual, essentially what is said to be a similar development in a suburban location near Cambridge with 'excellent public transport links', a so called 'public transport corridor' spatial option. The development assessed is not just the housing and other uses that can be accommodated

on the core site (5,600 houses and related development), but the entirety of the development intended in NECAAP (8,350 houses and related development).

9.5.2 This assessment has been provided principally to address arguments that relocation and demolition of the WWTP will give rise to carbon emissions that should be avoided by retaining and expanding the works on site, by assessing the overall carbon emissions benefits of housing development at NECAAP in comparison to an alternative suburban location.

9.5.3 The report notes that the assessment uses a simple model, based on readily available average data and proxy indicators for likely carbon emissions and that the results may therefore **not** be reliable. Although some of the assumptions are set out, it is a 'black box' analysis, and the results have not been validated, against, for example, other sub-regional transport modelling or socio-economic survey data, which is available for Greater Cambridge. The analysis is, in crucial respects, static and takes no account of future socio-economic or demographic change over the assessment period.

9.5.4 It considers three aspects of the Proposed Relocation and subsequent NECAAP development:

- Aspect 1: The relocation or retention and expansion of the WWTP, which draws on the Applicant's assessment reported in Chapter 10 of the ES. It is not stated whether, under the relocation scenario, the carbon emissions from the demolition and remediation of the existing works have been included in the analysis of either Aspect 1 or 2 or at all.
- Aspect 2: This is described as 'housing', but is actually 'emissions from buildings'. On page 9, it is noted that the modelling was based on 5,600 houses and other development on the core site and has been scaled up to consider 8,350 houses and other development at both locations. The assessment uses standard emissions factors per sq m for embodied construction emissions and for space heating. As such, the analysis ignores how either of the developments considered will be occupied and used now or in the future.
- Aspect 3: This is described as 'commuting'. The extent to which the analysis covers all forms of motorised travel is unclear. The analysis uses two present day average household vehicle ownership counts for Cambourne and City of Cambridge. It then applies a variety of vehicle fleet factors to generate operational carbon emissions. No information is given as to the sources of annual trip lengths by mode for the two locations.

9.5.5 The assessment presents three carbon reduction scenarios ranging from 'business as usual' to 'zero carbon' as well as two delivery scenarios. The optimistic delivery scenario, the delivery of all 8,350 dwellings by 2042, ie close to 1,000 houses a year at either location, is very unrealistic and a slower rate of delivery more in line with those set out in the GCLP FPs, the 'conservative' scenario, is more likely to occur. This kind of simple spatial comparison analysis in Aspects 2 and 3 is subject to high levels of uncertainty, which cannot be easily quantified. It uses a 'snapshot' of available parameters for the modelling. Implicitly,

important socio economic, transport and demographic variables have been kept constant temporally and spatially in the analysis.

9.5.6 This kind of simple spatial comparison analysis in Aspects 2 and 3 is subject to high levels of uncertainty, which cannot be easily quantified. It uses a 'snapshot' of available parameters for the modelling. Implicitly, important socio economic, transport and demographic variables have been kept constant temporally and spatially in the analysis.

9.5.7 The crudeness of the assumptions made invalidates the conclusions drawn about overall carbon emissions. The most questionable of those assumptions are:

(i) Extent of compared developments: the assessment should only have considered the development that could be placed on the core site or the Applicant's site (at most, 5,600 houses and related development), not any additional development that might take place within the wider NECAAP area under the relocation scenario. This is the only logical approach to take, given that the assessment does not, for example, assess an alternative 'employment led' development scenario for NECAAP, based on the 2018 Local Plans.

(ii) For Aspect 2, the analysis ignores the different ways in which dwellings will be occupied and used at the two compared locations. In reality, there are likely to be considerable differences in the numbers of residents, household typology, tenure mix, age profiles, employment, income and other social characteristics between the two compared developments.

(iii) In the analysis, the assumption is made that the types of housing development will be different at the two locations, in particular that average dwelling size at the suburban location will be 100 sqm GIA mainly low rise housing and that at NECAAP will be apartments averaging 77 sqm per dwelling ie 30% larger at the suburban location. More public realm per dwelling is also assumed at the suburban location. The argument advanced for making the different dwelling size assumptions is that NECAAP is a 'unique location' and that there will be real differences in market demand. This may be correct, but it means that the analysis is comparing two entirely different hypothetical resident communities. It is possible, but entirely unevidenced, that floorspace per person will be higher at the suburban location, partly reflecting differences in house prices and housing choices made by households at different stages in their life cycle. The difference in dwelling size and public realm area assumed accounts for **all** of the differences in embodied and operational carbon emissions between the two locations reported under Aspect 2.

(iv) The analysis uses simple per dwelling parameters for vehicle ownership and trip making, based on two questionable sets of data: an average for the whole city of Cambridge and for the free-standing new settlement at Cambourne. Within the City, there are likely to be significant differences in these parameters in different residential

neighbourhoods across the City, which is not explored. Cambourne, as a newly built settlement, will have an age, social and economic profile that is far more likely to change over time than the City wide average. It is likely, in reality, that average household sizes at the suburban location will be higher, but this point is ignored. NECAAP is one of only two locations in the City adjacent to a mainline railway station. Because of the location and type of housing, a considerable proportion of residents will choose to live there to allow easy commuting to London or elsewhere, which is also ignored in the analysis.

(v) The counter factual suburban location is described as being a generic suburban settlement and as a 'reasonable median comparator', whatever that means. In practice, this is in essence a free-standing small settlement, such as Cambourne or Northstowe. No attempt has been made to compare a more realistic alternative urban edge location, such as at Cambridge Airport. This is likely to magnify differences in vehicle ownership, trip lengths and frequencies and the transport emissions between the so-called comparators. Commuting emissions, in particular, will decrease over time as both the electricity network and manufacturing are decarbonised. This is only partly taken into account in the analysis.

Findings of the Strategic Assessment

9.5.8 In the commentary below, the 'conservative mid-point' scenarios are discussed.

Aspect 1: WWTW

9.5.9 This analysis summarises that in Chapter 10 of the ES. The only additional information provided, presumably by the Applicant, is the assessment of the carbon footprint of retaining and improving the works on site. This is reported as embodied construction emissions of 11,000 tCO2e as against a reported 58,000 tCO2e for relocation. It is not stated whether the latter figure is intended to include for the demolition and remediation of the existing works, but it can be assumed that it does not.

Aspect 2: Housing

9.5.10 The overall buildings emissions are reported as 0.5 mTCO2e for the residential counterfactual embodied emissions and 0.7 mtCO2e for relocation, with the non-residential emissions equal under both. The 0.2 mtCO2e difference is almost all a result of the greater floorspace being assumed at the suburban location. The analysis appears to assume the same number of residents in both locations, although, in reality, household sizes are likely to be higher in the suburban location, with a higher proportion of larger dwellings in the mix. All this analysis shows is that if you build larger houses, these will have greater embodied carbon emissions.

9.5.11 In SHH's view, this analysis should only have considered a development of 5,600 dwellings or fewer on the Applicant's land, which would reduce the embodied and overall carbon

emissions, including non-residential, to around 0.4 to 0.5 mtCO2e at both locations.

Aspect 3: Commuting

9.5.12 As reported, the analysis on p16 suggests that embodied transport emissions will be 31% greater at the suburban location, 0.3 mtCO2e as against 0.2 mtCO2e at NECAAP. The operational emissions are reported as 0.7 mtCO2e as against 0.4 mtCo2e. Again, a proper comparison, based on the core site would reduce all those values to less than 67% of the reported figures. Given the limitations in the assumptions and absence of trip length data, it is difficult to judge by how much this exaggerates the real long-term differences in per person carbon footprints there will be between the two locations. It is certainly likely that a properly calculated comparison between say NECAAP and another edge of city location eg the Airport, would show far smaller difference in overall carbon emissions. In any event, those differences are likely to be smaller than the 'errors of estimate' in this assessment.

Strategic Whole Life Carbon Assessment Conclusions

9.5.13 The Applicant's so called Strategic Whole Life Carbon Assessment in AW 7.5.2 cannot be given any credence. The assessment for Aspect 1 only reports the assessment included in Chapter 10 of the ES, but does confirm that relocation will give rise to avoidable construction emissions that are at least 40,000 tCO2e (excluding demolition) higher for relocation over retention. The analysis under Aspect 2 shows no valid difference between the two locations. The analysis under Aspect 3 is flawed, for the reasons stated, and has not demonstrated that there will be a substantial or indeed relevant difference between transport emissions for a development on the core site at NECAAP when compared, for example, to another realistic edge of city location. The assessment provides no support for the assertions of the City Council and South Cambridgeshire District Council that 'NECAAP is the most sustainable strategic location for housing development' in the Greater Cambridge area, which are themselves based on a very simplistic sustainability appraisal. The assessment in APP-206 does **not** support the Applicant's assertion that, overall, relocation of the WWTP will give rise to lower carbon emissions, even when the potential redevelopment of the core site is taken into account, and that assertion should be given no weight in the determination of the DCO application.

9.6 Carbon Emissions Overall Conclusions

SHH has undertaken a rigorous review of the applicant's carbon assessment and commissioned an assessment of demolition emissions. There are substantial flaws in the Applicant's analysis of carbon emissions, with misleading results reported in the ES and elsewhere.

In summary, the conclusions that should be drawn are:

(i) The relocation will give rise to substantial avoidable carbon emissions from construction when compared to the alternative, the expansion of the existing works on site, which may

be in the order of 40,000 tCO2e. SHH has assessed the carbon emissions from demolition as adding c 3,000 tCO2e to that total. The PD does not achieve the Applicant's own corporate construction emissions targets, nor has the Applicant demonstrated that it could do so. The Applicant has not demonstrated that these emissions are not contrary to the requirements of the Climate Change Act or the Government's interim targets.

(ii) The Applicant has not provided a baseline or benchmark assessment of operational carbon emissions from the existing works and the assessment provided in AW 5.2.10 is not transparent and the assumptions and working cannot be verified.

(iii) The Applicant has stated that the DCO Preferred Option for operations is the bio-gas option, but the dDCO does not incorporate provisions that would enable this to be built and operated. For example, no provision is made for piped connections to the national gas grid, nor does the DCO make any reference to the extensive regulatory requirements that the Applicant will need to make to become a supplier of biomethane to the gas grid, for example, the Gas Transporter and other regulations. As it stands, the biogas option is not fully worked through and there are substantial doubts about the future of domestic piped gas supply that make this option at best an aspiration.

(iv) The Applicant has not demonstrated that the CHP Option will meet the Applicant's corporate objective that operational facilities across its estate will be net zero by 2030. The CHP Option produces most of its net carbon emissions in the early years of operation, in contravention of the Government's interim carbon emissions targets. Given that this is an entirely new plant, this makes it most unlikely that the Applicant has any chance of meeting its operational carbon objective of net zero at 2030.

(v) The Applicant has submitted an entirely misleading Strategic Carbon Assessment, seeking to show that there will be large carbon emissions savings if the NECAAP development takes place compared with a counter-factual alternative, a low density free standing settlement with limited public transport connectivity to the city. No real difference has been evidenced in this assessment between the two development scenarios. There are other locations on the urban edge of the City eg Cambridge airport which will perform as well as NECAAP in terms of transport carbon emissions. The buildings emissions assessment has been based on spurious assumptions.

In our view, the ExA should conclude that the Proposed Development will have substantial avoidable carbon emissions, in contravention of the Climate Change Act and the Government's policies for achieving net zero carbon. These are a significant adverse environmental impact and hence harm which should be given great weight in determining that the DCO application should not be granted.

As it stands, DCO Requirement 21 in Schedule 2 is not formulated in a way that can guarantee delivery of either the Applicant's 70% capital carbon reduction commitment or the operational net zero by 2030 commitment.

In SHH's view, these are not matters which can be left to be addressed after the DCO is granted, but must be fully addressed in the submitted DCO design and assessment, prior to the conclusion of the Examination. These could then be made into binding commitments, for example, by the redrafting of Requirement 21.

10 Environmental Impacts and Mitigation

10.1 Introduction

In this section of the WR, specific additional evidence is presented in relation to the technical assessments included in the Applicant's Environmental Statement. These are in addition to material included in Section 10 of RR-035

10.2 Biodiversity

In RR- 035, SHH made its concerns clear on the threat to biodiversity posed by the PD and the associated changes to the area around. These concerns have been echoed in Natural England's RR-015. is not clear how the Applicant's claim for biodiversity net gain (BNG) can be achieved (AW 5.4.8.13; AS-064) given the effect on sensitive areas such as Quy Fen SSSI, Fleam Dyke SSSI and Wicken Fen SSSI. Habitat Trading (section 5.3.1) relies on replacing habitats lost during constriction with the same exact type. Although construction will not remove any of the SSSI areas, the effect of construction in close proximity, such as vibration, lighting, dust and water pollution, will impact on the sensitive nature of the habitats.

10.2.1 Habitat trading is questionable; it cannot replicate within the PD boundary habitats such as the loam pasture chalk marl pools which support aquatic plants at Quy Fen. Equally the open water habitats attractive to dragonflies and damselflies cannot be replicated. The hedgerows, scrub and pools on the periphery of the Quy Fen SSSI site would be particularly sensitive to the impact of construction.

10.2.2 During operation an increased footfall, both to the office space and Discovery Centre, and increased recreational routes will impact on Quy Fen SSSI. There is lack of information on the provision of mitigation and monitoring of this increase.

10.2.3 Groundwater pollution must be monitored and avoided to prevent impact on Quy Fen. Reed beds support a variety of wildlife including fish, invertebrates and birds while providing a natural filter to pollutants and oxygenating the water. The Applicant recognises that the proposed new outfall location on the River Cam will result in river units and reed bed habitats loss (5.3.5) but does not offer a resolution without which BNG cannot be achieved and may instead result in biodiversity net loss

10.2.4 SHH is concerned that the use of Low Fen Drove CWS by bats for foraging and commuting as reported in para 5.1.5 of the Bat Technical Report (AW 4.8.87, APP-092) may extend southwards across the A14 along the disused railway line. The Applicant should confirm if the small section of Study Area for Bats shown on Figure 8.43 (AW 5.3.8, AS-050) was visited, if the findings of the October 2020 survey of this southern section, report 5736639, were considered and if continuity is anticipated. Further disruption of the Low Fen Drove CWS to build a connection to

the gas grid should be avoided by reuse of the proposed gap connecting the footpaths on site to the new footpath leading to Low Fen Drove or some other means.

10.2.5 Without detracting from the general concerns raised by Natural England, see, for example item 7 in Part 2 of Table 1 in their Relevant Representation (RR -15), SHH is concerned about the absence of specific measures for protection of or habitat enhancement for Hymenoptera classed as rare, vulnerable or endangered. The Applicant should include such measures in the CoCP Part B Section 3.3 (AW 4.4.2.2 AS-161) and the relevant sections of the CEMP (AW 5.4.2.7 AS-057).

10.3 **Health and Mental well-being**

The Applicant has adopted the template Toolkit and process published in 2011 by the National Mental Wellbeing Impact Assessment (MWIA) Collaborative (England). The MWIA submitted is the Screening Toolkit, partially completed on 30 January 2023 with revisions on 29 September 2023 (AW 5.4.12.3; AS-077 and AS-078).

The purpose of the screening assessment was to assist in deciding whether it is worth doing a more intensive MWIA. The Applicant has concluded it is not. However:

(i) The Applicant did have access to much more evidential material from comments on mental health and wellbeing impact in the *Relevant Representations* available after 20 July. These do not seem to have been considered when revising the MWIA.

(ii) The Applicant has not addressed the underlying issue that what the PD introduces is significant new risk to physical and mental health and wellbeing in the affected communities, including to those who currently visit for recreation or commute in for employment. The Applicant has given very little weight to the impact of this, to consideration of how to avoid it completely or where unavoidable how this might be mitigated. As The Applicant has stated that the *relocation to the PD is not operationally necessary*, then the weight given to the impact on the physical and mental health and wellbeing of the affected communities and existing users should arguably be even greater.

(iii) The Applicant presents an optimistic but limited view of possible benefits, focussed predominantly on improved bridleway/footpath access beside the PD, and the proposed Discovery Centre. No evidence is presented to support this aspirational view and it is very much at odds with views expressed in *the Relevant Representations*. *In contrast, the likely harms to existing positive aspects of the affected communities are underplayed including the concerns of local businesses as identified in SHH's Survey at Appendix A; SHH 05.*

(iv) In completing questions 3 and 4 the Applicant used the example Key Questions provided. Despite the complexity of the PD and the varied communities affected there has apparently been no attempt to look at further situation-specific relevant points which should be considered, as suggested in the Toolkit at Question 3.

(v) From the Environmental Statement Chapter 12: Health APP-044 2.3.3 the list of communities which were considered by the Applicant omits the affected communities of Teversham, North Cambridge ie Newmarket Road area in Abbey Ward (other than possibly parts of Barnwell in Fen Ditton parish) and Quy Water, and Marleigh. References to Horningsea, Stow-cum-Quy and Fen Ditton suggest that only limited aspects of these communities have been considered even though the PD will be sited most closely to Horningsea and Fen Ditton.

(vi) The MWIA is intended to be evidence-based, but the information referred to is very limited. Much of the content is apparently drawn from the Equalities Impact Assessment (APP-211; AW 7.12) which states that it is prepared from desk-based evidence and shows *misunderstandings eg stating that there is a dress shop in Horningsea.* Consideration of the potential effect on local businesses and not-for-profit organisations, and consequent mental health impact, is inadequate – see *SHH's Survey ressults at Appendix A; SHH 05.* The Community Questionnaire (APP-110; AW 5.4.11.1) covers limited issues regarding River Cam-related recreation, certain Businesses, Schools and a Care Home but not physical and mental health in the wider community – see below.

10.3.3 In our view, the Community Questionnaire (AW 5.4.11.1; APP-110) that was undertaken was very limited and presents misleading results:

(i) The selection of stakeholders approached for the Community Questionnaire was extremely limited. Recreational Receptors are based only on river access. Of the 25 businesses and not-for-profit organisations contacted by SHH in Quy, Horningsea and Fen Ditton only three appear in the Applicant's Business stakeholder list. The list of Community Receptors approached appears biased towards Waterbeach educational groups.

(ii) The Applicant had not approached Recreational groups using Horningsea and Fen Ditton Village Halls or Recreation Grounds, (including Toddler Groups; cricket clubs) or churches in the three villages. The impact on the income of village halls and recreation grounds had not been considered or the mental wellbeing of members. Activities at these venues, such as art classes, dancing and exercise classes are known to alleviate stress but could be impacted by the PD.

(iii) There is no indication of response rates in each category. There is no information on the response to the follow up questions referred to at section 4.1.1.7 of Community Questionnaire.

(iv) User count surveys of key recreational routes within the study area were conducted in July and August 2022 (Community 5.2.11; APP-043). This discounts the use of such routes in other seasons, including cycling, walking horse-riding and dog walking and the use of recreational facilities for winter activities such as Bonfire Night.

(v) No mitigation has been suggested for the impact of noise, odour, vibration, and lighting on mental and physical well-being. The sustained impact over the estimated four-year period of construction is likely to contribute to prolonged stress. There is no indication that this will be monitored or measures to mitigate introduced.

(vi) In order to address some of these weaknesses, SHH conducted its own community research, in particular, a survey of twenty- five of the businesses and not-for-profit organisations (NFPs) in the area around the PD. The survey, methodology and results are described in Appendix A to this WR; SHH 05.

(vii) The enterprises were contacted by e-mail during one week at the end of September 2023 and invited to complete an anonymous electronic survey using Survey Monkey™. Seventeen responses were received, a 68% response rate.

10.3.4 Further comments on the Applicant's MWIA.

In relation to Question 3 Table A.2: Population characteristics and likely impact

(i) Age

> While certain age groups are identified as being vulnerable, those of working age may also experience significant stress and are vulnerable to mental health issues. This can also then impact on those in the vulnerable age groups who are dependent on them so should not be excluded from the study.

The Applicant has not identified the extent of the anxiety recorded in the Relevant Representations of children, and of the community as a whole but particularly parents regarding potential impact on the children's health and learning during both the construction and operational phases and anxiety over their travel through the PD area. Examples: RR-095, RR-115, R116, RR-117, RR-128, RR-144, RR-164, RR-195, RR-197, RR-249, RR-252

Working age and later life residents, regardless of gender, race and ethnicity and socio-economic position, in their *Relevant Representations* have in many cases said they felt ignored and expressed considerable frustration both with the proposal and the process of consultation. The attrition of the process which started in the summer of 2020 and the prospect of potentially years of living among construction works which will change the nature of the locality for ever is leading to significant stress in the affected communities and impacting mental health and wellbeing.

Relevant Representations indicate that the stress generated has not been restricted to a small group of later-life residents as suggested by the Applicant. Examples: RR-007, RR-061, RR-070, RR-109, RR-121, RR-142, RR-154, RR-169, RR-297, RR-296, RR-300

(ii) Physical health

As open countryside close to residents of North Cambridge, Stow-cum-Quy, Lode, Fen Ditton and Horningsea the area of the PD is much used for physical health by local residents and visitors, often without needing to drive. Examples: RR-069, RR-131, RR-164, RR-233

The Harcamlow Way long distance footpath *PRoW 130/8,* existing network of riverside walks, public and permissive footpaths and bridleways, Quy Fen and Anglesey Abbey draw visitors on foot, bicycle and horse, others arrive by boat. *Relevant Representations* by users show positive decisions to visit this area for peaceful countryside recreation and that it is seen as an important resource for mental wellbeing and reduction of stress. Examples: RR-102, RR-051, RR-141, RR-177, RR-182, RR-212, RR-221, RR-237, RR-239, RR-287

Despite the Applicant's optimism, submitted Relevant Representations show that the proposed additional access around the PD and Low Fen Drove is not expected to be attractive, due principally to concerns about odour and the visual impact of a very large industrial plant several parts of which will not be hidden by the bund. Examples: RR-127, RR-134, RR-137, RR-140, RR-191, RR-205

The riverside path connecting the communities of Fen Ditton and Horningsea in the Baits Bite Conservation Area *PRoW 85/6, 85/7* will be affected by a significant concrete structure at the outfall reducing the visual attractiveness, affecting the quality of the path since footfall will be concentrated into a narrow width passing the outfall, and reducing opportunities to experience wildlife and a natural riverbank.

Overall, the Relevant Representations suggest that there may be a reduction in use of the landscaped area immediately around the PD for physical exercise and mental wellbeing in both the construction and operational phases, particularly on foot. Depending on the experience of odour and visual impact this may extend to the area north of Horningsea, including the Harcamlow Way across to Quy Fen SSSI. Examples: RR-107, RR-069, RR-112

This would displace some existing and potential users and in *Relevant Representations* it is noted that Milton Country Park is already at capacity. Examples: RR-106, RR-080, RR-124.

It is possible that the PD may reduce attractive local opportunities for physical recreation and users may drive to venues further afield for exercise. For those least

able to travel, this would reduce choice and access, with consequent impact on physical and mental health. Example: RR-108

(iii) Settings

Schools - The Applicant is optimistic that schools will visit the Discovery Centre but as only one school agreed to be consulted there is not enough evidence to support this. The Relevant Representations noted above and Save Honey Hill's survey suggest that a local school and parents are in fact concerned about the impact of various aspects including dust, air pollution and noise on the children's learning and health during construction and in the operational phase. Mitigation is not adequate here, this is new risk introduced by the PD from which children must be completely protected. The Applicant has not satisfactorily explained how harm to the health and education of children arising from the PD will be avoided. It is also not clear how children with autism could be protected. Given the concerns of parents and the local school, and the opportunities presented by on-line technology, the extent of the benefit added by the proposed Discovery Centre is very questionable.

Question 4 Table A.3: Wider determinants at socio-economic and environmental level

(i) Workplace - The Applicant identifies that the PD is unlikely to contribute to security of employment. The Applicant notes that certain businesses (presumably the food outlets) may benefit temporarily during construction. There are numerous businesses and not for profit enterprises operating near to the PD site in Fen Ditton, Horningsea and Stow-cum-Quy. Only 5 of these were consulted by the Applicant and the Community Questionnaire [APP-110; AW 5.4.11.1] shows no questions were asked about the impact on employees. Relevant Representations make the same point – RR-109, RR- 128,

(ii) The community and local business owners and employees are worried about the impact on local enterprises. Examples: RR-303, RR-057, RR-180. The results of Save Honey Hill's survey [Appendix A to this WR, SHH 05] indicate that employees and business models are expected to be affected by the construction and operational phases of the PD, with implications for economic security and for physical and mental health of business owners and their employees. Damage to these enterprises will extend further into the economies of the communities in which they are based.

(iii) The PD could particularly affect the economy of Horningsea where a disproportionate number of the principal local enterprises are in the hospitality sector and expect to be adversely affected by the PD. The workforce in each case includes local residents.

(iv) The site of the Darwin Farm Shop and Nurseries run by CPFT NHS Trust where adults with learning difficulties and mental health challenges work in the nursery

and associated projects, extends from Newmarket Road (Quy Water) towards High Ditch Road and those working there are likely to be affected by the noise, dust, vibration, odour and traffic which could cause particular mental health issues. It is not clear whether this vulnerable enterprise was considered.

(v) The enterprises responding to Save Honey Hill's survey perceive the PD as having an adverse physical and mental health impact on their enterprise and on their employees. *Stress* is the condition most expected to affect employees, which in turn will be damaging to physical health.

Question 4 Table A.4: Protective factor - enhancing control.

(i) The Applicant focusses on aspirations for the proposed Discovery Centre and expects that the PD will not significantly affect sense of control, self-determination and independence. This is at odds with the *Relevant Representations* of a wide range of individuals many of whom record significant frustration, due to the perception of their expressed views being ignored by the Applicant during the consultations, and anger at the harm which will be caused. Some describe the mental health impact on themselves, or the local community, of the stress caused by the PD. Others express a sense of powerlessness in the face of a powerful organisation and show negatively affected perceptions of local democracy. Examples: RR-061, RR-065, RR-070, RR-109, RR-142, RR-178, RR-206, RR-207, RR-244, RR-259, RR-261.

(ii) The duration of the mental health and wellbeing impacts will vary. Even if the process stopped now the affected communities will not recover overnight from the harm demonstrated in the Relevant Representations. Some mental health and wellbeing impacts are likely to continue during construction, others for many years during the lifetime of the proposed relocated WWTP, others will be permanent due to the loss of open country and changed nature of the PD area to industrialised. The impact on businesses and their owners and employees is likely to be long-lasting.

Question 4 Table A.5 Protective factor - increasing resilience and community assets

(i) The Applicant again focusses on the proposed Discovery Centre and the proposed additional access immediately around the PD. As above, the Relevant Representations cast doubt on the benefits of these in practice. The Applicant appears to have missed the point that facilities and community assets already present will be harmed by the PD and mitigation is not capable of replacing what would be lost. Examples: RR-182, RR-191, RR-197, RR-198.

Question 4 Table A.6 Protective factor - facilitating participation and promoting inclusion.

(i) In addition to the comments made above, the Applicant failed to note the frustration experienced by those participating in the consultations both in respect

of the difficulty of responding and perceiving that their comments were ignored. *Relevant Representations* as above include concerns that the affected communities, especially Horningsea, which is currently very cohesive, will be permanently damaged. It could also be noted that these communities have come together to try to get their message across to the Applicant, the wider public and ultimately to the Examining Authority through inclusive activities including recording two community protest songs.

10.3.5 Conclusion

The MWIA was apparently given only cursory attention when prepared in January 2023. The updates in September 2023 (AS-???) do not incorporate any additional research or use of additional available evidence from the Relevant Representations; key areas of enquiry relating to impact on local businesses and employees have been overlooked. It appears that the Applicant gave negligible weight to the Mental and Physical Wellbeing Impact of the PD and the Applicant's conclusion that further appraisal was not required owes more to convenience and inadequate research rather than a proper analysis of the evidence.

10.4 Historic Environment

10.4.1 Introduction

As noted in SHH RR-035, the findings of the Historic Environment assessment are not always consistently set out. This remains apparent within and across amended documentation. As a result, the Applicant's findings particularly in relation to construction temporary effect and construction permanent residual effect lack clarity.

During preparation of the Written Representation (WR), we have reviewed the material submitted in RR-035 and additional submissions by the Applicant. The text below updates the assessment made in RR-035 at pages 32 and 33.

10.4.2 Significant Effect

At 4.2.17 (AW 5.2.13; AS-030) potential temporary effects during construction are reported as moderate adverse significant for Biggin Abbey, Poplar Hall and Bait's Bite Lock CA and at 4.2.18 slight adverse on Fen Ditton, Horningsea and Waterbeach CA.

Temporary effects, after applying the code of Construction Practice, are noted as "reduced to slight adverse" for Bait's Bite Lock CA, but are still moderate adverse significant on the two listed buildings (AW 5.2.13; AS-030 at 4.2.19). SHH takes the view that Baits Bite Lock CA should remain recorded as moderate adverse significant: the hoarding proposed for Baits Bite Lock CA and the presence of construction machinery travelling through and across arable and open land in the vicinity of the riverside will not reduce the magnitude of impact on character and setting. The CA will also remain impacted by the construction activity associated with the WWTP on its eastern boundary

at Biggin Abbey and throughout the PROW's that track the boundary edge of the Baits Bite CA.

It is noted potential temporary slight adverse effects are identified in the HE Assessment Tables (AW 5.4.13.4; AS-085) on Wildfowl Cottage (HE042) but not reported in the HE document. This building is set within the Baits Bite Conservation Area riverside and accessed via Horningsea Road and Biggin Abbey. It is SHH view that this assessment outcome should be included in the HE report and remain recorded as a temporary slight adverse effect after mitigation measures.

Potential permanent construction effects are identified at 4.2.50 and 4.2.51 as moderate adverse significant on Biggin Abbey (HE011) and HLCA22 (AW 5.2.13; AS-030). These effects are identified as remaining after mitigation measures and also recorded as permanent moderate adverse significant residual effects at 4.2.56. It is SHH view that while agreeing the PD will cause less than substantial harm to these historical assets it will be at the higher end of less than substantial.

The significant assessment outcome of effect on HCLA22 could not be found among the HE assessment findings in the Planning Statement at 6.19 (AW 7.5; AS-166) and as a significant effect consider it should be recorded there.

The HE Assessment Tables identify a permanent construction effect on Baits Bite Conservation Area as of moderate adverse magnitude and permanent moderate adverse significant effect AW 5.4.13.4; AS-085). However, the effect in the HE at 4.2.49 and 4.2.56 is recorded as slight adverse (AW 5.2.13; AS-030). It is SHH view that permanent moderate adverse significant effect' is appropriate for the CA, that this is reflected in the description of impact at 4.2.43-4.2.44 (AW 5.2.13; AS-030) and should be recorded here as moderate adverse. Further, similarly to Biggin Abbey and Historic Landscape Character HLCA22 at 4.2.50 and 4.2.5 (AW 5.2.13; AS-030), the residual effect after mitigation should remain a permanent moderate adverse significant effect. This should also be recorded amongst other HE assessment outcomes at 6.19 in the Planning Statement (AW 7.5; AS-166)

It is of note SCDC (RR-004) have indicated that particularly in the case of Biggin Abbey and Baits Bite Lock that 'the adverse effects from the proposed landscape mitigation to be greater than expressed in the applicant's assessment.'

10.4.2.1 Approach (See SHH 10 Figure 1: PD, Green Belt, CAs and Listed Buildings – Fen Ditton and Horningsea)

As expressed in SHH RR-035, it is SHH view that there has been insufficient consideration of the recommendations of Historic England[55] to consider the impact the PD would have on the HE in relation to the approach to Conservation Areas and listed buildings.

High Ditch Road and Horningsea Road are important historical approaches to the villages of Fen Ditton and Horningsea, associated Conservation Areas and circa 50 listed buildings within them. The historic villages are noted as a 'strongly rural character, despite the presence of the A14'[56]. The WWTP landscape and planting will be viewed when travelling along both approaches. Appendix 10 Fig. 1 illustrates High Ditch Road aligned south of the PD towards Fen Ditton and Horningsea Road aligned to the west of the PD to Horningsea.

The approach roads are noted as making a significant contribution to the rural setting, historical landscape and agricultural heritage of the area. The HE baseline assessment at 7.2.2 (5.4.13.1; AS-079) identifies the agricultural landscape as a dominant feature and the Inner Green Belt Study (2015)[57] specifies the GB sector encompassing High Ditch Road and approach to Fen Ditton as playing 'an important role in preserving the small scale of Fen Ditton and providing its rural setting, particularly north and east. The character, form and distinctive feel of Fen Ditton are particularly important to maintain, as it is one of the closest necklace villages to Cambridge'.

High Ditch Road is an important aspect of the origins and history of Fen Ditton, it contains remnants of Fleam Dyke (HE101), which also provided the village name, Fen 'Dittone, 'meaning village by the ditch. The HE notes Horningsea Road as an historic route and the wider agricultural landscape encompassing the PD as contributing to the historic context of Biggin Abbey II*as a rural retreat (AW 5.2.13; AS-030 at 4.2.46).

The HE at 4.2.56 identifies a permanent moderate adverse significant effect on Historic Landscape Character Area HLCA22 which the PD would occupy (AW 5.2.13; AS-030). The HE at 4.2.48 states that the character of HLCA22 'will be permanently altered by the construction of the proposed WWTP and associated landscaping. The open agricultural landscape will be urbanised by the presence of the proposed WWTP. The planned landscaping for the Proposed Development will soften the visual intrusion of these elements, but will also act to alter the local character of the area.'

The HE at 4.2.46 references the impact of changes to Horningsea Road in relation to Biggin Abbey but does not otherwise incorporate consideration of the effect that the WWTP and landscaping will have on the approach to both Conservation Areas (CAs) and

[55] Historic England Planning Inspectorate CWWTPR EIA Scoping Opinion
[56] LDA Design, Cambridge Inner Green Belt Boundary Study, 2015
[57] LDA Design, Cambridge Inner Green Belt Boundary Study, 2015

listed properties (AW 5.2.13; AS-030). Appendix 10 Fig.1 illustrates Fen Ditton's and Horningsea's listed buildings.

The permanent change in historical landscape character will be viewed and experienced from Horningsea Road travelling to and from Horningsea Conservation Area and listed buildings. Consequently, there will be an adverse impact on the character and setting of these historical assets arising from the extent of planting and truncating of previously open fenland views and, where views are more distant, of the landscape changes and tall industrial buildings in between and above the hedge and tree cluster planting.

There will be more distant views experienced on approach to Fen Ditton Conservation Area and listed buildings at various points along High Ditch Rd but, as specified in the Landscape Character Area (LCA) assessment the industrial buildings will be mostly visible to the south(AW 5.2.15; AS-035 Table 4.5) introducing a distinct industrial intrusion into an open rural setting . The permanent change in historical landscape character and, in particular the visual introduction of industrial plant on approach to these historical assets will consequently have an adverse impact on their character and setting.

The PD will introduce lighting and moving vehicles into the landscape during the Operation Phase. Both the lighting and movement have the potential to alter the rural setting of the approach to the Conservation Areas and listed buildings.

In consideration of impact on approach above it is SHH view that the assessment in addition to the permanent moderate adverse construction residual effects recorded for Biggin Abbey II* (HE011) in the HE (AW 5.2.13; AS-030) that permanent construction slight adverse effects identified in the HE Assessment Table (AW 5.4.13.4; AS-085) for Poplar Hall II (HE040) should be recorded in the HE and maintained as 'permanent slight adverse residual effect'. Further, that Wildfowl Cottage II (HE042) should have 'permanent slight adverse residual effect' recorded. In addition, on the basis of the HE assessment method that all three properties should have permanent slight adverse operational effects recorded.

The HE (AW 5.2.13; AS-030) records permanent slight adverse residual construction effects at 4.2.56 and permanent slight residual operational effect for Horningsea CA and Fen Ditton CA at 4.3.10. Fen Ditton CA is recorded in the HE as having temporary construction slight adverse effects only. The HE Assessment Table (AW 5.4.13.4; AS-085) does however identify a permanent slight adverse construction effect on Fen Ditton CA. It is SHH view that an impact magnitude of minor and permanent slight adverse residual construction and operational effect should be recorded in the HE for both CA's.

SHH recognises that a rating of permanent slight adverse residual effect is not in the context of the significance matrix used by the Applicant as being a significant effect. SHH does however consider there is a cumulative adverse effect of significance arising from the individual impact on three closely aligned and historically related conservation areas and circa 50 listed buildings within them all of which will be impacted by the PD when

viewed travelling along important historical routes towards the villages and identified as contributing to their rural setting.

10.5 Landscape and Visual Amenity: Impact of Proposed Lighting

10.5.1 **Operational Lighting**

SHH has reviewed the Lighting Assessment Report, (AS-100 /AW 5.4.15.3 ES Chapter 15 Appendix 15.3) and the Lighting Design Strategy (APP-072 /AW 5.4.2.5 ES Volume 4 Chapter 2 Appendix 2.5). In particular, SHH is concerned about the following aspects of that strategy and the impact assessment:

(a) Light pollution is known to have a health impact, with adverse effects on the circadian system, impacting melatonin and serotonin levels, resulting in poor sleep and impaired day-time alertness. Light modulation, as in LED sources at a frequency of 100hertz, can result in headaches, migraine and malaise[58].

(b) Page 17 of the Lighting Assessment Report (AW 5.4.15.3; AS-100), states that the report is a desk-based study and there is a lack of detail about the number of lights and their spacing. The Applicant states that the ELIA is a qualitative assessment, with information incomplete: Lighting Assessment Report, (AW 5.4.15.3; AS-100), Section 3.7.2, *'… with no detail of locations, lamp types, mounting heights, orientations, mounting angles, photometry etc. available.'* As such, this seriously diminishes the credibility of the published assessment.

(c) The majority of the area surrounding the proposed development (PD) has been zoned as E2 by the Applicant (SQM 15 TO 20). We believe that parts of the area should be rated E1, i.e., natural with dark lighting environment, which relates to uninhabited rural areas, in particular for Quy Fen.

(d) More detail is needed on minimising light spread; light spill upwards or outside the bund does not appear to be contained, with bund height limited to 5 m. SHH believes that the Applicant should provide more clarity on the light spill. ISOLux maps would be useful to illustrate light spread.

(e) The Applicant claims that the proposed lighting would be at a lower level than the current site, but this is questioned as height of buildings (20m plus) means reflected light from structures will be more apparent from a distance.

(f) There are a significant number of lights on structures that are higher than the 5m bund. There would be task lighting on the proposed WWTP (including on tops of structures) that will be used when required, plus flashing red navigation warning lights on taller structures. We estimate at least 20 structures would be lit above the 5m bund.

[58] Annual Report of the Chief Medical Officer 2017 - Health Impacts of All Pollution – what do we know? (publishing.service.gov.uk)

(g) The list of structures given in the Lighting Design Strategy (APP-072/AW 5.4.2.5) and Lighting Assessment Report (AS-100 / AW 5.4.15.3), differs from the list of structures given in the Draft Development Consent Order, (APP-009, AW 2.1, Revision no 3 , 29/09/23), Schedule 14, Parameters pp95-106. SHH would like to see a comprehensive list or model of the structures with a more detailed description of the lighting proposed for each structure.

(h) Lighting Design Strategy (AW 5.4.2.5; APP-072), p32 does not clearly describe lighting inside the Gateway Building (including offices) and fails to describe the lighting in the proposed Workshop Building, a significant building 70m x 30m & height 10m above FGL with clerestory windows.

(i) There would be a transformation in the appearance of the junction on Horningsea Road. Currently this area is unlit except for the immediate vicinity of the signalised junctions. Project Description (APP-034/ AW 5.2.2 ES Volume 2, Chapter 2) 'Highway lighting'**,** Section 2.9.8, p62, '*It is anticipated that lighting will be required around the permanent access road junction and the new pedestrian crossing point on Horningsea Road. ….. it is considered that as a worst case, lighting on Horningsea Road is required from Low Fen Drove Way to approximately 100m south of the southern A14 on-slip signalised junction*'. This is a substantial extension of high-level highway lighting from the junction northwards towards Horningsea which appears unnecessary.

(j) In addition to the significant increase in light around the junction, the nearby visitor car park, external to the bund, would be lit from 0800 -18:00 and thereafter PIR lights would be activated, so there would be the disturbance of light in winter and on/off lighting. Manual override lighting switches are frequently used, which rely on staff remembering to turn the light off when finished. These could be left on all night.

(k) Lighting Design Strategy (APP-072/AW 5.4.2.5), p16 states that : ' *Task lighting would only be provided for those working areas where overnight reactive maintenance…or emergency repairs are required*.' It would be helpful to include some estimate of the likely frequency of reactive and emergency work.

(l) About 33.3% of HGV movements are will be at night, we understand, introducing the light pollution of moving headlights & PIR activated lights at the entrance. Traffic & Transport (AS-038 /AW 5.2.19 ES Chapter 19), p. 33**,** predicts about 238 HGV movements per day, therefore we assume that at least 78 occur during the night. This would have a more damaging impact during the winter months when the area is darker for much longer.

(m) Night-time working, even with lighting at levels closer to the ground, has adverse impact on wildlife, including increased predation of moths, beetles and mosquitoes, disruption in navigation of bats, frogs and hedgehogs, breeding success of glow worms and disruption in circadian rhythm of nocturnal mammals such as foxes and badgers. ('*Light pollution is a driver of insect declines'; Owens, ACS et al in Biological Conservation Jan. 2020*)

(n) Cambridgeshire County Council expressed concern about the impact of lighting in their Relevant Representation (RR-001), Section 4.3, p.3.
'(c) *Low Fen Drove Way Grasslands and Hedges CWS ... Residual adverse impact from lighting scheme has not been addressed …. Impacts of lighting during construction unknown….*
(g)Bats – insufficient evidence to demonstrate impact of scheme on foraging / commuting bats…..
Lighting Design Strategy [APP-072] does not completely remove adverse impact of lighting scheme from bats and Low Fen Drove Way Grassland & Hedges CWS. The level of lighting spill associated with the operational phase is also unclear..'

(o) In Section 9 of RR-001, it is stated:
9.1 The Proposed Development will have a significant adverse impact on the landscape both visually (from both the new structures and lighting proposed), but also as a result of the traffic generated by the Development during operation along its new access road'. SHH agrees with that analysis.

(p) In 2021, planning permission was granted by SCDC for a barn conversion from agricultural to residential. The barn is situated on Low Fen Drove, at Snout Corner, about 50 metres from the PD site boundary. The ecological impact report commented on the suitability of the site for bat population[59].

(q) In RR-083, a professional ecologist was highly critical of the Applicant's Bat Technical, (APP-092/ AW 5.4.8.7 ES Volume 4 Chapter 8 Appendix 8.7). RR-083 expressed: '*serious concerns about the robustness of the dataset collected and the ability for meaningful conclusions to be drawn by an informed person*'. RR-083 also identified the likelihood of a near undocumented roost for Western barbastelle which is an Annex 2 species under the European Habitats Directive.

(r) Lighting of the PD falls between 2 confirmed bat roosts at LR2 and LR10, but in view of the shortcomings of the Applicant's Bat Technical, (APP-092 AW 5.4.8.7), there are likely to be more bat roosts and foraging routes in the vicinity as the PD falls between Cam River corridor, Quy Fen and Anglesey Abbey.

10.5.2 Construction lighting

(a) SHH believes that the Applicant in assessing construction effects, has generally under- represented the impact of construction lighting on residents and wildlife, as for example in Table 6-1, p78 of the Lighting Assessment Report (AW 5.4.15.3; AS-100

(b) In Section 5.3 p56 of the Lighting Assessment Report, there is a baseline description of the receptors; of the 22 receptors described, 17 are '*assumed to be dark*',

[59] 22/00343/PRIOR | Change of Use of Agricultural Buildings to 1 No. Dwellinghouse (Class C3), and for building operations reasonably necessary for the conversion. | Barn At Low Fen Drove Way Horningsea Cambridgeshire (greatercambridgeplanning.org)

therefore light intrusion would have a major impact.
Nine of the 22 receptors have been classified as suffering adverse effects but these are only classified as having 'short term' duration. SHH disputes the classification of 'short term' e.g., at receptor LR22 Waterbeach Compound 100x100m there would be extensive lighting at 8m high for 12 months.

(c) The main compound would be 300mx300m – with LED flood lights maintained illuminance 50, supplemented by LED tower lights for 42 months
Outfall structure (Receptor L13) This would have a significant impact on River Cam – path users, river users and wildlife. 4 months to complete during which a lit 40m x 25m compound would be set up. The Lighting Assessment Report (AS-100 / AW 5.4.15.3), Table 6.1 gives predicted construction effects as major adverse but short term.

(d) The Lighting Design Strategy (APP-072/AW 5.4.2.5) also reveals the large areas to be lit for significant time periods, some lit for 24 hours. Lighting will be required during working hours on construction compounds and task lighting will be required along the pipeline routes and at the treated effluent discharge outfall for:

- up to 12 months at the construction compound near the outfall;
- up to 14 months at the construction compound for Waterbeach pipeline, with 24-hour lighting on horizontal directional drilling sites when work is in progress;
- intermittently at Shaft 4 with up to three months during shaft construction, then up to five days for each event to recover the tunnelling equipment.
- up to 24 months at the compound at Shaft 5;
- up to 39 months at the land required for the construction of the proposed WWTP and completion of the landscaping proposals; and
- navigational warning lights will be within the river for up to four months for the construction of the outfall.

(e) The Code of Construction Practice: Part A General Requirements (APP-068 AW 5.4.2.1) ES Volume 4 Chapter 2 Appendix 2.1, Table 5.1, p24 describes the proposed construction hours which shows that in winter there would be mobilisation at 6am and shut down activities from 6pm. There are also 'special circumstances' for certain activities that prolong disturbance until 10pm on weekdays. Continuous working hours 24/7 are also planned for certain specific activities such as surface support during tunnelling.

(f) In Landscape and Visual Amenity (AS-034/ AW 5.2.15 ES Chapter 15), The Applicant states that the impact on the Eastern Fen Edge Chalklands LCA –would be **'***major , large adverse and significant'* and light pollution is a contributory factor;

and Table 4-1: Landscape character effects during construction – Proposed WWTP, associated tunnel and outfall arrangements' states : ''*There will be a reduction in tranquillity due to the activity generated by construction and vehicle movements. Lighting on the construction compounds and task lighting will introduce lit areas into a predominantly dark landscape…'*
The Landscape and Visual Amenity (AW 5.2.15; AS-034), looked at impact of the PD on 41 receptors. The night-time impact was included for receptors that contained residential properties.
In Table 4-2: Visual effects during construction – Proposed WWTP, associated tunnel and outfall, for a significant number of residential receptors: 5,7,10,11,13,17,19,20,21,22,24,27,28,29 and 31 the night time impact of the PD was rated as having an adverse impact (ranging from slight to moderate adverse).
Table 4-3: Landscape effects during construction – Waterbeach pipeline found adverse night time impact to receptors 11,19,21,22,24,28,29,33,34,36,37, and 38
Table 4-6: Visual effects during operation – Proposed WWTP, associated transfer tunnel and outfall arrangement, found adverse night time impact to a number of receptors 7,10,11,13,14,17,19,24,27,28,29,and 31

(g) SHH also notes the lorry light impact at Land parcels 48a, 49b, 56b and 58b (AS-151/AW 4.4 Land Plans - Sheet 8) during winter on local residences during construction of Waterbeach pipelines. Lorry Light impact at Land parcels 21a (AS-151/AW 4.4 Land Plans - Sheet 3) by construction compounds for two transfer tunnels - light pollution from vehicles and drilling equipment and for residents at Land parcel 20d.

Conclusion

SHH is concerned that the operational i.e. permanent lighting assessment has been based on an insufficiently specified lighting design and therefore its findings are highly suspect, and it is likely to have under-reported the potential lighting impacts in an area of unlit countryside. The assessment of construction lighting is more detailed, but generally under-estimates the duration and intensity of the localised effects of construction lighting as it will be experienced by nearby residents. In both cases, the Applicant should be asked to provide a revised more credible assessment.

10.6 Odour

The ExA Q1 questions regarding odour are noted and therefore not repeated here. The SHH review of the application has been undertaken by members of the community with no technical background in odour. The review has considered the following documents….

list them. Our review has raised the concerns set out in this section.

10.6.1 Legislation requirements
The legislation requirements for the PD are understood to be broadly the same as for the existing works. What measures will be in place to protect sensitive receptors surrounding the PD from the same historical odour impacts experienced at the existing works, if the PD is found not to achieve its forecast performance?

10.6.2 Consistent reference is made within the Applicant's documents to the standards which utilise the 98th percentile approach. This allows seven days per year when exceedances can take place which are as yet undefined and could potentially impact receptors that hitherto experience no impact from WWTW odour, while the applicant would be in a position of substantial betterment.

10.6.3 Potential exists for confusion between definitions used and references to the Environment Agency (EA), Institute of a Quality Management (IHQM) and the Industrial Emissions Directive (IED), for which clarity is required.

(i) H4 guidance shown at paragraph 2.2.6 of Odour Impact Assessment (OIA) (AW5.4.18; AS-104) provides benchmark odour targets at the site boundary or nearest receptors. Elsewhere in the Applicant's documentation references made to the IAQM and the use of 'moderately offensive' designation for the proposed site. In the EA H4 classification under 2.2.6 this could be interpreted to result in a 30Ue/m3 at the nearest receptors which is clearly unacceptable and does not reflect the Applicant models provided.

(ii) OIA paragraph 2.2.17 confirms that the boundary is '(*taken as the landscape bund – referred to as the Rotunda bund)'* in the context of the IED Environmental Permit. Confirmation is required that this definition of the boundary e.g., the Rotunda bund, is consistent throughout and also applicable to all EA H4 references to 'the boundary', including paragraph 2.2.8.

(iii) Paragraph 2.2.17 continues to state *'However, the waste water treatment processes are not regulated under the same IED EP. For our odour modelling, all outputs for all waste water treatment and sludge treatment centre components will utilise combine to ensure 'negligible impact' to all known receptors.* Clarity is required to avoid any confusion.

10.6.4 With reference to Table 2.2, an extract from the EA H4 guidance, clarity is required as to the level the Applicant is committing to, which should be the No Odour classification, whereby:
'No odour beyond the boundary or likely to be = no pollution =no action needed'.
The 'odour' classifications states:

Odour *pollution is or is likely to be caused beyond boundary.*
Your duty *is to use appropriate measures to minimise odour.*
You are not in breach if you are using appropriate measures.
If appropriate measures are being used, *residual odour will have to be tolerated by the community. For some activities appropriate measures will achieve no smell beyond the boundary.*

The EA H4 **Odour** classification for a new plant is clearly unacceptable as this again could potentially impact receptors that hitherto experience no impacts from WWTW odour, while the applicant would be in a position of substantial betterment.

10.6.6 Detailed observations are provided on the Odour Management Plan in this WR in Section 13.3.

Impact on amenity.

10.6.7 The Applicant promotes the increased amenity arising from the proposed footboards within the Landscape Management Plan, yet classifies to Receptor sensitivity scoring within Table 3-8 as Low, which is defined as *'the enjoyment of amenity would not reasonably be expected'*. If the Applicant is invested in the local environs, receptor IDs 7. 15 & 20 would be classified as Medium, and a new classification would be introduced as Medium for the Horningsea-Fen Ditton Greenway currently under construction.

Odour survey/modelling.

10.6.8 OIA Table 4.5 shows very substantial discrepancies between the various survey results (H + M, Odournet and Silsoe) and in turn between the survey results in the Odour modelling inputs (ARUP and CWWTPR). As these values are so widely different and are being used to underpin the Applicant's odour models, there is little confidence that the assessments are correct.

10.6.9 In Table 1-11, Odour on p21 of AP-166, AW 6.1.2 Applicant's Regard to Section 47 Consultation Responses, consultees asked for the modelling data to be independently verified, in response
'The Applicant considers that an independent verification is not required, it has been done in accordance with the IAQM guidance, the assessment has been through the Applicant's consultants and the Applicant's own internal quality review process.'

Considering the extensive variations in Table 4.5 of the odour impact assessment, is the Applicant prepared to fully underwrite the modelling and guaranteed the output and corresponding PD performance?

10.6.10 The Odournet 2018 model report[60] for Cambridge City Council found 2013 was the worst year in 2012 -2016. The EIA study uses 2016 - 2020 and concludes 2016 was the worst year. Can the Applicant test or comment on how much worse the predictions were for 2013 than 2016?

10.6.11 Table 4 of the same report shows that a raw sludge gravity belt outlet stack was a major source of odour. The Applicant should confirm if this process step will take place in the PD and if it is included somewhere in the EIA in one of the items listed in Table 3.6, 3.11, 4.5 and 4.6.

10.6.12 The Odour Impact Assessment (AW 5.4.18.2; AS-104) describes how baseline data was collected from the existing Cambridge WWTP. SHH requests the Applicant to clarify how

[60] Odournet (2018). Odour impact assessment for Cambridge Water Recycling Centre. Report number: CACC17A_08_final

or if this data was scaled up in the assessment of the PD to take account of the design capacities compared to the existing through-put when the baseline data was collected.

10.6.13 Further to ExA's Question 19.11 to the Environment Agency about climate change, SHH notes that the Applicant states in para 1.4.3 of the Odour Impact Assessment (AW 5.4.18.2; AS-104) that the PD is designed to take account of climate change. Recent annual maximum temperatures recorded in Cambridge have exceeded the long-term average maximum and, in 2019, the UK national record. Given the Applicant reports substantial variation between emissions in summer and winter, and predictions of average seasonal temperature rises are reported in the assessment of climate resist resilience (5.2.9; APP – 041), the Applicant should be asked to assess the impact on odour from hot dry spells and how these might change and be managed in future.

Odour reduction.

10.6.14 The Applicant has stated within its documentation that it is proposing to build a modern plant. While the proposed plant will be new, the general system and layout is largely conventional. As set out in this WR in Section 4.4 to 4.6, opportunities exist for the use of modern technology to increase efficiency, reduce footprint and odour. Table 4.6 of the Odour Impact Assessment [AS-104] shows this to particularly be the case for the Primary Settlement Tanks as being the next main odour source apart from those for which Odour Control Units (OCUs) are planned.

In the absence of modern technology being employed, the Primary Settlement Tanks should be covered within the proposed design. This is employed at a number of sites referenced in this WR and as can be seen from Table 4.6 would have a considerable impact on the PD and the local community.

Using the totals from Table 4.6 of AS 104 this breaks down as follows:

Structure Process Area (Table 4-6 Item No)	Total OUe/s
Volume treated by OCU and gas to grid (30-34 inclusive)	24,015
Primary Settlement Tanks (9)	**10,391**
All remaining sources (all items less 9 & 30-34)	5,731
Total for the CWWTPR Site	**40,137**

Table 4 – Breakdown and Comparison of Odour Output totals

10.6.15

10.6.16 Para 5.5.3 refers to Cambridge City Council as an example of an authority to be notified in the event of problems due to abnormal conditions. SHH notes that if the PD is approved, the main site would be in South Cambridgeshire.

Conclusion

SHH continues to have concerns that the Odour Assessment for the new works has not been as rigorous as it should have been and that opportunities have been missed to design a minimum odour plant.

10.7 Transport

SHH made representations at section 10.7 of RR-035. The Applicant has since updated the Transport Assessment. The need for peak hour restrictions on operational HGVs coming into and out of the works, to avoid congestion from right turning vehicles turning onto the A14 on slip at J34 is confirmed.

10.8 Water Resources

Introduction

10.8.1 SHH, in the RR (RR-035), has raised a variety of concerns about the PD and its potential impacts on Water Resources. These included that the planned capacity of the works is too small; the discharge standards are being set too low, with consequent adverse effects on water quality in the River Cam; groundwater impacts and the need for replacement habitats in relation to the new outfall. These concerns go to the heart of the DCO and to

the nature and extent of the PD being applied for. The Applicant has yet to respond to these.

10.8.2 The Applicant, as noted in the Consents and Other Permits Register (AS-123, AW 7.1) has made parallel applications for an Environmental Permit for the Operational Works under the Industrial Emissions Directive and for a Water Discharge Final Effluent Permit for the new works. Other water related consents will need to be granted by the EA and other bodies, but these are generally of lesser importance and, as such, may not need to be granted before the determination of the DCO.

10.8.3 The Environment Agency, as the principal regulator involved has set out, in RR-013, the extent to which it is not satisfied with the technical submissions made and the design or mitigation solutions being offered by the Applicant. Where these involve fundamental aspects of the PD, the ExA must be satisfied that there are solutions which are agreed by the Environment Agency and other relevant regulators and which have been properly incorporated into the DCO in terms of design and means of delivery, before recommending any approval. SHH believes that the following, drawn from those identified by the EA, are crucial:

i) Flood Risk Assessment

ii) Groundwater Protection and Contamination

iii) Water Resources

iv) Water Discharge Final Effluent Permit and the Interim Revised Permit

v) Environmental Permit for the Operational Works under the IE Directive

vi) Water Framework Directive Compliance Assessment and Biodiversity

vii) Habitats Regulations Assessment

10.8.4 The EA and the Applicant were questioned about these matters at ISH1 and indicated that work was ongoing to address these concerns. The EA and Applicant were asked to be transparent and release information and documents relating to the Discharge Permits. On 1 November, the ExA accepted an additional submission of Appendices to the Milton WRC Discharge Consent: Water Quality and Ecological Assessment (AS-170, AW 5.4.20.11).

Flood Risk Assessment

10.8.5 The Applicant's Flood Risk Assessment (APP-151, AW 5.4.20.1) reports increases in predicted flood levels downstream of the new works outfall under small magnitude flood events, without identifying the location of any increased flood risk or any appropriate mitigation for this. The EA, at the time of the RR, had yet to review the adequacy of the hydraulic modelling undertaken and also noted that an updated River Cam model, which

is likely to change levels of flood risk, is shortly to become available. The EA has recommended various actions to the Applicant to address the deficiencies in the FRA submission.

10.8.6 It is essential that this is resolved at a sufficiently early stage in the Examination to meet the requirements of para 164 of the NPPF and to allow the Applicant to make provision for mitigation within the DCO. It is highly relevant that in relation to modelled flood risk, the EA takes a very firm position that development should cause 'no detriment' by virtue of increased flood levels, however small. Most commonly, the mitigation has to be Flood Compensation Storage works. There does not appear to be suitable land within the draft DCO land limits for this purpose and amendments to the DCO may well be required.

10.8.7 As noted at ISH1, the Applicant is preparing a new Flood Risk Assessment. Until this can be reviewed, the concerns above remain.

Groundwater Protection and Contamination

10.8.8 The EA raised numerous technical questions about the submitted assessments in AW 5.4.14.1, 5.4.14.3 and 5.4.14.4 and was particularly concerned about the absence of certain contaminant testing and about the lack of groundwater testing in relation to the Waterbeach WWTP and pipeline route. New versions of these AS-089, AS-091 and AS-094 have now been submitted and are presumably being reviewed by the EA. If there are still gaps in the surveyed evidence base, it is difficult to see how these can be resolved within the timescale of the Examination.

10.8.9 SHH shares the EA's concerns about the adequacy of groundwater monitoring proposed, along the Waterbeach pipeline route and in relation to the SSSIs most at risk, Quy Waters and Wilbraham Fen, a matter which also concerns Natural England. Without appropriate analysis and mitigation proposals, the Appropriate Assessment cannot conclude that there are 'no likely significant impacts' on protected sites.

Water Resources

10.8.10 The need for additional large scale water transfers to enable the continuation of housing development in the Cambridge area is now a critical strategic planning issue. Certain aspects of the water supply issue do need to be considered as part of this DCO Examination. SHH is surprised by the EA's statement in RR-04, that 'the proposed new facility is replacing the existing works so no additional demand to the water supply will be made'. This may be narrowly true for the works' operation, but ignores an important issue directly relevant to the grant of the DCO. The Applicant has applied for an Interim Revised Discharge Permit for the existing works, at c 45,000 m^3 per day and a Final Discharge Permit for the new works at 55,000m^3 per day both for a nominal date of 2027. The Interim Permit application is for well above the existing permitted discharge of

37,330 m3/d, noting that the existing permit in terms of volume is being breached and has been for several years.

10.8.11 These increased flows will be all be water that is abstracted and fed into the public water supply from existing groundwater sources in the chalk in the Cam catchment, until supplies can be increased from any large-scale transfer into the Cambridge area as proposed in the CWC draft Water Resources Management Plan, which has yet to be approved by DEFRA. Neither the EA nor the Applicant have addressed the question of whether this additional abstraction will reduce the baseline flows in the Cam upstream of the works, which are used as the basis for the assessments of the impacts of the permits being applied for. Unless the Applicant can demonstrate otherwise, it must be assumed that the baseline flows used to assess the impacts of the permit applications must be reduced accordingly.

Water Discharge Final Effluent Permit and the Interim Revised Permit

10.8.12 These are, in SHH's view, the most important of the Other Consents to be sought by the Applicant and will dictate future water quality in the Cam downstream of both the old and new works. The DCO Examination should not be concluded until both of these permits have been determined, applying appropriately stringent standards for effluent discharge and based upon realistic estimates of future discharge flows. While these decisions are a matter for the EA under other legislation, the environmental impacts of discharges, including those on protected sites and areas, cannot be assessed until discharge parameters have been agreed and signed of by the EA. The EA in RR-013 has declined to comment on the technical aspects of the submissions made by the Applicant to avoid 'prejudicing the determination of the permit'.

10.8.13 The ExA at ISH1 agreed with SHH that these technical negotiations and documents should taking place in public and asked the EA and the Applicant to release the relevant documents and provide technical comment on progress. This has yet to occur. SHH are concerned that, without clear and known performance targets set through the permitting process, the interim phase with Waterbeach connected to the existing Cambridge WWTW, proposed for DCO approval, could underperform, and have adverse impacts.

10.8.14 The Applicant has published as part of the DCO application, the Discharge Permit Water Quality and Ecological Assessment (AW 5.4.20.11, APP -161) and two modelling reports (AW 5.4.20.5 and 5.4.20.6); the latter two have been updated as reports AS-113 and AS-114 respectively. Since 45,000 m^3/d is described as the current Dry Weather Flow, the proposal to transfer influent from Waterbeach suggests this value may be too small in the interim period and the model study described in the APP-161 and the Appendices to APP-161 [AS-170] may have been modelled at too low a value of discharge.

10.8.15 Further to Section 21 of the ExA's First Written Questions [PD-008], SHH suggests the assessment of the interim condition with Waterbeach connected to the existing Cambridge WWTW may be incomplete. As described under Water Resources para 4.2.26,

(AW 5.2.20 - Water Resources [AS- 040]) Waterbeach WWTW currently discharges effluent into the Bannold Drove Drain. The Drain is usually pumped into the River Cam at the Cam Pumping Station near Streatham, a site downstream of Wicken Fen and the Cam Washland SSSI. The proposed Waterbeach pipelines would transfer all this treated effluent and CSO flows under normal and storm conditions plus those from some of the development under construction at Waterbeach through to the existing outfall under the Interim condition. The existing outfall is described in Appendix G, page 4, para 2.1 of the recently submitted Appendices to APP-161 [AS-170] as "…mean flow of 52,574 M^3/d and a TP value of 0.653mg/l. This is based on measured 2017-2021 data at Cambridge WRC". The consequence of the influent transfer in the interim case must be to increase the total flow, phosphorus and other loads under most conditions in the River Cam between the existing outfall through the Cam Washlands, past Wicken Fen and downstream to the River Cam Pumping Station unless concentrations at the existing outfall are lowered in proportion.

10.8.16 There is some confusion about the discharge points from Waterbeach in the DCO documentation. Application Document AW 5.4.20.11 "…Discharge Consent: Water Quality and Ecological Assessment" addresses the changes needed to discharge points needed in the calibrated SIMCAT model to examine possible discharge permit limits under current, near future and with-project conditions. SHH draws attention to Figure 2.1 on page 5, Appendix G in AS-170 where an increase in phosphorus concentration is shown in reach 335 between Waterbeach WRC upstream and downstream, in all scenarios although the proposed discharge would change from reach 337 to reach 334. In any event, the EA advises that this model is to be updated.

10.8.17 Para 4.2.26 also states that the IDB occasionally pump Bannold Drain into the River Cam at Bottisham Lock. No figure is given for the quantity and timing of the (rare?) pumping to Bottisham Lock and so the "...small improvement in river water quality downstream of Bottisham Lock" quoted elsewhere may be an exaggeration since it ignores the average condition described in the preceding paragraph and also the condition of dry weather flows coupled with low flows in the River Cam. Some improvement below the Cam Pumping Station seems likely because of the extra treatment of Waterbeach effluent that would be given at Cambridge WRC.

10.8.18 The Environment Agency reports[61] 19 spills with a total duration of 310.25 hrs for the Waterbeach CSO. The Applicant's proposal to pipe stormwater to the existing Cambridge WWTW, subject to timing and any approval of the DCO, must increase the probability of increased use of either Riverside or Cambridge CSO in the Interim condition. Although the increased risk may be small since the design storm is less likely to occur in the few years before increased capacity could be available than in the long term, the Water Resources assessment summary on page 169, Table 5.1, (AW 5.2.20 - Water Resources [AS-040])

[61] Environment Agency (2022): EDM 2021 Storm Overflow Annual Return - all water and sewerage companies.xlsx

points to "….no deterioration" and to "fewer predicted stormwater and CSO discharge to the River Cam" which appears incomplete because it may not apply to the interim case.

10.8.19 Although the impacts of the interim case described above are not reported in the Environmental Statement (AW 5.4.20,[AS- 040]), the latest Appendices (AW 5.4.20.11, [AS- 170]) quantify adverse impacts under some scenarios. Although flows from Waterbeach are likely to be a small proportion of current flows from Cambridge WRC, the Applicant could consider continuing, if necessary, to operate the existing Waterbeach WRC in parallel with proposed pipeline to Cambridge WWTW until additional treatment capacity is available elsewhere.

10.8.20 In RR-035, SHH expressed important concerns that the Applicant is not making sufficient provision within the DCO for a works that will have long term capacity beyond the design applied for under Phase 2, which the Applicant accepts may be exceeded as early as the late 2030s. We have also expressed concern that the Applicant is under-estimating likely rates of population and industrial growth within the works catchment and may not be making adequate provision to accommodate climate change. The Applicant has not responded to any of these points. As it stands, the Final Discharge Permit applied for does not even cover the entirety of the DCO application, since it relates only to the Phase 1 capacity of 275,000 PE. This is not acceptable, and any Discharge Permit must relate to at least the Phase 2 capacity of the PD.

10.8.21 The EA has provided the Applicant with indicative conditions for the Interim Revised and Final Permits, which include for the Final Permit, discharge limits of 0.4mg/litre for Phosphorus and 14mg/litre for Suspended Solids. The Applicant is trying to make the case to the Environment Agency that these are too stringent and has provided the latest Appendices (AW 5.4.20.11, [AS- 170]) to support this case We note the background suspended solids data used is patchy and not up to date. The SIMCAT model as run produces sime anomalous results. Suspended Solids predictions are very varied and the modelling of ammonia, BOD and DO levels was apparently so unsatisfactory that it is not even presented in AW 5.4.20.11 [APP-161] or the extra Appendices [AS-170].

10.8.22 SHH's view is that, for the Final Permit at least, the EA should be applying a **'minimum practicable detriment to the water quality in the receiving water'** approach, not a 'just avoiding likely significant effects' approach. This is because this is an entirely new works, with the opportunity to invest some public money provided by the HIF grant to create a works that substantially improves existing water quality. The discharges allowed must create as few as possible adverse effects on water quality in the Cam, in terms of both ecological protection and safeguards to the interests of all potential river users. This is a realistic and sensible target and any DCO should not be granted unless the EA can be satisfied that the design can achieve this.

SHH notes that the Environment Agency reports[62] "…As a result of the trials, the Technically Achievable Limit (TAL) for P reduction at STWs was tightened from 0.5 mgP/l to 0.25 mgP/l for PR19 (the 2019 water industry price review). This improves the prospects of achieving river P standards". The report also states "There are two main technical control options – chemical dosing or biological nutrient removal (BNR)" and "BNR… can enable recovery of the phosphorus which is not possible with chemical dosing methods". There is a risk that the Applicant could choose a technology following detailed design that might prove unable to meet more stringent permit requirements needed in the future especially if the design ignores changes in baseline concentrations and flows due to climate change as described in the DCO application. It would be a missed opportunity if the Applicant is unable to fund a more future proofed process design until some future OFWAT price determination.

Some other changes in baseline concentrations and flows will occur due to discharges from other works in the catchment. The Applicant should clarify whether factors used in the model reflect the high population growth that has occurred in recent years and if these are compatible with the Local Plan (2018) and the Emerging Local Plan or whether these are the factors adopted in 2018 by Atkins for the EA. The background suspended solids data used is patchy and not up to date.

Environmental Permit for the Operational Works under the IE Directive

10.8.23 An application for this has been made, as noted in AW 7.1. This will cover general pollution control measures, including emissions to air, based on anaerobic digestion and the CHP combustion option within the DCO. These are mainly technical requirements which do not go to the heart of the DCO.

Water Framework Directive Compliance Assessment and Biodiversity

Until the Environment Agency has validated and accepted the discharge modelling for the Interim and Final Permit, the ExA cannot be satisfied that the Habitats Regulations Assessment is robust and that, applying the precautionary principle, there are no likely significant effects on nationally designated siites or protected species.

SHH also has a specific concern over the replacement of soft river bank by the new outfall, adversely affecting the appearance of the Bait's Bite Lock CA. As noted by the EA, there is no mechanism within the DCO that would ensure that any off-site compensatory provision of biodiversity river units or replacement habitat outside the order limits is actually delivered.

10.8.24 SHH notes that the predictions of scour downstream of the outfall is based on a 1-2 year river flow and a maximum storm water discharge with a return period of more than 1:10

[62] Environment Agency, December 2022. 'Phosphorus and freshwater eutrophication: challenges for the water environment'

years. SHH queries whether this is a standard design approach accepted by the EA or if less frequent river flows should also be tested where they may cause overtopping of the main channel.

10.8.25 SHH welcomes the Applicant's statement at ISH 2 that all drainage within the bunded area would be pumped into the works and not discharged into the balancing ponds or wetlands outside the bund which are connected to the Black Ditch. The Applicant still needs to confirm the design capacity of the discharge pipeline under the tailwater surcharge due to the design flood level in the River Cam, the design total capacity of the Waterbeach twin pipeline and the corresponding discharge of lift pumps in the WRC under these conditions.

11 Funding

11.1 Introduction

SHH, in Section 11 of RR-035, raised substantive concerns about the certainty of delivery, conditions and amount of HIF funding available to support the relocation. SHH's concerns about this were not resolved by information included in the Statement of Reasons (AW 3.1, AS-013) and the Funding Statement (AW 3.2, APP-013).

SHH's advisers have had extensive experience of managing complex regeneration and infrastructure projects, where these are supported by central Government funding. The PD is to be funded through the most complex and precarious set of interlocking agreements, which involve Homes Engand; Cambridge City Council, as both landowner, local planning authority and as potentially the maker of compulsory purchase orders for other land in NECAAP; SCDC as local planning authority and as potentially the maker of compulsory purchase orders for other land in NECAAP; CAPCA; as well as two sets of private sector companies, Land Securities/U+I as Master Developers and Anglian Water, where the Applicant is just a constituent company. The grants are not being made directly to the Applicant, but via these interlocking agreements. From our research, there appears to be no guarantee that the relocation project will be completed, if the fixed grant money runs out or if political or economic circumstances change, such that, quite legitimately any of the partners apart from the Applicant has good reason to curtail or abandon the relocation project.

In our view, the Applicant has, therefore, not demonstrated that the requirements of the Compulsory Acquisition Guidelines can be met.

This is clearly a concern for the ExA, and the material included below is intended to help the ExA in questioning the Applicant on these matters.

11.2 Provision of Information about Funding and Agreements

During ISH 2, the ExA asked the Applicant and Homes England to answer questions on a

wide range of funding issues and to provide these to the Examination. As the ExA is aware, SHH has been in extensive FoI and EIR requests and conversations with the parties, principally Cambridge City Council and Homes England, over several years, to secure a proper picture of the funding and development agreements and of the implications of these for the certainty of delivery of the DCO and of the development intended on the existing works site.

SHH is aware of, and in some cases has obtained, heavily redacted copies of the documents listed below. In our view, there is relevant material for the ExA to see and understand in all these documents. This is not an exhaustive list and there may well be other relevant documents not listed here:

(i) Cambridge City Council Business Case HIF/FF/000069/BC/01 - Cambridge Northern Fringe East (CNFE), including all Appendices and sub-appendices.

(ii) Housing Infrastructure Fund Grant Determination Agreement (Forward Funding), made between Homes England, Cambridge City Council and others.

(iii) Master Development Agreement, made between Cambridge 4 LLP, U and I (Cambridge) Limited and Land Securities Property Holdings Limited

(iv) Members' Agreement relating to Cambridge 4 LLP made between Cambridge City Council, AWG C4 Limited and Cambridge 4 LLP

(vi) Agreement between Homes England and Cambridge and Peterborough Combined Authority to document the transfer of Recycling Payments (as stated in Part 2, paragraph 2.5 of the Grant Determination Agreement)

(vii) The Option Agreements set out in the GDA, including:
   a. The Grant recipient and the LLP
   b. AWS and AWG
   c. Ambury Developments and AWG

SHH assume that the Applicant and Homes England will provide a proper summary of the key terms and obligations set out in those documents or elsewhere to assist the ExA at D1. The following is a list of key questions that SHH believes need to be answered by the Applicant and Homes England:

(i) Confirmation that the grant is a fixed cash sum limited to £227 million.

(ii) Explain why, given that the short tunnel option has been adopted, the grant has not been reduced to the lower sum for that option set out in the HIF Business Case of £167 million.

(iii) The purposes for which the grant may be used and the key milestones and break points in the grant agreements.

(iv) The identity of all organisations who can claim payments from the grant and for what purposes.

(v) The definition and budget for the Enabling Phase and the extent to which that grant has already been expended.

(vi) The date by which a 'cleared' site must be delivered for development and a definition of what constitutes the cleared site, in terms of demolition etc.

(vii) The latest programme for approval and construction of the relocated works and the decommissioning, demolition and remediation of the existing site prior to handover.

(viii) The latest cost estimates for expenditure going forward on Enabling and Delivery that will be eligible for grant.

(ix) Identify the specific defined AW entities who will fund any cost overruns and whether these have independent sources of funding, apart from the HIF grant.

(x) The ExA also asked various questions around what will happen if the DCO is not granted or if NECAAP is not adopted or if the grant terms are breached/not met, including contingency arrangements, which are not repeated here.

11.1.1 SHH also believe that it would help the ExA if the Applicant were to provide more information about the existing works site and the land to be to be made available to developers, principally for housing development. This should include a plan showing the boundaries and measured area of land owned freehold by the Applicant within North East Cambridge, and the boundaries/area to be handed over for development. Please identify within that the land that will be retained by AW for operational apparatus at ground level and the extent of restrictions on development that will be in placed on land handed over, where there will be retained sewers and other underground apparatus or for other reasons. Please identify the number of dwellings as in the latest version of NECAAP that can be accommodated on the land to be handed over, which forms part of the 5,600 which is the stated capacity of the 'core site' owned by AW and Cambridge City Council.

11.2 SHH also notes that APP-078 refers to Appendix E but this does not appear to be included in the Examination Library.

11.3 Adequacy of HIF budget

Correct HIF Grant Maximum Sum

RR-035 Section 11.2 established the two estimates used by the Applicant and in turn Cambridge City Council for the HIF Business Case submission, based on a site located East of Waterbeach (£227m) and the other at Milton, North of the A14 (£167m), since understood to be Site 2 from the original site selection process.

The HIF Business Case confirmed that the cost of the plant is approximately the same, wherever the new plant is located. The location of them does affect the length of the tunnels and therefore the cost of them, hence the difference between estimates.

The two estimates used in support of the HIF Business Case submission do not include the Proposed Development site at Honey Hill, but the corresponding costs can be simply derived from the Applicant's site selection data to arrive at the comparable cost for the Honey Hill site.

The Applicant's Stage 4 Final Site Selection Report, submitted as document APP-078 [63] but without the relevant Appendices, conducted an extensive economic comparison of the three shortlisted sites. The approach outlined on page 17 of the report is as follows:

2.5.2 The economic assessment comprised the calculation of whole life costs for each of the site area options (including sub-options) building on the costs developed during Stage 3 – Fine Screening. The economic assessment was carried out by experienced construction professionals using recent cost data from a range of similar wastewater projects in the UK.

2.5.3 Initially an unmitigated cost for each option was established, which comprised the development of the scheme at each of the three sites and the associated infrastructure, assuming standard industry design approaches and assumptions which would be required across all three site areas, such as compliance with air and water quality related regulations and permits. This approach established the baseline site area option against which all other site area options are compared.

2.5.4 The calculation of the whole life costs included both capital costs (including DEVEX, CAPEX and Capital Maintenance) and operational costs (OPEX) for the new WWTP and associated infrastructure. The Capital Maintenance and OPEX included in the whole life cost estimates were forecast over a 20-year period.

2.5.5 Following the formation of the baseline cost estimates, the mitigation and enhancement measures established in the environmental and operational assessments were used to revise the whole life cost estimates for each of the site area options. The revised 'with mitigation' cost estimates were then compared to establish the lowest cost mitigated site area option.

2.5.6 The economic assessment is provided in Appendix E.

The resulting table 64 in Appendix E sets out the cost differential between site 2, North of the A14 at Milton and the proposed site at Honey Hill. Using the common option Aii for each, this shows the unmitigated capital expenditure cost of site 2 to be 12% higher than

[63] Document APP-078 - Volume 4 - Chapter 3 - Appendix 3.5 Stage 4 Site Selection Report – Final Site Selection

[64] Page 290, - Stage 4 Site Selection Report – Final Site Selection, Appendix E – Economic Assessment, Table E.87 - Mitigated vs unmitigated costs

for site 3 at Honey Hill and the mitigated cost to be 13% higher. As the Appendices are currently omitted from APP-078, for convenience the table is shown in Figure ?? below:

Table E.87: Mitigated vs unmitigated costs

	% compared to lowest cost option (CAPEX)		% compared to lowest cost option (WLC)	
Site area option	Unmitigated	Mitigated	Unmitigated	Mitigated
1Ai	107%	111%	103%	105%
1Bi	105%	109%	102%	104%
1Aii	107%	109%	103%	104%
1Bii	105%	107%	102%	103%
2Ai	113%	116%	106%	107%
2Bi	113%	116%	106%	107%
2Aii	112%	113%	105%	105%
2Bii	112%	113%	105%	105%
3Ai	101%	102%	101%	101%
3Aii	100%	100%	100%	100%

Figure 5 - Extract from Economic Assessment - Appendix E

Analysis shows that using the Aii mitigated cost option, based on the Site 2 Business Case estimate of £167m, the equivalent comparative cost for the Honey Hill site is therefore as little as £149m.

Enabling costs

The enabling costs component of the HIF Grant has recently been confirmed by Homes England as follows[65]:

'We can confirm that 14% of the Housing Infrastructure Fund (HIF) award for the Northern Fringe East development is allocated for the initial enabling works, and the remaining 86% of the award is for the subsequent construction and delivery phase.'

Conversely Cambridge City Council has since advised the enabling costs are capped at £31.5m [66]. Based on the enabling percentage confirmed by Homes England it appears that Cambridge City Council is still relying on the enabling costs total based on the long tunnel non-green belt option east of Waterbeach, which we understand has long since been dropped from consideration.

Summary comparison of estimates

[65] Freedom of Information RFI4275 dated 24th August 2023 – Homes England Disclosure Log August 2023
[66] Freedom of Information FOI13526 dated 31st July 2023 – Cambridge City Council Disclosure Log July 2023

The review of Anglian Water estimates and site selection analysis is summarised in Table ??

	HIF Fund Business Case submission		**Equivalent cost**
Site **Cost elements**	**Waterbeach site**	**Site 2 - Milton - North of A14**	**Site 3 - Honey Hill**
Site designation	Site excluded	Site 2	Site 3
Works cost	£167m	£167m	-
Additional Tunnel Element	£60m	-	-
Business Case submission cost	**£227m**	**£167m**	**-**
Stage 4 - Final site selection - Economic Assessment (Table E.87)	N/A	113%	100%
Pro-rated cost based on Table E.87	-	-	£147.8m
Corresponding Maximum Sum	**£227m**	**£167m**	**£149m**
Difference from current published Maximum Sum		£60m	£80m
Enabling cost cap %	14%	14%	14%
Enabling cost cap	£31.78m	£23.38m	£20.86m
Delivery Funds	86%	86%	86%
AW estimates - delivery stage	**£195.22m**	**£143.62m**	**£128.14m**

Table 6 - Comparison of Anglian Water Estimates

11.3.1 Integrity of Cost Estimates

The HIF fund application business case acknowledges the likely timeframe for relocation and asserts, as contributory factors to its approval, that the proposed facility is based on demonstrated solutions and does not include significant innovation, has limited risk and that sufficient levels of optimism bias and contingency have been applied.

The Business Case also incorporated a statement on page 133 regarding the integrity of the cost estimates, including use of the database used to verify cost estimates submitted to Ofwat:

'The costs estimates contained within this business case have been prepared by the @one Alliance. The @one Alliance has used its normal costing processes to arrive at the estimates being used in this business case. This includes using the costing database which is used to verify costs estimates submitted to Ofwat as part of the five yearly Asset Management Period submission. All of the material produced to support the cost estimates can be found in Appendix 6.1.4.

Please refer to the cost estimates for the relocation of CWRC (short and long tunnel options) included in Appendix R. Both of these options have been included because the location of the relocated CWRC is unknown at the moment, therefore, the longer option cost has been used as the potential maximum cost.'

While neither Appendix 6.1.4 nor Appendix R has been made available to SHH, we understand that the Business Case was approved by the Cambridge City Council section 151 officer and therefore that the integrity of the estimates should be reliable.

However, the Applicant's Funding Statement [APP-013] para 3.1.9 states 'The construction contract for the PD is expected to be procured in 2023/24. On completion of this exercise, a revised project cost estimate will be crystallised'. This suggests that the Applicant has no clear idea at this point in time, whether the total quantum of grant available is sufficient to complete the project.

Maximum Grant Sum

Some considerable time has passed since the long tunnel non-green belt option east of Waterbeach was dropped from the selection process, yet despite the estimate basis being clearly set out in the HIF Business Case, the Applicant, along with Homes England and Cambridge City Council have still not corrected the advertised maximum sum for the site selected.

Based on the Applicant's own estimates and site selection analysis the correct maximum sum for Honey Hill is demonstrated to be £149m, with only £128.14m available for the delivery stage, yet the Funding Statement para 3.1.8 states that 'the original cost estimate for the proposed WWTP reflects the HIF Agreement funding at approximately £227m.

Retention on Site

Page 29 of the HIF Business Case suggests that a further option had been considered, stating that: 'The option of rationalising the CWRC and retaining it on site was also explored. This would still be at a considerable cost, whilst not allowing the release of any land for residential development on the core site'. However, no corresponding costs or analysis has ever been made available to validate these assumptions.

11.3.2 Conclusion

Neither SHH nor the ExA is in a position at present to confirm whether there is sufficient funding or fully binding agreements that will ensure that the relocation takes place in its entirety nor that the land released will be developed for housing in the form anticipated in NECAAP.NECAAP is as yet not far advanced and even when adopted will require potentially contentious compulsory acquisition of land outside the control of any of the parties to the HIF and associated agreements. In our view, there are no guarantees that the project can be delivered nor that the wider housing development of the core site or other land at NECAAP will proceed to completion.

12 Planning Balance

12.1 Lack of compliance with the development plan

12.1.1 As explained in Section 6 above, the proposed development fails to comply with the adopted development plan, considered as a whole. It also fails to comply with key policies in the NPPF and does not accord with the NPSWW. Emerging policy does not provide any support for the relocation of the CWWTP and is in any event at a very early stage of development, limiting the weight to be given to it. The development is inappropriate development and will cause substantial harm to the Green Belt. Numerous other harms are accepted by the Applicant (as set out in para 6.1.7 of the Planning Statement). The PD will also result in less than substantial harm to heritage assets, engaging further tests in the NPPF as to the acceptability of development.

12.2 Planning benefits relied on by the Applicant

12.2.1 The planning benefits relied on by the Applicant are not sufficient to amount to very special circumstances capable of outweighing the harm caused by inappropriate development in the Green Belt. They are also insufficiently weighty to outweigh the great weight that must be accorded to less than substantial harm to heritage assets in accordance with para.202 NPPF.

12.2.2 Table 7 assesses the benefits listed by the Applicant at paras 2.2.17 and 6.2.13 of the Applicant's Planning Statement (AW 7.5; AS-166). In particular, it considers whether the benefit relied on would be achievable on the existing site by consolidating and enhancing the existing works, and whether the benefit is necessary in order to mitigate the impacts

of the proposed development. In SHH's view, where the claimed benefits score 'yes' in any of the columns of the table, they show be given little or no weight as 'very special circumstances', for the reasons outlined in the headings to each column.

Claimed Benefit	**Accuracy of Applicant's claim**	**Achievable on existing site by consolidating and enhancing existing works**	**Normal requirement for new modern waste water facility**	**Necessary DCO mitigation**	**Weight to be accorded in SHH's view**
Modern low carbon waste water treatment facility	Does not achieve stated 70% capital carbon reduction	Yes	Yes		None
Improving storm resilience	Marginal improvement	Yes	Yes		Little
Improving quality of recycled water returned to River Cam	Marginal improvement. Discharge standards not stringent enough	Yes	Yes		Little
Restore and enhance surrounding environment (biodiversity)	Ignores biodiversity loss from redevelopment of existing site			Yes	None
Maximise public value and support circular economy	These are products of the process which have to be recycled as is done at existing works.	Yes	Yes		None
Operational and capital cost efficiencies and carbon cost reduction	No evidence of operational or capital cost efficiencies of combined provision. Does not achieve operational net zero.	Yes. Piping Waterbeach effluent to existing works will achieve this	Yes		No evidence to support this
Improve access to countryside	Minor improvements to footpath network.			Yes	Little

Claimed Benefit	Accuracy of Applicant's claim	Achievable on existing site by consolidating and enhancing existing works	Normal requirement for new modern waste water facility	Necessary DCO mitigation	Weight to be accorded in SHH's view
Enhance education	Small benefit.	Yes			Little
Enhance recreational opportunities	Public use of land around works is small benefit.			Yes	Little

Table 7 – Benefits of the Proposed Development Claimed by the Applicant

12.3 Changes to the weight given to harms by the Applicant

12.3.1 Since the submission of the application, the Applicant has updated the extent of the harms that will be caused by the proposed development (AW 7.5; AS-166 para.6.1.7). These include the recognition of large and moderate adverse significant effects on landscape, visual amenity, farm businesses, heritage assets and archaeological remains and water resources in the River Cam, both during the construction and operational phases. SHH agrees with the identification of the harms of the proposed development although the impact to the Green Belt, landscape and the historic environment has been underestimated. However, even on the Applicant's assessment of the harms, it is clear that the proposed development will cause a number of weighty harmful effects, not all of which are capable of sufficient mitigation. Weighing these against the benefits of the proposed development, it is clear that the DCO should be refused.

13 Draft DCO Powers and Provisions

13.1 Introduction

SHH participated in ISH1 and raised substantive concerns about the drafting of the dDCO, in particular, the powers to deviate certain works in Article 6, the protection of trees and hedges in Articles 23 to 25, the restoration provisions in Article 35. Our principal concern is with the content of Schedules 1 and 14, which are intended to set the development parameters. There are errors and inconsistencies in these such that the Environmental Statement must be deficient in that it cannot have assessed the 'reasonable worst case' development that the Applicant is seeking powers to build. This is a fundamental failing to meet the requirements, long established by the Rochdale judgements and means that the Environmental Statement does not comply with the EIA Regulations.

Points made by SHH at ISH1 on these matters are set out in SHH 12 Summary of Oral Submissions in Section 2.

SHH has provided the Applicant with a detailed schedule of these errors and concerns, in document SHH 11. No response has yet been received. SHH has yet to provide detailed

comments on Schedule 2 Requirements, which we believe are also deficient. These will be provided once the other concerns raised in SHH 11 are resolved.

In the remainder of this section, comments are made about certain of the Management Plans submitted by the Applicant.

13.2 Draft CoCP and other Management Plans

13.2.1 Construction Workers Travel Plan (CWTP)

13.3.1.1 SHH has reviewed the Outline Construction Workers Travel Plan (AW 5.4.19.9, APP-150), the CWTP, and the ExA's First Written Questions [PD-008]. SHH considers the Objectives set out in bullets 3 and 4 para 1.10.1 of the CWTP should be set out in more detail to reflect specific issues often raised by the communities. Otherwise, the effect of para 6.3.5 would be a purely reactive approach which puts the onus on residents to complain about specific instances where workers' travel is causing problems.

13.3.1.2 SHH would like to see far more specific provisions in this plan to address:

On street and verge parking on Cowley Road, on Clayhithe and Horningsea Roads, between Clayhithe and Fen Ditton School and, on High Ditch Road and Low Fen Drove.

Use of High Ditch Road and Low Fen Drove rather than Newmarket Road especially when the A14 is blocked.

Use of minibuses to move workers through Horningsea.

Congestion on the A14 over bridge at times of entry and egress by staff and sub-contractors.

13.2.1.1 Further to PD-008 para 20.61, SHH suggests the Applicant also states what number of staff and sub-contractor car parking spaces will be provided at each working site and how much flexibility there is to expand this in case the measures set out in paras 6.3.1 to 6.3.4 of the CWTP are inadequate.

13.2.1.2 Further to PD-008 para 20.58, SHH considers the Applicant should provide transport to allow some workers to be collected offsite from existing transport hubs such as Cambridge North station, Waterbeach Station or the P&Rs or from dedicated remote parking areas.

13.2.1.3 SHH suggests that Cambridge City Council, South Cambridgeshire District Council and Cambridgeshire County Council are asked if they are aware of any similar worker parking and collection schemes for construction projects in Greater Cambridge.

13.2.1.4 Further to PD-008 para 20.60, SHH suggests consideration of the possibility of creating additional parking area by expanding the limited parking at the existing WWTW by use of some land in or around the disused A Plant and filter beds or the

land immediately to the south which is owned by the City and forms another part of the NECAAP Core Area.

13.3.2 Operational Workers Travel Plan (OWTP)

13.3.2.1 SHH has reviewed the Outline Operational Workers Travel Plan (5.4.19.8 ES Volume 4 Chapter 19 Appendix 19.8 [APP-149]), the OWTP, and the ExA's First Written Questions [PD-008].

13.3.2.2 SHH suggests Objectives listed as bullets 3 and 4 of para 1.10.1 in the Outline Construction Workers Travel Plan (AW 5.4.19.9 [APP-150]) should be repeated in para 7.2.1 of the OWTP since these encompass impacts on local ecology and residents. The issues likely to be of concern should also be repeated.

13.3.2.3 Further to the clarification of numbers requested under para 20.73 of PD-008, SHH notes that spaces for 10 vans are described in both paras 3.2.3 and 3.2.4 of the OWTP and queries the actual number of van movements actually assessed.

13.3.2.4 Further to PD-008 paras 20.86 and 20.88, SHH suggests the question of actual travel mode share by workers is broadened with evidence from some of the Applicant's other operational WRCs and STCs.

13.3.2.5 SHH notes that the bulk of peak operational worker travel movements result from the transfer of RES workers to the proposed site. If the office space and transfer were removed from the DCO, the OWTP would be simpler to operate and the impacts to be mitigated would be substantially reduced. SHH objections to this transfer are presented elsewhere.

13.3.2.6 Para 5.2.1 of the OWTP states 8 staff are present at the existing WWTW whereas 30 can be derived from Table 6.1. Para Table 8.2 suggests a target mode share of 25% by bicycle and foot; SHH notes that the existing office area is substantially better served by public transport and non-vehicle access as well as being somewhat easier to access from the A14 from the east than the proposed site. As a result the target mode share may be too optimistic and reducing the quantum of travel to the proposed site would bring bigger benefits.

13.3.2.7 Para 10.2.2 of the OWTP should make it clear if the TPC would be the first point of contact for residents and Parish Councils to raise concerns about operational traffic.

13.3.2.8 The Applicant should make it clear if residents and Parish Councils would be able to access monitoring reports to be defined in the Final OWTP as described in Para 10.4.4 of the outline OWTP.

13.3.3 Construction Traffic Management Plan

13.3.3.1 SHH has reviewed the Construction Traffic Management Plan (AW 5.4.19.10 [AS-109]), the CTMP, and the ExA's First Written Questions [PD-008] and related information in the

Travel and Transport chapter of the ES (AW 5.2.19 [AS-038]) and supporting documents. Our review is relatively high level and we hope the concerns we raise will also assist the County Council and Highways England in providing expert review of the Application.

13.3.3.2 Further to Para 20.56 of PD-008, SHH asks if access from the A10 via the level crossing north of the proposed new station and new pumping station has been considered to serve the northern section of the Waterbeach pipeline?

13.3.3.3 The Applicant should confirm that all vehicle types listed in Table 2-1 of the CTMP [AS-111] will use the proposed construction routes and access points. Does 'cars' include private cars used by site staff and workers or visitors? Does 'vans' include minibuses bringing workers to sites? Might exceptions be suggested in future for abnormal loads? The generality of para 4.1.1 should not be used to undermine the commitment to keep Construction Traffic out of Horningsea and Fen Ditton settlements. This commitment might be usefully repeated in the CTMP rather than being merely referenced to the Transport Assessment (5.4.19.3 [AS-108a]) where it is stated in Table 2-8.

13.3.3.4 SHH requests the ExA to direct the Applicant to add an extra commitment to avoid all use of Low Fen Drove during construction and operation between Point G and access CA11 as shown on Access and Traffic Regulation Plans Sheet 4 (document 4.7 [AS-154]).

13.3.3.5 Can the Applicant confirm that the largest volume of excavated material considered for transport on local roads is the foreseen excavation and replacement of 1950m3 of excavated material from 2 landfills near Clayhithe. Would any special measures be needed to cope?

13.3.3.6 SHH suggest excavated material from the proposed transfer tunnel sites west of the River Cam is used locally near the shaft sites rather than being transferred to the proposed WWTW for landscaping. To put any extra shortfall in context, can the Applicant provide further information relating to excavation volumes given in the Material Resources Requirements and Waste Estimates (AW 5.4.16.1, APP-132) as follows:

13.2.1.5 The area and location over which the extra 100 mm excavation might take place to produce 68952 m^3 of material.

13.2.1.6 The general ground lowering depth and related volume from within the bund contributing to the 104936 m^3 material sourced from structures.

13.3.3.7 SHH suggests the APNR on Horningsea Road described in para 6.3.3 second bullet, second sub bullet should be sited north of Point F, site access CAO6 as shown on Access and Traffic Regulation Plans Sheet 7 (AW4.7, AS-154).

13.3.3.8 Further to the steps outlined in para 7.1 of the CTMP, SHH requests the ExA to direct the Applicant to ensure that the Community Liaison Plan (Document 7.8 [AS-132] process or similar is used during development and updating of the detailed Plan to consult with, as a

minimum, Horningsea Residents Association and the Parish Councils of Waterbeach, Horningsea and Fen Ditton.

13.3.4 Operational Logistics Traffic Plan

13.3.4.1 SHH has reviewed the Outline Operational Logistics Traffic Plan (AW 5.4.19.10 [AS-111]), the OLTP, and the ExA's First Written Questions [PD-008]. Our review is relatively high level and we hope the concerns we raise will also assist the County Council and Highways England in providing expert review of the Application.

13.3.4.2 SHH will review the responses to the ExA's questions in paras 20.21-23 [PD-008] about the choice of access since this is a major concern.

13.3.4.3 Further to PD-008 para 20.9 on the ambiguities in referencing reports, SHH assumes that any renaming of this Plan would be carried back into this representation.

13.3.4.4 Para 1.8.3 states that 50% of current and future operational traffic would derive from each of eastbound and westbound directions on the A14. This is a major departure from information provided during consultations which stressed that only a small proportion of traffic arrived at J33 (Milton) from the east. SHH notes that the southern segment of the J33 roundabout is the shortest and the most susceptible to changes in numbers of HGVs turning back to use J34.

13.3.4.5 SHH considers Para 2.5.5, second bullet is weak and 'Not allowing' should be the objective not 'restricting'. Paras 4.1.3 and 4.1.4 support this point and the prohibited movements described on Sheet 3 of the Access and Traffic Regulation Order Plans (AW 4.7, AS-154) are welcomed. Furthermore, it should be noted that there are weight restrictions on roads through both villages and the Applicant should not allow HGVs to use these roads to access the proposed WWTW on the basis that they are making local deliveries. We are concerned that page xi of the Summary in the Travel and Transport chapter of the ES (AW 5.2.19, AS-038) contradicts the robust approach sought through the OLTP and AS-154.

13.3.4.6 The OLTP should address the actions to be taken when the westbound A14 is blocked between J35 and J33 or J34 and J33. At the least, drivers should be made aware whether alternative WRCs or STCs should be used. During construction, the point is covered under para 6.10.1 of the CTMP.

13.3.4.7 SHH objects to the proposed transfer of non-operational office staff to the proposed WWTW. Although relevant to the OLTP, the objection is covered elsewhere.

13.3.4.8 SHH considers the Applicant should address the potential for the proposed entrance at the junction to be used for unintended purposes or antisocial behaviour. For example, land to the south west of the site entrance and within J34 was temporarily occupied by Travellers some years ago. The scope of monitoring in para 8.3.2 should be expanded to cover unintended traffic.

13.3.4.9 Further to Table 9.1, SHH considers the scope of roles and responsibilities in the Final OLTP should make it clear how the residents and parish councils should contact the appointed site and operations manager to address any community concerns; the Community Liaison Plan (AW 7.8, AS-132) does not cover operations.

13.3.5 Odour Management Plan

13.3.5.1 The Applicant's draft Odour Management Plan (OMP) (AS-106) is not adequate for inclusion within the draft Development Consent Order.

The OMP represents an opportunity for the Applicant to demonstrate control and provide reassurance to the local community of its commitment, responsibility and accountability through provision of a comprehensive Odour Management Plan for the PD. The Preliminary OMP is draft in nature, vague and dilutes the Applicant's responsibility and accountability, potentially at the expense of local amenity.

The Applicant seeks permission for the PD, benefitting from a HIF grant, in turn permitting the sale of its own land holdings. The local community are currently free of WWTW odour impacts and should suffer no reduction to their amenity as a result of the PD.

The Odour Management Plan should clearly demonstrate how the PD would achieve this objective, for which the Applicant should be fully responsible and accountable.

This should also be read in conjunction with comments raised regarding AW 5.2.18, APP-050 and the Odour Impact Assessment AW 5.4.18.2, AS-104 in Section 10.6 above.

Existing Works

13.3.5.2 The existing works is historically noted as having a poor track record over an extended period in terms of odour impacts on the local community. The Applicant's corresponding documents (APP-050, AS-104, AS-106) are conservative in this regard, which is borne out by surrounding businesses, the Local Authorities, the media, local residents and the need for the introduction of quarterly residents meetings.

The 2018 Odournet UK Ltd Survey[67], referenced in Odour Impact Assessment 5.4.18.2 [AS-104], noted the odour sources, the type of odour and where covers are installed, which are limited.

Similar STWs, such as others referenced in this WR, have consistently made improvements to odour release under their AMP regime, with corresponding benefits to the community. The 2018 Odournet UK Ltd Survey and Table 4-5 of Odour Impact Statement [AS-104], demonstrate that much more could have been done at the existing works to reduce odour impacts for the local community.

[67] https://www.greatercambridgeplanning.org/media/1247/odour-impact-assessment-for-cambridge-water-recycling-centre-2018.pdf

The existing works operates under the permitted regime and has in place an odour management plan but this has proved to have limited effect in achieving timely resolution or introducing the continuous improvements necessary to reduce impact on the community.

OMP Adequacy

13.3.5.3 The preliminary OMP is draft in nature. Aspects of the OMP will clearly require conclusion of the detailed design to allow day to day procedures to be completed. However, in applying for a DCO, sufficient should be known about the PD to allow a high level of OMP maturity. Multiple references are made to next iterations or future issues.

The OMP Summary page v refers to OMPs that sit outside environmental permit but these are not apparent.

The objective of the OMP outlined under para 2.1.6 is narrow and excludes factors such as escalation, assurance, continuous improvement and impacts on the community.

In Table 3.1, the final 3 columns would benefit from clarification and the addition of a column showing which processes are covered at the existing works for comparison.

Paragraph 3.1.3 refers to receptors being at risk of adverse effects, including receptors to the north-east of the site being at higher risk of being impacted, yet the OMP doesn't outline the mitigation required or actions that will be taken should the risk materialise. Reference is also made to receptors at risk in paragraph 3.3.2.

Paragraph 3.2.2 appears to be in error quoting faint intensity as 5 OUE/m3

Other specific issues are addressed below:

Enforceability

13.3.5.4 The OMP is unclear how the plan and corresponding measures set out will be enforced.

The existing works has an OMP and operates under the permitted regime but has had limited impact on effectiveness, timely correction and continuous improvement of odour impacts.

Figure 4.1 outlining the process flow, stops at the Manager, presumably of the site. No provision is made for escalation or corporate responsibility and accountability.

Some functions of the existing works that are shown to be odour sources are not currently planned to be covered at the PD, for example the Primary settlement tanks. If it transpires that odour impacts are being experienced how will this be addressed?

The OMP is also unclear how the amenity of the local community will be assured.

Performance outcomes

13.3.5.5 A number of performance outcomes are identified that are unacceptable. These include para 2.2.2 which states, referring to the Environment Agency (EA) H4 Odour Management guidance (Appendix 3) (EA, 2011)[68]:

The benchmark level for the most offensive odours at the site boundary is taken to be 1.5 odour units per cubic metre (OUE/m3) as an hourly average concentration level which is not to be exceeded for 98 percent of the time in a typical year.

EA H4 guidance states '*The condition and the benchmarks given in this guidance are based on odour levels at the boundary. If there are no receptors close to the boundary, we will normally permit a facility that meets the criteria at the nearest receptor*.'

A 98 percentile level of 1.5 OUE/m3 at the nearest receptor is unacceptable for a new facility.

The EA H4 report includes the following table:

Figure 1- Three levels of odour

Unreasonable odour amounting to serious pollution is being or is likely to be caused (regardless of whether appropriate measures are being used). You must take further action or you may have to reduce or cease operations. The Environment Agency would not issue a permit if it considered that you were likely to be operating at this level.
Odour pollution is or is likely to be caused beyond boundary. **Your duty** is to use appropriate measures to minimise odour. **You are not in breach** if you are using appropriate measures. If appropriate measures are being used, residual odour will have to be tolerated by the community. For some activities appropriate measures will achieve no smell beyond the boundary.
No odour beyond the boundary or likely to be = no pollution = no action needed

Figure 33 – Extract from Environment agency document H4

Under the H4 classification above, there is potential for the Applicant to assert that the DCO was passed based on its submission and therefore it is using all appropriate measures and in accordance with H4 odour should therefore '*be tolerated by the community*'.

[68] https://assets.publishing.service.gov.uk/media/5a7ba9a2ed915d1311060b16/geho0411btqm-e-e.pdf

The PD is a new facility and there should be no doubt that of the three levels of odour in EA H4 Fig 1, the works should fall in the green odour classification.

OMP paragraph 2.2.2 Bullet 4 states '*This benchmark is the highest standard and is adopted by the CWWTPR project.'* The above examples demonstrate that clarification is required in this regard.

3.6.7 States that '*Good performance is deemed to occur when actual measured emission levels are modelled and show that the 98th percentile does not exceed 1.5ouE/m3 at receptors.'* This conflicts with the modelling provided by the applicant.

Odour detection varies from person to person but is typically first detected at between 0.5 to 1.0 ouE/m3. This suggests the good performance proposed allows the most sensitive receptors to potentially be impacted continuously (subject to conditions) and to a greater degree for the upper percentile period, which is not defined or quantified. This should be considered a detrimental impact not good performance.

Paragraph 4.1.6 addressing fault cases should reflect best efforts for reinstatement 'and in any event no longer than'. Timescales shown are stated as subject to parts. No information is provided regarding actions taken to de-risk impacts, such as product selection, part availability, local stockholding and statistical process control.

Paragraph 5.4.1 states: '*The proposed WWTP will be operated to maximise efficiency and to ensure compliance with various operational and regulatory limits. Some of the operations on site may, inadvertently, result in odour escaping*.' Confirmation is required that the Applicant will not introduce efficiency measures or cost reductions at the expense of odour impacts to the community.

Similarly, the Applicant has identified cost as its primary site selection criteria, noting that the current site would negate covering of certain processes. The applicant has demonstrated its reluctance to invest in the measures to reduce odour impacts at its existing site. The proposed DCO should enforce rigorous acceptance standards and measures to avoid future potential long term impacts on amenity during the operational phases when improvements fall to the Applicants budget.

Risk assessment

13.3.5.7 The OMP should include a proper risk assessment addressing the full range of odour risks, the mitigation that will be taken and the corresponding actions.

Although there are operational methods and procedures that require the detailed design to be completed, OMP paragraph 4.3.5 highlights a number of examples that are 'reasonably foreseeable' for which 'a response plan will be drawn up'.

Foreseeable examples should be included in a comprehensive risk assessment along with other worst case scenarios such as climate change impacts or instances of septicity.

Operational Management - Proactivity and best practice

13.3.5.8 The OMP is largely retrospective and advises that complaints and reports will be made available to the authorities. Some STW sites are proactive in their approach. Best Available Technique (BAT) should also be applicable to its odour prevention and reporting, for example:

a) The objective of identifying an odour source and addressing it before it is experienced by the community

b) Publishing key reports and metrics on a website for use by the local community, for example as provided at Mogden[69]

The OMP for a new facility should aspire to best practice not 'lower the bar'.

Permit Conditions

13.3.5.9 Chapter 2.1 of EA H4 Odour Management document sets out its odour conditions used in Environmental permits as follows:

The current form of odour condition used in our environmental permits is shown below and usually consists of two elements:

- *the odour boundary condition, which specifies the outcome which the operator must achieve (i.e. no pollution beyond the site boundary); and*
- *a condition requiring compliance with an OMP (where activities are considered likely to give rise to odour)*

There may also be specific operational conditions relating to odour control which require certain techniques or specify emission limits.

As a key element of the permitting regime, it is essential that the Odour Management plan is set at an acceptable level.

[69] https://www.thameswater.co.uk/about-us/performance/mogden#:~:text=Mogden%20sewage%20treatment%20works%20is,of%20the%20sewage%20treatment%20process.