

- Key**
- Core Site Boundary
 - Area Boundaries
 - Administrative Boundary

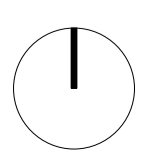
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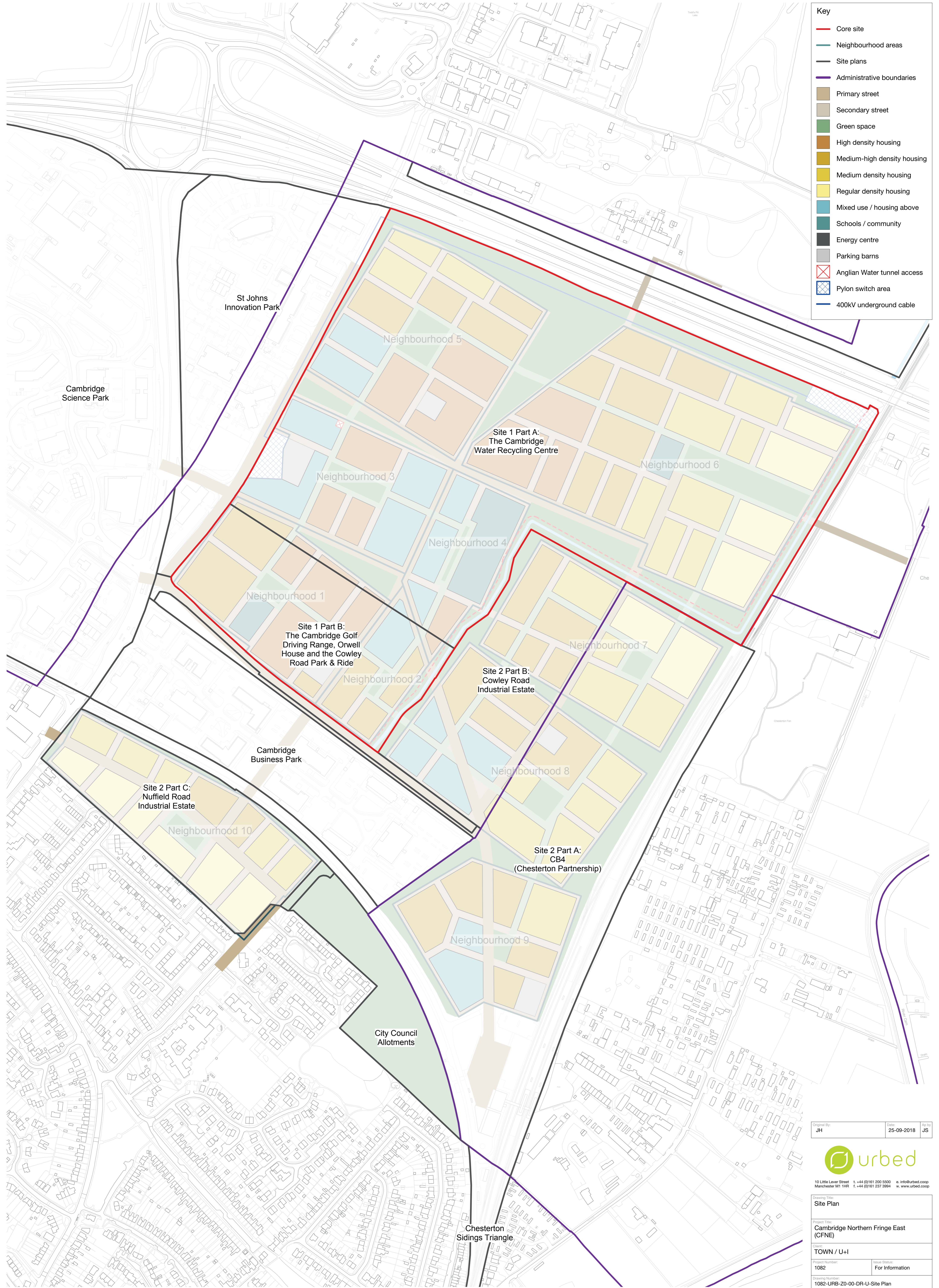


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Drawing Title	
Explanatory Plan	
Project Title	
Cambridge Northern Fringe East (CFNE)	
Client	
TOWN / U+I	
Project Number	Issue Status
1082	For Information
Drawing Number	
1082-URB-Z1-00-DR-U-Explanatory Plan	
Scale	Date
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Revision	
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Key	
	Core site
	Neighbourhood areas
	Site plans
	Administrative boundaries
	Primary street
	Secondary street
	Green space
	High density housing
	Medium-high density housing
	Medium density housing
	Regular density housing
	Mixed use / housing above
	Schools / community
	Energy centre
	Parking barns
	Anglian Water tunnel access
	Pylon switch area
	400kV underground cable

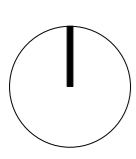
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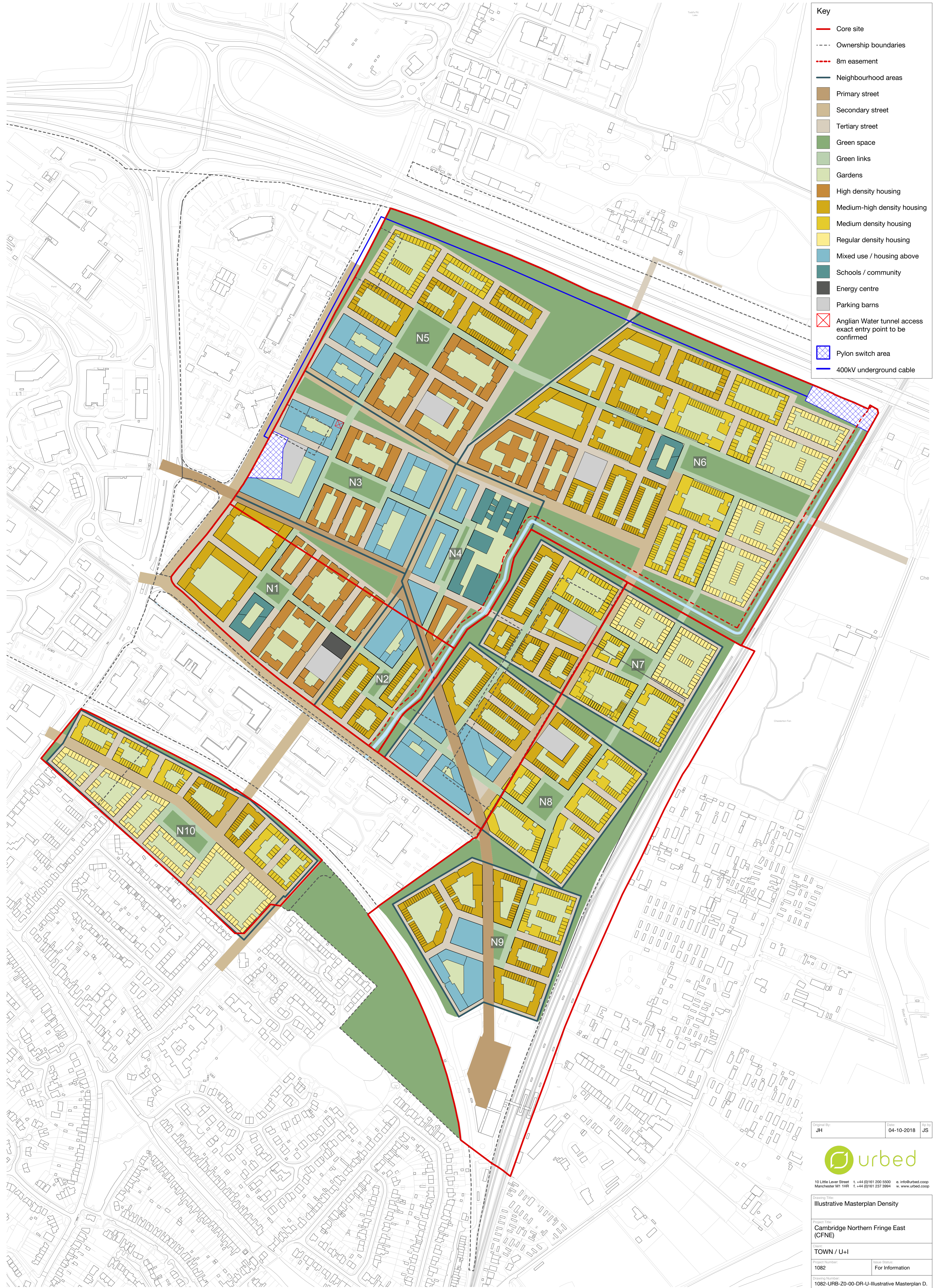


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Drawing Title	
Site Plan	
Project Title: Cambridge Northern Fringe East (CFNE)	
Client: TOWN / U+I	
Project Number: 1082	Issue Status: For Information
Drawing Number: 1082-URB-Z0-00-DR-U-Site Plan	
Scale: 1:2500@A1/1:5000@A3	Date: 25-09-2018
	Revision: 5

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- Key**
- Core site
 - - - Ownership boundaries
 - - - 8m easement
 - Neighbourhood areas
 - Primary street
 - Secondary street
 - Tertiary street
 - Green space
 - Green links
 - Gardens
 - High density housing
 - Medium-high density housing
 - Medium density housing
 - Regular density housing
 - Mixed use / housing above
 - Schools / community
 - Energy centre
 - Parking barns
 - X Anglian Water tunnel access exact entry point to be confirmed
 - ▨ Pylon switch area
 - 400kV underground cable

Drawn By: JH Date: 04-10-2018



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Illustrative Masterplan Density

Project Title: **Cambridge Northern Fringe East (CFNE)**

Client: **TOWN / U+I**

Project Number: **1082** Issue Status: **For Information**

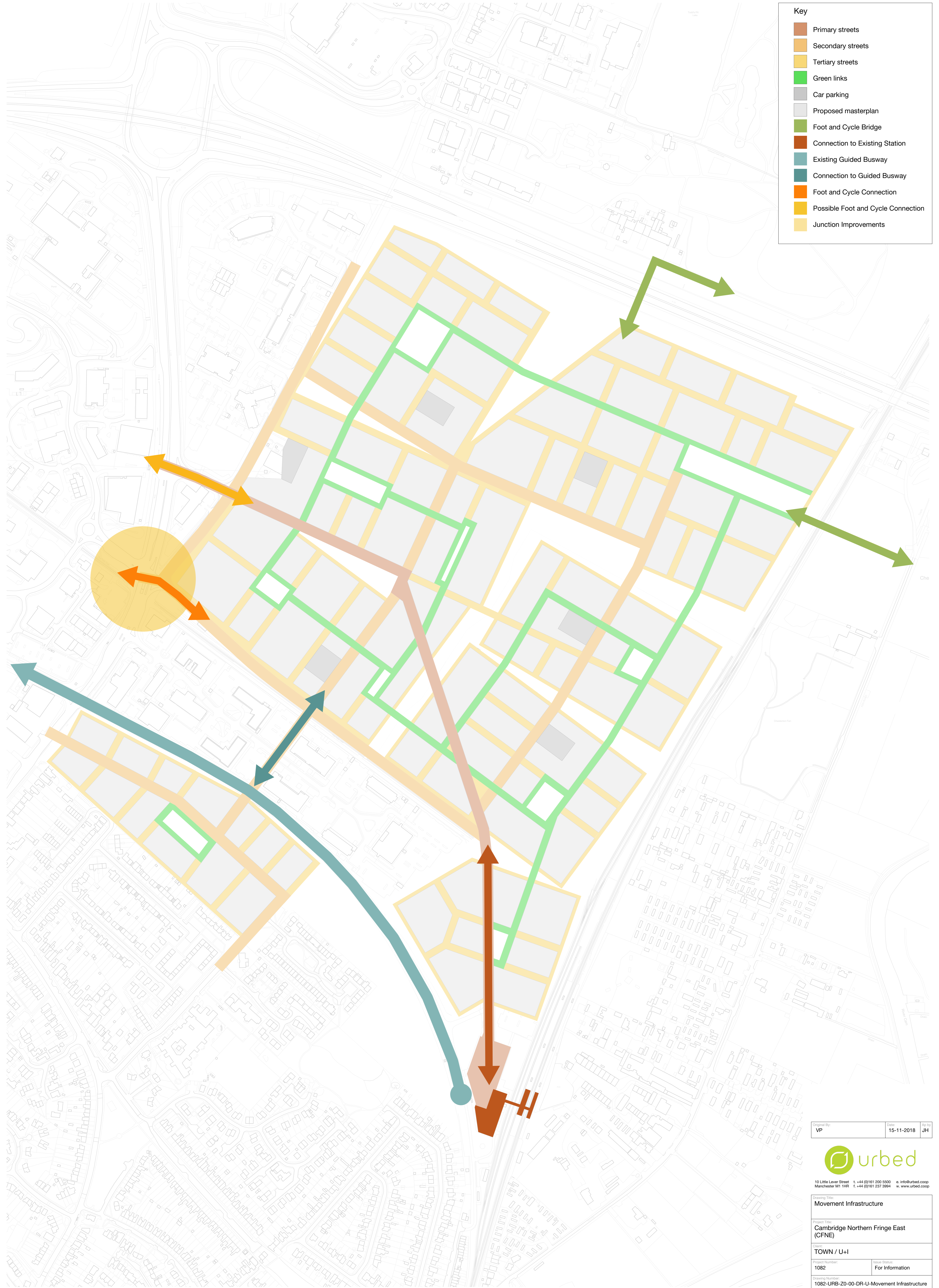
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Scale: **1:2500@A1/1:5000@A3** Date: **17-10-2018** Revision: **7**

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Key

- Primary streets
- Secondary streets
- Tertiary streets
- Green links
- Car parking
- Proposed masterplan
- Foot and Cycle Bridge
- Connection to Existing Station
- Existing Guided Busway
- Connection to Guided Busway
- Foot and Cycle Connection
- Possible Foot and Cycle Connection
- Junction Improvements



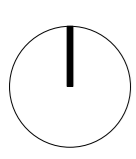
Original By: VP	Date: 15-11-2018	By: JH
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Project Title: Cambridge Northern Fringe East (CFNE)	
Client: TOWN / U+I	
Project Number: 1082	Issue Status: For Information
Drawing Number: 1082-URB-Z0-00-DR-U-Movement Infrastructure	
Scale: 1:2500@A1/1:5000@A3	Date: 15-11-2018

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Key

- Primary streets
- Secondary streets
- Natural corridors
- Green Links
- Neighbourhood squares
- Milton Country Park
- Nuffield Road Allotments
- River Cam
- Foot and Cycle Crossing
- Drain



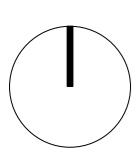
Prepared By: VP	Date: 16-11-2018	Prepared By: JH
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Green Infrastructure	
Project Title: Cambridge Northern Fringe East (CFNE)	
Client: TOWN / U+I	
Project Number: 1082	Issue Status: For Information
Drawing Number: 1082-URB-Z0-00-DR-U-Green Infrastructure	
Scale: 1:2500@A1/1:5000@A3	Date: 16-11-2018
Revision:	

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CNFE

HIF Scheme - Key Assumptions

Cambridge City Council

Revision 05 – 30 November 2018



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Introduction

This document and its contents have been prepared through discussion and agreement between Cambridge City Council, Anglian Water, U+I and their advisors.

This document is intended solely to set out the key assumptions that have been made to inform the CNFE masterplan at the time of the HIF application and should be read in conjunction with and as part of the submission to Homes England in December 2018.

Section 1 of this document defines some of the terms used in the HIF scheme masterplan and the HIF submission information.

Section 2 of this document relates to the CNFE Core Site masterplan (Site 1A – Anglian Water ownership and Site 1B – Cambridge City Council ownership).

Section 3 of this document relates to the wider CNFE sites (Sites 2A, 2B and 2C) adjacent to the CNFE Core Site. All areas fall under the CNF AAP.


Any amendments required to this document should be addressed to Faithful+Gould for the attention of [REDACTED] / [REDACTED].

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Document history

Revision	Purpose description	Originated	Checked	Authorised	Issue Date
Draft	Draft for comment	[REDACTED]	[REDACTED]		27 th Sept 2018
Rev 01	Revised following comments	[REDACTED]	[REDACTED]		15 th Oct 2018
Rev 02	Revised following team updates	[REDACTED]	[REDACTED]		29 th Oct 2018
Rev 03	Revised following final comments and incorporation of Section 2 (adjacent sites)	[REDACTED]	[REDACTED]		6 th Nov 2018
Rev 04	General definitions section added and improved structure	[REDACTED]	[REDACTED]		29 th Nov 2018
Rev 05	Minor amendments to definitions	[REDACTED]	[REDACTED]		30 th Nov 2018

1. Definitions of Terms Used

Term	Definition	Applicable Site Area
CWRC	The Anglian Water owned and operated 'Cambridge Water Recycling Centre' to be relocated. The CWRC comprises the Cambridge Waste Water Treatment Plant (CWWTP) and its integral Sludge Treatment Centre (STC).	
CNFE Core Site	The Core Site comprising: <ul style="list-style-type: none"> site 1A (39.1 hectares under Anglian Water ownership); site 1B (7.6 hectares under Cambridge City Council ownership). <p>The CNFE Core Site to be redeveloped into 6 neighbourhoods following relocation of the CWRC.</p>	Site 1A and 1B combined = 46.7 hectares / 115 acres
CNFE	The area made up of the CNFE Core Site above (site 1A and site 1B to be developed into 6 neighbourhoods) together with the following CNFE wider area sites: <ul style="list-style-type: none"> site 2A (known as Brookgate/CB4); site 2B (known as Cowley Road Industrial Estate); site 2C (known as Nuffield Road Industrial Estate). <p>The CNFE area is where residential development is unlocked by the relocation of the CWRC.</p> 	<p>Site 1A and 1B combined = 46.7 hectares / 115 acres</p> <p>Sites 2A, 2B and 2C combined = 28.5 hectares / 70 acres</p> <p>Total CNFE (sites 1 and 2 combined) = 75.2 hectares / 186 acres</p>
AAP	The area action plan for the Cambridge Northern Fringe (CNF) area.	
CNF	The area to the north of Cambridge covered by the AAP. (Note: The CNFE Core Site and Adjacent Sites fall within the wider area making up the land under the AAP).	
NSIP	A Nationally Significant Infrastructure Project as approved by the Secretary of State following a successful Section 35 application.	
DCO	The Development Consent Order process as the means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects	
The partnership	Cambridge City Council (as applicant) and Anglian Water (as majority landowner and key enabler) working together as joint venture partners to redevelop CNFE.	

2. CNFE Core Site Assumptions

2.1. Masterplan Assumptions

2.1.1. Overall Site Footprint

- The CNFE Core Site covers sites 1A and 1B
- The overall plan area of the core site is 466,771 m² (115 acres/46.7 hectares)
- The core site will be developed into 6 neighbourhoods (N1 to N6)
- This site footprint breaks down into the following uses:

Overall Site / Footprint Areas (m ²)	Core Site Neighbourhoods																				
	N1			N2			N3			N4			N5			N6			Total		
	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area
Housing	19,939	14,150	34,088	5,571	2,667	8,239	6,108	3,814	9,922	1,881	695	2,576	24,448	17,356	41,804	52,489	40,414	92,904	110,437	79,096	189,533
Mixed Use	-	-	-	3,848	448	4,296	15,794	4,725	20,519	6,745	796	7,541	6,305	1,439	7,744	-	-	-	32,692	7,408	40,100
Schools	1,906	635	2,541	-	-	-	-	-	-	7,360	3,645	11,006	-	-	-	1,662	648	2,310	10,928	4,929	15,856
Parking Barns	1,694	-	1,694	-	-	-	1,737	-	1,737	-	-	-	1,700	-	1,700	1,694	-	1,694	6,825	-	6,825
Future Proofing / Energy Centre	963	-	963	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	963	-	963
Pylon Infrastructure	-	-	-	-	-	-	2,595	-	2,595	-	-	-	-	-	-	3,356	-	3,356	5,951	-	5,951
Total Built Area	24,501	14,785	39,286	9,420	3,116	12,535	26,234	8,539	34,773	15,986	5,136	21,122	32,453	18,795	51,248	59,201	41,063	100,264	167,795	91,433	259,228
All Highways	-	-	17,916	-	-	7,788	-	-	16,835	-	-	10,769	-	-	22,726	-	-	41,830	-	-	117,864
Green Spaces	-	-	4,734	-	-	2,854	-	-	5,770	-	-	5,448	-	-	32,983	-	-	37,891	-	-	89,679
Water (Currently included in Green Space)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Public Realm	-	-	22,650	-	-	10,641	-	-	22,605	-	-	16,217	-	-	55,708	-	-	79,721	-	-	207,543
Neighbourhood total	-	-	61,936	-	-	23,177	-	-	57,378	-	-	37,339	-	-	106,956	-	-	179,985	167,795	91,433	466,771

2.1.2. Core Site Buildings Floor Area

- The overall total GIFA of new development on the core site is 529,576 m²
- This total GIFA across neighbourhoods 1 to 6 breaks down into the following building uses:

Gross Internal Floor Areas (m ²)	Core Site Neighbourhoods						
	1	2	3	4	5	6	Total
Housing	77,069	24,721	59,734	21,601	99,173	150,367	432,665
Commercial	-	3,336	13,963	6,719	4,174	-	28,193
Hotel	-	-	-	10,013	-	-	10,013
Retail	-	865	3,620	1,742	1,082	-	7,309
Schools	2,700	-	-	7,500	-	2,700	12,900
Community	-	494	2,069	995	618	-	4,177
Parking Barns	7,307	-	7,523	-	7,350	7,307	29,488
Future Proofing / Other	-	247	1,034	498	309	-	2,088
Future Proofing / (Energy Centre)	2,743	-	-	-	-	-	2,743
Total GIA (m²)	89,819	29,664	87,943	49,069	112,707	160,374	529,576

2.1.3. Building Design

- No basement construction. All development is above ground.
- Maximum height of buildings above ground is 7 storeys.
- Efficient fabric to reflect Passivhaus certification or similar standards
- Investigate modern methods of construction opportunities to reduce environmental impact and drive efficiency and consistency
- Roof area to combine brown/green roofs for ecology, blue roofs for attenuation and PV panels for renewable energy
- Building over existing and extended Anglian Water tunnels subject build over agreement and building foundation design to ensure no load on the tunnels
- Net to gross internal floor area efficiencies:

Use	Net to Gross Efficiency
Apartments	80%
Houses	100%
Retail	95%
Commercial	80%

2.1.4. Housing Mix

- The total no. of new housing units on the core site (site 1A and 1B) is 5,600.
- All houses are limited to neighbourhoods 5 and 6.
- ■% of housing to be affordable (■% sale / ■% rent)
- ■% of housing to be market (■% sale / ■% rent)
- The overall housing mix by neighbourhood is as follows:

Accommodation Mix (units)		Core Site Neighbourhoods						Total
		1	2	3	4	5	6	
Apartments	1 bed	477	132	378	135	583	689	2,394
	2 bed	426	144	341	124	533	676	2,244
	3 bed	119	43	80	29	141	193	605
Total Apartments (Nr)		1,022	319	799	288	1,257	1,558	5,243
Houses	2 bed	-	-	-	-	7	59	66
	3 bed	-	-	-	-	22	137	159
	4 bed	-	-	-	-	15	117	132
Total Houses (Nr)		-	-	-	-	44	313	357
Overall Units (Nr)		1,022	319	799	288	1,301	1,871	5,600
Split		18%	6%	14%	5%	23%	33%	100%

2.1.5. Housing Floor Area

- The overall total GIFA of new housing is 432,665 m²
- This total GIFA breaks down into the neighbourhoods as follows:

Gross Internal Floor Areas (m ²) Housing Only		Core Site Neighbourhoods						Total GIA
		1	2	3	4	5	6	
Apartments	1 bed	26,539	7,361	21,013	7,502	32,418	38,320	133,153
	2 bed	37,262	12,561	29,833	10,891	46,651	59,113	196,311
	3 bed	13,268	4,799	8,889	3,208	15,742	21,466	67,372
Total Apartments (GIA m ²)		77,069	24,721	59,735	21,601	94,811	118,899	396,836
Houses	2 bed	-	-	-	-	541	4,383	4,924
	3 bed	-	-	-	-	2,127	13,376	15,503
	4 bed	-	-	-	-	1,693	13,709	15,402
Total Houses (GIA m ²)		-	-	-	-	4,361	31,468	35,829
Overall Housing GIA (m ²)		77,069	24,721	59,735	21,601	99,172	150,367	432,665
Split		18%	6%	14%	5%	23%	35%	100%

2.1.6. Housing Density

- High density housing equates to 7 storeys
- Medium/high density housing equates to 4-5 storey
- Medium density housing equates to 3-5 storey
- Regular density housing equates to 2-3 storey
- The density mix across the neighbourhoods is as follows:

Accommodation Mix (units)		Apartments			Houses			Total
		1 bed	2 bed	3 bed	2 bed	3 bed	4 bed	
Neighbourhood 1								
High density housing	7 storey	341	273	68	-	-	-	682
Medium-high density housing	4-5 storey	136	153	51	-	-	-	340
Medium density housing	2-5 storey	-	-	-	-	-	-	-
Regular density housing	2-3 storey	-	-	-	-	-	-	-
Mix	4-7 storey	-	-	-	-	-	-	-
Total Houses (Nr)		477	426	119	-	-	-	1,022
Split		47%	42%	12%	0%	0%	0%	100%
Neighbourhood 2								
High density housing	7 storey	-	-	-	-	-	-	-
Medium-high density housing	4-5 storey	89	101	34	-	-	-	224
Medium density housing	2-5 storey	-	-	-	-	-	-	-
Regular density housing	2-3 storey	-	-	-	-	-	-	-
Mix	4-7 storey	43	43	9	-	-	-	95
Total Houses (Nr)		132	144	43	-	-	-	319
Split		41%	45%	13%	0%	0%	0%	100%
Neighbourhood 3								
High density housing	7 storey	184	147	37	-	-	-	368
Medium-high density housing	4-5 storey	-	-	-	-	-	-	-
Medium density housing	2-5 storey	-	-	-	-	-	-	-
Regular density housing	2-3 storey	-	-	-	-	-	-	-
Mix	4-7 storey	194	194	43	-	-	-	431
Total Houses (Nr)		378	341	80	-	-	-	799
Split		47%	43%	10%	0%	0%	0%	100%
Neighbourhood 4								
High density housing	7 storey	52	42	10	-	-	-	104
Medium-high density housing	4-5 storey	-	-	-	-	-	-	-
Medium density housing	2-5 storey	-	-	-	-	-	-	-
Regular density housing	2-3 storey	-	-	-	-	-	-	-
Mix	4-7 storey	83	82	19	-	-	-	184
Total Houses (Nr)		135	124	29	-	-	-	288
Split		47%	43%	10%	0%	0%	0%	100%
Neighbourhood 5								
High density housing	7 storey	305	244	61	-	-	-	610
Medium-high density housing	4-5 storey	150	167	55	-	-	-	372
Medium density housing	2-5 storey	50	43	8	7	22	15	145
Regular density housing	2-3 storey	-	-	-	-	-	-	-
Mix	4-7 storey	78	79	17	-	-	-	174
Total Houses (Nr)		583	533	141	7	22	15	1,301
Split		45%	41%	11%	1%	2%	1%	100%
Neighbourhood 6								
High density housing	7 storey	194	155	39	-	-	-	388
Medium-high density housing	4-5 storey	359	404	135	-	-	-	898
Medium density housing	2-5 storey	136	117	19	20	58	38	388
Regular density housing	2-3 storey	-	-	-	39	79	79	197
Mix	4-7 storey	-	-	-	-	-	-	-
Total Houses (Nr)		689	676	193	59	137	117	1,871
Split		37%	36%	10%	3%	7%	6%	100%
Site Total								
Total Houses (Nr)		2,394	2,244	605	66	159	132	5,600
Split		43%	40%	11%	1%	3%	2%	100%

2.1.7. Commercial Uses

- Retail space at ground level is included in neighbourhoods 2,3,4 and 5 with a total GIFA of 7,309m². Space will be to shell standard with capped services for full fit out by tenants.
- Commercial (office or similar use) is included in neighbourhood 2,3,4 and 5 with a total GIFA of 28,193m². Space will be fitted out to a Cat A standard with final fit out by tenants.
- A hotel is included within neighbourhood 4 with a GIFA of 10,013m². Specification assumed as four-star standard.

2.1.8. Social Infrastructure

- The social infrastructure required to serve the wider area AAP (Sites 1 and 2) is all being provided and located within Site 1 (the core site).
- There are 2 no. primary schools.
- The first primary school has a GIFA of 2,700m² and will be delivered as part of neighbourhood 1.
- The second primary school has a GIFA of 2,700m² and will be delivered as part of neighbourhood 6.
- There is 1 no. secondary school.
- The secondary school has a GIFA of 7,500m² and will be delivered as part of neighbourhood 4.
- The community / health centre provision has a GIFA of 4,177m² and will be delivered across neighbourhoods 2 to 5 with the majority delivered as part of neighbourhood 3.

2.1.9. Car Parking & Travel Plan

- Overall approach to minimise car use and maximise sustainable modes of transport in order to keep within the vehicle trip budget determined by the A10 Study.
- 0.2 spaces per dwelling (50% of these spaces will need to be DDA compliant)
- Circa 1,120 car parking to be provided on the core site in multi-storey car barns to serve each of the 6 neighbourhoods. Car barns up to maximum 5 storeys (ground plus 4 floors).
- Car barns located in neighbourhoods 1, 3, 5 and 6.
- Car charging points throughout car barns (assume charging point per 10 spaces)
- Cycle parking based on 1 per bedroom with 50% within buildings and 50% in external shelters
- Bus route to be extended to be within 400m of each home
- No requirement to incorporate Guided Bus infrastructure

2.1.10. Public Realm and Green Infrastructure

- Extend Chisholm trail to follow watercourse along eastern boundary of core Site 1.
- Existing watercourse route to be maintained but enhanced to improve biodiversity and interaction with public.
- Environment Agency 8m easement zone into site from western bank of watercourse
- A number (4 no.) of Anglian Water's existing circular tanks to the north of the site within the main park will be retained for use as public realm water features, surface water attenuation and as a potential reclaimed water source for non-potable uses.
- Neighbourhood greens and interconnecting green links to be delivered by plot developers / housebuilders.
- No allotments on site. Look at opportunities outside AAP area.

2.1.11. Sustainability

- A bespoke sustainability framework to be developed that incorporates:
 - CEEQUAL certification or CEEQUAL criteria incorporated into the bespoke framework requirements to drive sustainability in infrastructure
 - the Cambridge Sustainable Housing Design Guide;
 - BREEAM 'excellent' certification for non-residential;
 - 'Building With Nature' certification for green infrastructure

2.2. Infrastructure Assumptions

2.2.1. Energy

- Energy will be generated at individual unit / local level and not centrally. There will not be a central Energy Centre nor a district heating scheme. Note that the energy centre building zone formerly shown in the masterplan has been retained for potential future sustainable infrastructure uses.
- There is an opportunity to reclaim heat from passing sewage for use with commercial and/or social infrastructure (schools/health centre) uses. This is to be investigated further.
- All homes and other uses are to be 100% electricity. No gas supply provided.
- Homes will incorporate local heating / cooling infrastructure including air source heat pump, underfloor heating, etc.
- Homes to be future-proofed to incorporate provision for local cooling
- Housing fabric efficiency standards to reflect 'Passivhaus' quality certification or similar equivalent

2.2.2. New Utilities - Water

- Total mains (potable) supply capacity for core site is 44 litres per second design flow rate.
- 5,600 no. housing plus 25 no. non-housing water connections
- £3M allowance for off-site water reinforcement is subject to confirmation from Cambridge Water
- Total reclaimed (non-potable) supply capacity is 31 litres per second design flow rate.
- Reclaimed (non-potable) water from surface water used for WC flushing, clothes washing, irrigation. Option for greywater top-up.
- Both potable (from off-site supply) and non-potable (from surface water) water distribution network on a neighbourhood by neighbourhood basis

2.2.3. New Utilities – Electricity

- Power requirement load is estimated at 22MVA assuming no contribution from renewable energy and battery storage systems which will reduce this demand.
- New electrical secondary substations per neighbourhood preferably incorporated within buildings as follows:
- 2 no. 1MVA substations
- 11 no. 2MVA substations
- £1.5M allowance for off-site reinforcement of power supply subject to confirmation from UK Power Networks. Assumes taking 11kv supply from Arbury (2.5km distance). This is preferred over incorporating a new primary substation on-site.

2.2.4. New Utilities - Drainage

- A robust SUDS strategy will be developed to deliver the significant amount of on-site attenuation of surface water required due to high water table
- Where possible a framework will be agreed for the adoption of SUDS by Anglian Water
- Surface water attenuation will be delivered through combination of:
 - Blue roof technology
 - Permeable footpaths to primary, secondary and on-plot roads
 - Swales to green roads
 - Lined ponds (6nr) as part of the public realm
 - Stormcell storage system under lined ponds above
 - Stormcell storage system to on-plot courtyards

- Roofs are treated in 2-layers as follows:
 - Blue roof layer - attenuation to 50% of roof area is blue roofs, (the remaining 50% is either pitched roof, plant area or other uses)
 - Above the blue roof layer - 50% have PV's (25% over the blue roof, 25% above the other area) + 25% green roof + 25% other (plant etc.)
 - The roof over the blue roof has a lightweight grid metal grid on posts to support the green,
 - The PV's are on posts & plinths to give the water attenuation volumes
- 4 nr Anglian Water circular tanks to the north of the site will be retained for use as public realm water features and surface water attenuation
- Sewage from development to discharge into existing Anglian Water tunnel c17m below ground

2.2.5. Decommissioning & Demolition

- Anglian Water remove liquid materials from tanks, filter beds, etc as part of decommissioning in advance of demolition works
- Suitable demolition materials will be crushed and sorted for re-use on site

2.2.6. Groundworks

- Remediation strategy - Whilst it is known that there is an element of contamination on the Anglian Water site, actual areas of contamination are not yet known. An initial remediation cost allowance has therefore been made based on the Homes & Communities Agency 'Guidance on dereliction, demolition and remediation costs' which states costs are based on per hectare costs of remediation and should be applied to the gross area of the site. Based on a high-level assessment using the HCA stated 'range determining factors', the applicable per hectare costs are currently assessed at the lower end of the benchmark range @ £[REDACTED] per hectare. The initial cost assessment is therefore based on £[REDACTED] x 40 hectares plus a lower per hectare cost for the balancing 6.5 hectares. The remediation strategy will be refined following further intrusive geo-technical investigations.
- The remediation strategy and cost allowances will be refined following further intrusive geo-technical investigations.
- The land under Cambridge City Council's golf driving range is anticipated to be greenfield and hopefully does not require remediation
- Capping layer of 600mm to be installed over entire site
- Underground gases, venting and membrane proposed under buildings

2.2.7. Diversions

- Anglian Water's inlet - The existing deep underground inlet structure will be capped and infilled for use as AW's access point into the retained sewer tunnel.
- Anglian Water's tunnel - AW will construct a new inlet off-site as part of their relocation works. The existing tunnel under the core site will be extended to this new inlet. The tunnel will be extended from the current inlet through to the northern boundary of the site. The tunnel can be built over subject to permissions.
- Overhead power cables – the existing UKPN overhead power cables are rated at 132KV. The cables are to be diverted underground via 2 no cable entry zones (at each end). The underground cables will run along the north perimeter buried in the acoustic berm within the site boundary creating a circa 20m sterilised easement zone (no structures or trees over). The cables will run along the west perimeter outside the site boundary buried under Cowley Road. The cables will cross over the railway.
- Mobile Phone Mast - phone mast is also on the site near Cowley Road frontage and will require relocation

2.2.8. Highways

- A new foot and cycle bridge over the A14 to link northwards
- A new foot and cycle bridge over the railway to link eastwards
- At-grade improvements to the Cowley Road junction to improve east-west cycle connectivity
- A new underpass or overpass (assuming no at-grade crossing feasible), north of the Cowley Road junction (location tbc) to improve pedestrian and cycle connectivity
- 2 no. junction improvements to the junctions of Cowley Road and Milton Road;
- 5 no. new primary road access junctions, 3 no. of which will connect to existing public highway (Cowley Road)
- Primary roads to be delivered by masterplan developer with secondary roads delivered by plot developers / housebuilders.
- Primary roads based on circa 16.5m overall width to allow for a segregated cycleway
- Secondary roads based on circa 16.5m overall width

2.2.9. Waste Management

- Collection from underground waste bins (3 waste streams) sited within 50m of each home

2.2.10. Noise Protection

- A new 6m wide by 4m high acoustic berm along northern boundary with A14 to include an acoustic fence and tree planting. Diverted underground power cables to run in new berm.
- No acoustic edge treatment proposed to boundary with railway – dealt with through building fabric design/performance

2.3. Commercial Assumptions

2.3.1. Financial Appraisal

- Land costs have been cash-flowed across the on-plot build periods for each neighbourhood
- Site wide costs are apportioned as a % of GDV
- Growth of sales values is █% per annum
- Development contingency of █% of cost plan excluding Section 106 contributions
- Interest on total development costs of █% per annum based on a circa █% LTC ratio
- Developer's return of █% of GDV
- Cashflow as per the masterplan programme
- Professional fees for plot development is █% of neighbourhood development costs
- Professional fees for side-wide infrastructure is █% of site wide infrastructure costs

2.3.2. Cost Plan

- Construction costs represent current market conditions as at 4Q 2018 pricing levels.
- The planned scope of works for the HIF scheme cost plan assumes that all existing features, buildings, ground conditions etc on the CNFE Core Site 1 will be left in their current existing state following de-commissioning and vacation by Anglian Water and CCC.
- The HIF scheme cost plan reflects the development floor areas and accommodation mix included in Section 2.0 and 3.0 of this document.
- Remediation strategy - Whilst it is known that there is an element of contamination on the Anglian Water site, actual areas of contamination are not yet known. An initial remediation cost allowance has therefore been made based on the Homes & Communities Agency 'Guidance on dereliction, demolition and remediation costs' which states costs are based on per hectare costs of remediation and should be applied to the gross area of the site. Based on a high-level assessment using the HCA stated 'range determining factors', the applicable per hectare costs are currently assessed at the lower end of the benchmark range @ £█ per hectare. The initial cost assessment is therefore based on £█ x 40 hectares plus a lower per hectare cost for the balancing 6.5 hectares. The remediation strategy will be refined following further intrusive geo-technical investigations.
- Demolished concrete structures to be crushed on-site for re-use.
- The watercourse is dredged and re-landscaped to enhance the public realm
- There is NO requirement for gas supply to the site (i.e. not required for residential, retail, commercial use or social use),
- Roads over the watercourse will be culverted through a large diameter pipe and the ground banked over, (not via bridge structures),
- Telecommunications ducting will be provided free of charge for installation by the developer,
- Future off-site sewage discharge connection will be provided by Anglian Water free of charge as part of their diversion of existing mains works.

2.3.3. Section 106

- Total section 106 allowance of £█ is included for the CNFE Core Site. This equates to £█ per home based on 5,600 dwellings. The total £█ comprises:
 - £█ for on-site schools and community buildings
 - £█ contribution for wider transport initiatives off-site
- CCC state a section 106 transport contribution to fund various transport schemes and improvement should be based on £█ per Development Unit Equivalent (DUE). Based on an assessment of 7,700 DUE and given the highways improvements and linkages included in the masterplan cost, an allowance of £█ per DUE has been assumed, giving the allowance for S106 transport contribution of £█ for the CNFE Core Site.

2.4. Programme Assumptions

2.4.1. Anglian Water CWRC Relocation

- The AAP is submitted for approval by end Q2 2021
- The DCO is submitted to Planning Inspectorate in Q1 2020
- The DCO is approved in Q1 2021
- Anglian Water commence relocation in Q2 2021
- Anglian Water complete relocation in Q2 2024
- Anglian Water complete decommissioning of their existing CWRC facility in Q2 2025

2.4.2. Planning

- The AAP is submitted for approval by end Q2 2021
- The AAP is fully adopted by end Q2 2022
- The hybrid planning application (covering detailed strategic infrastructure and outline plot development) is submitted for approval by end Q1 2022
- Planning consent for the hybrid application is secured by end Q4 2022
- Submission of detailed planning applications by the Plot Developers will commence early 2024

2.4.3. Acquisition

The core site will be released for re-development in 3 main parts:

1. Vacant possession of Cambridge City Council land in Q1 2023
2. Vacant possession of circa 10% of Anglian Water land (adjacent to CCC land) to facilitate the remaining site areas for neighbourhoods 1 and 2 in Q1 2023
3. Vacant possession of the remaining 90% balance of Anglian Water land in Q2 2025

2.4.4. Homes

- The first homes (neighbourhoods 1 / 2) will complete Q4 2026
- The last homes (neighbourhood 6) will complete Q1 2037
- Core site homes (5,600 no.) will be started in the following years:
 - Units started 2023-2025 - 20% (1,114 no.)
 - Units started 2026-2030 - 65% (3,623 no.)
 - Units started 2031-2035 - 15% (864 no.)

2.4.5. Schools

- Primary school 1 (neighbourhood 1) will complete Q4 2030
- Secondary school (neighbourhood 4) will complete Q1 2032
- Primary school 2 (neighbourhood 6) will complete Q1 2037

3. CNFE Wider Site Assumptions

3.1. Masterplan Assumptions

3.1.1. Overall Site Footprint

- This covers sites 2A, 2B and 2C adjacent the CNFE Core Site.
- The overall plan area of the adjacent sites is 285,101 m² (70 acres/28.5 hectares)
- The adjacent sites will be developed into 4 neighbourhoods (N7 to N10)

3.1.2. Adjacent Site Buildings Floor Area

- The overall total GIFA of new development on the adjacent sites is 285,849 m²
- This total GIFA across neighbourhoods 7 to 10 breaks down into the following building uses:

Gross Internal Floor Areas (m ²)	Wider Site Neighbourhoods				
	7	8	9	10	Total
Housing	59,919	80,002	56,629	48,299	244,849
Commercial	-	14,052	4,533	-	18,585
Hotel	-	-	-	-	-
Retail	-	3,643	212	-	3,855
Schools	-	-	-	-	-
Community	-	2,082	558	-	2,640
Parking Barns	7,300	7,300	-	-	14,600
Future Proofing / Other	-	1,041	279	-	1,320
Total GIA (m²)	67,219	108,121	62,211	48,299	285,849

3.1.3. Housing Mix

- The total no. of new housing units on the adjacent sites (site 2A, 2B and 2C) is 3,025.
- ■% of housing to be affordable (■% sale / ■% rent)
- ■% of housing to be market (■% sale / ■% rent)
- The overall housing mix by neighbourhood is as follows:

Accommodation Mix (units)		Adjacent Site Neighbourhoods				
		7	8	9	10	Total
Apartments	1 bed	236	407	293	132	1,068
	2 bed	241	412	314	129	1,096
	3 bed	66	108	92	32	298
Total Apartments (Nr)		543	927	699	293	2,462
Houses	2 bed	34	16	4	50	104
	3 bed	81	46	13	110	250
	4 bed	68	31	9	100	208
Total Houses (Nr)		183	93	26	260	562
Overall Units (Nr)		726	1,020	725	553	3,024
Split		24%	34%	24%	18%	100%

3.2. Programme Assumptions

3.2.1. Planning

- The AAP is submitted for approval by end Q2 2021
- The AAP is fully adopted by end Q2 2022

3.2.2. Homes

- Homes on the adjacent sites (3,025 no.) will be started in the following years:
 - Units started up to 2022 - 15% (454 no.)
 - Units started 2023-2025 - 20% (605 no.)
 - Units started 2026-2030 - 10% (302 no.)
 - Units started 2031-2035 - 30% (907 no.)
 - Units started in subsequent years - 25% (756 no.)
- Compared to the CNFE core site, the delivery of housing on the adjacent sites are assumed as follows:
 - Cowley Road is delivered alongside core site neighbourhood 1
 - Nuffield Road is delivered alongside core site neighbourhood 4
 - CB4 is delivered alongside neighbourhoods 5 and 6

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Table 1 - Breakdown of Overall Gross Internal Floor Area by Use/Type

Gross Internal Floor Areas (m2)	Core Site Neighbourhoods						Total
	1	2	3	4	5	6	
Housing	77069	24721	59735	21601	99172	150367	432665
Commercial	0	3336	13963	6719	4174	0	28195
Hotel	0	0	0	10013	0	0	10013
Retail	0	865	3620	1742	1082	0	7309
Schools	2700	0	0	7500	0	2700	12900
Community	0	494	2069	995	618	0	4177
Parking Barns	7307	0	7523	0	7350	7307	29488
Future Proofing / Other	0	247	1034	498	309	0	2088
Future Proofing / (Energy Centre)	2743	0	0	0	0	0	2743
Total GIA (m2)	89819	29664	87944	49069	112706	160374	529576

Table 2 - Breakdown of Housing Accommodation by type

Accommodation Mix (units)	Core Site Neighbourhoods						Total
	1	2	3	4	5	6	
Apartments	1 bed	477	132	378	135	583	689
	2 bed	426	144	341	124	533	676
	3 bed	119	43	80	29	141	193
Total Apartments (Nr)		1022	319	799	288	1257	5585
Houses	2 bed	0	0	0	0	7	59
	3 bed	0	0	0	0	22	137
	4 bed	0	0	0	0	15	117
Total Houses (Nr)		0	0	0	0	44	313
Overall Units (Nr)		1022	319	799	288	1301	5600
Split		18%	6%	14%	5%	23%	33%

Table 3 - Breakdown of Gross Internal Floor Area for Housing by type

Gross Internal Floor Areas (m2) Housing Only	Core Site Neighbourhoods						Total GIA
	1	2	3	4	5	6	
Apartments	1 bed	26539	7361	21013	7502	32418	38320
	2 bed	37262	12561	29833	10891	46651	59113
	3 bed	13268	4799	8889	3208	15742	21466
Total Apartments (GIA m2)		77069	24721	59735	21601	94811	118899
Houses	2 bed	0	0	0	0	541	4383
	3 bed	0	0	0	0	2127	13376
	4 bed	0	0	0	0	1693	13709
Total Houses (GIA m2)		0	0	0	0	4361	31468
Overall Housing GIA (m2)		77069	24721	59735	21601	99172	150367
Split		18%	6%	14%	5%	23%	35%

Table 4 - Breakdown of Housing Accommodation by nr of storeys

Accommodation Mix (units)	Core Site Neighbourhoods						Total
	1	2	3	4	5	6	
High density housing	7 storey	682	0	368	104	610	388
Medium-high density housing	4-5 storey	340	224	0	0	372	898
Medium density housing	2-5 storey	0	0	0	0	145	388
Regular density housing	2-3 storey	0	0	0	0	0	197
Mix	4-7 storey	0	95	431	184	174	0
Overall Units (Nr)		1022	319	799	288	1301	5600
Split		18%	6%	14%	5%	23%	33%

Table 5 - Breakdown of Housing Gross Internal Floor Area by nr of storeys

Gross Internal Floor Areas (m2) Housing Only	Core Site Neighbourhoods						Total GIA
	1	2	3	4	5	6	
High density housing	7 storey	30466	0	27233	7690	45083	28665
Medium-high density housing	4-5 storey	26603	17566	0	0	29126	70307
Medium density housing	2-5 storey	0	0	0	0	11813	31587
Regular density housing	2-3 storey	0	0	0	0	0	19808
Mix	4-7 storey	0	7155	32512	13911	13150	0
Overall Housing GIA (m2)		77069	24721	59735	21601	99172	150367
Split		18%	6%	14%	5%	23%	35%

Table 9 - Breakdown of Housing Accommodation per neighbourhood and storeys

Accommodation Mix (units)	Apartments			Houses			Total
	1 bed	2 bed	3 bed	2 bed	3 bed	4 bed	
Neighbourhood 1							
High density housing	7 storey	341	273	68	0	0	682
Medium-high density housing	4-5 storey	136	153	51	0	0	340
Medium density housing	2-5 storey	0	0	0	0	0	0
Regular density housing	2-3 storey	0	0	0	0	0	0
Mix	4-7 storey	0	0	0	0	0	0
Total Houses (Nr)		477	426	119	0	0	1022
Split		47%	42%	12%	0%	0%	100%
Neighbourhood 2							
High density housing	7 storey	0	0	0	0	0	0
Medium-high density housing	4-5 storey	89	101	34	0	0	224
Medium density housing	2-5 storey	0	0	0	0	0	0
Regular density housing	2-3 storey	0	0	0	0	0	0
Mix	4-7 storey	43	43	9	0	0	95
Total Houses (Nr)		132	144	43	0	0	319

Table 6 - Breakdown of Overall Site Footprint into Uses

Overall Site / Footprint Areas (m2)	Core Site Neighbourhoods																						
	N1			N2			N3			N4			N5			N6			Total				
	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area	Building Footprint	External Works	Total Area		
Housing	19939	0	14150	34088	5571	2667	8239	6108	3814	9922	1881	695	2576	24448	41804	52489	40414	92904	110437	79096	189533		
Mixed Use	0	0	0	3848	448	4296	15794	4725	20519	6745	796	7541	6305	1439	7744	0	0	0	32692	7408	40100		
Schools	1906	635	2541	0	0	0	0	0	0	7360	3645	11006	0	0	1662	648	2310	10928	4929	15856			
Parking Barns	1694	0	1694	0	0	0	1737	0	1737	0	0	1700	0	0	1694	0	1694	6825	0	6825			
Future Proofing	963	0	963	0	0	0	0	0	0	0	0	0	0	0	0	0	0	963	0	963			
Pylon Infrastructure	0	0	0	0	0	0	2595	0	2595	0	0	0	0	0	3356	0	3356	5951	0	5951			
Total Built Area	24501	14785	39286	9420	3116	12535	26234	8539	34773	15986	5136	21122	32453	18795	51248	59201	41063	100264	167795	91433	259228		
Highways			17916			7788			16835			10769			22726			41830			117864		
Green Spaces			4734			2854			5448			5448			32983			37891			89679		
Water (Currently included in Green Space)																					0		
Total Public Realm			22650			10641			22605			16217			55708			79721			207543		
Neighbourhood total			61936			23177			57378			37339			106956			179985			167795	91433	466711

Notes:

Neighbourhood 1 has the energy centre located under Future proofing.

Mix Use includes: Housing, Commercial, Retail, Community, Future proofing and Hotel

Highways includes Green Links

Table 7a - Breakdown of Housing Accommodation by type and nr of storeys

Accommodation Mix (units)	Housing Density						Total
	High	Med/High	Med	Reg	Mix	Total	
	7 storeys	4-5 storeys	2-5 storeys	2-3 storeys	4-7 storeys		
Apartments	1 bed	1076	734	186	0	398	2394
	2 bed	861	825	160	0	398	2244
	3 bed	215	275	27	0	88	605
Total Apartments (Nr)		2152	1834	373	0	884	5243
Houses	2 bed	0	0	27	39	0	66
	3 bed	0	0	80	79	0	159
	4 bed	0	0	53	79	0	132
Total Houses (Nr)		0	0	160	197	0	357
Overall Units (Nr)		2152	1834	533	197	884	5600
Split		38%	33%	10%	4%	16%	100%

Table 7b - Breakdown of Housing Accommodation by type and nr of storeys

Accommodation Mix (units)	Apartments				Houses			Total
	1 bed	2 bed	3 bed	2 bed	3 bed	4 bed		
High density housing	7 storey	1076	861	215	0	0	0	2152
Medium-high density housing	4-5 storey	734	825	275	0	0	0	1834
Medium density housing	2-5 storey	186	160	27	27	80	53	533
Regular density housing	2-3 storey	0	0	0	39	79	79	197
Mix	4-7 storey	398	398	88	0	0	0	884
Total Houses (Nr)		2394	2244	605	66	159	132	5600
Split		43%	40%	11%	1%	3%	2%	100%

Table 8a - Breakdown of Housing Gross Internal Floor Area by type and nr of storeys

Gross Internal Floor Areas (m2) Housing Only	Housing Density						Total GIA
	High	Med/High	Med	Reg	Mix	Total	
	7 storeys	4-5 storeys	2-5 storeys	2-3 storeys	4-7 storeys		
Apartments	1 bed	59853	40794	10394	0	22112	133153
	2 bed	75320	72194	14015	0	34782	196311
	3 bed	23954	30614	2970	0	9834	67372
Total Apartments (GIA m2)		159127	143602	27379	0	66728	396836
Houses	2 bed	0	0	1988	2936	0	4924
	3 bed	0	0	7813	7690	0	15503
	4 bed	0	0	6220	9182	0	15402
Total Houses (GIA m2)		0	0	16021	19808	0	35829
Overall Housing GIA (m2)		159127	143602	43400	19808	66728	432665
Split		37%	33%	10%	5%	15%	100%

Table 8b - Breakdown of Housing Gross Internal Floor Area by type and nr of storeys

Gross Internal Floor Areas (m2) Housing Only	Apartments			Houses			Total GIA
	1 bed	2 bed	3 bed	2 bed	3 bed	4 bed	
High							

Table 1A - Breakdown of Overall Gross Internal Floor Area by Use/Type - Neighbourhood Split

Gross Internal Floor Areas (m2)	Neighbourhoods										Total
	1	2	3	4	5	6	7	8	9	10	
Housing	77069	24721	59735	21601	99172	150367	59919	80002	56629	48299	677514
Commercial	0	3336	13963	6719	4174	0	0	14052	4533	0	46778
Hotel	0	0	0	10013	0	0	0	0	0	0	10013
Retail	0	865	3620	1742	1082	0	0	3643	212	0	11164
Schools	2700	0	0	7500	0	2700	0	0	0	0	12900
Community	0	494	2069	995	618	0	0	2082	558	0	6817
Parking Barns	7307	0	7523	0	7350	7307	7300	7300	0	0	44088
Future Proofing / Other	0	247	1034	498	309	0	0	1041	279	0	3408
Future Proofing / (Energy Centre)	2743	0	0	0	0	0	0	0	0	0	2743
Total GIA (m2)	89819	29664	87944	49069	112706	160374	67219	108120	62211	48299	815425

Table 2A - Breakdown of Housing Accommodation by type - Neighbourhood Split

Accommodation Mix (units)		Neighbourhoods										Total
		1	2	3	4	5	6	7	8	9	10	
Apartments	1 bed	477	132	378	135	583	689	236	407	293	132	3462
	2 bed	426	144	341	124	533	676	241	412	314	129	3340
	3 bed	119	43	80	29	141	193	66	108	92	32	903
Total Apartments (Nr)		1022	319	799	288	1257	1558	543	927	699	293	7705
Houses	2 bed	0	0	0	0	7	59	34	16	4	50	170
	3 bed	0	0	0	0	22	137	81	46	13	110	409
	4 bed	0	0	0	0	15	117	68	31	9	100	340
Total Houses (Nr)		0	0	0	0	44	313	183	93	26	260	919
Overall Units (Nr)		1022	319	799	288	1301	1871	726	1020	725	553	8624
Split		12%	4%	9%	3%	15%	22%	8%	12%	8%	6%	100%

Table 1B - Breakdown of Overall Gross Internal Floor Area by Use/Type - Site Split

Gross Internal Floor Areas (m2)	Sites			
	2A	2B	2C	Total
Housing	117414	79136	48299	244849
Commercial	4533	14052	0	18585
Hotel	0	0	0	0
Retail	212	3643	0	3855
Schools	0	0	0	0
Community	558	2082	0	2640
Parking Barns	7300	7300	0	14600
Future Proofing / Other	279	1041	0	1320
Future Proofing / (Energy Centre)	0	0	0	0
Total GIA (m2)	130296	107254	48299	285849

Table 2B - Breakdown of Housing Accommodation by type - Site Split

Accommodation Mix (units)		Sites			
		2A	2B	2C	Total
Apartments	1 bed	520	416	132	1068
	2 bed	523	444	129	1096

	3 bed	137	129	32	298
Total Apartments (Nr)		1180	989	293	2462
Houses	2 bed	49	5	50	104
	3 bed	126	14	110	250
	4 bed	99	9	100	208
Total Houses (Nr)		274	28	260	562
Overall Units (Nr)		1454	1017	553	3024
Split		48%	34%	18%	100%

Table 9 - Breakdown of Housing Accommodation per neighbourhood and storeys - Site Split

Accommodation Mix (units)		Apartments			Houses			Total
		1 bed	2 bed	3 bed	2 bed	3 bed	4 bed	
2A								
High density housing	7 storey	0	0	0	0	0	0	0
Medium-high density housing	4-5 storey	246	277	92	0	0	0	615
Medium density housing	2-5 storey	203	175	29	29	86	59	581
Regular density housing	2-3 storey	0	0	0	20	40	40	100
Mix	4-7 storey	71	71	16	0	0	0	158
Total Houses (GIA)		520	523	137	49	126	99	1,454
Split		36%	36%	9%	3%	9%	7%	100%
2B								
High density housing	7 storey	0	0	0	0	0	0	0
Medium-high density housing	4-5 storey	260	293	97	0	0	0	650
Medium density housing	2-5 storey	33	28	5	5	14	9	94
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	123	123	27	0	0	0	273
Total Houses (GIA)		416	444	129	5	14	9	1,017
Split		41%	44%	13%	0%	1%	1%	100%
2C								
High density housing	7 storey	0	0	0	0	0	0	0
Medium-high density housing	4-5 storey	59	66	22	0	0	0	147
Medium density housing	2-5 storey	73	63	10	10	31	20	207
Regular density housing	2-3 storey	0	0	0	40	79	80	199
Mix	4-7 storey	0	0	0	0	0	0	0
Total Houses (GIA)		132	129	32	50	110	100	553
Split		24%	23%	6%	9%	20%	18%	100%
Site Total								
Total Houses (GIA)		1,068	1,096	298	104	250	208	3,024
Split		35%	36%	10%	3%	8%	7%	100%

Table 10 - Breakdown of Housing Accommodation per neighbourhood and storeys - Site Split

Gross Internal Floor Areas (m2) Housing		Apartments			Houses			Total
		1 bed	2 bed	3 bed	2 bed	3 bed	4 bed	
2A								
High density	7 storey	0	0	0	0	0	0	0
Medium-high density housing	4-5 storey	13,684	24,238	10,240	0	0	0	48,162
Medium density housing	2-5 storey	11,292	15,312	3,228	2,160	8,390	6,874	47,256
Regular density housing	2-3 storey	0	0	0	1,490	3,902	4,660	10,052
Mix	4-7 storey	3,949	6,213	1,781	0	0	0	11,943
Total Houses (GIA)		28,925	45,763	15,249	3,650	12,292	11,534	117,413
Split		25%	39%	13%	3%	10%	10%	100%
2B								
High density	7 storey	0	0	0	0	0	0	0
Medium-high density housing	4-5 storey	14,462	25,638	10,797	0	0	0	50,897
Medium density housing	2-5 storey	1,835	2,450	557	373	1,366	1,048	7,629
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	6,842	10,763	3,005	0	0	0	20,610
Total Houses (GIA)		23,139	38,851	14,359	373	1,366	1,048	79,136
Split		29%	49%	18%	0%	2%	1%	100%
2C								
High density	7 storey	0	0	0	0	0	0	0
Medium-high density housing	4-5 storey	3,282	5,775	2,449	0	0	0	11,506
Medium density housing	2-5 storey	4,061	5,513	1,113	745	3,024	2,330	16,786
Regular density housing	2-3 storey	0	0	0	2,980	7,708	9,320	20,008
Mix	4-7 storey	0	0	0	0	0	0	0
Total Houses (GIA)		7,343	11,288	3,562	3,725	10,732	11,650	48,300
Split		15%	23%	7%	8%	22%	24%	100%
Site Total								
Total Houses (GIA)		59,407	95,902	33,170	7,748	24,390	24,232	244,849
Split		24%	39%	14%	3%	10%	10%	100%

Pell Frischmann

excellence through innovation

Cambridge North Fringe East

Civils and Infrastructure Strategy
HIF Bid Document

Date: 7th November 2018
PF Report Ref: **101999- Civils Strategy Document**

REVISION RECORD Report Ref:					
Rev	Description	Date	Originator	Checked	Approved
-	Initial Issue	8th October 2018		█	█
A	Design/Strategy Development in line with assumption document	7th November 2018		█	█

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CAMBRIDGE NORTH FRINGE EAST – CIVILS STRATEGY

1. INTRODUCTION

1.1 OVERVIEW

1.1.1 This 'live' document provides a statement on the ongoing strategy in delivering the Cambridge North Fringe East development.

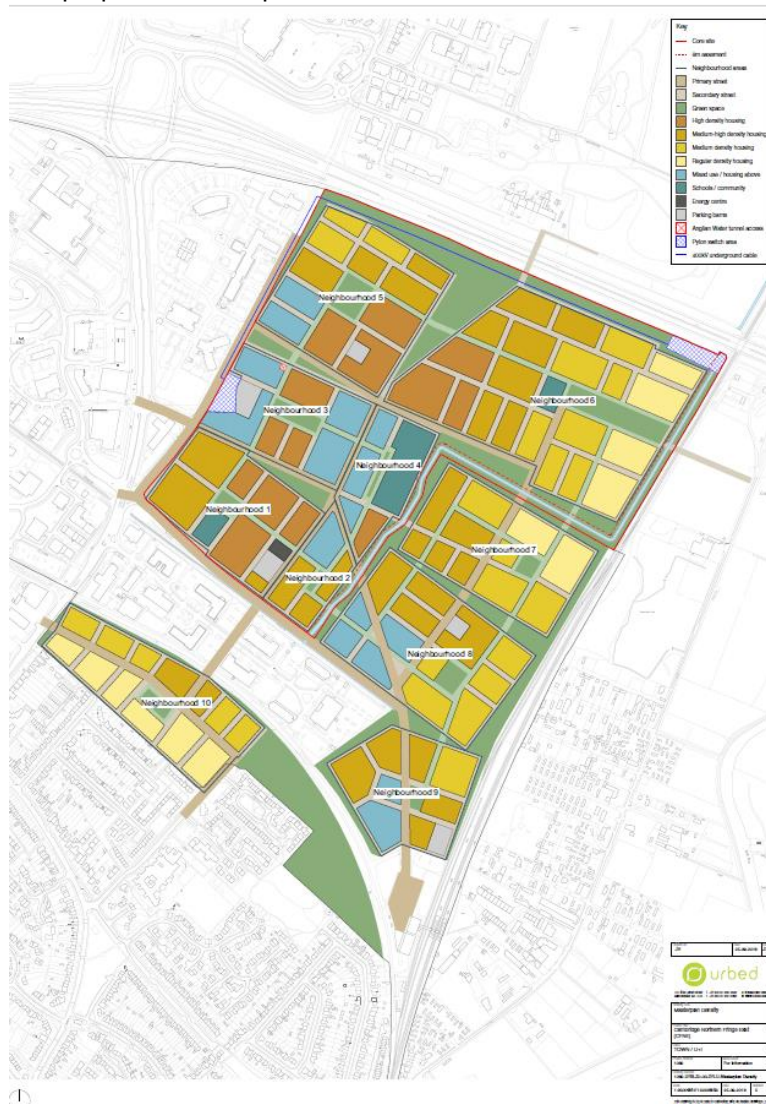
1.1.2 In particular the Civils scope focuses on the following elements;

- Existing Utilities. Together with [REDACTED] formalising the proposed services strategy.
- Geotechnical Site Appraisal and planned approach
- Drainage and Flood Risk Assessment and Strategy
- Highways Strategy

1.1.3 This document and the proposed masterplan is based upon URBED drawing 1082-URB-Z0-00-DR-U-Masterplan Density issued 25.09.18

1.1.4 The **CORE SITE** is sites 1A and 1B – divided into 6 neighbourhoods. The masterplan also indicates sites 2A, 2B and 2C. The core site is an area of approximately 46.7ha.

The proposed masterplan is identified below.



- 1.1.4 Approximately two thirds of the CNFE site is the current Anglian Water (AW) sewage treatment plant with the remainder primarily taken by a driving range area owned by Cambridge City Council
- 1.1.5 The existing site has a number of constraints including pylons, telephone masts and an existing water course which are all identified in Pell Frischmann drawing 101999_SK007. The detail of the constraints is explained further below.
- 1.1.6 Pell Frischmann have also highlighted the potential constraints to the proposed masterplan on drawing 101999_SK008

2. UTILITIES

2.1 EXISTING STATUTORY UNDERTAKERS PLANT AROUND AND SERVING THE SITE

- 2.1.1 For the site constraints of the existing site Pell Frischmann are looking at what existing infrastructure is to be removed post relocation of Anglian Water
- 2.1.2 We have received and assimilating all the C2 statutory undertaker's information surrounding and serving the site.
- 2.1.3 An initial review has concluded the following. All of which will be presented on a utilities constraints plan to be issued in due course:

Openreach – The only services indicated on site are connections to buildings from Cowley Road serving the STW, Orwell House and the driving range.

Vodafone – In Cowley Road, No services on site

Sky – Services on site to buildings from Cowley Road, possible connection to mast

City Fibre – In Cowley Road.

Mobile Phone Mast– Mast to west side of site appears to be 3 and O2 shared (Note mast info not updated since 2012). Others may now be using it too. Local substation as below.

Virgin Media – Connections to STW site buildings from Cowley Road, possibly to the mast

Anglian Water – Live Drainage indicated includes rising mains from southeast and from west to intake chamber (to be clarified if to remain), plus tunnel to intake chamber. There is also a pumping station indicated within the west part of the site adjacent to Cowley Road which discharges to the inlet chamber. Also, Final Effluent and combined sewer outfalls to east – presumed to be redundant with STW demolition. (Note the current outfall from the 'D' works is not indicated).

Depths are not indicated but it is assumed that these services are not deep (apart from the tunnel), in particular the rising mains, and may need diversion if they are left active by AWG.

Cadent Gas – MP and LP mains in Cowley Road. Connections to site buildings from Cowley Road west side only.

Cambridge Water – 7" and 6" mains in Cowley Road west. No services indicated crossing site, there will be service connections to buildings but these are not shown on water plans. (Note that new services on site may need to be installed in barrier pipe due to ground contamination).

UKPN – There are 132kV overhead power lines on pylons passing diagonally across the site. These feed to a railway substation to the east of the site (east side of the railway line) and then continue on pylons. There are 3 No pylons on the site.

HV services enter from Cowley Road to the west to connect to a substation (Cowley Road Mast) adjacent to the mobile phone mast.

Just to the north of this HV services enter the site to connect to 2 No substations adjacent to the intake chamber (Riverside Pumping Station & Milton Pumping Station). Further north HV services enter and run north to a substation (Sewage Pumping Station). These substations do not appear to serve any properties off site. Various connections, assumed to be LV, also from Cowley Road, connect to the buildings along the west side of the site.

To the south side of the site there are connections to Orwell House and the Driving Range.

Much of the onsite distribution appears to be private emanating from the Generator House. However, there is an HV cable from this which feeds (or is incoming from) offsite to the east side, crossing under the railway. This may feed to an industrial building on Fen Road which is off the UKPN record.

There are a number of redundant/abandoned incoming connections to the STW and across the site.

An allowance should be made in the cost plan for disconnection of all services currently serving the site.

2.1.4 Major diversions/relocation:

Initial UKPN discussions have confirmed the pylons are 132kV (6 or 7 core) supplies. 3 options for the rerouting of the 132kV main have been considered based upon burying the cables. We have commenced discussions with UKPN on the basis of the below diversion options:

- Option 1 rerouting of the cables on the western and northern edges of the site. It is anticipated this will require a [REDACTED] buffer zone. **It is anticipated that the cost or re-routing these cables is in the order of £[REDACTED]**
- Option 2 rerouting of the cables on the western side of the site and northern side of the A14 (within another Anglian Water Parcel of Land). **It is anticipated that the cost or re-routing these cables is in the order of £[REDACTED]**
- Option 3 rerouting of cables through the site (minimum width [REDACTED] zone). This is likely to be considered the least favourable by UKPN as they will be concerned with all the other statutory undertakers plan planned and future potential contact.

There is a requirement to relocate the mobile phone mast and local substation below. As indicated above we are investigating the full use of the mast together with outline costs for relocation. An allowance of £[REDACTED] should be assumed for relocation of the Mast, associated substation and potential land purchase.

3. GEOTECHNICAL

3.1 OVERVIEW

- 3.1.1 Information This report highlights the current situation in terms of geotechnical and, more pertinently, geo-environmental risks associated with the CNFE site, as well as possible next steps to achieve a clean and useable site, in the eventuality that the site is required to be decommissioned and de-contaminated from its current state.
- 3.1.2 In accordance with the discussions with the client team the geotechnical approach for the site is to assume Anglian Water depart the water treatment site and the Client team demolish, decontaminate the site in preparation for the residential development.

3.2 CURRENT SITUATION AND ASSUMPTIONS

- 3.2.1 A geo-environmental preliminary risk assessment was carried out by Mott McDonald in August 2018 (ref: 38808 - EA01 Revision A, 16 August 2018). This included a contaminated land qualitative risk assessment and information regarding previous site investigation works carried out at the Anglian Water site. The desk study was completed for site 1 only, including part A: The Cambridge Water Recycling Centre and part B: The Cambridge Golf Driving Range, Orwell House and the Cowley Road Park and Ride. These areas are also named Zone 1 – 6 on the most recent Masterplan.
- 3.2.2 A previous ground investigation was undertaken at the WRC site by A F Howland Associates during April and May 2005. The exploratory hole location plan is appended to this note. This comprised four boreholes at depths of 9-10m below ground level (bgl), 24 window sample holes between 2.5 and 5.0m bgl and 11 trial pits to 3m bgl. A general summary of the geology from the boreholes, window samples and trial pits is shown in the table below.
- 3.2.3 Groundwater was struck during drilling between 1.5 and 2.5m bgl, although these may not be a reliable measurement due to the age of the site investigation.

Strata	Depth to base (m bgl)	Thickness of strata (m)	Water depth (m bgl)
Topsoil	0.00 to 0.55	0.00 to 0.55	1.50 to 2.70
Made ground	0.40 to 2.50	0.40 to 2.50	(strikes)
Sand (RTD)	0.40 to 4.80	0.90 to 3.50	
Clay (GLT)	Proven to 5m in window samples	0.20 to 7.70	

Proven to bottom of BH's only

- 3.2.4 According to the Environment Agency for groundwater resources, the superficial deposits at the site (River Terrace Deposits) are designated as a Secondary A aquifer.
- 3.2.5 Previous ground investigations, from 2005 (A F Howland Associates) and 2012 (Endeavour Drilling), encountered several contaminants in soil that exceeded current guideline criteria for residential land use without homegrown produce; the most representative of future development plans. The exceedances included: cadmium, chromium, lead, cyanide, and several Polycyclic Aromatic Hydrocarbons (PAH).
- 3.2.6 Groundwater and soil leachate samples from historical ground investigations were compared to Environmental Quality Standards (EQS) and Drinking Water Standards (DWS). The River Terrace Deposits are classified as a Secondary A aquifer and there are drains adjacent to the site boundary. Leachate tests show exceedances of: cadmium, copper, nickel and total PAH.

Groundwater samples included exceedances of: lead, nickel, ammonia, nitrate, individual PAHs, total PAH and Total Petroleum Hydrocarbons (TPH).

- 3.2.7 The locations of soil and leachate exceedances are shown below on the Figure 1a, and the exceedances for groundwater is also shown in Figure 1b. It can be seen that for the soil and leachate, contamination is confined to only a small proportion of the site, with the groundwater spread slightly further.

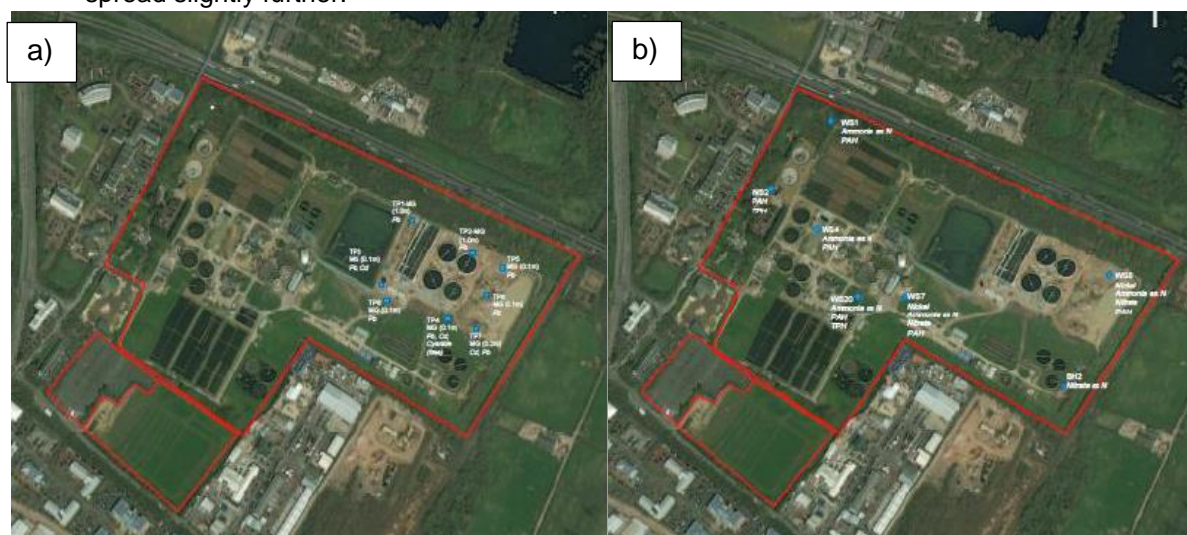


Figure 1a) Exceedances in soil and leachate contamination and b) groundwater contamination.

- 3.2.8 The results of the investigations indicate that hotspots of contamination are, or have the potential to be present, throughout the site. It should be noted that further contamination may be released during demolition, and testing should be included to assess this within the demolition plan.
- 3.2.9 The risks identified within the desk study were mostly assessed as low, however, there are potential moderate risks to human health (future site users), as a result of the presence of contaminated Made Ground and potential ground gases on site. There are moderate risks to groundwater in the River Terrace Deposits and nearby surface water. This is due to the presence of contaminants in Made Ground and existing exceedances in groundwater on site.

3.3 POTENTIAL REMEDIATION OPTIONS

- 3.3.1 Ground investigations will inform the scale of remediation works required at the site. Based on current available information it is considered that the remediation works are likely to comprise treatment of contaminant hotspots only, not pervasive contamination. It should also be noted that additional hotspots may be encountered following removal of existing tanks, structures and buildings. The likely remediation and mitigation works will include, but is not limited to:

- Removal or treatment of hotspots encountered in the made ground/ underlying natural strata. If the majority of the hotspots relate to organic contamination (as would be expected at the WRC) it is possible that on-site biodegradation may be a potential treatment option;
- Design of appropriate gas protection measures for the proposed buildings;
- Design of a 'clean' cover system in areas of soft landscaping (likely to be minimal), for planting areas the minimum cover thickness will be 600mm.

- If material is to be removed from site, this should be discussed with a waste carrier and Waste Acceptance Criteria testing would be required. A waste classification assessment can be carried out as part of any interpretation of the new site investigation.
- Any material that is to be reused on site should only be done following the completion of a risk assessment and production of a materials management plan (MMP).

3.3.2 The requirement for groundwater remediation will be confirmed following the additional ground investigation.

3.3.3 Remediation cost estimations have been based on guidance provided by Homes and Communities Agency (2015) and included in Figure 2. Cost is based on a category B site (moderate contamination potential due to presence of sewage works), with moderate to high water risk (due to presence of secondary aquifer) and moderate end use sensitivity (residential development without private gardens).

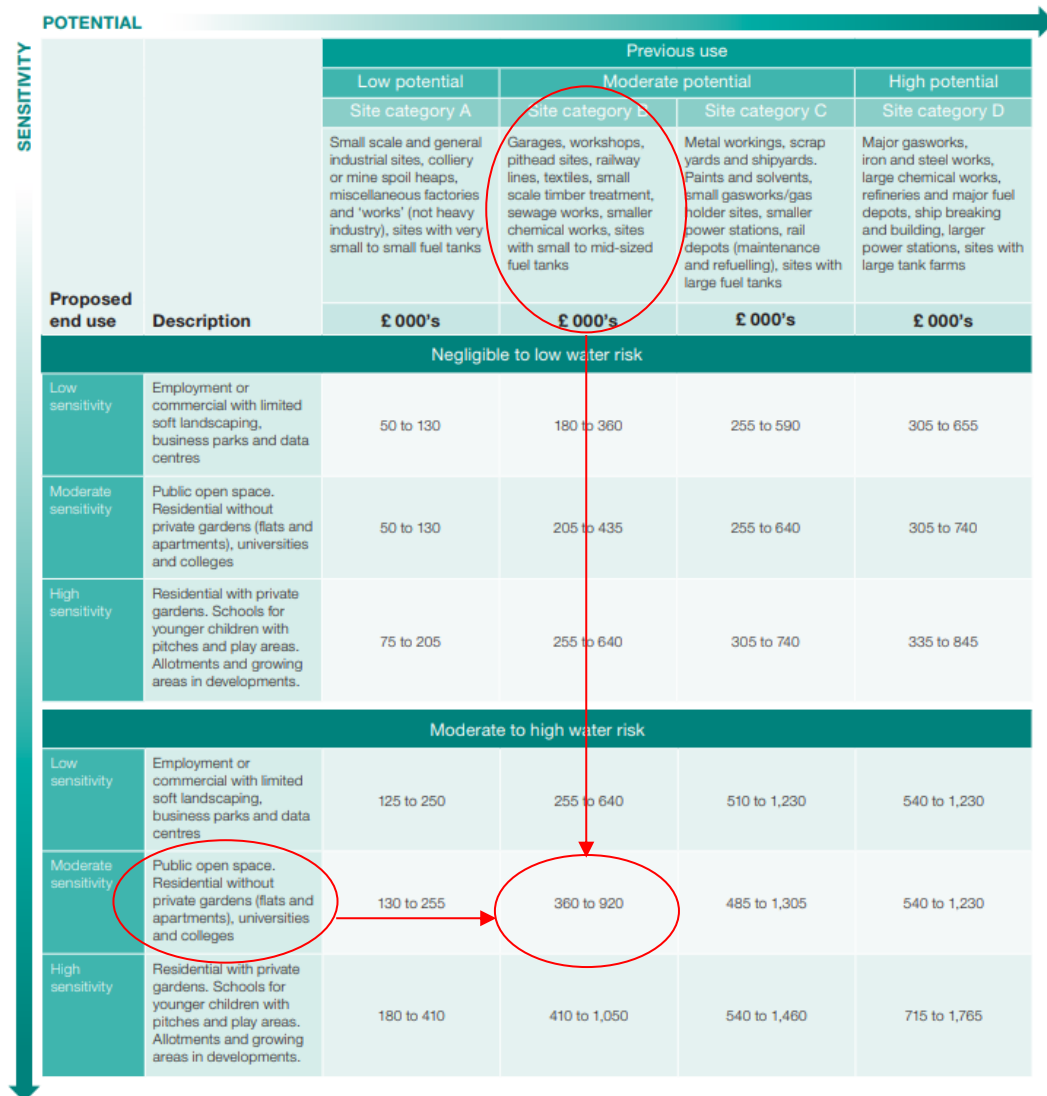



Figure 2 Remediation Cost Matrix from Highways and Communities Agency 2015.

3.3.4 Guidance suggests a cost of £ [redacted] to £ [redacted] per hectare (Homes and Communities Agency, 2015) for remediation of the site. This does not include a capping layer and should be applied to the gross area of the site and are not related to actual areas of contamination. The

range of costs exist to cover the wide possibilities of contamination and remediation requirements. The range of costs per hectare provided in Figure 2 can be narrowed by using Figure 3 and determining the associated risk for different criteria.



Range determining factors	Low	Mid	High
Size	If greater than 5ha	If circa 5ha site	If less than 5ha. If less than 1ha range may not apply
Site context	No history of contamination in surrounding area	Some history of contaminated sites in surrounding area	Significant history of contaminated sites in surrounding area. However if there is a regional contamination issue this might reduce the amount of remediation by an individual site.
Number of previous uses and duration	Single use site (unless that use was high potential and over a long time)	Primarily single use	Mixed uses
Geology	Non permeable barrier close to surface or at depth but protecting a sensitive aquifer	Variable or thin layers	Permeable geology in sensitive areas
Depth	Shallow or surface	Top metre or so	Deep and thick layers of contamination requiring excavation or treatment
Spread of concentration	Isolated hot spots	Large areas but not complete site cover	Majority of site covered
Site location	Easy access, rural location	Outer city areas	Inner city areas, restricted access
Market conditions	Not active, stagnant recession like economy	Stable	Active market, buoyant economy for several years
Procurement strategy	High client risk profile	Proportionate and appropriate ownership of risk	Low client risk profile

Figure 3 Remediation Cost Range Indicator Matrix from Highways and Communities Agency 2015.

- 3.3.5 Considering the cost range indicators, the cost estimate is thought to be near the lower estimate of £[REDACTED] per hectare and suggest an allowance of £[REDACTED] per hectare be use without additional site investigation. The WRC is approximately 40ha, therefore a total cost of £[REDACTED] can be estimated.
- 3.3.6 It is unlikely that the entire site will need to be remediated. From the previous site investigations, it is assumed that [REDACTED]% of the site will require remediation due to the presence of the contamination hotspots, however it has been conservatively suggested that remediation requirements of up to [REDACTED]% of the total site should be considered. The remediation extent will be confirmed following the site investigation works and subsequent assessments.

- 3.3.7 It is anticipated that low amounts of waste removal given the results of the previous SI and the only areas of known contamination being small and in hotspots. It should be assumed WAC classifications of “hazardous” waste not suitable for re-use to be conservatively █% of the site.
- 3.3.8 For the existing golf driving range site it has been assumed contamination (due to its previous use being a green field site) is extremely limited. As such we have suggested an allowance of £█ per hectare be considered. The golf driving range is approximately 6.65ha, therefore a total cost of £█ can be estimated.
- 3.3.9 The site will also require a capping layer for the entire site given the nature of hotspots and the previous use of the site. For the purposes of this assessment we should consider a capping layer a minimum of 600mm thick and covering the 40ha area is to be installed.

Ground Gases

- 3.3.10 Presence of ground gas at the WRC site was assessed by @one Alliance (2014). The report did not state which strata the boreholes were measuring gas in and no borehole logs from this report are available.
- 3.3.11 This assessment resulted in a gas characteristic situation of CS2 based on CIRIA guidance (CIRIA C665, 2007). A CS2 was identified due to presence of elevated concentrations of carbon dioxide (█%) and high gas flow rates (maximum of 6.1l/hr). A CS2 represents a low risk but does require gas protection measures to be incorporated into new dwellings. The gas monitoring undertaken was completed in atmospheric pressure conditions greater than 1000mBar and therefore the results may not represent worst case or low and falling atmospheric conditions. The monitoring period was also not long enough to inform the risk for a residential. As such, the results may not be representative and additional monitoring from dedicated wells should be undertaken to confirm the gas situation. Ground gases may therefore present a risk to residents in new dwellings if gas protection is not incorporated into designs. Further monitoring should be undertaken to inform this.
- 3.3.12 Typical scope of gas protective measures as defined in CIRIA C665 are to use either reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 1200g Damp proof membrane (DPM) and underfloor venting, or beam and block or pre-cast concrete with a 2000g DPM/reinforced gas membrane and underfloor venting. All joints and penetrations are to be sealed for both options. It is suggested that suspended slabs are used for costing as worst case.

Re-use of Demolition Material

- 3.3.13 It has been proposed that demolition rubble can be used as fill material for the underground areas currently present at the AW treatment works. This consists of the sorting, stockpiling, testing and installation of rubble material from the demolition works as general recycled material. The recycled material may be also be used as subgrade material for the future temporary or permanent works for the proposed development.
- 3.3.14 The use of recycled materials will be subject to the agreement and approval of the client. It would be necessary to ensure that where such material was used, either by themselves or in combination with other materials or ground water, that they would not present a health hazard or result in damage to structures (for example high sulphate content could cause an adverse reaction in contact with concrete). Clearly recycled material containing potentially contaminating and hazardous substances, such as asbestos, could be detrimental to the health and safety of the workforce.
- 3.3.15 The recycled materials shall thus be free of:
- organic materials and general mixed waste;

- peat or alluvium or material containing organic matter such as topsoil;
- logs or stumps;
- materials susceptible to spontaneous combustion;
- materials with a high sulphate content;
- material containing potential contaminants and hazardous substances as defined in the Hazardous Waste (England and Wales) Regulations 2005, such as asbestos; and,
- material containing reinforcing rods, steel and cast iron.

3.3.16 The use of recycled demolition materials is considered a sustainable approach to construction and will be utilised as far as is practically possible.

3.3.17 We would assume almost all of the demolition material is able to be re-used as fill given the current information about the site and usual demolition practices. To be conservative we would recommend it is best to assume █% of material can be re-used, to allow for small asbestos/contamination findings and the removal of steel reinforcement.

3.4 RECOMMENDED SITE INVESTIGATION WORKS

3.4.1 The following recommendations are made to assess the current conditions prior to any demolition of the current site:

- Ground investigations are necessary to determine the extent of contamination on site in the Made Ground and River Terrace Deposits.
- Ground investigations should extend to the golf driving range and old Park and Ride areas since there is currently no known ground investigations for these areas of the site.
- Groundwater monitoring and analysis is needed to determine the extent of groundwater contamination and determine the groundwater levels. In particular, the historical TPH hotspots identified on the WRC site may indicate a potential for free phase contamination.
- Further ground gas monitoring should be undertaken, potentially using dedicated wells, to assess the risks to proposed developments, including new dwellings, since historical monitoring has identified elevated CO₂ concentrations and gas flow rates.

3.4.2 The ground investigation works are likely to involve some targeted exploratory holes around historical contaminant hotspots and known sources, together with a larger number of windowless samples to identify any additional hotspots.

3.4.3 The proposed site investigation for the whole of site 1, including the Park and Ride and the driving range, can be extended to investigate the contamination levels at site 2.

3.4.4 A range of boreholes around the site will be required, these will include the installation of groundwater monitoring standpipes in the RTD to delineate hotspots and determine groundwater levels and flow directions. Also, soil sampling through the depth of the Made Ground and underlying strata will be undertaken in the boreholes.

3.4.5 Window samples will also be required. These will be to install ground gas monitoring standpipes in areas of future residential buildings to inform ground gas protection requirements and undertaken further soil sampling of the Made Ground and underlying natural ground in areas of hotspots and on a non-targeted grid. The sampling locations will be dependent on the presence of existing structures. Further testing may be required following demolition of the existing structures.

3.4.6 The following table shows the anticipated number of boreholes and window samples. These are an upper estimate based on the previous site investigations, site requirements and available space:

Exploratory hole type	Number Required for Site 1	Number Required for Site 2
Boreholes	■	■
Window Samples	■	■

4. DRAINAGE

4.1 FLOOD RISK

4.1.1 Flood Risk - Fluvial

The site is situated within Flood Zone 1, having a low risk (<0.1% probability) of flooding in any given year. Mixed use developments are suitable within Flood Zone 1 in accordance with the NPPF. Flood Zone 2 of the River Cam is shown to be located to the east of the site.

4.1.2 Flood Risk – surface water

The majority of the site is having a very low risk of surface water flooding. Isolated areas are affected by high, medium and low risk of surface water flooding, dictated by the current topography of the site. The existing ditches along the sites eastern boundary convey surface water through the site and outfall to the River Cam downstream.

4.1.3 Flood Risk - groundwater

The site is underlain by superficial deposits consisting of sand and gravel. The British Geological Survey (BGS) SuDS map shows the site has the potential of high groundwater.

The use of soakaways as a means of disposing of surface water has been discounted due to the presence of the high groundwater and the existing contamination present on the site.

4.2 SURFACE WATER MANAGEMENT

4.2.1 The use of sustainable drainage needs to be at the forefront of the development masterplan. The philosophy of the surface water drainage strategy is to maximise water re-use and source control surface water management techniques to provide a robust and sustainable drainage scheme. The overall SuDS strategy will be fully integrated into the proposed scheme, will promote water reuse as well as limiting peak runoff flows to that of a greenfield site. The SuDS scheme will improve the water quality and provide amenity within the urban landscape as part of the management of the surface water.

4.2.2 SuDS general principals;

The general principal of the site wide SuDS scheme will be to;

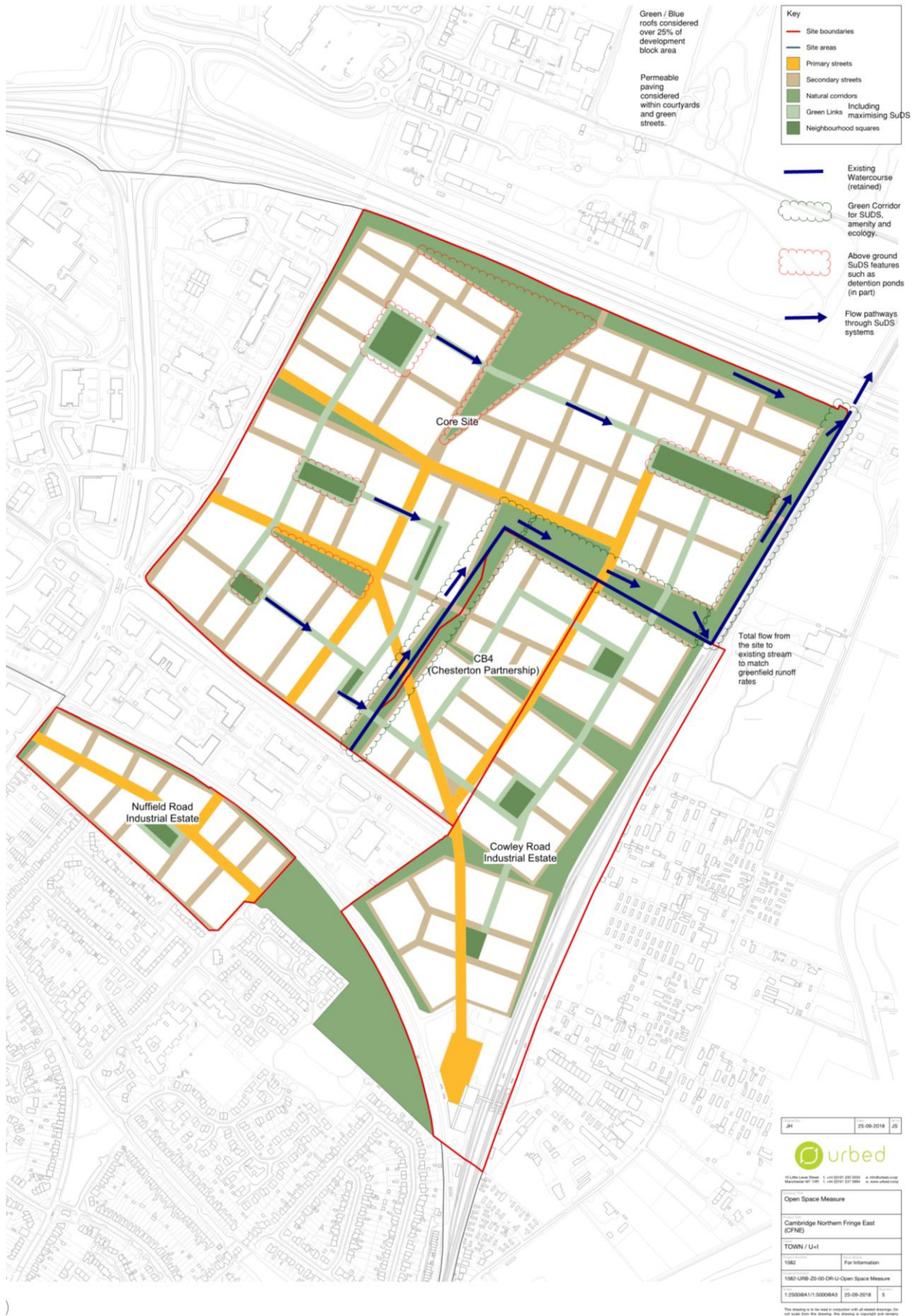
- Mimic the greenfield runoff regime of the site and surface water runoff towards the River Cam.
- Surface water flows generally flow east and north east and will be intercepted by the existing drainage ditches on the site.
- The drainage ditches will be enhanced and used to provide a green corridor around the site. A buffer zone adjacent to the ditches of 8 m will be required as a minimum for maintenance purposes.
- Surface water reuse will be encouraged on the site at plot level.
- Source control measures such as green roofs and permeable paving will used to help manage the surface water as close to source as possible.
- Infiltration is deemed not to be a solution when dealing with surface water runoff from the site. This is due to the potential of high ground water and the risk of groundwater contamination.

- The use of swales and green streets will be incorporated into the masterplan to help improve the water quality, slow down surface water runoff, provide attenuation and provide an attractive and practical way to manage the surface water through the site.
- The use of above ground attenuation will be preferred to underground tanks.
- For every 1ha of impermeable area an attenuation volume of approximately 800 m³ will be required, without considering the effects of SuDS. Attenuation to be provided for the 100-year plus 40% design event.
- The masterplan and integration with SuDS techniques will be critical in providing a robust SuDS solution for this high-density site.
- The ownership and maintenance of the SuDS scheme will need to be determined and agreed, so that it can be demonstrated the SuDS scheme be suitable over the lifespan of the development.
- The SuDS scheme will need to take into account the phasing of the proposed development.

4.3 SURFACE WATER DRAINAGE STRATEGY

- 4.3.1 The primary constraints which affect the drainage strategy are high ground water levels and potential ground contaminates. Both these issues prevent infiltration being used as a method of disposing the surface water runoff generated by the site. All SuDS techniques will need to be fully lined to prevent infiltration of surface water into the ground water.
- 4.3.2 It is envisaged that blue / green roofs are considered across much of the roof area across the site. The greater proportion the greater benefit these systems will achieve. The blue roofs will provide the ability to store and treat water for grey water use within the buildings.
- 4.3.3 Where possible all surfaces on the site should be permeable or allow surface water into a permeable layer. Permeable paving with a porous sub-base will be used wherever practically possible throughout the site, such as within the courtyards and private streets, to enhance water quality, provide attenuation and conveyance throughout the site. Other SuDS measures such as swales and filter strips are envisaged to aid improving water quality from the surface water runoff. New trees will be introduced across the site to aid with amenity and ecology, which in places can be used to supplement the drainage scheme. Landscaped ponds, underlain by a permeable sub-base are proposed within areas of public open space. This will provide the additional attenuation requirements to limit the runoff from the proposed development to greenfield runoff QBAR rates.
- 4.3.4 The existing ditch along the boundary of the site, will be enhanced and incorporate a minimum 8 m buffer zone from the top of the bank. Areas alongside the ditch will be formed into a 'green corridor' which can be used to enhance ecology and amenity. It is proposed that the site's surface water is discharged into this ditch at greenfield runoff rate.
- 4.3.5 The high density nature of the site and multiple SuDS solutions and control mechanisms will affect the surface water management strategy for the site. However the principal of attenuating and reusing water at source will help manage surface water and help reduce on surface attenuation requirements.
- 4.3.6 The proposed outline strategy has been undertaken on the basis that 800 m³ of attenuation will be required for every hectare of impermeable area on site, which is equivalent to limiting the surface water runoff to greenfield QBAR rates. In order to come up with the drainage strategy this volume has been split between the different attenuation features as shown by the table below and on the attached spreadsheet.

4.3.8 Below is an outline strategy for SuDS introduction.



5. HIGHWAYS

5.1 SCOPE

5.1.1 Following issue of the frozen masterplan by URBED on 25.09.18 and the Client Team Meeting a Masterplan Road Hierarchy plan has been issued. This drawing shows the following approach to road strategy:

	Road Types	Width (m)	Comments	Drainage Strategy	Material Strategy
i	Primary Streets	16.5		Underground attenuation	Highest quality
ii	Secondary Streets	16.5		Underground attenuation	
iii	Tertiary Streets	11.0	Normal width	Underground attenuation	
		5.5	Edge of neighbourhoods		
iv	Green (Street) Links	11.0	Normal width	Drainage Swales	
		8	Around neighbourhood squares		

5.1.2 With regard to connections to the existing highway network it is understood the following is being considered:

- A Carriageway/footway/cycleway link between Cambridge North station to the site (running south east to north west is proposed)
- On the southern extent of the site a footway/cycleway link is proposed linking Cowley Park to the development
- 3 new main junctions serving the site (two along the western boundary and one along the southern boundary)
- Minor alterations are required to the junctions of Cowley Road and Milton Road
- Introduction of a potential underpass/ pedestrian bridge.
- On the northern extremity of the site a proposed footbridge is anticipated across the A14
- On the Eastern extremity a footway/cycleway link over the railway.

5.1.3 We have produced plans for consideration and focus as the masterplan develops these are;

- Drawing 101999_SK007 – Existing site layout/ Existing site information. The plan shows the existing site operation, site limits and existing constraints.
- Drawing 101999_SK008 – Proposed Masterplan Constraints Plan.

Report

Odour impact assessment for
Cambridge Water Recycling Centre

Client: Cambridge City Council
Mandela House
Cambridge

Report number: CACC17A_08_final
Project code: CACC17A

Date: 23 October 2018 (October 2018)





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Executive Summary

Cambridge City Council (CCC) commissioned Odournet UK Ltd to undertake an odour impact assessment for Anglian Water's Water Recycling Centre (WRC) in Cambridge. 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.

The scope of the study was as follows:

1. To clarify the current WRC configuration and operations.
2. To undertake an odour survey and define odour emission estimates for each of the key elements of the treatment process at the WRC.
3. 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 study was conducted in accordance with the relevant aspects of published UK guidance issued by the Institute of Air Quality Management (IAQM) the Environment Agency and DEFRA. The study involved an odour measurement survey which was conducted at the WRC in summer 2017 with the cooperation of Anglian Water. The results of the survey were used alongside operational information for the WRC and odour measurement data collected at other UK sewage treatment works to define odour emission estimates for each aspect of the works operations. Odour dispersion modelling was then undertaken in order to assess the long-term odour exposure levels which are likely to occur around the site under the current operational conditions.

The key findings of the study are summarised as follows:

1. The odour survey identified a range of odour sources at the WRC under the current operational conditions. These sources include the raw sewage reception and screenings/grit removal plant, the stormwater storage tanks, the primary settlement tanks, the anoxic and aerobic secondary treatment plant, and the sludge handling and storage operations.
2. The estimated time weighted summer odour emissions from the WRC are approximately 73,000 ou_E/s . Of these emissions approximately 20% are generated by the preliminary treatment stage, 1% from storm water handling, 15% by the primary treatment stage, 22% by the secondary treatment stage and 42% from the sludge handling and treatment operations.
3. The largest individual contributors to the total site emissions are the emissions from the raw sludge belt thickening plant, the secondary sludge digestion tanks, the D stream anoxic plant and the primary settlement tanks.
4. The results of dispersion modelling which was undertaken to assess the level of odour impact risk under the foreseeable long term operational conditions at the works (current operations plus both secondary digestion tanks assumed to be in use and gas collection issues addressed) indicate that odour exposure levels in the area immediately surrounding the works exceed the $C_{98, 1\text{-hour}} = 3, 5$ and $6 \text{ ou}_E/\text{m}^3$ odour impact criteria discussed in section 2.3 of this report. 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 within this report.
5. The likely increase in exposure to odours that would be experienced periodically in the vicinity of the storm overflow lagoon should be considered if the suitability of this land for development is to be reviewed.



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1 Introduction and scope

1.1 Introduction

Cambridge City Council (CCC) commissioned Odournet UK Ltd to undertake an odour impact assessment for Anglian Water's Water Recycling Centre (WRC) in Cambridge. 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.

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3. 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 study was conducted in accordance with the relevant aspects of published UK guidance issued by the Institute of Air Quality Management (IAQM) the Environment Agency and DEFRA. The study was conducted by specialist consultants drawn from Odournet's UK consultancy team who have extensive experience assessing the odour impact of sewage treatment operations.

1.2 Structure of report

The report is structured as follows:

1. Section 2 describes the methodology undertaken to conduct the assessment.
2. Section 3 provides an overview of the current site operations.
3. Section 4 identifies the odour sources associated with the operation of the WRC.
4. Section 5 presents the results of the odour survey conducted at the works.
5. Section 6 presents an estimation of odour emissions from the WRC.
6. Section 7 assesses the predicted odour exposure levels in the area surrounding the WRC under the current operational conditions.
7. Section 8 summarises the findings of the study.

Supporting information is provided in the Annex.

1.3 Quality Control and Assurance

Odournet's odour measurement, assessment and consultancy services are conducted to the highest possible quality criteria by highly trained and experienced specialist staff. All activities are conducted in accordance with quality management procedures that are certified to ISO9001 (Certificate No. A13725).

All sensory odour analysis and odour sampling services are undertaken using UKAS accredited procedures (UKAS Testing Laboratory No. 2430) which comply fully with the requirements of the international quality standard ISO 17025: 2005 and the European standard for olfactometry EN13725: 2003. Where required, Odournet are accredited to conduct odour sampling from stacks and ducts in accordance to ISO 17025: 2005 and EN13725: 2003 under the MCERTS scheme. Odournet is the only company in the UK to have secured UKAS accreditation for all elements of the odour measurement and analysis procedure.



The Odournet laboratory is recognised as one of the foremost laboratories in Europe, consistently outperforming the requirements of the British Standard for Olfactometry in terms of accuracy and repeatability of analysis results.



2 Description of approach

2.1 Identification of odour sources and estimation of odour emissions

The odour sources associated with the WRC operations under the current conditions were defined on the basis of a review of the site operations (site audit) which was undertaken on 18th January 2017 by [REDACTED] in the company of an experienced Anglian Water Treatment [REDACTED] and [REDACTED].

Emission estimates (expressed in terms of European odour units) for each source were defined primarily on the basis of data collected at the works during an odour survey which was conducted by Odournet in August 2017. The odour survey was undertaken in summer conditions after a period of dry weather. In defining appropriate emission rates library data collected by Odournet from other operational sewage treatment facilities in the UK and contained in Odournet's odour emission database were reviewed where necessary.

All of the Odournet measurement data utilised was collected using sampling and analysis techniques compliant with the British Standard for Olfactometry BS EN 13725: 2003¹. Further details regarding the sampling and analysis techniques applied during the studies are presented in Annex A.

Consideration was given to the influence of the following factors to derive representative and comparable emission values:

- Turbulence of aspects of the process handling odorous liquid and solid material.
- The effect of seasonal changes in the influent quality and rate of biological generation of odours within the process.
- The frequency and duration of release of intermittent activities.

2.2 Odour dispersion modelling

On the basis that odour annoyance or 'nuisance' is a symptom that develops through intermittent exposure to odours over extended time periods (see Section 2.3 below), the study focused on assessing the long-term odour exposure levels which may occur around the site under the current operational conditions².

The assessment was performed using mathematical atmospheric dispersion modelling techniques which provided statistical analyses of the odour exposure levels that are likely to occur in the area around the site for each individual meteorological year of a 5 No. year dataset.

Data describing the topography of the local area was obtained from Ordnance Survey. The locations of the odour sources at the facility were defined using detailed aerial imagery of the site along with observations made during the site audit.

The dispersion modelling was conducted using the US EPA AERMOD dispersion model (version 7.12.1). The model was run in accordance with guidance issued by the US EPA and guidance relevant to odour assessment published by the Environment Agency. Details of the assumptions applied within the model are presented within the main body of this report.

¹BS EN 13725:2003, *Air quality - Determination of odour concentration by dynamic olfactometry*

² For the current operations model it was assumed that the recent issue of odorous biogas leakage has been resolved (Anglian Water have indicated that the flare stack is now fully operational, and that by the end of October 2017 a replacement gasholder bag will be operational).



2.3 Criteria for assessment of impact risk

In general terms, odour annoyance is recognised as a symptom that develops as a result of intermittent but regular exposure to odours that are recognisable and have an offensive character. The key factors that contribute to the development of odour annoyance can be usefully summarised by the acronym FIDOL:

- Frequency of exposure.
- Intensity or strength of exposure.
- Duration of exposure.
- Offensiveness.
- Location sensitivity.

In acknowledgement of these factors, a number of odour impact criteria have been developed that enable the odour impact risk of facilities to be predicted using dispersion modelling techniques. These criteria are generally defined in terms of a minimum concentration of odour (reflecting the intensity/strength element of FIDOL) that occurs for a defined minimum period of time (reflecting duration and frequency element of FIDOL) over a typical meteorological year. The concentration element of these criteria can be increased or lowered to reflect variations in the offensiveness of the odours released from a specific type of facility, and the sensitivity of nearby sensitive locations.

There are currently a range of odour criteria applied in the UK to attempt to gain an insight into the probability of odour annoyance developing at a given location. However, there is no firm consensus on which odour impact criteria should be applied for sewage treatment works and the issue is currently a matter of debate.

In the UK, odour impact criteria are generally expressed in terms of a European odour unit concentration that occurs for more than 2% of the hours of a typical meteorological year, and have been designed for application to permanent residential properties which are considered to be the most sensitive from an impact risk perspective.

The most commonly applied criterion from this perspective is the 'Newbiggin criterion'. This criterion was originally introduced into a public inquiry for a new sewage works at Newbiggin-by-the-sea in 1993, and equates to an odour exposure level of 5 European odour units per cubic meter ($C_{98, 1\text{-hour}} > 5 \text{ ouE/m}^3$). This 5 European odour units criterion has been successfully applied during numerous planning and odour nuisance assessment studies since 1993 for sewage, waste, food and a range of other industrial and agricultural activities.

Since 2002, a range of indicative odour annoyance criteria have also been applied to assess odour impact risk from residential properties, which have supplemented the use of the Newbiggin criterion. These criteria were introduced in the Horizontal Guidance Note for Odour Management H4 issued by the Environment Agency³ and define three different levels of exposure at which odour impact or annoyance could potentially be expected to occur, for odours with high, moderate and low offensiveness. The indicative criteria are presented in the table below:

³ IPPC H4 Technical Guidance Note "H4 Odour Management", published by the Environment Agency, March 2011.



Table 1: Odour impact criteria

Relative offensiveness	Indicative criterion	Typical processes
Most offensive	1.5 ou _E /m ³ 98 th percentile (hourly average)	Processes involving decaying animals or fish remains; septic effluent or sludge; biological landfill odours
Moderately offensive	3 ou _E /m ³ 98 th percentile (hourly average)	Intensive livestock rearing; sugar beet processing; fat frying (food processing); well aerated green waste composting
Less offensive	6 ou _E /m ³ 98 th percentile (hourly average)	Brewery; coffee roasting; confectionary; bakery

Odour guidance published by DEFRA in March 2010⁴ also refers to these criteria but in less specific terms. The guidance does not state which criterion should be applied for assessing impact but does suggest that typical criteria fall within the range of $C_{98, 1\text{-hour}} = 1.5 \text{ ou}_E/\text{m}^3$ to $C_{98, 1\text{-hour}} = 5 \text{ ou}_E/\text{m}^3$.

Similarly, guidance published by the Institute of Air Quality Management (IAQM)⁵ in May 2014 also refers to these criteria. This guidance does however state that odour impact may occur between $C_{98, 1\text{-hour}} = 1 \text{ ou}_E/\text{m}^3$ and $C_{98, 1\text{-hour}} = 10 \text{ ou}_E/\text{m}^3$ and that professional judgement should be applied to determine criteria on a case by case basis by considering the underlying science, sensitivity of local receptors and developing case law.

There is currently some debate as to which odour criteria currently are the most appropriate for assessing the risk of impact of odorous industries such as sewage treatment, and to what extent the criteria are able to predict occurrence of odour annoyance for different odour types. Whilst there appears to be a substantial body of evidence to support the Newbiggin-by-the-Sea impact criterion for assessing the development of odour annoyance from the sewage treatment sector, the availability of such evidence for the EA criteria is currently somewhat lacking. There is therefore a developing view within the UK odour community that the most stringent EA criteria (i.e. $C_{98, 1\text{-hour}} = 1.5 \text{ ou}_E/\text{m}^3$) may represent an overly precautionary standard in many cases even for highly offensive odours.

Odournet's general experience based on assessment of odours which could generally be classified as moderate to highly offensive (e.g. odours from waste water and sludge handling operations) generally supports this view, and indicates that for high sensitivity receptors such as residential premises odour annoyance is a symptom that is most likely⁶ to develop at exposure levels between $C_{98, 1\text{-hour}} = 3 \text{ ou}_E/\text{m}^3$ and $C_{98, 1\text{-hour}} = 5 \text{ ou}_E/\text{m}^3$. However the occurrence of adverse impact and complaints from areas of predicted odour exposure levels below $C_{98, 1\text{-hour}} = 3 \text{ ou}_E/\text{m}^3$ cannot be completely ruled out.

This observation is supported to some extent by the findings of recent legal cases relating to odours from sewage treatment works (and a policy statement issued by the Chartered Institute of Water and Environmental Management) as indicated below.

- **Appeal by Sherborne School, CRUK, CLIC Sargent, Mencap and British Heart Foundation against North Dorset District Council (January 2016).** The District Council originally refused outline planning permission for the erection of homes on land in proximity to Gillingham sewage treatment works on the basis that the proposed development would have an adverse impact on the general amenity of the future occupants due to odours from the sewage treatment works.

⁴ Odour Guidance for Local Authorities, published by DEFRA, March 2010.

⁵ Guidance on the assessment of odour for planning, published by IAQM: April 2014.

⁶ On the basis of odour exposure levels predicted by the AERMOD dispersion model using emission rates defined on the basis of site specific measurement data and taking into account local factors that will influence emissions (such as sewage turbulence in open channels/tanks, seasonal variation in emissions etc).



Odour dispersion modelling was undertaken on behalf of the appellant, and the inspector concluded that “the appropriate parameter to apply in this case is the $3 \text{ ou}_E/\text{m}^3$ contour line”.

- **Appeal by Abbey Homes against St Edmundsbury Borough Council (March 2012).** The Borough Council originally refused planning permission for the erection of 101 dwellings on land between Upthorne Road and Hepworth Road, Stanton, Suffolk, for reasons including the proximity of the site to an existing small rural sewage treatment works and the potential effects on the living conditions of future residents of the dwellings. On the basis of odour dispersion modelling submitted by experts acting for both parties, the inspector considered an appropriate threshold to be more than $C_{98, 1\text{-hour}} = 1.5 \text{ ou}_E/\text{m}^3$, and that $C_{98, 1\text{-hour}} = 3 - 5 \text{ ou}_E/\text{m}^3$ was a more appropriate threshold (the inspector could see no reason to expect a significant loss of amenity to the occupiers of the proposed dwellings where Anglian Water’s modelling predicted exposure levels below $C_{98, 1\text{-hour}} = 3 \text{ ou}_E/\text{m}^3$).
- **Appeal against Corby Borough Council (2012).** This appeal concerned land at Ashley Road, Middleton, Leicestershire. The inspector concluded in this case “I believe that it is reasonable to take account of the $1.5 \text{ ou}_E/\text{m}^3$ contour map in determining odour impact. In my view areas subject to such concentrations are unlikely to provide a reasonable permanent living environment.”
- **Appeal by Lakeland Leisure Ltd. against Allerdale Borough Council, 2012.** This appeal concerned the development of dwellings in Cockermouth, Cumbria in the vicinity of a sewage treatment works. The inspector concluded that development within the area predicted to experience odour exposure levels of $C_{98, 1\text{-hour}} = 3 \text{ ou}_E/\text{m}^3$ or less would be appropriate due to the anticipated medium offensive nature of the odours from the sewage works.
- **Thames Water vrs Dobson 2011.** This nuisance action was brought against Thames Water Mogden Sewage Treatment Works by a group of residents claiming odour nuisance caused by this large municipal sewage works in London. The inspector concluded that he would be reluctant to find nuisance if the modelled odour concentration was only $C_{98, 1\text{-hour}} > 1.5 \text{ ou}_E/\text{m}^3$ but as the odour concentration rises to $C_{98, 1\text{-hour}} = 5 \text{ ou}_E/\text{m}^3$ he considered that this was the area where nuisance from the works would start and that by the time that $C_{98, 1\text{-hour}} > 5 \text{ ou}_E/\text{m}^3$ or above is reached nuisance would certainly be established.
- **Appeal by JS Bloor (Northampton) Ltd 2010.** This appeal concerned a proposed residential development on land near an existing sewage treatment works in Leighton Linlade. The inspector noted that the water company used a standard of $C_{98, 1\text{-hour}} > 5 \text{ ou}_E/\text{m}^3$ which they indicated would be a “concentration level above which odour might be a potential nuisance”, and stated that the approach seemed reasonable and had been accepted at a previous appeal.
- **Extract from CIWEM policy statement.** CIWEM issued a position statement on odour in 2012 stating that the following framework is the most reliable that can be defined on the basis of the limited research undertaken in the UK at the time of writing:
 - $C_{98, 1\text{-hour}} > 10 \text{ ou}_E/\text{m}^3$ - complaints are highly likely and odour exposure at these levels represents an actionable nuisance;
 - $C_{98, 1\text{-hour}} > 5 \text{ ou}_E/\text{m}^3$, - complaints may occur and depending on the sensitivity of the locality and nature of the odour this level may constitute a nuisance;
 - $C_{98, 1\text{-hour}} < 3 \text{ ou}_E/\text{m}^3$, - complaints are unlikely to occur and exposure below this level is unlikely to constitute significant pollution or significant detriment to amenity unless the locality is highly sensitive or the odour highly unpleasant in nature.



It should be noted that the majority of the guidance and legal/planning cases relating to odour focus on the risk of impact at residential premises which are considered as high sensitivity receptors. There is much less available data regarding odour impact at potentially less sensitive non-residential receptors, and there is no clear precedent for what constitutes a suitable criterion.

As a general concept, the application of less stringent odour impact criterion may be suitable for users of less sensitive receptors (such as commercial or industrial premises). However complaints of odour are often documented from non-residential premises such as places of work so the issue is far from clear.

As there is no definitive precedent as to which criterion is suitable for either residential or non-residential premises, the criteria selected for planning purposes is open to challenge. Ultimately the decision on which criteria to apply is for the Council based on their risk appetite.

For this study, the assessment of risk of impact associated with the operations conducted at the WRC has been conducted by consideration of the $C_{98, 1\text{-hour}} = 3 \text{ ou}_E/\text{m}^3$ and $5 \text{ ou}_E/\text{m}^3$ criteria. The $C_{98, 1\text{-hour}} = 6$ and $10 \text{ ou}_E/\text{m}^3$ isopleths are also presented for reference.



3 Overview of sewage treatment operations

3.1 Location of works

The Water Recycling Centre is a medium to large sized sewage treatment works located on the north eastern edge of the city of Cambridge. The works serves a population equivalent of approximately 165,000, with an influent dry weather flow of 650 l/s.

In close proximity to the northern, south eastern and western boundaries of the WRC are located commercial premises. To the east and north east is located undeveloped land (agricultural land and Milton Country Park). Residential areas are located further afield to the north and south west.

The location of the site is indicated in Figure 1 below.

Figure 1: Map of the location of the WRC



In broad terms, the works has been operating in its current configuration since 2015. In 2015 Anglian Water completed a £██████████ upgrade of the WRC to meet the Greater Cambridgeshire growth needs up to 2031. The key elements of the upgrade focussed on the secondary treatment operations, and involved decommissioning two percolating filter beds (known as Stream A and Stream B filters) and associated



humus tanks. To replace these plant new biological treatment plant with a smaller footprint (Stream D activated sludge plant) and final settlement tanks were commissioned.

3.2 Overview of sewage treatment operations

The sewage received at the WRC is made up of primarily domestic influent (there are no notably odorous trade discharges). The majority of the influent received at the works is delivered via gravity sewer, although a small proportion of the influent is delivered via pumped rising mains. Septicity dosing is undertaken at the pumping stations of the rising mains to reduce the risk of the development of septic conditions within the sewage.

Sewage arrives at the WRC into a large open below ground chamber from where it is pumped to the head of a raised inlet works. Tankered cess and other liquid wastes delivered to the works by road are also discharged into the below ground chamber.

At the head of the raised inlet works a number of bellmouths discharge the influent into a turbulent chamber prior to it flowing through open channels to 3 No. enclosed fine screens (operated in duty-assist-standby configuration). The screens remove rag from the influent which is then washed and compacted prior to deposit in 2 No. open skips which are replaced approximately once per week.

Following screening the flows pass through an open channel into an open circular detritor where grit is removed prior to being washed and deposited into an open skip which is replaced approximately once per week.

The screened and degrittled flows are then conveyed along an open channel and turbulent mixing section. Works returns primarily consisting of liquors from the sludge treatment centre (liquors from the raw sludge gravity belt thickeners and centrate from the digested sludge centrifuges) and any road drainage are returned into an open chamber downstream of the detritor prior to combining with the influent in the open channel. Ferric sulphate is dosed into this channel.

Storm flows received at the works (those above 3x dry weather flow) are removed via storm weirs located downstream of the screens and diverted into 2 No. open circular storm tanks via enclosed pipework. Once the incoming flow rate into the works subsides the storm water within the tanks is returned to the works for treatment. The storm tanks are fitted with scrapers which are designed to prevent the accumulation of potentially odorous sediment on the base of the tanks after emptying. In extreme rainfall events the storm tanks fill and overspill (via enclosed pipework) into a large (approximately 100m x 140m) storm lagoon which is designed to store storm effluent which then soaks into the ground. Once the effluent has soaked away a residual sediment layer is left on the base of the lagoon which (according to site operators) typically results in a notable odour in the immediate area for between 10 and 14 days. Site operators believe that the lagoon is typically filled once per year on average.

Flows from the inlet works are conveyed via 2 No. open turbulent distribution chambers into 5 No. circular primary settlement tanks (PSTs) for solids settlement and removal. Each tank is fitted with automatic sludge scrapers and scum removal plant. Site operators state that between four and five of the tanks are routinely in use, dependent on the magnitude of flows received at the works.

Following primary treatment, the settled sewage is conveyed via an open distribution chamber into one of 2 No. secondary treatment streams. Stream D is an activated sludge process which includes a highly turbulent distribution/mixing chamber at the head of the works where settled sewage and return activated sludge (RAS) are mixed. The mixed liquors are conveyed to one of 4 No. lanes each comprising an anoxic and an aerobic section. A turbulent outlet channel collects the treated sewage from all 4 No. lanes and conveys it to 4 No. circular final treatment tanks (FSTs) for final clarification.



Stream C receives settled sewage from the PSTs which is mixed with RAS in a turbulent open chamber and then diverted into 4 No. lanes, each comprising anoxic and aerobic stages. Final clarification is provided by 3 No. open circular final settlement tanks.

Final tertiary treatment of all flows is provided by sand filters.

3.3 Overview of sludge treatment operations

Indigenous raw sludge from the primary settlement tanks is pumped via enclosed pipework into a circular covered sludge buffer tank, the air from which is extracted for treatment in an odour control unit.

Imported raw sludge is delivered to the site by road tanker and passed through a strainpress (to remove rag and other materials which are deposited into an open skip) into an enclosed imported sludge holding tank. This tank is served by an odour control unit. Imported sludge from this tank is conveyed into the sludge buffer tank where it is mixed with the indigenous raw sludge.

Mixed raw sludge from the sludge buffer tank is thickened in 2 No. gravity belt thickeners located on the ground floor of a sludge thickening building. The belts are locally enclosed and the captured odours are vented to atmosphere via 2 No. dispersion stacks. The liquors from the belts are discharged into an open sump prior to return the head of the works as described above.

Surplus activated sludge (SAS) from the Stream D activated sludge plant is stored in an open above ground SAS holding tank prior to thickening within 1 of 2 No. aquabelts (only one belt can run at any time and each is locally enclosed and vented to atmosphere via short dispersion stack) located in a SAS thickening building. Liquors from the belts are diverted into the distribution chamber at the head of the D stream secondary treatment plant.

Imported SAS and indigenous SAS from the Stream C secondary treatment plant is stored in a circular covered SAS buffer tank which is served by an odour control unit. The SAS is thickened in a SAS drum thickener prior to delivery into a circular covered above ground sludge blend tank where it is mixed with the thickened SAS from the D stream secondary treatment plant and the thickened raw sludge. The air from the sludge blend tank is extracted for treatment in the same odour control unit as the SAS buffer tank.

Mixed thickened sludge from the sludge blend tank is processed in the enclosed Monsal plant and then digested in enclosed primary anaerobic digesters with associated gas capture and combustion plant. At the time of the site audit there were a number of operational issues with the normal gas collection system and gas flare and some degree of gas leakage was occurring from the primary digester Whessoe valves. Anglian Water have indicated that these issues are being resolved and the routine release of unburnt biogas will not be anticipated from the site over the long term. Following digestion the sludge is transferred to one of 2 No. open secondary digestion tanks, sections of which are aerated in specific locations to avoid the accumulation of grit and silt, resulting in turbulence in these areas. The second tank is not in use, but contains a quantity of digested sludge. Anglian Water have indicated that the second tank will be cleaned in September 2017 and brought back into operation at some future stage.

Sludge from the secondary digestion tank is transferred via enclosed pipework to a number of centrifuges located in the upper level of the sludge thickening building. Centrate is discharged into the same sump as the GBT liquors. The trailers are typically removed after several days of storage, and in summer four or five trailers are typically stored onsite, and in winter this can increase up to nine. In addition, an emergency bund typically contains a quantity of cake that hasn't been deposited in a trailer.

The layout of the treatment assets at the WRC is shown in Figure 2.



Figure 2: Layout of treatment assets at the WRC



3.4 Overview of complaints

Complaints data provided by Cambridge City Council indicates that between 2005 and 2014 18 No. complaints of odour relating the WRC were received by the Council, from both residential and commercial premises. From completion of the upgrade in 2015 to the present (September 2017), 5 No. complaints of odour have been received. Detailed information regarding the nature of each complaint is not available. For three of the complaints the postcode is provided and these appear to have been received from residential locations. These locations have been plotted on the map below.



Figure 3: Location of odour complaints (2015-present)



4 Identification of odour sources

4.1 Overview of the mechanisms for odour generation from sewage treatment operations.

The generation of odour from the processing of sewage is primarily associated with the release of odorous Volatile Organic Compounds (VOCs) that are generated as a result of the anaerobic breakdown of organic matter by micro-organisms. Anaerobic breakdown starts within the human bowel and may continue within the sewerage network and treatment works if conditions (i.e. a lack of oxygen) allow.

The key objectives of the sewage treatment process are to remove solid organic matter which is responsible for the generation of the majority of sewage odours and to provide treatment to remove any residual contaminants from the wastewater so that it can be returned back into the environment.

Since the main source of odour and VOCs is the solid organic matter, the most intense and offensive odours tend to be generated from the operations involving the handling of sludge i.e. the processes applied to dewater and store raw sludge. These processes are generally considered to present the greatest risk of odour impact offsite, unless adequate controls are put in place. Depending upon the quality of the sewage presented to the works, the aspects of the treatment process involved in the handling of raw sewage (e.g. preliminary and primary treatment stages) may also generate substantial levels of offensive odours.

Odours generated from the sewage treatment processes downstream of the primary sludge removal stage (e.g. the activated sludge processes and final settlement) present a significantly reduced risk of odour impact. This is due to the fact that the majority of odorous biogenic material has been removed from the flow at this point, and the treatment processes applied to remove any remaining contaminants in the sewage are aerobic which inhibits the formation of the majority of the reduced sulphur compounds which are responsible for offensive sewage odours.

The rate of odour release from sewage and sludge sources is influenced by the temperature of the material and the surface area exposed to the atmosphere. As a result, odorous emissions from sewage treatment operations tend to be highest during the summer months. Furthermore, activities that lead to increase in the surface area of odorous material exposed to the atmosphere (e.g. due to turbulence generated by sewage handling processes and agitation of sludge) will inevitably lead to an increase in the magnitude of odour released.

4.2 Identification of sources of odour emission

A range of odour sources were identified at the WRC. These sources are summarised below.

Table 2: Identification of odour sources for the WRC

Stage of treatment	Source	Nature of odorous material/level of enclosure	Frequency and duration of release
Preliminary Treatment	Inlet works chambers, detritor and channels	Raw sewage / open	Continuous
	Screenings plant and skips	Screenings / enclosed and open	Continuous
	Grit skips and dewatering plant	Grit storage / open	Continuous
	Works return channel	Works returns (dewatering liquors, site drainage)	Continuous
Storm water	Storm weirs and tanks	Raw sewage (storm water) / open	Intermittent (1 day per month in summer, 2 days per month winter)



	Storm lagoon	Raw sewage (storm water) and sediment / open	Intermittent (very infrequent, typically 1 to 2 weeks per year)
Primary Treatment	Distribution chambers	Raw sewage / open	Continuous
	Primary settlement tanks	Raw sewage / open	Continuous
	Settled sewage distribution chambers	Raw sewage / open	Continuous
Secondary Treatment	Distribution/mixing chambers	Settled sewage and return activated sludge / open	Continuous
	Activated sludge plant - anoxic and aerobic sections	Mixed liquors / open	Continuous
Sludge treatment and handling	Sludge buffer tank OCU	Treated odours - stack emissions	Continuous
	Imported sludge strain press skip	Sludge screenings / open skip	Continuous
	Imported sludge tank OCU	Treated odours - stack emissions	Continuous
	Raw sludge gravity belt thickeners	Enclosed thickeners with vented emissions	Continuous
	Raw sludge thickening building	Fugitive emissions from building	Continuous
	Sludge liquors sump	Raw & digested sludge liquors / open chamber	Continuous
	SAS thickening building	Enclosed belts with vented emissions	Intermittent (10 hours per day)
	SAS holding tank	SAS / open tank	Continuous
	SAS buffer & sludge blend tank OCU	Treated odours - stack emissions	Continuous
	Secondary digestion tanks	Digested sludge / open tanks	Continuous
	Sludge cake	Digested sludge cake / open bay and trailers	Continuous



5 Odour survey results

5.1 Olfactometry and hydrogen sulphide measurement results

The results of Odournet's 2017 odour survey are summarised in the tables below and presented in full in Annex B, along with a record of the operational conditions at the works at the time of sampling.

Table 3: Olfactometry and H₂S measurements from open sources

Source	Date of Sampling	Geomean emission rate [ouE/m ² /s]	H ₂ S emission rate [ug/m ² /s]
Detritor (morning)	22.08.2017	22.2	5.664
Detritor (afternoon)	24.08.2017	23.4	1.680
Works return chamber	22.08.2017	26.8	1.338
PST #1	22.08.2017	3.9	0.654
PST #5	23.08.2017	1.1	0.134
Settled sewage chamber	23.08.2017	8.0	0.539
Stream D Anoxic zone	23.08.2017	22.4	0.414
Stream D Aerobic zone	23.08.2017	0.2*	<LLOD
Stream C Anoxic zone	23.08.2017	0.5	<LLOD
Stream C Aerobic zone	23.08.2017	0.2*	<LLOD
Secondary digestion tank (in use)	24.08.2017	5.7	3.342
Secondary digester (disused)	24.08.2017	0.6	5.739
Fresh sludge cake	24.08.2017	5.7	4.475
Digested sludge centrate sump	24.08.2017	2.4	0.677

*Estimated result as some sample results fell below the lower limit of detection of the analysis technique

Table 4: Olfactometry and H₂S measurements from volume sources

Source	Date of sampling	Geomean odour concentration [ouE/m ³]	H ₂ S conc. [ppm]	Flow rate (m ² /s)	Odour emission rate (ouE/s)
SAS buffer & sludge blend tank OCU	22.08.2017	31	<LLOD	0.03	1
Raw sludge thickening building	22.08.2017	231	<LLOD	n/a	n/a
Imported raw sludge holding tank OCU outlet	24.08.2017	2831	<LLOD	0.02	50
Raw sludge gravity belt outlet stack	22.08.2017	47557	10.7	0.36	19023

The raw sludge buffer tank OCU was not operating at the time of the 2017 odour survey. Anglian Water have indicated that the performance of this unit is likely to be broadly comparable to the performance of the OCU which serves the sludge blend and SAS buffer tanks.

5.2 Hedonic tone analysis results

Table 5: Hedonic tone analysis results

Source	Date of sampling	Concentration at which odours were perceived as 'mildly offensive' [ouE/m ³]
Detritor	22.08.2017	2.1
Stream D anoxic zone*	23.08.2017	1.8



Imported raw sludge holding tank OCU outlet	24.08.2017	2.0
Secondary digestion tank	24.08.2017	2.1

*due to the low concentration of the sample collected from the stream D aerobic zone, hedonic tone analysis could not be undertaken.

5.3 Discussion

Review of the odour measurement results presented above prompts the following observations:

- The odour emission rates measured from the influent in the detritor at the WRC are indicative of a moderately odorous influent. The comparability of the measured emission rates from the morning of the first day of sampling and the afternoon of the third day indicate a relatively consistent influent emission rate. The hydrogen sulphide emission rates do not indicate a substantial problem of septicity within the sewage received at the works at the time of sampling.
- The measurements of the odour emission rate from the works return chamber confirm that the material which is returned to the works for treatment is also moderately odorous.
- In comparison the emission rates of odour and hydrogen sulphide from the primary settlement tanks (PSTs) are low and are indicative of well operated tanks. The maintenance of the sludge blankets in the tanks at minimal levels is likely to result in the minimisation of odour generation within the tanks.
- The odour emission rates measured from the secondary treatment plant (filter beds, humus tanks and activated sludge plant) were all low and indicative of a well treated sewage, with the exception of the D stream anoxic zone. The measured emission rate at this location is higher than would typically be expected, and the reason for this is unknown.
- Review of the emission rates from the secondary digestion tanks indicates that the retained digested sludge within the disused tank is not a particularly odorous material. The sludge within the tank that is in use is more odorous, and measurements of the ammonia concentration of the collected samples indicates that this is likely to be a key component of the odours released. The same is the case for the sludge cake.
- At the time of sampling the sludge liquors sump was unlikely to have contained liquors due to the temporary suspension of the use of the thickening plant. On this basis the emission rate measured from this location is unlikely to be representative of the long term emissions.
- The odour concentration of the treated air from the SAS buffer & sludge blend tank OCU is very low, and indicates that the unit is likely to be providing a high level of treatment.
- The odour concentration of the treated air from the imported raw sludge holding tank OCU is substantially higher and indicates that the unit is unlikely to be performing as well. However due to the low flow rate of air through this OCU the resulting odour emission is small. The untreated air extracted from the raw sludge gravity belt thickeners is extremely odorous.
- Review of the results of the hedonic tone analysis indicates that the odour panel found the offensiveness of the odours from the various areas of the works to be broadly comparable.



6 Estimation of odour emissions

6.1 Assumptions applied to estimate odour emissions

The assumptions applied to estimate odour emissions from the works for the current operational conditions are presented below. This reflects the current operational conditions at the works, but assuming that the biogas leakage has been resolved and both of the secondary sludge digestion tanks are brought into use (indicated by Anglian Water to be the long term plan).

- The odour emission rates for open odour sources for summer conditions were calculated by multiplying the plan area of the treatment process by the area odour emission rates defined in the table below.

Table 6: Estimated summer odour emission rates applied for current operational conditions

Stage of treatment	Source	Estimated odour emission rate (ouE/m ² /s)	Turbulence factor	Note
Preliminary Treatment	Inlet works chamber, screens detritor and channels	23	1 - 6	Measured
	Screenings skips	35	1	Estimated (reference data)
	Grit skips and dewatering plant	25	1	Estimated (reference data)
	Works return channel	27	1	Measured
Storm water	Storm weirs and tanks	8	1-6	Measured influent emission rate divided by 3 (3xDWF)
Primary Treatment	Distribution chambers	23	1-3	Measured (influent)
	Primary settlement tanks	2.1	1-3 (weirs)	Measured
	Settled sewage distribution chamber	8	1-6	Measured
Secondary Treatment	Distribution/mixing chambers	5	1-20	Estimated based on SS distribution measurement and estimate of RAS
	Stream D anoxic zone	22	1	Measured
	Stream D aerobic zone	0.2	1	Measured
	Stream C anoxic zone	0.5	1	Measured
	Stream C aerobic zone	0.2	1	Measured
	Outlet channels	0.2	1-20	Estimated based on aerobic zone measurements
Sludge treatment and handling	Imported sludge strain press skip	50	1	Estimated (reference data)
	Sludge liquors sump	350	3	Estimated (reference data)
	SAS holding tank	4	1	Estimated (reference data)
	Secondary digestion tank	6	1-6	Measured
	Sludge cake	6	1	Measured

- The emission rate of odour from all aspects of the works involved in handling raw liquid sewage (e.g. the preliminary and primary treatment) were reduced by a factor of 5 during autumn/winter to reflect the reduction in emissions due to lower sewage/ambient temperature and dilution effects of rainwater. Emissions from aspects of the operations including the secondary treatment stage, sludge handling, screenings handling and storage were assumed to remain relatively constant during summer and winter conditions.



- For turbulent sources, a multiplier was applied to the emission rate to reflect the elevation in emissions that occurs due to the increase in surface area exposed to the atmosphere. The following turbulence factors were used which are based on Odournet's broader experience in the wastewater sector and the findings of research:

Table 7: Turbulence factors

Level of turbulence	Turbulence multiplier
Low	3
Medium	6
High	12
Extreme	20

- The emission rates applied for volume and point sources were also based on the results of Odournet's 2017 measurement survey, and where relevant, reference data obtained by Odournet from comparable sources at UK sewage treatment works using accredited odour sampling and analysis techniques. For the raw sludge buffer tank OCU, the flow rates and odour emission rate were estimated based on the results of the testing of the SAS buffer and sludge blend tank OCU.

Table 8: Estimated emission rates for point and volume sources

Stage of treatment	Source	Estimated flow rate (m ³ /s)	Estimated odour emission rate (OU _E /s)	Note
Sludge treatment and handling	Raw sludge buffer tank OCU	0.03	1	Assumed to be the same as SAS buffer & sludge blend tank OCU
	Imported sludge OCU	0.02	50	Measured
	SAS buffer & sludge blend tank OCU	0.03	1	Measured
	SAS thickening belt vent	0.4	250	Estimated (reference data)
	Raw sludge thickening building	0.625	144	Estimate based on measured odour concentration and estimated 3 building air changes per hour
	Raw sludge gravity belt thickener vents	0.4	19023	Measured

- It is assumed that at any given time three of the bellmouths at the head of the elevated inlet works are discharging.
- It is assumed that 2 No. screenings skips, 1 No. grit skip and 1 No. sludge strainpress skip are in use.
- It is assumed that the 2 No. circular storm tanks are in use for 2 No. days per month in winter and 1 No. day per month in summer. The emission rate from the storm water has been estimated as a third of the influent emission rate, to account for the fact the storm flows are directed to the tanks at 3x dry weather flow. It is assumed that the cleaning systems within the tanks are effective and that no odorous sediment is retained in the tanks after emptying.
- It is assumed that 4 No. PSTs are in use during summer, and 5 No. PSTs are in use in winter.
- It is assumed that one of the raw sludge gravity belt thickeners is in operation 24 hours per day.
- It is assumed that one of the SAS belts is in operation for 10 No. hours per day.



- It is assumed that both of the secondary digestion tanks are in use, and that each is fitted with an aeration system which constantly aerates approximately 10% of the surface.
- It is assumed that 5 No. sludge cake trailers were in place in summer, and 9 No. trailers were present in winter.
- Emissions from the filling of the storm lagoon (which typically only happens once per year) were not included in the model.

6.2 Breakdown of estimated emissions

A breakdown of the summer odour emissions generated from each aspect of the sewage treatment process is presented in Table 9 below. The emission rates presented in the table have been adjusted to reflect the frequency of occurrence of each odour source and are 'time-weighted'.

Table 9: Summer time weighted emissions from each aspect of the treatment process

Stage of treatment	Source	Odour emission rate [ou _E /s]	% of total emissions
Preliminary treatment	Inlet works screens, detritor & channels	13283	18.2%
	Screenings skips	315	0.4%
	Grit skips and dewatering plant	190	0.3%
	Works return channel	398	0.5%
Storm water	Storm weirs and tanks	557	0.8%
Primary treatment	Distribution chambers	2235	3.1%
	Primary settlement tanks	7271	10.0%
	Settled sewage	1744	2.4%
Secondary treatment	Distribution/mixing chambers	1435	2.0%
	Activated sludge plant - anoxic zones	13705	18.8%
	Activated sludge plant - aerobic zones	1264	1.7%
Sludge treatment and handling	Sludge buffer tank OCU	1	0.0%
	Imported sludge strain press skip	225	0.3%
	Imported sludge tank OCU	50	0.1%
	Raw sludge gravity belt thickener vent	19023	26.1%
	Raw sludge thickening building	144	0.2%
	Sludge liquors sump	350	0.5%
	SAS thickening vent	104	0.1%
	SAS holding tank	278	0.4%
	SAS buffer & sludge blend tank OCU	1	0.0%
	Secondary digestion tanks	9855	13.5%
	Sludge cake	416	0.6%
TOTAL		72843	100

Based on a review of the above table, the total time weighted summer odour emission from the works is approximately 73,000 ou_E/s. Of these emissions approximately █% are generated by the preliminary treatment stage, █% from storm water handling, █% by the primary treatment stage, █% by the secondary treatment stage and █% from the sludge handling and treatment operations.

Within the preliminary treatment area, the handling and treatment of odorous raw sewage results in this area contributing approximately one fifth of the total emissions from the WRC.



Storm water handling emissions account for a very small percentage of site emissions due to fact that the storm tanks are used relatively infrequently, and also due to the cleaning systems which prevent the retention of sediment in the base of the tanks after emptying.

For the primary treatment stage, the majority of emissions (■%) are released from the surface of the primary settlement tanks which have a relatively large surface area.

For the secondary treatment stage, the elevated odour emission rate measured from the anoxic zones of the D stream activated sludge plant means that they account for almost ■% of the total emissions from the WRC as a whole. Despite the large surface area of the aerobic stages of the secondary treatment plant, the low odour emission rate from the partially treated sewage means that emissions from this area only account for approximately ■% of overall emissions.

The high contribution of the sludge treatment and handling operations is due primarily to two key odour sources; the vent which emits odours from the raw sludge gravity belt thickener and the open secondary digestion tanks. The large contribution of the raw sludge belt thickener (■% of total emissions) is due to the very high odour concentration of the air extracted and vented to atmosphere untreated. For the secondary digestion tanks the 14% contribution to total emissions results primarily from the large surface area of the tanks and the areas of turbulence caused by the aeration mixing.



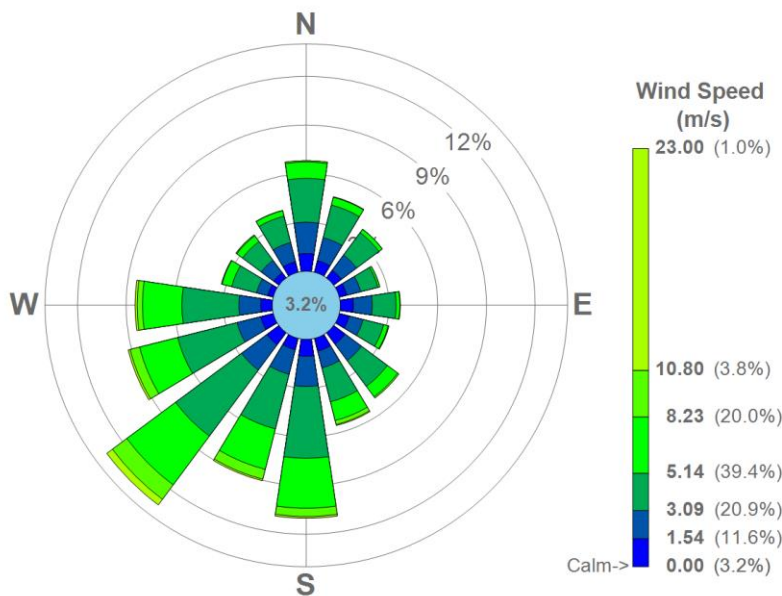
7 Odour impact assessment

7.1 Dispersion modelling assumptions

The assumptions applied for the dispersion model were as follows:

- The meteorological data used by the model to simulate the dispersion and dilution effects generated by the atmosphere has been selected with reference to the AERMOD Implementation Guide⁷, which advises that the most representative meteorological dataset should be utilised (this will be influenced by both proximity to the study site and the representativeness of the surface characteristics of the meteorological station in comparison to the study site).
- Sequential hourly average meteorological data was obtained from the recording station located at Cambridge Airport for the years 2012 to 2016, with missing data imported from RAF Mildenhall. Cambridge Airport is located approximately 3km to the south of the WRC and is located in an area of broadly comparable landuse (semi rural/urban area located on the eastern edge of the city of Cambridge). The meteorological data was adjusted to reflect the surface characteristics of the study site in accordance with the guidelines in the AERMOD Implementation Guide. The windrose for the meteorological data utilised in the study is presented below.

Figure 4: Windrose for Cambridge Airport (with missing data imported from RAF Mildenhall) for 2012 to 2016



- Data describing the topography of the area surrounding the works was obtained from Ordnance Survey in Landform Panorama™ format.
- The model was run assuming rural dispersion characteristics, as defined in the AERMOD implementation guide
- Buildings and structures in the vicinity of the odour control units were included in the model.
- A 2.7km by 3.2 km uniform Cartesian receptor grid was defined for the study area. The model was run using a receptor point spacing of 100 m for all years. The model for the ‘worst case’

⁷ AERMOD Implementation Guide, Published by the US EPA, Revised August 2015



year was also rerun using a spacing of 40 m, and this is presented in Annex C. Receptor heights of 1.5m were assumed.

- The model only considers normal operational occurrences. Short term events such as plant breakdown, maintenance and repair could potentially impact considerably on the odorous emissions from time to time. Such short term variations have not been considered within the model.
- The model reflects the current operational conditions, with the exception that the both secondary digestion tanks are assumed to be in use and the issues with gas collection are assumed to have been addressed. From discussions with Anglian Water it is understood that there are currently no other planned changes to the works operations that are likely to substantially change odour emissions and that this reflects the likely foreseeable long term operation of the WRC.

7.2 Dispersion modelling results

Current practice for odour assessment for planning is for the model to be run using five individual meteorological years, and for the assessment conclusions to be based on the results of the worst case year. In this case the worst case year is likely to be 2013, although this is dependent on which specific offsite location is being assessed. The model output for 2013 (100 m receptor grid spacing) is presented in Figure 5 below. The model outputs for all years modelled (including the 2013 model output with a 40 m receptor grid spacing) are presented in Annex C so that the variation in predicted odour exposure levels can be understood. The figures present isopleths defining the area where predicted odour exposure levels will exceed $C_{98, 1\text{-hour}} = 3, 5, 6$ and $10 \text{ ou}_E/\text{m}^3$.

Figure 5: Current operational conditions model output - 2013 (100m receptor grid spacing)



7.3 Discussion of model output:

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 $C_{98, 1\text{-hour}} = 3, 5$ and $6 \text{ ou}_E/\text{m}^3$ 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.

Clearly if the operations at the works vary substantially going forwards in comparison to those assumed for the model then the risk of odour impact will vary.

Review of the model output indicates that the predicted exposure levels at the 3 No. residential locations from which odour complaints were received range fall below the $C_{98, 1\text{-hour}} = 3 \text{ ou}_E/\text{m}^3$ exposure level. However the absence of detailed complaint information means that it is unclear whether these complaints resulted from 'normal' odour emissions from the works or abnormal emissions, such as those associated with the gas collection system problems. Overall the value of the complaint data in assessing the foreseeable level of odour impact risk is limited.

It should be noted when reviewing the model output that the odour emissions associated with the use of the storm overflow lagoon are not included within the model. As described in section 3.2 the lagoon is typically only used approximately once per year with the resulting sediment causing a notable odour in the immediate area for between 10 and 14 days. On this basis it is considered likely that any receptors located in close proximity to the lagoon would experience elevated odours and increased risk of annoyance during these times. This could be confirmed by undertaking sniff testing in the area at a time when the lagoon contains odorous material.



8 Summary of findings

The key findings of the study are summarised as follows:

1. The odour survey identified a range of odour sources at the WRC under the current operational conditions. These sources include the raw sewage reception and screenings/grit removal plant, the stormwater storage tanks, the primary settlement tanks, the anoxic and aerobic secondary treatment plant, and the sludge handling and storage operations.
2. The estimated time weighted summer odour emissions from the WRC are approximately 73,000 ou_E/s . Of these emissions approximately ■% are generated by the preliminary treatment stage, 1% from storm water handling, ■% by the primary treatment stage, ■% by the secondary treatment stage and ■% from the sludge handling and treatment operations.
3. The largest individual contributors to the total site emissions are the emissions from the raw sludge belt thickening plant, the secondary sludge digestion tanks, the D stream anoxic plant and the primary settlement tanks.
4. The results of dispersion modelling which was undertaken to assess the level of odour impact risk under the foreseeable long term operational conditions at the works (current operations plus both secondary digestion tanks assumed to be in use and gas collection issues addressed) indicate that odour exposure levels in the area immediately surrounding the works exceed the $C_{98, 1\text{-hour}} = 3, 5$ and $6 \text{ ou}_E/\text{m}^3$ odour impact criteria discussed in section 2.3 of this report. 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 within this report.
5. The likely increase in exposure to odours that would be experienced periodically in the vicinity of the storm overflow lagoon should be considered if the suitability of this land for development is to be reviewed.



Annex A Odour sampling and analysis techniques

A.1 Collection of odour samples from sources with no measurable flow

Collection of samples from area sources where there is no measurable flow such as open liquid tanks or channels and piles of sludge cake was conducted using a ventilated canopy known as a 'Lindvall hood'. The canopy was placed on the odorous material and ventilated at a known rate with clean odourless air. A sample of odour was collected from the outlet port of the hood using the 'Lung' principle as described above.

The rate of air blown into the hood was monitored for each sample and used to calculate a specific odour emission rate per unit area per second (E_{sp}) as follows:

$$E_{sp} (\text{ou}_E/\text{m}^2/\text{s}) = C_{\text{hood}} \times L \times V$$

Where:

C_{hood} is the concentration result from the laboratory analysis.

V is the flow presented to the hood.

L is the flow path cross section of the hood (m^2)

Covered area (m^2)

A.2 Collection of odour samples from odour control plant and buildings

Collection of samples from vents and odour control plant stacks vents were conducted using the 'Lung' principle. A 60 l Nalophan sample bag was placed in a rigid container and connected to the sample location using a PTFE sample line. Air was withdrawn from this container using a pump which caused a sample of the odorous air to be drawn through the line into the bag.

If necessary, samples were pre-diluted with nitrogen at the point of collection to prevent condensation from forming in the sampling lines and odour bag, which may influence the odour concentration prior to analysis.

For samples undertaken from vents or odour control plant stacks, the temperature and velocity of the airflow at each point was also determined using suitable monitoring techniques.

The emission rate of odour was then calculated by multiplying the measured odour concentration by the volume flow rate (m^3/s) as measured in the duct.

For samples collected from within buildings, the lung principle was applied to collect the sample, and the volume escape rate of building air estimated to enable an estimation of the emission rate of odour from the building to be made.

A.3 Measurement of odour concentration using olfactometry

Odour measurement is aimed at characterising environmental odours, relevant to human beings. As no methods exist at present that simulates and predict the responses of our sense of smell satisfactorily, the human nose is the most suitable 'sensor'. Objective methods have been developed to establish odour concentration, using human assessors. A British standard applies to odour concentration measurement:

- BSEN 13725:2003, *Air quality - Determination of odour concentration by dynamic olfactometry.*

The odour concentration of a gaseous sample of odorants is determined by presenting a panel of selected and screened human subjects with that sample, in varying dilutions with neutral gas, in order to determine the dilution factor at the 50% detection threshold (D_{50}). The odour concentration of the



examined sample is then expressed as multiples of one European Odour Unit per cubic meter [ou_E/m^3] at standard conditions.



Annex B Odour and H₂S measurement results

B.1 Odour and H₂S measurement results from 2017 survey

Table 10 Odour emission measurements for open sources

Source	Date of Sampling	Area odour emission rate [ou _E /m ² /s]			
		Geomean	Sample 1	Sample 2	Sample 3
Detritor (morning)	22.08.2017	22.2	36.4	13.4	22.3
Detritor (afternoon)	24.08.2017	23.4	23.2	23.5	23.4
Works return chamber	22.08.2017	26.8	20.0	36.7	26.2
PST #1	22.08.2017	3.9	3.3	4.0	4.6
PST #5	23.08.2017	1.1	1.2	1.2	0.9
Stream D Anoxic zone	23.08.2017	22.4	22.2	20.4	24.9
Stream D Aerobic zone	23.08.2017	0.2*	0.2*	0.2*	0.2*
Stream C Anoxic zone	23.08.2017	0.5	0.5	0.6	0.4
Stream C Aerobic zone	23.08.2017	0.2*	0.3	0.2*	0.2*
Settled sewage chamber	23.08.2017	8.0	6.6	6.5	11.8
Secondary digestion tank (in use)	24.08.2017	5.7	12.1	4.9	3.1
Secondary digester (disused)	24.08.2017	0.6	0.9	0.6	0.4
Fresh sludge cake	24.08.2017	5.7	5.1	5.9	6.0
Digested sludge centrate sump	24.08.2017	2.4	1.6	3.6	2.2

*Result is estimated as actual result fell below the Lower limit of detection of the analysis technique

Table 11 Odour concentration measurements for volume sources

Source	Date of sampling	Odour concentration [ou _E /m ³]			
		Geomean	Sample 1	Sample 2	Sample 3
SAS buffer & sludge blend tank OCU	22.08.2017	31	32	30	32
Raw sludge thickening building	22.08.2017	231	277	216	206
Imported raw sludge holding tank OCU outlet	24.08.2017	2831	4012	2779	2036
Gravity belts outlet stack	22.08.2017	47557	48699	45353	48699

B.2 Operational conditions at the time of the odour survey

Date	Incoming flow rate to works (m ³ /day)	PST dip levels	GBTs in operation1	Centrifuges in operation	Rainfall in 3 days prior to survey (mm)
22.08.2017	53049	#1: 3.0m water (<1m sludge)	1 of 2	1	0
23.08.2017	51016	#5: 3.2m water (<0.8m sludge)	1 of 2	1	0
24.08.2017	49943	NA	0 of 2	1	0



Annex C Dispersion model outputs

Figure 6: Current operational conditions model output - 2012 Met data (100m receptor grid spacing)



Figure 7: Current operational conditions model output - 2013 Met data (40m receptor grid spacing)



Figure 8: Current operational conditions model output - 2014 Met data (100m receptor grid spacing)

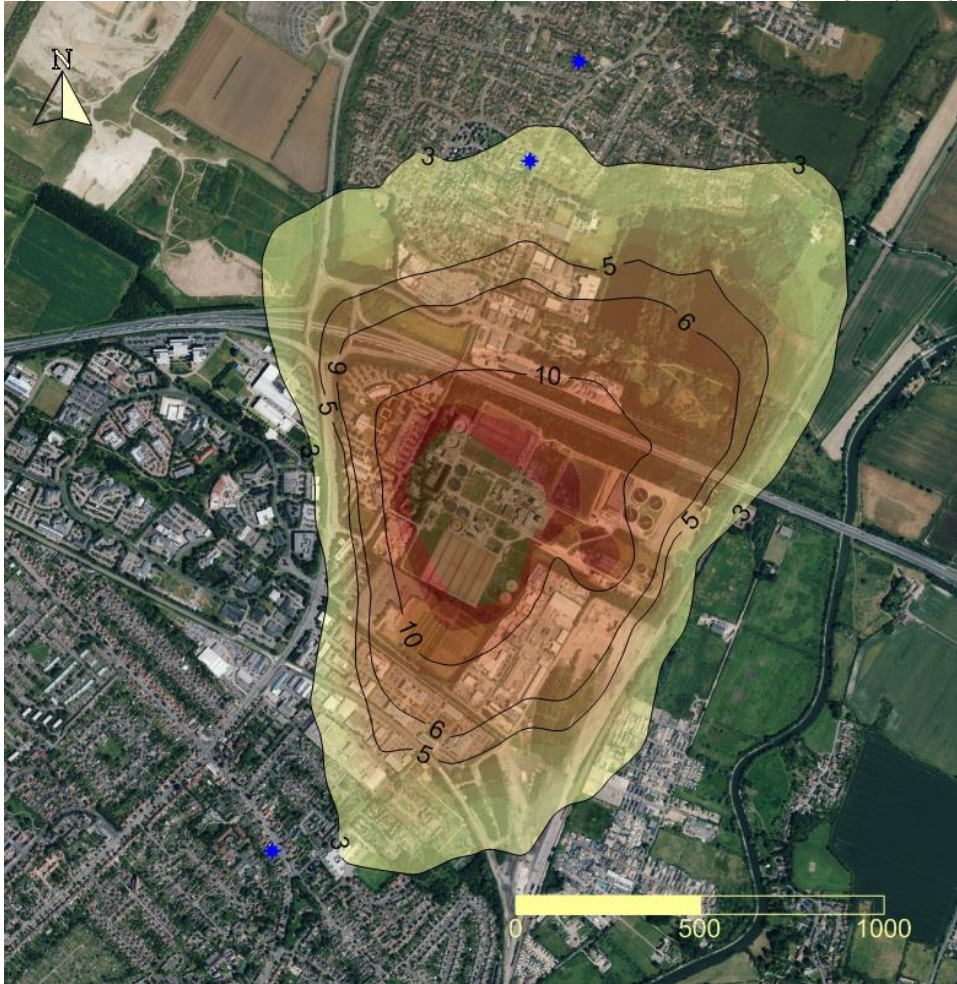


Figure 9: Current operational conditions model output - 2015 Met data (100m receptor grid spacing)

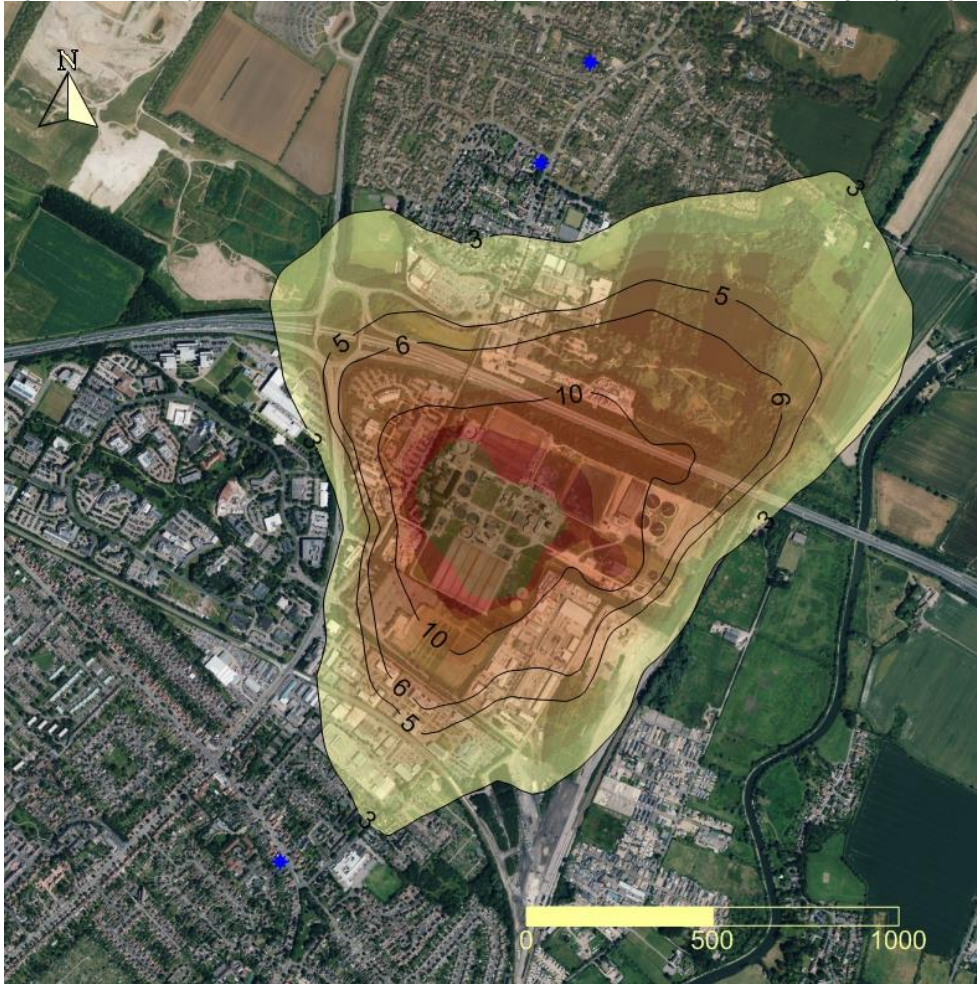
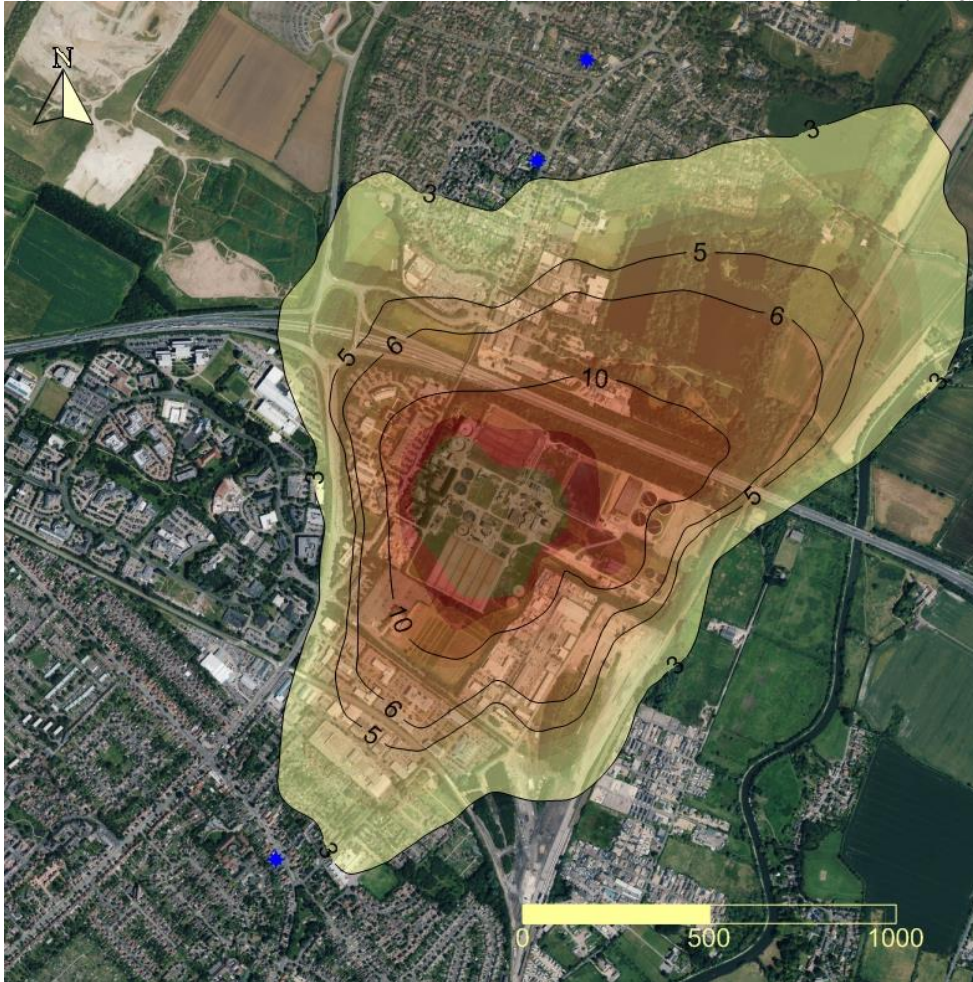


Figure 10: Current operational conditions model output - 2016 Met data (100m receptor grid spacing)



Pell Frischmann

U + I and Town

Cambridge Northern Fringe East (CNFE)

Transport Strategy

Volume I - Report
Final Report
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Pell Frischmann

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Executive Summary

Pell Frischmann has been commissioned by U+I and Town to prepare a Transport Strategy in relation to the development of the Cambridge Northern Fringe East (CNFE) area as a mixed-use development. The focus of this Transport Strategy is the area of the CNFE core site currently occupied by Anglia Water's Recycling Centre and Cambridge Golf Driving Range and referred to in this report as the Core Site, as well as the additional plots of land to the south of the guided busway and north of the station which make up the wider CNFE area (CNFE).

The CNFE development scheme has evolved over a period of many years with a substantial amount of work completed by Cambridgeshire County Council (CCC) and their appointed consultants. This has included the development of a strategic transport model and associated scenario testing. The transport analysis undertaken to date has led to a series of conclusions regarding the mix and volume of development that can be accommodated when accounting for the predicted person and vehicular trip generation of the area. This includes delivering a development with a focus on travel by sustainable modes and reduced residential parking provision to achieve an acceptable transport network impact as defined by the identified vehicle trip budget.

This Transport Strategy has been prepared to provide the context of the current transport and highway assessment work completed in relation to the development of the CNFE site along with expectations and next steps for the delivery of a comprehensive transport strategy for the scheme.

The CNFE core site masterplan identifies a development providing 5,600 dwellings, 2 primary schools, 1 secondary school and a mix of commercial, retail, community and health land uses. The CNFE site provides additional retail and commercial floorspace as well as an additional 3,000 residential units. As part of the scheme proposals the residential element is to be delivered with a residential parking provision of 0.2 spaces per dwelling.

The CNFE site is located within an area where considerable transport and highway mitigation schemes are being implemented with the site itself assisting in the delivery of these schemes. It benefits from being located close to the Cambridgeshire Guided Busway and the full extent of the site being within 1.5km of Cambridge North Railway Station.

The overall focus of the Transport Strategy is to confirm that the development will be brought forward in line with the CCC transport modelling work completed to date and more specifically ensure it is aligned with the trip budget identified within the A10 Ely to Cambridge Transport Study. The study itself identifies the importance of achieving a high volume of internal trip assignment and limiting car parking provision.

In their respective roles as the local and strategic highway authorities Cambridgeshire County Council and Highways England have been consulted as part of the process of developing this Transport Strategy. Engagement with both authorities has confirmed that the CNFE site will only be accepted if it works within the trip budget defined in the A10 Ely to Cambridge Transport Study. In this regard the mix and scale of development is not fixed but the external trip generation is fixed.

Working within the A10 study trip budget Cambridgeshire County Council have advised that no additional traffic modelling is required of this scheme other than that required to determine the localised impact on the proposed site access junctions and access onto Milton Road via the two existing junctions of Milton Road / Cowley Road / Cambridge Science Park and Milton Road / Cowley Road West. This will be undertaken as part of the next stage of work.

A HIF bid has been submitted and this transport strategy forms an addendum to this. All transport analysis supporting this bid has been carried out within the framework of the Combined Authority's developing LTP and the Ely to Cambridge Transport Multi Modal Study (Feb 2018) using sub-regional model CSR2, which covers major development including CNF.

The impact of the scheme on the transport network after the implementation of a comprehensive package of mitigation outlined in the Ely to Cambridge A10 study will be net neutral. Net neutrality will be achieved by working within a specific 'trip budget' which apportions vehicular trips from CNFE at a level which the Ely to Cambridge PSOBC indicated would be commensurate with the scale of development proposed on the site.

This Transport Strategy identifies a series of interventions and solutions to mitigate the volume of car trips that may otherwise be generated and enable the development to be delivered within the CCC identified ceiling figure. The CNFE transport strategy will ensure vehicle trips are within the defined budget through infrastructure schemes and sustainable transport initiative including:

- We will build on Cambridge's tradition of cycling with walking and cycling being the main forms of movement at CNFE. This will include an onsite cycle hub.
- CNF will rebalance an employment-dominated part of Cambridge, achieving a sustainable mix of housing, work, retail and leisure and reducing the need to travel
- It will exploit its proximity to sustainable transport infrastructure including the guided busway, Cambridge North Station, cycling infrastructure, and walking routes. A high frequency bus will be provided throughout the site so all residents are within 400m of a bus stop.
- Travel demand management measures and a bold commitment to car parking restraint will reduce car use.
- Delivery and service vehicle movements will be reduced through a consolidation centre/ delivery hub and underground waste storage.
- The strategy will tie into work undertaken by the Cambridge Greater Partnership linking to proposed improvements to bus / cycle / pedestrian facilities on Milton Road, as well as connecting to proposed Greenways and the Chisholm Trail.

The CNFE vehicle trip generation will be within the trip budget set by the A10 study and the trip generation of the site will be monitored on a phase by phase basis to ensure the trip budget is not exceeded. Therefore, in order for the full scheme to be constructed, the mode share targets must be achieved.

We have considered the impacts on the local transport network (all trips in AM peak):

- Driving (1,700 trips) Most will travel outside of the city centre, impacting mainly on accesses into the site from Milton Road, and the Milton (A10/A14) Interchange. These junctions have been identified within the A10 Study and will receive funding to provide improvements to mitigate any impact
- Cycling (3,400 trips) Most will be travelling towards the city centre or the Science Park increasing use of new cycling infrastructure on the Chisholm Trail and Milton Road. The new connection across the Milton Road will improve access to the Science Park from CNFE and Cambridge North Station
- Walking (1,750 trips) Most will be travelling to the city centre or Science Park, making use of the proposed new connection across Milton Road
- Bus (1,250 trips) Most will be travelling to the city centre and towards the south of Cambridge. An additional service will be implemented, benefiting new exiting public transport users.
- Rail (600 trips) Most will be travelling to London via Cambridge

The strategy for the site is supported by Cambridgeshire County Council through the local planning process, so is a scheme that has political backing for both the development and the approach to sustainable transport. Undertaking a sensitivity test with a significantly higher vehicle trip generation therefore does not align with the above and would be contrary to both the AAP and the A10 study.

The economic impact appraisal of the CNFE site (as discussed with MHCLG and DFT) therefore considers this core scenario and uses the Cambridge Sub-Regional (CSRM2) strategic transport model to provide inputs to a TUBA assessment in line with WebTAG guidance. The initial, high-level assessment modelling of the transport external costs with the CNFE traffic demand shows a transport cost of -£[REDACTED] across the network.

Although in accordance with WebTAG guidance this figure is misleading, in that it assesses the whole impact of the development but excludes all of the benefit that the development will deliver through its contribution to the mitigation package set out in the A10 Study. That study quantified the transport user benefits of the proposed mitigation package at £810m (at 2018 prices). The CNFE site provides a contribution of £[REDACTED]

towards these mitigation measures – equating to ■■■% of the overall mitigation costs. Therefore, the same proportion of benefit should be attributed to CNFE, a transport user benefit of £■■■■■

The true impact of the proposed development on the transport network is therefore only -£■■■■■. However, in accordance with WebTAG guidance we have modelled the more substantial impact through our economic case.

The A10 study will evolve and further work undertaken by Cambridgeshire County Council as part of the next stages of the business case. This work will include appraisal of the environmental and social impacts. Therefore, at this stage a qualitative review of the impacts has been undertaken for the HIF submission and this is considered to be proportional.

The transport mitigation package and the developments masterplan will lead to significant improvements in the travel options in the area following the redevelopment of the site. The mode shares that will be achieved at CNFE are likely to become the norm in Cambridge and this site will have a competitive advantage because of its accessibility and be a catalyst for improvements in air quality and noise in this area.

It has been proven in the preliminary strategic outline business case that there is a mitigation package that can unlock the CNFE and wider development in this area. These schemes will evolve through the latter stages of the business case, and accident appraisal will be undertaken as part of this work. Given the CNFE development is seeking to reduce severance and remove pedestrian/ cyclist/ vehicle conflict when crossing the Milton Road, it is considered that there will be a positive impact in terms of accidents on Milton Road.

The impact of the walking and cycling improvements on existing physical activity has been considered qualitatively at this stage as the schemes are evolving in response to ongoing discussions with stakeholders. The masterplan will reduce severance (discussed below) and therefore increase the likelihood of people choosing to walk and cycle. This will have a positive impact on physical activity through improved health and greater productivity through reduced absenteeism.

The masterplan will promote include a mix of land uses that will be active at different times of the day and front streets that will be designed with people in mind. Routes to and from public transport will be legible, lit and landscaped with quality waiting facilities. Therefore, a qualitative assessment of the security and journey quality impacts is that these will be a positive.

The site currently has a severe impact on severance due to the local road network, railway line and the CWRC. The CNFE development will improve connectivity, reduce severance and improve permeability to destinations including Cambridge North Station and the Science Park via a permeable site masterplan, a new link over the A14 (connecting Cambridge with Waterbeach and Milton Park), and a new link across Milton Road creating a safe, direct route for pedestrians and cyclists between Cambridge North Station and the Science Park. The proposed development will break down these barriers and therefore it is considered the severance and accessibility impacts will be largely positive.

Improved access to Cambridge North Station and the Science Park, and an enhanced bus service serving local users with more frequent and reliable bus services will be provided, with any pump-priming bus costs met by the developer. At this stage a qualitative assessment suggests that there will be a largely positive option and non-use value.

This report has identified the next stages of assessment required to enable delivery of the CNFE site. This focuses on completing viability assessments of the proposed transport solutions and engagement with the relevant stakeholders to maintain buy-in regarding the ability to deliver the transport strategy.

A number of programmed actions will take the project forward with the aim of a planning application to be submitted in 2022, construction to start in 2023 and the first homes completed in 2026. Overall the target for construction completion is 2037.

1 Introduction

- 1.1 Pell Frischmann has been commissioned by U+I and Town to prepare a Transport Strategy in relation to the development of the Cambridge Northern Fringe East (CNFE) area as a mixed-use development. The focus of this Transport Strategy is the area of the CNFE currently occupied by Anglia Water's Recycling Centre and Cambridge Golf Driving Range and referred to in this report as the core site, as well as the additional plots of land to the south of the guided busway and north of the station which make up the wider CNFE area (referred to as CNFE).
- 1.2 The CNFE development scheme has evolved over a period of many years with a substantial amount of work completed by Cambridgeshire County Council (CCC) and their appointed consultants. This has included the development of a strategic transport model and associated scenario testing. The transport analysis undertaken to date has led to a series of conclusions regarding the mix and volume of development that can be accommodated when accounting for the predicted person and vehicular trip generation of the area. This includes delivering a development with a focus on travel by sustainable modes and reduced residential parking provision to achieve an acceptable transport network impact as defined by the identified vehicle trip budget.

Site Context

- 1.3 The development site extends from the A14 in the north to Chesterton in the south and the Fen Rail Line in the east to Cowley Road in the west. The Core site location is identified in **Figure 1.1** with the development areas that make up the wider CNFE site also identified.

Figure 1-1 CNFE Site Location



Source: © OpenStreetMap contributors with Pell Frischmann annotations

Development Proposal

- 1.4 The development proposals for the CNFE core site currently consists of the following scale of development:
- [REDACTED] dwellings of which [REDACTED]% is to be affordable.
 - [REDACTED] primary schools.
 - [REDACTED] secondary school.
 - Community and Health Centre – 5,178 sq.m.
 - Commercial Floor Space – 36,203 sq.m.
 - Retail Floor Space – 7,810 sq.m.
- 1.5 A copy of the current scheme masterplan is provided at **Appendix A**.
- 1.6 As part of the scheme development, car parking provision will be 0.2 spaces per dwelling and cycle parking provision one space per bedroom. Car parking will be provided within three 6 storey flexible parking structures and cycle parking will be provided 50% within buildings and 50% in external shelters.
- 1.7 The non-residential landuses will also have appropriate car parking levels to ensure that the level of external trips are limited to that which is within the overall trip budget.
- 1.8 As part of the scheme development a bus route will be provided through the site with all dwellings to be within 400m of a bus stop. Initial engagement with Stagecoach has indicated that the existing Citi2 service could be routed along the development spine at the same 10-minute frequency daytime (Mon-Sat) as existing; and with a 30min frequency evenings and Sunday.
- 1.9 The wider CNFE site includes an additional:
- [REDACTED] dwellings.
 - Community and Health Centre – 2,640 sq.m.
 - Commercial Floor Space – 18,585 sq.m.
 - Retail Floor Space – 3,855 sq.m.

Report Context

- 1.10 The currently available traffic evidence base has been produced by or on behalf of CCC. This Transport Strategy utilises the current evidence base in order to develop a transport strategy for the CNFE site which minimises car use and the need to travel and maximises the use of sustainable modes of travel. This is particularly relevant given that the current CCC evidence base identifies that part of the strategy for the CNFE area is dependent on providing restricted levels of car parking.
- 1.11 Taking full account of the vehicle trip budget determined from the A10 Ely to Cambridge Transport Study (Strand 3), this report sets out the scale and type of transport mitigation required for the CNFE site to be delivered. The parking provision of 0.2 spaces per dwelling is aligned with the trip budget.

Development Transport Strategy

- 1.12 The transport strategy is predicated on delivering a comprehensive sustainable transport package. It incorporates and embraces current and emerging technologies in transport planning and smart cities to maximise the attractiveness of walking, cycling and public transport to minimise the impact vehicles will have within the development and on the wider highway network. The following summary of measures and interventions set out how the aspiration for a 'Transport Neutral' development will be achieved.

- A network of walking and cycling facilities that are designed to maximise comfort and accommodate peak demands, drawing upon the TfL Healthy Streets approach.
- Green streets (pedestrian and cycle only streets) within the development.
- Variable messaging round the development to provide information on public transport services (in real time), congestion, air quality alerts.
- Cycle parking provided at a level that facilitates use of this mode, and cycle hubs linked with existing schemes in Cambridge.
- Consolidated collection points for deliveries and waste and pick up/ drop off from taxis to minimise the number of vehicles circulating through the site.
- Minimise the number of car parking spaces provided on site, and provide electric vehicle charging at all spaces to maximise the uptake of electric vehicles.
- Car club vehicles provided in locations on the periphery of the development to minimise the number of vehicles circulating through the site. Requirement for all car club vehicles to be electric vehicles.
- Provision of electric vehicle charging at all car parking locations in the development and integrate this with onsite combined heat and power network, or renewable energy generation sources.
- Provide an underground refuse collection system to consolidate the frequency and number of refuse collection vehicles that need to enter the site.
- Trees provided within the streetscape to provide shade and shelter from the weather to help encourage walking through the development.
- Corridors within the site to be future proofed to allow retro fitting of mass public transit systems running through the development.
- Comprehensive network of SuDS within the street network to assist with management of infiltration of the rainwater.
- Consider the use of smart road technologies such as solar roads, electric charging of vehicles in the road surface, self-healing road materials, and sensors in car parking bays that allow drivers to more efficiently navigate to available car parking bays.
- Mobility as a Service (MaaS) will also be promoted as part of the development to facilitate travel by more sustainable modes.

1.13 The north eastern extent of Cambridge benefits from substantial recent, and ongoing transport infrastructure development and upgrades. These provide an established base point from which the CNFE benefits and which provides a focus for connection to / from the CNFE development area. A summary of this base point provision is as follows:

- Cambridge North Rail Station providing regular services (4 per hour during the peak hour) providing a 5-minute journey time connection between the station and Cambridge City Centre. The station provides 1,000 cycle parking spaces.
- The Cambridgeshire Guided Busway (CGB) connecting Cambridge City Centre with Huntingdon with guided (bus only) section between St Ives and the A3109 Milton Road, Cambridge. The busway now incorporates an 875m segregated section between Cambridge North Rail Station and Milton Road.
- High frequency bus services (Citi 2) to supplement the CGB providing connection between Cambridge North Station and Addenbrooks with a weekday, 10-minute service frequency (6 buses per hour in each direction).
- National Cycle Network 51 (Oxford to Colchester) runs adjacent to the guided section of the CGB route. The busway extension to Cambridge North Rail Station incorporates the off-road cycle route.
- The Chisholm Trail. Running between Cambridge and Cambridge North Rail Stations a largely off-road pedestrian and cycle link currently under construction.

- Off road cycle link between Cambridge North Station and Waterbeach with potential for upgrade as part of the Waterbeach Greenway proposals.

Structure of Report

1.14 The remainder of this report is split into 8 further sections. These sections are summarised as follows:

- **Section 2** summarises the local highway context and considers the accessibility of the site by non-car modes.
- **Section 3** explains the proposed and emerging transport schemes being developed for the North Cambridge area.
- **Section 4** summarises the stakeholder engagement completed to date.
- **Section 5** sets out the transport strategy for the CNFE site, summarising the measures to be brought forward to enable the development area to manage vehicle trip generation and focus travel on sustainable modes.
- **Section 6** provides the forecast vehicle trip generation of the CNFE core site and the CNFE against which future site transport assessments will be assessed. It determines what the impact is likely to be on the local transport network and provides an overview of the economic impact.
- **Section 7** explains the gap analysis summarising the further work that will be required to support a future planning application for the CNFE site.
- **Section 8** sets out the current expectations with regards to the timescales for the delivery of the development.
- **Section 9** provides a summary and conclusion to the report.

2 Baseline Transport Situation

Introduction

- 2.1 This Chapter of the Transport Strategy document sets out the baseline, transport conditions in and around the proposed CNFE development site. It is based on the outcomes of a desk-based research exercise carried out between September and October 2018 and site visits undertaken in October 2018.

Site Location and Description

- 2.2 The development site extends from the A14 in the north to Cambridge Business Park / Cowley Road in the south and the Fen Rail Line in the east to Cowley Road in the west. The site location and approximate limits of the development area are as presented in **Figure 1.1** with the more immediate site context identified in **Figure 2.1**.

Figure 2-1 CNFE Site Context



Source: © OpenStreetMap contributors with Pell Frischmann annotations

Surrounding Highway Network

Strategic Road Network

A14 (T)

- 2.3 The A14(T) runs east to west along the northern boundary of the CNFE development area. It is a trunk road which forms part of the Highways England strategic road network and provides a link between Felixstowe in the east to the M1, M6 and A14 (Cattorpe Interchange) to the west.

- 2.4 Milton Interchange (Junction 33 of the A14) is a grade separated junction which provides an interchange between the A14, A10 and the A1309.
- 2.5 The A14 is currently the subject of major highway construction upgrade works between Cambridge and Huntingdon (the Cambridge to Huntingdon improvements scheme which began in November 2016). The works are proposed for completion by [REDACTED] and include a new bypass south of Huntingdon and widening of the A14 between Swavesey and Girton.
- 2.6 Upgrade works are also ongoing at junction 33. The works incorporate;
- Bypass lane from the eastbound off slip to A10;
 - Alteration to lane assignments between the A10 and Cambridge Road (for Milton); and
 - Widening of southbound circulatory carriageway to provide a third lane.

A10

- 2.7 The A10 runs north from junction 33 of the A14. It is a single carriageway link providing connection between junction 33 of the A14 and Waterbeach Village, approximately 4.5km north of junction 33, and Ely approximately 20km from the junction.

Local Road Network

Milton Road

- 2.8 A1309 Milton Road is a main route into Cambridge City Centre, providing highway access to major employment sites including the Cambridge Science Park, St Johns Innovation Centre and Cambridge Business Park. Milton Road is subject to a 30mph speed limit in the vicinity of the junctions with Cowley Road and Kings Hedges Road. North of the junction with Cowley Road North, the speed limit increases to 50mph.
- 2.9 To the south of the Milton Road / Cowley Road / Cambridge Science Park junction, Milton Road forms a signalised junction with the CGB.

Cowley Road

- 2.10 Cowley Road is a two-way carriageway which runs along the western and southern boundary of the Water Recycling Centre. Running along the southern boundary of the site it provides access to the Cowley Road Industrial Estate, and Cambridge North Station. It is subject to a 30mph speed limit. The section running alongside the eastern boundary is subject to a speed limit of 20mph and provides access to St John's Innovation Park. For the remainder of this report Cowley Road is referred to as Cowley Road (West) and Cowley Road (South).

Public Transport

Rail

Cambridge North Station

- 2.11 Cambridge North Station opened in May 2017 and is located to the south east of the site. It is between 600m and approximately 1.5km of the furthest part of the site. The approximate walk distances from the station at 500m, 1km and 1.25km intervals are identified in **Figure 2-2** confirming the majority of the site is within 1km.

Figure 2-2 Distances to Cambridge North Train Station



Source: © OpenStreetMap contributors with Pell Frischmann annotations

- 2.12 Cambridge North Station is managed by Greater Anglia and is served by rail services operated by Thameslink, Greater Anglia and Great Northern, serving destinations including Cambridge Central, London King's Cross, London Liverpool Street, Norwich and Ely. The station benefits from a total of four rail services in each direction per hour during peak hours.
- 2.13 The station has 3 platforms, as well as parking for 450 cars and 1,000 bicycles.
- 2.14 As part of the station development, a number of transport infrastructure improvements were also provided around the station and these are summarised below:
- An extension of the Cambridgeshire Guided Bus (CGB) route from Milton Road to Cambridge North Station;
 - A new cycleway linking the existing cycleway along the CGB with Cambridge North Station and south to Cambridge City Centre via a new link through Moss Bank;
 - A new cycleway running parallel to Cowley Road along a disused Network Rail access track linking Cambridge North Station with Milton Road, the Cambridge Science Park and Milton village;
 - The provision of a new Station Access Road linking Cowley Road with Cambridge North Station, including the provision of a segregated footway and cycleway along the western side and a footway on the eastern side; and
 - A new station square ('Cambridge Square') including disabled car parking, drop-off facilities and a taxi rank.

Bus Services

Cambridgeshire Guided Busway (CGB)

- 2.15 The CGB provides connection between Cambridge and St Ives with the with guided (bus only) section running between St Ives and the A3109 Milton Road, Cambridge. The stops nearest to the CNFE Core Site are located on the bus way approximately 130m west of the Milton Road / CBR junction.
- 2.16 The busway incorporates an 875m segregated section between Cambridge North Rail Station and Milton Road. Bus routes A and D provide a connection between St Ives and Cambridge City Centre via Cambridge Science Park with some services also stopping at Cambridge North Station. Route A continues to Addenbrook's Hospital with some services also continuing to Royston.
- 2.17 Routes A and D run on a combined Monday – Saturday frequency of 4 per hour in each direction. Service frequency on a Sunday is 2 per hour.
- 2.18 On a weekday, during the period 07:00 – 09:00 up to 10 services are provided per hour inbound to Cambridge and 5 services outbound. This is supplemented with 7 outbound services between 16:00 – 18:00.
- 2.19 Route C runs between St Ives and Cambridge City Centre. Services do not stop at Cambridge North Station. This route provides a Monday - Saturday service frequency of 1 - 2 buses per hour, in and outbound. Sunday frequency is one per hour in both directions.

Cowley Road

- 2.20 Bus stops are located on Cowley Road South served by bus route Citi 2. The eastbound stop is located approximately 160m east of the Milton Road / Cowley Road / Cambridge Science Park junction and the westbound stop approximately 115m west of the Milton Road / Cowley Road / Cambridge Science Park junction.
- 2.21 Citi 2 runs between Cambridge North Station and Addenbrooks Hospital. It runs in both directions on a frequency of one bus every 10 minutes on a weekday one every 10 minutes on a Saturday and one every 30 minutes on a Sunday.

Milton Road

- 2.22 The nearest Milton Road bus stops are located north and south of the Milton Road / Cowley Road / Cambridge Science junction.
- 2.23 The northbound stop is located approximately 130m south of the junction and southbound stop approximately 90m north of the junction. These stops are served by the 9 / 9x and the Milton Road Park and Ride.
- 2.24 Service 9 / 9x runs north and south between Cambridge City Centre and Ely. The service runs on an hourly frequency but with northbound services increasing to two buses per hour between 16:47 and 18:44 and southbound services increasing to two buses per hour between 17:00 – 19:30.
- 2.25 **Table 2.1** provides a summary of the above identified services with **Figures 2.3** and **2.4** providing network route maps.

Table 2-3 Summary of Bus Services

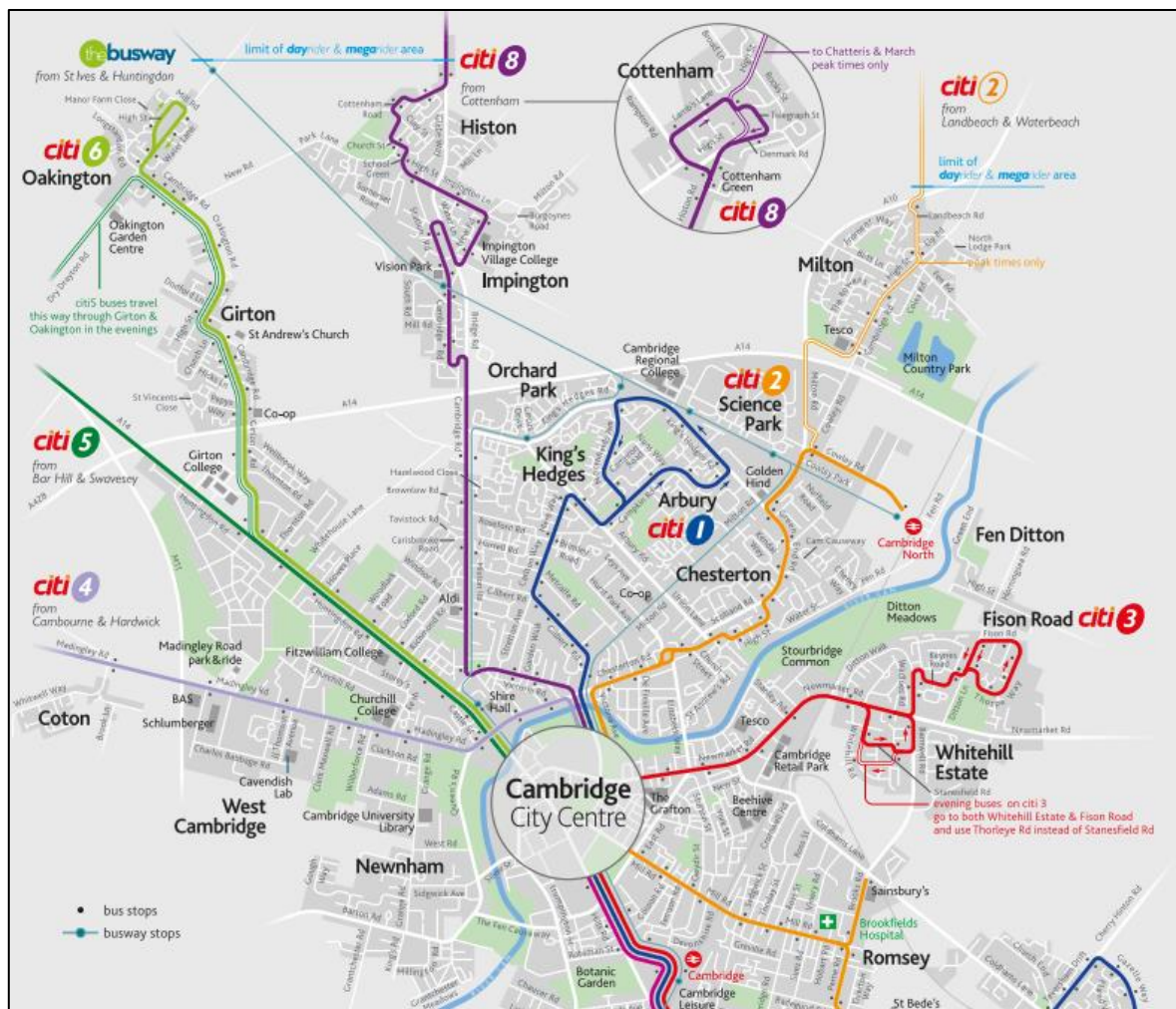
Service	Route	Frequency		
		Monday – Friday	Saturday	Sunday
CGB A & D	St Ives – Cambridge – Royston	4 per hour	4 per hour	2 per hour
CGB C	St Ives – Cambridge	Up to 2 per hour	Up to 2 per hour	1 per hour
Citi 2	Cambridge North Station – Addenbrooks Hospital	6 per hour	6 per hour	2 per hour
9 / 9x	Cambridge City Centre - Ely	One per hour	One per hour	No Service

Figure 2-4 Cambridgeshire Bus Network Map



Source: <https://www.stagecoachbus.com/maps>

Figure 2-5 Cambridge City Bus Network Map



Source: <https://www.stagecoachbus.com/maps>

Milton Road Park & Ride

- 2.26 The Milton Road Park & Ride (P&R) is located approximately 800m north of junction 33 of the A14 and is accessed from the A10. The P&R provides a 792 space car park along with covered cycle parking to accommodate 50 bicycles. Services connect the P&R with Cambridge City Centre starting at 06:20 Monday to Friday, 07:20 on a Saturday and 09:00 on a Sunday.
- 2.27 Monday to Friday service frequency is one bus every 10 minutes in each direction after 07:00 every 10 minutes in each direction after 08:00 on a Saturday and every 15 minutes in each direction on a Sunday.
- 2.28 Services stop at Milton Road, adjacent to Cambridge Science Park during all hours of operation with southbound stops stopping on the Science Park access road, rather than Milton Road, before 09:00.

Pedestrian Environment

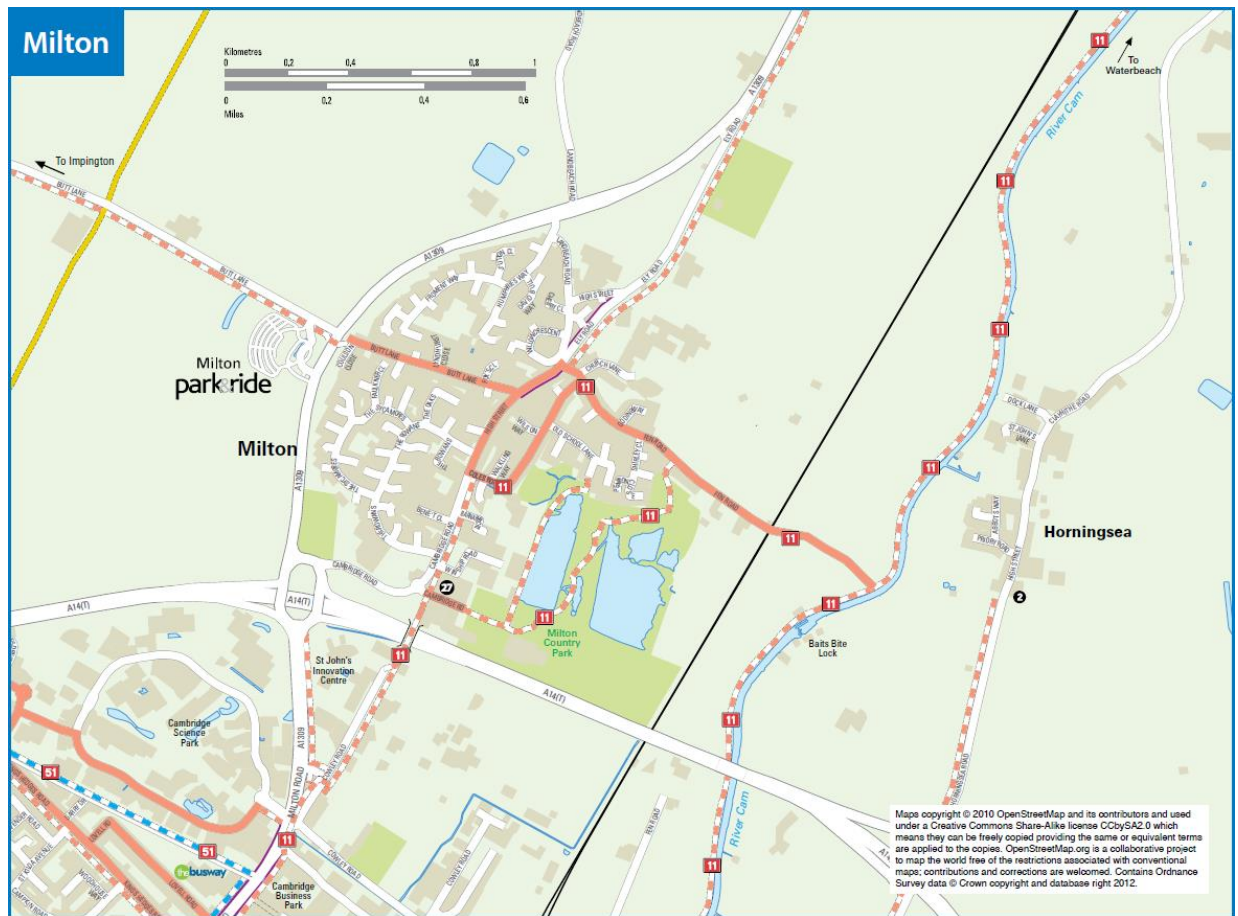
- 2.29 The CNFE site sits adjacent to an extensive pedestrian network with prominent north / south links running along Milton Road and east west links along Cowley Road South providing connection between Milton Road and Cambridge North Station.
- 2.30 A shared foot / cyclepath runs along the south side of Cowley Road South providing a segregated connection to Cambridge North Station. A narrow footway is also provided along the northern side of Cowley Road South albeit there is a section of approximately 100m, adjacent to the southern boundary of Cowley Industrial Estate, where no footway is available.

- 2.31 Cowley Road West provides a footway along the western side of the carriageway with a shared foot / cyclepath running along the eastern side of the carriageway. The shared foot / cycleway provides connection onto the shared foot / cycleway running along the east side of Milton Road and the shared link that runs along the south side of Cowley Road South to Cambridge North Station. Toucan crossings for pedestrians and cyclists over the Milton Road / Cowley Road / Cambridge Science Park facilitate connections between these routes.
- 2.32 On Milton Road a footway is provided along the eastern side of the carriageway from junction 33 of the A14. The footway extends north of junction 33 providing a footway connection to Milton. The footway then runs south to Chesterton Road. Along the western side of the carriageway a footway is provided from the Science Park access south to Chesterton Road. The footway providing direct connection into the Science Park.
- 2.33 The Milton Road pedestrian crossings located nearest to the site are at the junction of Milton Road / Cowley Road / Cambridge Science Park. The four-arm signalised junction includes toucan crossing arrangements for pedestrians and cyclists over the southern arm of Milton Road and Cowley Road South.
- 2.34 Located 100m south of the Milton Road / Cowley Road / Cambridge Science Park the Cambridge Business Park junction (Milton Road / Cowley Park) also incorporates toucan crossing arrangements on the southern arm of Milton Road and Cowley Park. Using either the Milton Road / Cowley Road / Cambridge Science Park junction or Milton Road / Cowley Park junction pedestrians are able to safely access both of the Milton Road bus stops nearest to the CNFE Core site.

Cycle Environment

- 2.35 In addition to the shared foot / cycleways summarised above the cycle infrastructure available close to the site incorporates two National Cycle Networks (NCN). These are as follows:
- National Cycle Network 51 (Oxford to Colchester). Runs adjacent to the guided section of the CGB route with an extension included as part of the CGB extension introduced to Cambridge North Station. NCN 51 provides a link to Northstowe and St Ives.
 - National Cycle Network 11. The section currently constructed incorporates connecting between Waterbeach and Cambridge City Centre.
- 2.36 The primary route of NCN 11 runs to the east of the development site with the nearest connection provided from Fen Road approximately 1.5m south east of the site. Access is via the connection introduced from Cambridge North Station onto Moss Bank. However, secondary routes are also signed running along the shared foot / cycleway along Cowley Road West with connection south onto the Milton Road shared foot / cycleway. Running north the route crosses the A14 via the Jane Coston Bridge. The route runs through Milton providing a connection back into the primary NCN11 route approximately 1,2km east of Milton. Figure 2.5 identifies the route of NCN11 within the vicinity of the development site and Milton with Figure 2.6 presenting the wider cycle network for Cambridge.

Figure 2-6 Milton Cycle Links



Source: <https://www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/cycling/cycle-routes-and-maps/>

Figure 2-7 Cambridge Cycle Links



Source: <https://www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/cycling/cycle-routes-and-maps/>

3 Proposed and Emerging Transport Schemes

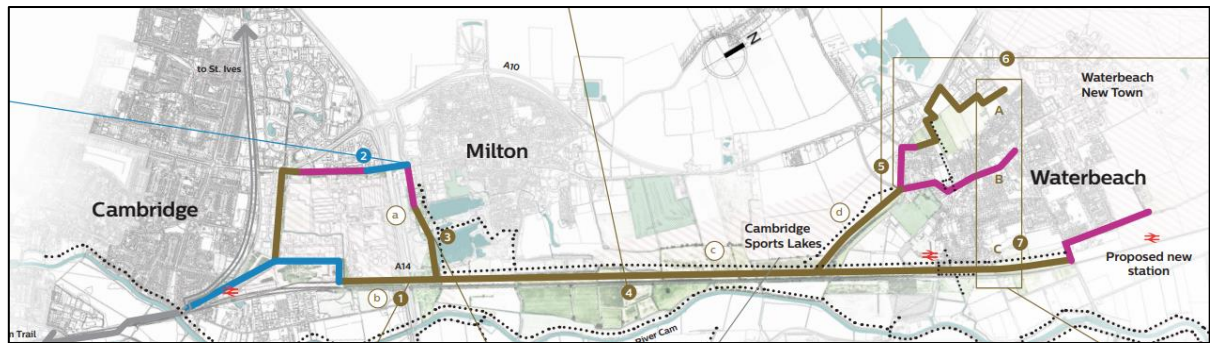
Milton Road

- 3.1 The Greater Cambridgeshire Partnership (GCP) Milton Road scheme proposes improvements to public transport, bicycle and walking infrastructure on the key north / south arterial route so as to *'make these sustainable travel options a more attractive alternative to the car, and to improve journey times.'* The proposed scheme is currently under public consultation and focuses on provision of the following infrastructure.
- Segregated cycle lanes on both side of the road located between the footway and verge;
 - Introduced new length of outbound bus lanes to supplement the existing provision;
 - Floating bus stops;
 - Copenhagen style priority junction crossings;
 - Signalised junction and roundabout redesigns to provide either off road cycle crossings or segregated cycle crossings.
 - Junction improvements to provide improved legibility for pedestrians and cyclists.
 - Northbound bus lane;

Waterbeach Greenway

- 3.2 Cambridgeshire County Council are currently consulting on the upgrading and the provision of new greenways that provide links to / from and within Cambridge.
- 3.3 An existing Greenway provides connection to / from Waterbeach running primarily alongside the River Cam from Fen Road in Cambridge however with the route susceptible to pooling of water and being indirect the review has focused on providing a new more direct route.
- 3.4 The focus of the new greenway is for a route with a minimum width of 2m that runs broadly parallel to the Fen Rail Line and provides connection south to Cambridge North Station. Crossing the A14 two routes are proposed to provide connection to the station. These routes are summarised as follows:
- A new A14 underpass located west of the railway line providing onward connection to Cambridge North Station on a route located between the rail line and the CNFE core site.
 - The second greenway is routed via Jane Coston Bridge which crosses the A14 approximately 350m east of junction 33 and connects the route into Cowley Road West. The route enables connection to Cambridge North Station via the cycle way running alongside the CGB.
- 3.5 South of the station the cycle link provided to Moss Bank and in turn Fen Road provides onward connection to the centre of Cambridge. It enables tie in to the Chisolm Trail.

Figure 3-1. Proposed Route of New Waterbeach Greenway¹



Source: www.greatercambridge.org.uk/greenwaysconsultation

Chisholm Trail

- 3.6 The Chisholm Trail connects Cambridge North Station with Addenbrooks Hospital via Cambridge Station. The trail will primarily run on traffic free routes and enables connection to destinations including Cambridge Retail Park.
- 3.7 The route construction has been commissioned with a build phase of up to 5 years envisaged. The Greater Cambridge Partnership Consultation Leaflet supplied confirms the route proposals.

Cross City Cycling – Links to Cambridge North and Science Park

- 3.8 One of 5 route upgrades across the city the link to Cambridge North and Science Park is split across three phases. These are as follows:
- Phase 1 – Green End Road from Water Lane to Nuffield Road - Constructed.
 - Phase 2 – Green End Road from Nuffield Road to Milton Road – Currently under Construction.
 - Phase 3 – Nuffield Road – Construction to be confirmed.
- 3.9 The upgrades focus on providing designated on road cycle lanes which incorporate associated measures, such as floating bus stops, so as to provide improved highway safety, reduce congestion and improved air quality.

A10 Ely to Cambridge Transport Study

- 3.10 The Ely to Cambridge Transport Study is an assessment of the potential benefits of a range of transport and transport / highway infrastructure interventions and is described as a *'wide ranging multi modal strategy'* that incorporates three strands. The identified strands are:
- Strand 1 – Overall transport requirements on the corridor.
 - Strand 2 – Specific requirements for growth at Waterbeach.
 - Strand 3 – Specific requirements for growth at CNFE / Cambridge Science Park (CSP)
- 3.11 Strand 3 focuses on review as to how *'further growth at Cambridge Northern Fringe East and the Cambridge Science Park might be accommodated on the transport network.'* Due to existing and forecast traffic congestion along the A10 / A14 / Milton Road *'analysis suggests that without mitigation*

¹ Source

or measures to limit car use and provide better alternatives for many trips into the area, development traffic would displace other traffic to less appropriate routes.’ Consequently, the studies ‘recommended strategy for unlocking growth at the CNFE and the Cambridge Science Park is as follows:

- *Providing a form and mix of development that enables access to many services and facilities by residents, workers and visitors to be made locally or without the need to travel by car, supported by a policy of demand and parking management for developments in the area.*
- *Reducing the number trips that are made to and from the CNFE / CSP area by car, and providing infrastructure and services to allow for these trips to be made by other means*
- *Further study into the provision of additional vehicular capacity where it would address access and congestion issues without adding to congestion problems elsewhere on the strategic and local road networks. This should include consideration of the capacity that could usefully be provided at the site accesses and at the A14 / A10 / A1309 Milton Interchange.’*

4 Stakeholder Engagement

Introduction

- 4.1 During the process of preparing the Transport Strategy, Pell Frischmann has engaged with key stakeholders to understand assessment work completed to date along with the ongoing work required to achieve stakeholder support for the scheme development. The following section of the report summarises the consultation that has been undertaken with minutes of identified meetings provided at **Appendix B**.

Planning & Highway Authority Engagement

- 4.2 A combined meeting was held with Cambridgeshire County Council CCC, Cambridge City Council (CCiC) and Highways England (HE) on 9th October 2018.
- 4.3 Discussions were focused on agreeing the expectations of the A10 Ely to Cambridge transport study trip budget, the suitability of the proposed CNFE Transport Strategy and future expectations regarding highway infrastructure, requirement of assessment work and funding of mitigation.

A10 Study

- 4.4 CCC has clarified the work completed to date in relation to the A10 Study and the transport modelling completed. This confirmed that a vehicle trip budget had been identified against which the CNFE site would be assessed and that the development should not exceed this volume. The findings of the A10 study confirmed the trip budget that the CNFE site was required to meet but that the development scale and mix was not fixed.
- 4.5 Subject to the development proposals meeting the requirements of the trip budget it was agreed by the relevant highway authorities that no additional transport modelling would be required and that the scope of the CNFE Transport Strategy would be acceptable.

Key Links

- 4.6 A strong link between Cambridge North Station and Cambridge Science Park is identified as being an essential part of the wider site development. As part of this work CCC explained Cambridge Science Park's transport consultants have investigated the spatial requirements for landing a foot/cycle bridge on the western side of the A10 Milton Road. Utilising this link as the western end of an elevated connection into the proposed development (or an underpass) would be beneficial to the wider site Transport Strategy.

Transport Network Proposals

- 4.7 It has been identified that the existing vehicular access into Cambridgeshire Science Park via Milton Road is due to be removed in late 2019.
- 4.8 The proposed Waterbeach Greenway (off-road route for pedestrians, cyclists and equestrians) will run north-south alongside/through the site and will need to be accommodated in the masterplan.

Contributions

- 4.9 It was acknowledged that the CNFE site will be required to provide a highways contribution (for wider proposed infrastructure schemes) that would be directly linked with the quantum of development across the full CNFE / Cambridgeshire Science Park and wider development aspirations for north of the A14. However, cost estimates for measures linked only to the proposed development (e.g. site access, connection to Cambridge Science Park and site-specific public transport improvements), will need to be calculated separately.

Stagecoach

- 4.10 The proposals for the CNFE core site were introduced to Stagecoach on Monday 1st October 2018.

- 4.11 The focus of discussions to date has been with regard to the scope for diverting an existing Stagecoach service to serve the middle of the CNFE core site.
- 4.12 Stagecoach identified that the most relevant services that could be diverted into the CNFE core site would be either CGB service D or the Citi 2 with Citi 2 seen as the service that provided the best opportunity to penetrate the site. This could be maintained on the current weekday 10 minute service frequency thereby providing a frequent connection between Addenbrookes Hospital, the City Centre, Cambridge Science Park and Cambridge North Station.
- 4.13 Stagecoach also commented on the Masterplan and the importance of providing bus stops within the site such that all dwellings are located within 400m of a bus stop. The Masterplan as presented may not be adequate to enable the north east corner of the site to provide an appropriate route to a stop within 400m. If this remained the case it may prove necessary for some of the Citi 2 buses to undertake an additional diversion further into the site. This may require an additional vehicle to be provided in order to maintain the 10 minute service frequency of Citi 2.

5 Transport Strategy

Introduction

- 5.1 The emerging transport strategy for the CNFE site has been developed accounting for the scale and type of development proposed, the transport and highway assessments undertaken to date by Cambridgeshire County Council and the need to align with the A10 Ely to Cambridge Transport Study whilst restraining residential parking to a ratio of 0.2 vehicle parking spaces per dwelling.

Access Arrangements

- 5.1 Vehicular access to the Core CNFE site will likely be provided to and from Cowley Road South and East via up to five separate junctions with two providing connection along the western boundary and three along the southern boundary. The proposed access points are shown on the masterplan supplied in **Appendix A** and include a direct link to enable direct connection between the Cambridge North Station and the centre of the site. This direct connection is subject to the development of the Cambridge Commercial Park as part of the wider CNFE development area.
- 5.2 Vehicular access proposals will incorporate upgrades to the two Milton Road / Cowley Road junctions. The details are subject to further assessment including junction specific capacity modelling and assessment.
- 5.3 All primary access points will be constructed to a standard to be agreed with the local highway authorities with footways and segregated cycleways to be incorporated where required. They will also seek to futureproof the development to enable the future implementation of mass public transit systems.
- 5.4 With primary accesses being provided onto both Cowley Road South and East the site foot and cycle infrastructure will tie in directly to the shared foot / cycle ways along both routes. This includes a site corridor running from the centre of the site to the south east corner to enable a link to NCN 51 running south to Cambridge North Station.
- 5.5 In addition to the combined foot / cycle / vehicle access points three foot / cycle links are currently proposed to be introduced. These potential measures are summarised as follows:
- A new foot and cycle bridge over the A14 to connect to Cambridge Road thus facilitating connection into NCN 11 that runs through Milton.
 - A new foot and cycle bridge over the railway line to link east to Fen Road.
 - A pedestrian and cycle route across Milton Road (in the form of an improved at-grade crossing, overpass or underpass).
- 5.6 The development will also seek to incorporate an extension to the Chisholm Trail with this to run along the eastern boundary of the site thus tying in to the network of links to be introduced across the site and the foot / cycle access points proposed from the northern and eastern boundaries of the site.
- 5.7 The boundary treatment along Cowley Road South will seek to allow a segregated foot / cycleway to be introduced with a series of pedestrian / cycle avenues running north / south enabling permeable connection into / out of the site.

Public Transport Provision

- 5.8 As part of the scheme development a high frequency bus service will be provided through the site with all dwellings to be within 400m of a bus stop.
- 5.9 Initial engagement with Stagecoach has indicated that the existing Citi 2 service will be routed to run within the site adding stops between Milton Road and Cambridge North Station. The service runs on a frequency of one bus every 10 minutes in each direction, the inclusion of the service therefore

providing the CNFE Core Site with a high frequency service that will connect the site with Ely, Waterbeach, Milton, Cambridge City Centre and Addenbrooks Hospital.

Parking Arrangements

- 5.10 The scheme car parking provision for the residential element of the scheme will be at a maximum ratio of 0.2 spaces per dwelling (1,780 parking spaces). Car parking will be provided within three 6 storey flexible parking structures. Current expectation is that one electric vehicle charging point will be provided for every 10 spaces, with passive provision provided to increase the provision in the future.
- 5.11 Non-residential landuses will also have appropriate levels of parking to ensure that the trip budget for the area is achieved.
- 5.12 Cycle parking provision will be one space per bedroom with 50% of all parking provided within buildings and 50% in external shelters.

Internal Movement Strategy

- 5.13 The site will be designed to enable the permeable movement of people with a principle route corridor included that directs movement of people between the site and Cambridge North Station and Cambridge Science Park. Ease of movement is focused on pedestrian and cycle connections to:
 - Cambridge North Station,
 - Cambridge Science Park,
 - Cambridge Guided Busway Stops and
 - Existing, and upgraded cycle networks including NCN 11 and 51 along with the Milton Road segregated cycle links.

Parking / Waiting / Loading Management

- 5.14 To supplement the extensive sustainable travel interventions proposed it will be necessary to ensure an appropriate no parking / limited waiting strategy is introduced with comprehensive site wide TROs. This will need a site wide restriction on kerbside parking.
- 5.15 Given the retail and commercial uses proposed, the parking / waiting restrictions will need to be supplemented by appropriate loading permissions so as to minimise obstruction and facilitate efficient loading and unloading arrangements. Given that much of the community and retail provision will be located within the centre of the site the focus of the delivery regime will be on consolidation and restricting the timing of deliveries. This could be linked to the proposed delivery hub summarised below to provide an incorporated residential / commercial facility.

Further Measures to Minimise Vehicle trips

Cycle Hubs

- 5.16 It is intended that a Cycle Hub will be introduced at the centre of the site providing cycle parking and charging along with a shop for bike repairs and maintenance. There is also an intention to introduce a cycle hire scheme loaning a mix of Brompton, traditional and electric bikes depending on the requirements of the user.

Consolidation Centre / Delivery Hub

- 5.17 The scale of the development enables a consolidation centre / delivery hub to be considered as a viable option thus consolidating and minimising delivery vehicle trips. Goods are delivered from external sources to the hub, sited on the perimeter of the development or off site, with these then transferred where size permits, by bicycle to residents. The consequential benefit is a reduction in

vehicles, reduced conflict with vulnerable road users, and reduced pollution. An example of this model is Zedify who currently operate in Cambridge.

Refuse Collection

- 5.18 The envisaged strategy is for the introduction of an underground waste storage system across the site. Details of these arrangements will be clarified as the scheme progresses however similar schemes have been introduced to enable large centralised underground containers to be installed. This has the benefit of enabling waste to be collected less frequently than typical kerb side arrangements with the potential for demand sensors and real time information to be used.

Mobility as a Service (MaaS)

- 5.19 MaaS provides a focus on consolidating and integrating sustainable travel options into a single point of access for the user. A MaaS system enables a single point of payment for all modes and allows for the user to focus on the most suitable option for travelling without need to review a series of options separately.

Site Wide Travel Plan

- 5.20 The site will be supported by an extensive site-wide travel plan ensuring connection and linkage between Travel Plan Co-ordinators across the residential and employment uses. The Travel Plan will incorporate commitment and management to ensure a site wide sustainable travel website is set up, this could be co-ordinated with a wider development / community website, to ensure residents are able to access information on sustainable travel.
- 5.21 The travel plan will also provide for the development of sustainable travel welcome packs designed accordingly for residents and employees.
- 5.22 In developing a Travel Plan the site will align itself with other organisations within Cambridge but most specifically those across The Cambridge Science Park, St Johns Innovation Centre and Cambridge Business Park. Currently an area wide travel plan applies to all of these as part of the Travel Plan+ area. The plan covers the period April 2018 – March 2021.
- 5.23 Whilst the development timescales for the CNFE core site extend beyond the current end date of the Travel Plan the developers for the CNFE core site will engage with the Travel Plan+ group during the development of a planning application so as to start feeding in ideas both in terms of new opportunities that the CNFE core site may be able to support but also how measures within the existing area wide Travel Plan may benefit the CNFE core site such that sustainable travel habits can be developed from day one of occupation.

6 Trip Assessment

Introduction

- 6.1 The focus of this Transport Strategy is aligned with the A10 Ely to Cambridge Transport Study to maximise trip internalisation and travel by sustainable modes and minimise vehicle trips. However, rather than directly transfer the trip rates that can be derived from the work completed within the A10 study this Transport Strategy further refines the trip forecasts. This refinement accounts for the proposed scale of development on the CNFE site and a constrained residential car parking provision of 0.2 spaces per dwelling.

Trip Generation, Distribution and Mode Share

- 6.2 In order to determine person trip generation, and subsequently modal trip generation, the 2011 census data has been interrogated. Journey to work mode share has been derived for travel to and from the 2011 super output area within which the CNFE site is located. This provides a total of the top 16 areas including the CNFE super output area, where residents are most likely to travel to / from.
- 6.3 Three additional zones have also been allocated to account for other journeys within Cambridgeshire, other journeys outside of the Cambridgeshire area (assumed to be by car), and other journeys by rail (made possible by the opening of Cambridge North Station following Census release in 2011).
- 6.4 The residential trip distribution is derived from the census for key destinations accounting for the point of origin being the 2011 super output area within which the CNFE site is located whilst for the employment trips assignment is based on the point of destination being the 2011 super output area within which the CNFE site is located.
- 6.5 The scale of development proposed will require education and local retail facilities to be provided within the site. Therefore, for the purposes of a trip assessment to inform the transport strategy, it has been assumed that trips to these land uses will be internal to the site and therefore have not been considered further in this assessment.
- 6.6 From the base point of residential mode split the mode share has been adjusted to account for the proposed parking regime that will limit residential parking provision to 0.2 spaces per dwelling. The key assumptions are as follows:
- No trips within the 2011 super output area that the CNFE site is located will be made by car.
 - Car trips to census output areas adjacent to the development site are reduced to account for the overall focus on minimising car travel, the proximity to the busway and the proposed diversion of buses into the site, and to reflect that Cambridge is a city where walking and cycling are higher in the mode hierarchy.
 - Walking and cycling mode share to and from the super output area containing the Cambridge Science Park (CSP) has been increased to account for the new links into CSP and its expansion.
 - Additional rail trips to destinations such as London and Ely have been assumed to account for the opening of the new Cambridge North Station following the release of the census data, and the improvements to the rail network that have occurred and are planned e.g. Thameslink and East-West Rail respectively.
 - The mode share for CNFE employment trips is unchanged from the census baseline.
- 6.7 The mode share has been split to account for each 2011 Census Super Output Area thereby accounting for distance and public transport routing. Accounting for the adjusted mode share the AM period (7am to 10am) and PM period (4pm to 7pm) approximate vehicle trip generation for the proposed CNFE site is identified in **Table 6.1**.

Table 6-1 CNFE Site Forecast External Vehicle Trips

Peak	AM (7am to 10am)		PM (4pm to 7pm)	
Direction	Inbound	Outbound	Inbound	Outbound
Vehicle trips	1,289	2,122	1,945	1,739

- 6.8 The forecast trips are lower than the equivalent trip rate within the A10 Ely to Cambridge Transport Study, Strand 3 CNFE / Cambridge Science Park (CSP) Transport Report as the CNFE site Strategy trips have been adjusted to account for the proposed level of on-site residential car parking provision. For clarity the peak period trip generations utilising the Strand 3 residential external trip rate are as identified in **Table 6.2**.

Table 6-2 A10 Study CNFE Site Forecast External Trips

Peak	AM (8am to 9am)		PM (5pm to 6pm)	
Direction	Inbound	Outbound	Inbound	Outbound
Vehicle trips	2,718	3,090	2,640	2,704

- 6.9 It is noted that the figures presented as part of the A10 Study will form a basis of a trip budget, although it is understood that the final trip budget is being refined. The tables show that the vehicle trips presented within this strategy align with the vehicle trips provided as part of the A10 Study.
- 6.10 The multi-modal trip generation has also been derived as part of the assessment. As discussed previously the mode share was defined on a zone by zone basis for the residential and business land uses to give an overall number of trips by mode. The zonal mode shares for residential trips are shown in **Table 6.3** and **Figure 6.1**.

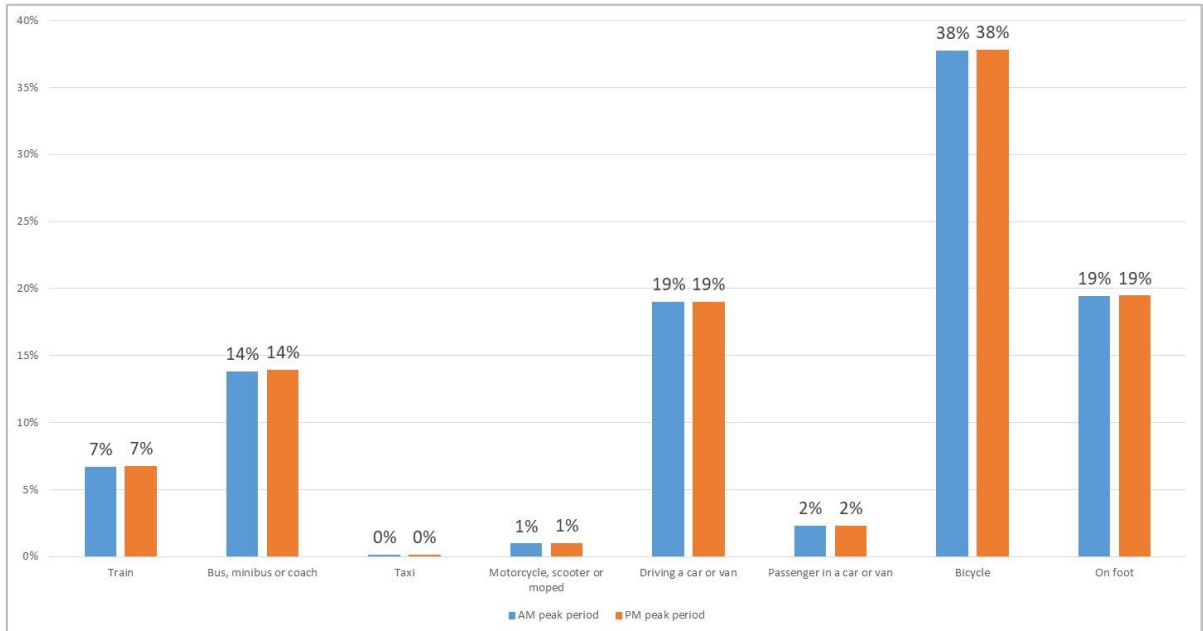
Table 6-3 Forecast External Residential Mode Split

Mode	AM peak period	PM peak period
Train	7%	7%
Bus, minibus or coach	14%	14%
Taxi	0%	0%
Motorcycle, scooter or moped	1%	1%
Driving a car or van	19%	19%
Passenger in a car or van	2%	2%
Bicycle	38%	38%
On foot	19%	19%

- 6.11 These mode splits align with the aspiration to create an exemplar sustainable development on the northern fringe of Cambridge, and those outlined in the A10 Study which specified mode shares of 14% for bus and 7% for train.

6.12 Cambridge already has a high proportion of residents choosing to cycle in and around the city so a mode share of 38% aligns with what is currently observed in some parts of the city. The Science Park, which will be expanded, is likely to be a significant work destination for residents of the proposed development and therefore a walking mode share of 19% is considered to be appropriate in the context of this development.

Figure 6.1 AM and PM peak period



Multi Modal Trip Generation

6.13 The two-way multi modal trip generation for the CNFE site is shown in **Table 6-4**.

Table 6-4 Multi Modal Trip Generation

Mode	AM (7am to 10am)	PM (4pm to 7pm)
Train	1,253	1,384
Bus, minibus or coach	2,591	2,860
Taxi	30	33
Motorcycle, scooter or moped	182	200
Driving a car or van	3,401	3,684
Passenger in a car or van	425	466
Bicycle	7,010	7,690
On foot	3,611	3,965

Development Impact

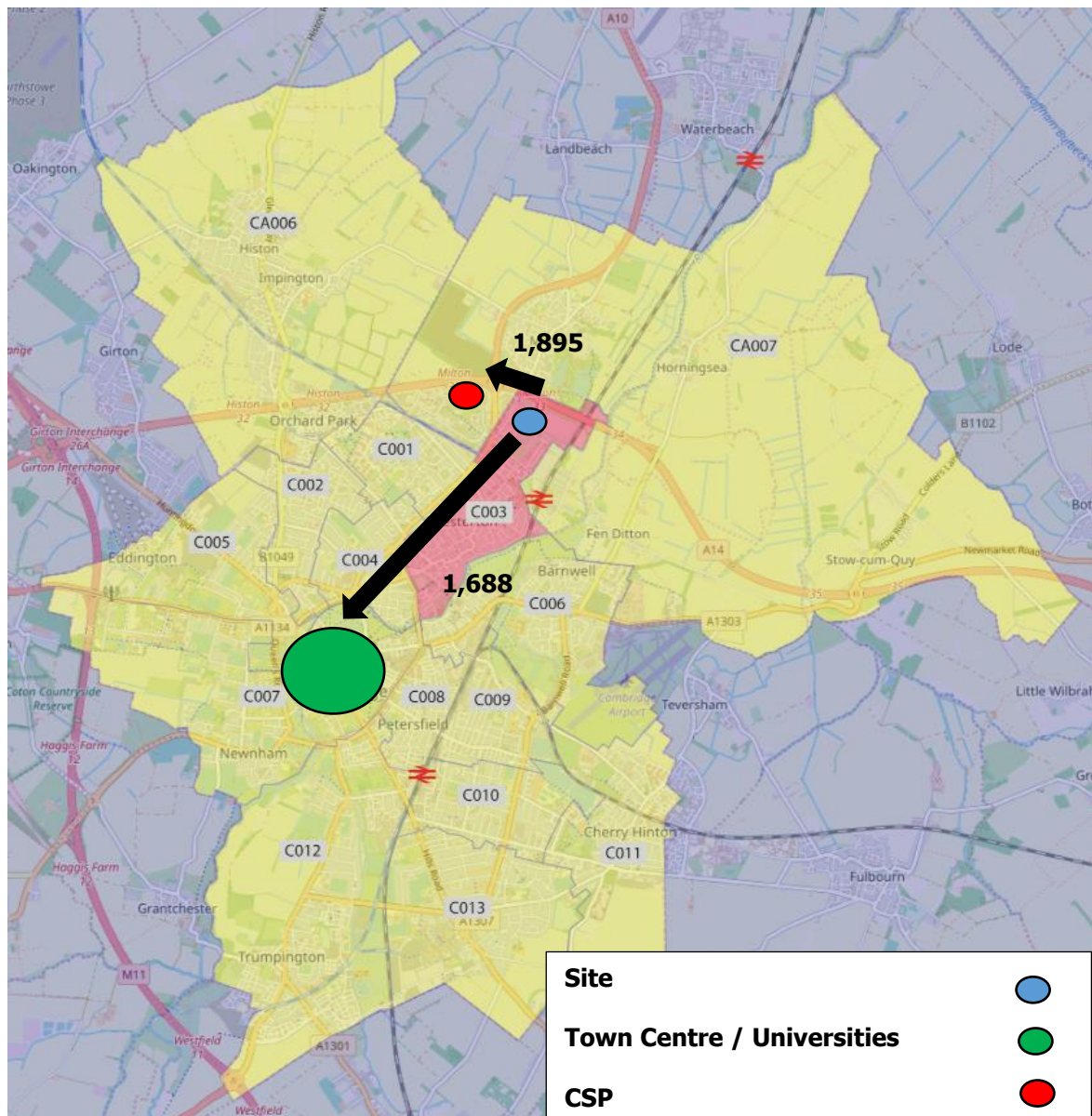
Vehicles

- 6.14 The impact on the local road network has been quantified through the economic assessment and the vast majority of the vehicles originating from the site are likely to be travelling to the wider area outside of the city centre. As a result, the vehicles largely impact upon the accesses into the site from Milton Road, as well as the Milton Interchange to the north where the A10 connects to the wider Strategic Road Network (the A14). These junctions have been identified within the A10 Study and will likely receive contributory funding from the development to provide improvements to mitigate any impact resulting from development traffic.

Walking and Cycling

- 6.15 Of the 7,010 additional cyclists associated with the proposed development during the three hour AM peak, the majority (over half) of these will be travelling towards either the city centre or the science park. Similarly, most of walking trips are also likely to walk to either the city centre or the science park.
- 6.16 This will result an increase in the number of cyclists using the new cycling infrastructure on the Chisholm Trail and along Milton Road. Further funding from the proposed transport contribution can be allocated to upgrading these facilities to cater for the increase in cyclists. The total number of cyclists going to / from these destinations during the AM peak period is shown in **Figure 6.2**.

Figure 6.2 Key Cycle Destinations AM Peak Period (7am to 10am)



6.17 The development of the site will open the area, breaking down the severance created by the local road network, railway line and the Anglian Water Recycling Centre. An additional link over the A14 will allow the Waterbeach development to the north, to connect with the City, whilst also providing a connection to Milton Country Park. As part of the development proposals, a new link across Milton Road will deliver a safe direct route from the both the CNFE site and the station directly into CSP. Both these new links could significantly benefit existing pedestrians / cyclists as well as facilitating movement to / from the site.

Public Transport

6.18 Most of the additional bus passengers resulting from the proposed development will be travelling to the city centre and towards the south of Cambridge. The size of the development allows for an additional service to be implemented which will cater for the new residents. This will benefit exiting public transport users by providing an additional service.

6.19 The recently opened Cambridge North Station will be able to cater for the additional rail passengers associated with the proposed development. The majority of whom are likely to commute to London. The introduction of the East West Rail link would also provide cross country routes allowing fast and convenient access from the site to other key locations such as Oxford and Milton Keynes.

Economic Impact

Available transport models:

- 6.20 A package of pre-existing models developed by and for Cambridgeshire County Council was used to assess transport impacts as part of the Ely to Cambridge Transport Study including Strand 3 CNFE/CSP Transport Report (February 2018), and the Ely to Cambridge Transport Study, Preliminary Strategic Outline Business Case (January 2018). The study utilised the Cambridgeshire County Council Cambridge Sub-Regional Model (CSRM2). The CNFE site was a core part of the assessment and the model has been used by CCC to consider the impacts of development on this, and other sites, across Greater Cambridge and the wider model study area.
- 6.21 CSRM2 is a WebTAG compliant strategic transport model which uses base data from 2015, including:
- Validation against traffic and transportation counts
 - All networks (highway, PT, walk, cycle)
 - Representation of parking and Park and Ride
 - Base transport movement data
 - Base land use data
 - Matrices with up-to-date mobile phone data

Modelling Transport External Costs:

- 6.22 For the purposes of the assessment of Transport User Costs, Cambridgeshire County Council's transport consultants (██████████) used a Reference Case 2031 version of the highway component of the CSRM2 model. This incorporates all committed transport schemes up to 2031 and all underlying growth and committed Local Plan development, excluding the CNFE site.
- 6.23 Cambridgeshire County Council agreed that the model was fit for purpose for use in the Strand 3 work and preparation of the Preliminary Strategic Outline Business Case and Highways England has been engaged throughout the A10 study.
- 6.24 The Reference Case also includes a number of committed strategic highways measures that are programmed for delivery across the study area including Highways England's A14 Cambridge to Huntingdon Improvement and associated junction works. The committed transport improvements provide a large localised increase in capacity. These will be complemented by other measures identified in the Ely to Cambridge Transport Study which the local authorities are currently exploring. The mitigation package for the CNFE site will likely include contributions towards other, more significant, transport schemes and measures including some of those identified via the A10 study. For these interventions the development will likely be required to make financial contributions that are reasonable in scale and kind, the levels of which will be determined as the site proceeds through the planning process.
- 6.25 A second 2031 model run has also been developed that incorporates the additional trips associated with the CNFE development.
- 6.26 The CNFE development trips have been determined through a stand-alone multi-modal trip generation and trip distribution assessment, utilising person trip rates, Office for National Statistics (ONS) Census data and an aspirational mode share that reflects the exemplar nature of the proposals in terms of creating a high level of sustainability and public transport accessibility and achieving a low vehicular mode share. These trips have been distributed to origins and destinations using the same trip distribution as forecast by the CSRM2 model for the Northern Fringe.
- 6.27 Importantly, the low vehicular mode share for the proposed CNFE housing-led development is in line with the trip budget assessed in the A10 Ely to Cambridge Transport Study. Cambridgeshire County Council are fully supportive of this strategy.
- 6.28 The outputs from these two model run scenarios have been input into TUBA to provide an assessment of the Transport External Costs associated with the additional highway trips.

- 6.29 The economic impact appraisal of the CNFE site (as discussed with MHCLG and DFT) therefore considers this core scenario and uses the Cambridge Sub-Regional (CSR2) strategic transport model to provide inputs to a TUBA assessment in line with WebTAG guidance. The initial, high-level assessment modelling of the transport external costs with the CNFE traffic demand, but no significant site-specific mitigation, shows a worst-case unmitigated transport cost of -£[REDACTED] across the network.
- 6.30 This figure needs to be viewed in the context that, in practice, development of the site would also include a package of transport mitigation, the details of which will be identified as the development proceeds through the planning process. This package will likely include significant contributions to the mitigation package set out in the A10 Study which themselves bring significant transport benefits. That study quantified the transport user benefits of the proposed mitigation package at £[REDACTED] (at 2018 prices). With the the CNFE site potentially providing a contribution of £[REDACTED] towards these mitigation measures (equating to 38% of the overall mitigation costs), if the same proportion of benefit were attributed to CNFE, a transport user benefit of £[REDACTED] results.
- 6.31 The true impact of the proposed development on the transport network is therefore only -£[REDACTED]. However, in accordance with WebTAG guidance we have modelled the more substantial impact through our economic case to provide a ‘worst case’ unmitigated measure of potential disbenefit.
- 6.32 The full breakdown is included within the Economic appraisal.

Prob not lawful as CIL regs prohibit tariff-style contributions

Environmental and social impact

- 6.33 The A10 study will evolve and further work undertaken by Cambridgeshire County Council as part of the next stages of the business case. This work will include appraisal of the environmental and social impacts. Therefore, at this stage a qualitative review of the impacts has been undertaken for the HIF submission and this is considered to be proportional.
- 6.34 The transport mitigation package and the development masterplan will lead to significant improvements in the travel options in the area following the redevelopment of the site. The mode shares that will be achieved at CNFE are likely to become the norm in Cambridge and this site will have a competitive advantage because of its accessibility and be a catalyst for improvements in air quality and noise in this area.
- 6.35 It has been proven in the AAP transport modelling and preliminary strategic outline business case that there is a mitigation package that can unlock the CNFE and wider development in this area. These schemes will evolve through the latter stages of the business case, and accident appraisal will be undertaken as part of this work. Given the CNFE development is seeking to reduce severance and remove pedestrian/ cyclist/ vehicle conflict when crossing the Milton Road, it is considered that there will be a positive impact in terms of accidents on Milton Road.
- 6.36 The impact of the walking and cycling improvements on existing physical activity has been considered qualitatively at this stage as the schemes are evolving in response to ongoing discussions with stakeholders. The masterplan will reduce severance (discussed below) and therefore increase the likelihood of people choosing to walk and cycle. This will have a positive impact on physical activity through improved health and greater productivity through reduced absenteeism.
- 6.37 The masterplan will promote include a mix of land uses that will be active at different times of the day and front streets that will be designed with people in mind. Routes to and from public transport will be legible, lit and landscaped with quality waiting facilities. Therefore, a qualitative assessment of the security and journey quality impacts is that these will be a positive.
- 6.38 The site currently has a severe impact on severance due to the local road network, railway line and the CWRC. The CNFE development will improve connectivity, reduce severance and improve permeability to destinations including Cambridge North Station and the Science Park via a permeable site masterplan, a new link over the A14 (connecting Cambridge with Waterbeach and Milton Park), and a new link across Milton Road creating a safe, direct route for pedestrians and cyclists between Cambridge North Station and the Science Park. The proposed development will break down these barriers and therefore it is considered the severance and accessibility impacts will be largely positive.

- 6.39 Improved access to Cambridge North Station and the Science Park, and an enhanced bus service serving local users with more frequent and reliable bus services will be provided, with any pump-priming bus costs met by the developer. At this stage a qualitative assessment suggests that there will be a largely positive option and non-use value.

7 Strategy Progression

Introduction

- 7.1 A range of feasibility studies have been completed in relation to matters that influence the development of the CNFE area including Cambridgeshire County Council transport and corridor studies and developer led feasibility assessments for site development.
- 7.2 Within the context of transport and highways these studies direct the focus of the design, construction and mitigation solutions for the site and provides a pre planning context. To progress the CNFE site through to submitting a planning application it will be necessary to confirm that the proposed strategy can be delivered.
- 7.3 In terms of the site masterplan this will be focused on further site iterations albeit focused on maintaining the connections, particularly by foot and bicycle, identified in the masterplan supplied at **Appendix A**. The other items or 'Gaps' that will need to be clarified are as summarised over the remainder of this Section of the report.

Public Transport

- 7.4 The evolution of the transport strategy has included engagement with Stagecoach with regards to providing bus connection for the site. This has identified that service Citi 2 could be diverted from Cowley Road South.
- 7.5 The next steps of the public transport strategy will determine:
- Siting of bus stops to enable a maximum walking distance of 400m to all dwellings.
 - Likely Citi 2 timetable alterations to accommodate the routing into and through the site.
- 7.6 As part of this process further consultation will be held with Stagecoach to enable the evolving solution to fit with their commercial and operational expectations.
- 7.7 A demand review of current bus use, both of the Citi 2 and CGB will be necessary to determine the level of additional frequency on either route and what element of additional capacity relates to the CNFE area.
- 7.8 Engagement with the rail operator for Cambridge North Station will be completed so as to enable a comprehensive sustainable transport strategy to be complete and ensure the strongest possible links between the station and the CNFE site.

Cycle & Pedestrian Network

- 7.9 Indicative designs for cycle and pedestrian connections will be produced to show how these will look and confirm the siting of these routes within the masterplan. These will range from the primary routes down to the pedestrian / cycle avenues.
- 7.10 The proximity of the site to Cambridge North Station provides a key element of the Transport Strategy for the CNFE area. The ability for cyclists making a multi modal trip to park at the station will have a direct bearing on the volume of residents making the multi modal trip. Consequently, capacity analysis will be required to identify if further cycle parking is required at the Station and the volume required in relation to the CNFE site.
- 7.11 A viability review will also be necessary to ascertain how a link can be provided from the CFNE Core Site into the potential Cambridge Science Park foot/cycle bridge that will cross Milton Road to the south east of the CNFE core site.

Car Club

- 7.12 Given the focus on a residential parking provision of 0.2 spaces per dwelling and consequently expected low car ownership the site is likely to benefit from the inclusion of at least one car club space to supplement the extensive range of sustainable travel connections. Given the low level of expected car ownership across the site it will be necessary to consult with car club operators to determine the expectation as to the number of car club spaces to be introduced and potentially how this could be delivered as part of a multi travel mode club.

MaaS

- 7.13 The delivery of a MaaS system will require investigation to understand whether a system is already emerging across Cambridge or whether an appropriate system and business model needs to be developed. In this regard engagement with a range of stakeholders will be necessary with the initial focus of this engagement CCC, CCiC and HE in order to gain their buy in and ensure it is suitable for Cambridge.

Parking / Waiting / Loading

- 7.14 A site wide parking / waiting order would provide a blanket approach to enabling enforcement and minimise potential for residents / employees to seek to bring vehicles to the site other than where designated spaces are provided. The detail as to how this is best implemented and secured in a legal agreement will require consultation with Cambridgeshire County Council.

Highways

- 7.15 Investigate the impact of the CNFE area upon the Milton Road corridor particularly the operation of the Milton Road / Cambridge Science Park / Cowley Road and Milton Road / Cowley Road junction. This capacity review will account for the following:
- CNFE parking ratio of 0.2.
 - Traffic growth associated with forecast traffic growth accounting for development at Cambridge Science Park and Waterbeach.
 - Mitigation requirements at Milton Road / Cambridge Science Park / Cowley Road and / or Milton Road / Cowley Road junctions.
- 7.16 This work is currently being undertaken by the council in relation to the development of the Area Action Plan. The results of the modelling work will then be used to determine the impact and the vehicle trip budget associated with the CNFE site.

Other

- 7.17 Preliminary investigations regarding the viability, siting and size of the following:
- Cycle Hub.
 - Consolidation Centre / Delivery Hub.
 - Refuse Collection.
- 7.18 The viability exercise will be developed in conjunction with relevant stakeholders, particularly the potential cycle hire companies and the current Cambridgeshire County Council Waste operator. This will support the scheme masterplan and provide the evidence that the proposed arrangements are suitable for the site.

8 Development Phasing and Delivery Timescales

Project Programme

- 8.1 An overall programme for development of the CNFE core site has been prepared taking the scheme from the current masterplan, through to planning application, determination, construction and subsequently completion. The current practical completion for all phases of the Core development is 2043.
- 8.2 The current project programme is summarised in **Table 8.1**.

Table 8-1 Development Timetable

Task	Completion Date
Pre Planning	
HIF Application	December 2018
HIF Approval	February 2019
HIF Drawdown Longstop Date	May 2019
Planning	
Area Action Plan Submitted	July 2021
Area Action plan Adopted	July 2022
Hybrid Planning Application Commences	September 2019
Hybrid Planning Application Submitted	March 2022
Hybrid Planning Application Approved	December 2022
One	December 2030
Two	December 2028
Three	March 2033
Four	February 2032
Five	July 2035
Six	March 2037
Cambridge Water Recycling Centre (CWRC) Relocation	
DCO Process Commences	January 2019
DCO Permission Obtained	February 2021
Relocation Commences	April 2021
Relocation Completed	April 2024

End of Existing CWRC Decommissioning	April 2025
New Development	
Site Infrastructure Commences	June 2023
First Homes Complete	December 2026
First Phase Complete	December 2028
Final Phase Complete	March 2037

Phasing

- 8.3 As part of the delivery programme a review of scheme phasing has been undertaken so as to account for this within the overall development programme.
- 8.4 Phasing proposals have been developed for the residential and associated commercial / leisure elements of the scheme. This will be brought forward over six phases of development with the first phase to be completed in [REDACTED]. The completion dates for each of the six phases is identified in **Table 8.2**.

Table 8-2 Timetable for Development Phases

Development Phase	Completion Date
One	[REDACTED]
Two	[REDACTED]
Three	[REDACTED]
Four	[REDACTED]
Five	[REDACTED]
Six	[REDACTED]

9 Summary and Conclusions

- 9.1 This Transport Strategy has been prepared to provide the context of the current transport and highway assessment work completed in relation to the development of the CNFE site along with expectations and next steps for the delivery of a comprehensive transport strategy for the scheme.
- 9.2 The CNFE core site masterplan identifies a development providing [REDACTED] dwellings, [REDACTED] primary schools, [REDACTED] secondary school and a mix of commercial, retail, community and health land uses. The CNFE site provides additional retail and commercial floorspace as well as an additional [REDACTED] residential units. As part of the scheme proposals the residential element is to be delivered with a residential parking provision of 0.2 spaces per dwelling.
- 9.3 The CNFE site is located within an area where considerable transport and highway mitigation schemes are being implemented with the site itself assisting in the delivery of these schemes. It benefits from being located close to the Cambridgeshire Guided Busway and the full extent of the site being within 1.5km of Cambridge North Railway Station.
- 9.4 The overall focus of the Transport Strategy is to confirm that the development will be brought forward in line with the CCC transport modelling work completed to date and more specifically ensure it is aligned with the trip budget identified within the A10 Ely to Cambridge Transport Study. The study itself identifies the importance of achieving a high volume of internal trip assignment and limiting car parking provision.
- 9.5 In their respective roles as the local and strategic highway authorities Cambridgeshire County Council and Highways England have been consulted as part of the process of developing this Transport Strategy. Engagement with both authorities has confirmed that the CNFE site will only be accepted if it works within the trip budget defined in the A10 Ely to Cambridge Transport Study. In this regard the mix and scale of development is not fixed but the external trip generation is fixed.
- 9.6 Working within the CCC trip budget no additional traffic modelling is required of this scheme other than in determining the impact on proposed site access junctions and access onto Milton Road via the two existing junctions of Milton Road / Cowley Road / Cambridge Science Park and Milton Road / Cowley Road West.
- 9.7 This Transport Strategy identifies a series of solutions to mitigate the volume of car trips that may otherwise be generated and enable the development to be delivered within the CCC identified ceiling figure. These measures include:
- A Cycle Hub.
 - A Consolidation Centre / Delivery Hub.
 - Underground Waste Storage.
 - Provision of a high-frequency bus service within the site with all residents to be located within 400m of a bus stop.
- 9.8 This report has identified the next stages of assessment required to enable delivery of the CNFE site. This focuses on completing viability assessments of the proposed transport solutions and engagement with the relevant stakeholders to maintain buy-in regarding the ability to deliver the transport strategy.
- 9.9 A number of programmed actions will take the project forward with the aim of a planning application to be submitted in 2022, construction to start in [REDACTED] and the first homes completed in [REDACTED]. Overall the target for construction completion is [REDACTED].

Appendix A - Masterplan



Appendix B – Stakeholder Engagement

	budget allowed for within the Study. ■■■ confirmed that the level of development within the CNFE site is not set by the Study and can vary as long as the overall volume of trips set out within the trip budget is adhered to.	
4	■■■ confirmed that she did not expect any further transport modelling work as part of the Study at this stage.	
5	■■■ confirmed that it is the intention of the Transport Strategy that will accompany the CNFE HIF bid submission to align with the assumptions and trip budget contained within the Study. ■■■ confirmed that this would be acceptable.	
6	■■■ confirmed that the Transport Strategy for the proposed development in terms of traffic generation would be acceptable provided that the expected traffic generation remains within the Study trip budget. ■■■ confirmed that this would be the case.	
7	CCC officers reiterated the importance of creating a strong link between Cambridge North Station and Cambridge Science Park (CSP) and confirmed that CSP's transport consultants have investigated the spatial requirements for landing a foot/cycle bridge on the western side of the A10 Milton Road, which could potentially form the western end of an elevated connection into the proposed development site (or an underpass). It has been agreed that the link will be incorporated within the design and the HIF submission.	
8	■■■ noted that the existing vehicular access into CSP via Milton Road is due to be removed in approximately one years' time.	
9	■■■ noted that there is a proposed Waterbeach Greenway (off-road route for pedestrians, cyclists and equestrians) which will run north-south alongside/through the site. The Greenway is currently under consultation and provides a link under the A14.	
10	■■■ confirmed that CCC will calculate and provide a likely highways contribution (for wider proposed infrastructure schemes) that would be directly linked with the quantum of development. However, cost estimates for separate measures linked only to the proposed development (e.g. site access, connection to CSP and site-specific public transport improvements), will be separate to this figure.	

Pell Frischmann		Project No. 102027
		Version No. Draft 1
MEETING MINUTES		Project CNFE - Transport
Subject Cambridge Northern Fringe East (CNFE) – Stagecoach Cambridge Transport Discussions		Date 24.10.2018
Location Stagecoach Cambridge, 100 Cowley Rd, Cambridge CB4 0DN		By Chkd ██████████
Date and Time	Monday 1st October 2018 14:00-15:00	
Attendees	████████████████████ ██ ██	
Apologies	None	
Circulation	As above plus: ██ ██ ██ ██	

ITEM	DESCRIPTION	ACTION
1 2.	████ opened the meeting by setting out the client's aspirations to develop Cambridge Northern Fringe East (CNFE) area. █████ explained that the core site was likely provide █████ homes and associated retail / commercial space, although the removal of the water treatment plant will also extinguish the 'odour zone' allowing for additional houses to be built out.	
2 4.	████ enquired as to the impact of the CNFE development of the existing Stagecoach operation.	
5.	████ explained that the industrial estate which includes the Stagecoach depot was not contained within the core site that was being brought forward by the CNFE scheme but formed part of the wider site which was enabled by the relocation of the Cambridge Water Treatment Works and subsequent removal of the odour zone which currently limits development.	
3 7.	████ explained Stagecoach's possible concerns with the relocation of the depot; as this may require a redesign of the bus network depending on the location of the of the relocation site.	
8.	████ then explained how the existing network operates; drivers change over shift in the city centre (at Drummer Street); they start at the depot at the beginning of the day and only return to the depot at the end of service. ████ inquired as to what facilities would be available at Cambridge North station on completion and if that might be viable as a bus layover area.	
4 10.	████ then showed the indicative masterplan for the CNFE core site, and asked what opportunities there would be to serve the core of the site with either a diversion of an existing service / enhanced service.	

	<p>■■■ set out that the two most relevant services are the 'D' (Trumpington – St.Ives) which uses the busway, and the '2' which is a standalone service between Addenbrookes, the City Centre and Science Park. It was felt that the '2' gave the best opportunity to penetrate the site.</p> <p>The existing '2' service runs on a 10 minute frequency during the day Mon-Sat, with a 30-min frequency in the evening and on a Sunday.</p>	
5	<p>It was discussed that a diverted '2' along the proposed development spine road running at the same frequency as the existing (10 min daytime) would be suitable starting point. ■■■ noted that the top-right of neighbourhood 6 on the indicative masterplan would be a challenging walk to the nearest stop, therefore this may need further consideration. If at least some of the buses on the service had a further diversion further into the site to ensure all the site was within the recommended walk distance of a stop then it may be necessary to add an additional vehicle to maintain the 10 minute service frequency.</p>	
6	<p>■■■ thanked both ■■■ and ■■■ for their assistance and would be in touch as the scheme progressed.</p>	

Education Provision

Age group	Forecasted number of children	Suggested provision of facilities	Timeframe
0-3 (pre-school)	1725 – 2588 (1120 – 1680 from Site 1A and B)	Private, public and voluntary services and facilities provision to reflect the range of providers: maintained schools; non-maintained schools; independent schools (including free schools and academies); all providers on the Early Years Register; and all providers registered with an early years childminder agency (CMA).	Demand-based
4-10 (primary)	2588 – 3450 (1680 – 2240) from Site 1A and B)	2 Primary Schools (1 x 2 F/E; 1 x 3 F/E). Includes SEND places within mainstream provision. On-site Provision.	First phase of new Primary School required in Phase 1. Staged-PAN entries. Capacity reached after about 7 years.
11-15 (secondary)	1466 – 2156 (952 – 1400 from Site 1A and B)	It is considered, at this stage, that development will not generate sufficient demand for a new standalone secondary school. However, provision has been made within the Masterplan for a school should that position change. Otherwise, off-site contributions for the expansion of existing provision within the City will be made. Includes SEND places within mainstream provision.	It is likely that there will be some secondary school capacity which could mitigate initial impact, meaning that off-site contributions will not be needed in phase 1. Staged-PAN entries. Capacity reached after about 8 years.

Education Provision - Background

QUESTION 1.4.2.7: If you have **not** highlighted 'Education' as a type of physical infrastructure to be funded through HIF please answer the below question:

Please indicate whether the housing development generates a need for new school places and how this will be accommodated, either within the development site or elsewhere.

CONTEXT – EDUCATION APPROACH IN CAMBRIDGESHIRE

The Government provides capital funding, known as Basic Needs, towards the provision of new school places only where there is increased demand arising from population changes. The funding allocations made in each case is determined following analysis of the Surplus Places and Capacity Assessment (SCAP) returns submitted to the Department for Education ('DfE') and is provided on a three year rolling cycle.

There is a clear expectation from the DfE that, where additional capacity is a direct result of housing development, the capital funding required to deliver this should be sought via developer contributions, either Section 106 or CIL. The SCAP guidance and return requires projects required to expand capacity as a result of housing developments to be recorded separately, including details of the levels or anticipated level of developer funding which will be secured.

The process which the DfE operates for the allocation of capital funding towards the provision of new school places, therefore, explicitly excludes the provision of places required as a result of new housing developments.

Cambridgeshire County Council is the Local Education Authority for the Cambridge Northern Fringe.

Early Years and Childcare

Where a new primary school is established it will include facilities for delivery of early years education and childcare usually in the form of one or 2 class bases and ancillary facilities, e.g. small office, in order to deliver the current 15 hour weekly entitlement.

Early Years education and childcare is not only delivered through schools or settings based in schools, but by the private, voluntary and independent (PVI) sector.

Primary

For good organisational reasons, Cambridgeshire County Council's policy is to establish new primary schools with whole forms of entry, e.g.:

- 210 place schools (one form of entry (1 FE))
- 420 place schools (2 FE)
- 630 place schools (3 FE)

This facilitates single year group teaching i.e. children grouped by age and implementation of infant class size legislation which limits Foundation and Key Stage 1 class (Reception, Year 1 and Year 2) sizes to 30 pupils to one teacher.

Secondary

Secondary schools provide for the 11-16 age range. Cambridgeshire County Council has no fixed position regarding the size of new secondary schools. However, as there is a direct correlation between the size of a school and its financial robustness, Cambridgeshire County Council would expect a new secondary school to be no smaller than 5FE (750 places). Schools larger than 11FE (1650 places) are the exception in Cambridgeshire.

Cambridgeshire County Council’s policy is to establish 11-16 schools unless the best option for providing additional post-16 provision in response to demographic growth is identified as being through the establishment of an 11-19 school.

Special Educational Needs

The vast majority of children with special educational needs will be educated in their local mainstream school with additional appropriate support from specialist units, usually co-located with mainstream schools. Those few children with the most complex and severe learning needs (approximately 1% of all Cambridgeshire children), attend one of the Council’s Area Special Schools.

Pupil Multipliers: Children per 100 dwellings

Cambridgeshire County Council’s standard approach to assessing demand from major new housing developments is to develop forecasts based on agreed pupil yield multipliers. For development proposals, such as those at the Cambridge Northern Fringe, where detail of development proposals is available only at a high level the Council would look to use general pupil multipliers. These multipliers, reviewed and approved in January 2018, suggest that for a development of this scale the demand for education provision would be in the range of:

Education Phase (Multiplier Range per 100 dwellings)	Low level projections (Forms of Entry)	High level projections (Forms of Entry)
Early Years 0-3 years of age (20 – 30)	1725	2588
Primary 4-10 years of age (30 – 40)	2588 (12.3FE)	3450 (16.5FE)
Secondary 11-15 years of age (17 – 25)	1466 (9.7FE)	2156 (14.3FE)

This can be further broken down by proposed development phase to:

Site 1 A and B

Education Phase (Multiplier Range per 100 dwellings)	Low level projections (Forms of Entry)	High level projections (Forms of Entry)
Early Years 0-3 years of age (20 – 30)	1120	1680
Primary 4-10 years of age (30 – 40)	1680 (8FE)	2240 (10.7FE)
Secondary 11-15 years of age (17 – 25)	952 (6.3FE)	1400 (9.3FE)

Site 2 A, B and C

Education Phase (Multiplier Range per 100 dwellings)	Low level projections (Forms of Entry)	High level projections (Forms of Entry)
Early Years 0-3 years of age (20 – 30)	605	908
Primary 4-10 years of age (30 – 40)	908 (4.3FE)	1210 (5.8FE)
Secondary 11-15 years of age (17 – 25)	514 (3.4FE)	756 (5FE)

These pupil multipliers best reflect a standard housing dwelling mix as delivered and planned across the wide range of strategic housing developments across the county. As part of this this reflects a standard housing profile with a typical housing density of around 65 dph as anticipated on sites such as Northstowe, Alconbury and the Cambridge Fringe development sites.

More detailed pupil multipliers are applied as details of development schemes become confirmed, mostly beyond the grant of outline planning consent. Until this point it is not appropriate to apply these more detailed multipliers as assumptions around development mix will fluctuate significantly.

However, the Council does recognise that the specifics and scale of this proposed development do make planning on the basis of a typical development density of 65 dph is not appropriate. The scale of development required to deliver a viable development will inevitably push the development density to become in excess of 150+ dph. As has occurred with similar outlier developments (University of Cambridge's Northwest Cambridge site for example), the Council is committed to working with developers to identify appropriate variations to the standard pupil multipliers to ensure that planning is undertaken on an appropriate basis.

This additional work cannot yet be undertaken, but it is clear that the shift in development density will significantly reduce the overall pupil yield which would be anticipated from the site. Therefore, although at this stage it is not possible to provide clarity over the actual scale of mitigations required, it is possible to provide assurance that these will not be in the magnitude of that indicated from the Council's general multipliers.

Forecasted Number of Children from Development (combining Sites 1A and B, and 2A, B and C)

Whilst it is not appropriate to use the County Council multipliers which are based on lower density and different housing mixes from local developments, we can in broad terms estimate the requirements on site to provide education. There are a number of assumptions made below that are subject to change. A detailed assessment of educational need, in discussion with Cambridgeshire County Council, will be required at the Area Action Plan and Planning Application processes. Considering the type of housing envisaged from Sites 1A and B, and Sites 2A, B and C, the provision of facilities is outlined below:

Education Phase	Suggested Provision of Facilities
0-3 (pre-school)	Private, public and voluntary services and facilities provision to reflect the range of providers: maintained schools; non-maintained schools; independent schools (including

	free schools and academies); all providers on the Early Years Register; and all providers registered with an early years childminder agency (CMA);
4-10 (primary)	At least one, potentially 2 new primary schools. Each offering the capacity for 2-3 Forms of Entry. Final determination will need to reflect detailed housing mix and assessment of capacity in existing catchment areas adjacent to the development site.
11-15 (secondary)	This site will not generate sufficient demand for a new, stand-alone secondary school. However, provision has been made within the Masterplan for a school should that position change. Otherwise, contributions towards off-site mitigations, in the form of expansion of existing provision within the City, will be required.
Further Education	The Council is planning a number of expansions of Further Education provision serving the wider Cambridge Area Partnership (CAP) area, which includes all local providers. Ongoing review and commissioning work will identify when and where additional capacity will be needed to mitigate the significant levels of housing development within the CAP area. The constraints of this site means that on-site expansion of provision would not be sought. There remains the potential that developer contributions towards off-site mitigation will need to be sought from the developer.
Special Education Needs	No specific provision is made to SEND provision within the Cambridge Northern Fringe. There remains the potential for developer contributions towards off-site mitigations to be sought from the developer.

Timeframes for Delivery

The initial primary school requirements will need to be secured via an early trigger point stage in the development phasing plan, in order to ensure that children can access education within relatively close proximity to where they live. Final determinations about this approach and triggers will need to reflect the phasing plans for the development and analysis of existing capacity in surrounding catchment areas. This will help establish if existing schools offer any scope for mitigating the early phases of construction. However, for the initial stages of planning and viability assessment, it should be assumed that the site and first phase of a new primary school would be required from the outset of development.

It is likely that as a result of wider secondary education capacity commissioning work there will be some secondary school capacity which could mitigate the initial impact in the early years of the development. This would mean that off-site contributions would not be needed at the outset of the development. Triggers for contributions would need to be negotiated and secured as part of wider S106 / viability discussions.

Health Care Provision Supporting Information

QUESTION 1.4.4.1: What consideration have you given to ensuring that the health and care services locally will align with the additional homes to be built?

ENSURING LOCAL HEALTH AND CARE SERVICES ALIGN WITH DEVELOPMENT

It is envisaged that Sites 1A and B will accommodate [REDACTED] homes, with Sites 2A, B and C, accommodating a further [REDACTED] homes. The additional population growth, if calculated using the Cambridge City average household size of 2.3 people (taken from the 2011 Census: Rooms, Bedrooms, and Central Heating), will be [REDACTED] and [REDACTED] respectively – or [REDACTED] people in total for the whole scheme.

The optimal list size for a single General Practitioner's ('GP') practice (of 120m²) is [REDACTED] patients. Irrespective of surplus capacity in existing nearby GP surgeries, Site 1A and B are likely to require [REDACTED] new GPs, with Site 2A, B and C requiring [REDACTED] new GPs – or [REDACTED] new GPs across the whole site, brought together within a single multi-clinic practice (assuming that is the preferred approach in operational terms).

It is envisaged that [REDACTED] new dental surgeons will be required, that there will be a need for the provision of 42 Acute Healthcare beds, and 42 Extra Care beds, arising from the whole development.

The CNFE masterplan is designed to accommodate the amount and type of health facilities described above. In the event that some off-site provision is deemed (by the relevant authority) to be more appropriate, then financial contributions would be made accordingly.

PLANNING POLICY – HEALTH

The National Planning Policy Framework (NPPF) 2018 acknowledges the importance of considering health impacts during the planning process. It covers many issues that are directly related to the determinants of health. The NPPF identifies the three essential components of delivering sustainable development, which gives rise to the need for the planning system to perform a number of roles. The role of particular relevance to health is a 'social role'. The NPPF states the planning system should *"support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being"* (paragraph 8b).

The NPPF then leads into a dedicated section (8) on 'Promoting healthy and safe communities', stating that (paragraph 91) *'Planning policies and decisions should aim to achieve healthy, inclusive and safe places which:*

- a) *promote social interaction, including opportunities for meetings between people who might not otherwise come into contact with each other – for example through mixed-use developments, strong neighbourhood centres, street layouts that allow for easy pedestrian and cycle connections within and between neighbourhoods, and active street frontages;*
- b) *are safe and accessible, so that crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion – for example through the use of clear and legible pedestrian*

routes, and high quality public space, which encourage the active and continual use of public areas; and

- c) *enable and support healthy lifestyles, especially where this would address identified local health and well-being needs – for example through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food, allotments and layouts that encourage walking and cycling.*

The national Planning Policy Practice Guidance 2014 ('PPG') also includes guidance on the importance of addressing health and wellbeing through planning. Undertaking a Health Impact and Needs Assessment ('HINA') is one of the ways that the PPG suggests health can be demonstrated to be a consideration of development.

CONTEXT – HEALTH APPROACH IN CAMBRIDGESHIRE

Spatial planning and development has the potential to impact on human health and wellbeing. This is because a wide range of social and environmental factors affect the health of local communities within Cambridge. Good health is related to good quality housing and developments, well designed street scenes, well laid out neighbourhoods, quality and efficiency in transport systems, opportunities to experience leisure and cultural services activities and green and open space.

A HINA will be prepared to support and inform the forthcoming Area Action Plan and Planning Application processes for CNFE. This will define health needs arising from the development more accurately. A HINA is commonly defined as *“a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.”* It is a tool to appraise both positive (e.g. creation of new jobs) and negative (e.g. generation of pollution) impacts on the different affected sub-groups of the population that might result from the development. Public participation is considered a major component of the process.

It will be necessary to engage with a number of groups and organisations in the local health and wellbeing system, to help inform the preparation of the HINA:

- Director of Public Health at Cambridgeshire County Council;
- The Health and Wellbeing Board – which can provide a valuable forum through which partners can help ensure that planning proposals, where appropriate, are likely to have a positive impact on the health and wellbeing of local communities. Health and Wellbeing Boards bring together local authorities, the NHS, communities and wider partners to share system leadership across the health and social care system; and have a duty to encourage integrated working between commissioners of services, and between the functions of local government (including planning). Each Health and Wellbeing Board is responsible for producing a Health and Well-being Strategy which is underpinned by a Joint Strategic Needs Assessment. This will be a key strategy for a local planning authority to take into account to improve health and well-being. Other relevant strategies to note would cover issues such as obesity and healthy eating, physical activity, dementia care and health inequalities. Data and information from Public Health England is also useful as part of the evidence base for plan-making;
- NHS Cambridgeshire and Peterborough Clinical Commissioning Group ('CPCCG') and NHS England are responsible for the commissioning of healthcare services and facilities which are linked to the work of the Health and Wellbeing Boards and the local Director of Public Health. These bodies in consultation with local healthcare providers will have assisted Cambridge City Council regarding its strategic policy to deliver health facilities and its assessment of the quality and capacity of health infrastructure as well as its ability to meet forecast demand. They will be able to provide information on their current and future strategies to refurbish, expand, reduce or build new facilities to meet the health needs of

the existing population as well as those arising as a result of new and future development. The CPCCG has prepared the 'New Housing Developments and the Built Environment JSNA 2015/16', which identifies specific measures that should be considered in delivering a health development in Cambridgeshire.

- Engagement with the local community is also important. This should also include local Healthwatch organisation (which represents users of health and social care services) and other community groups as appropriate.

The HINA will be structured to consider a range of topics, but for this purpose are indicatively provided below:

- **Health Priorities**

This will need to be explored through the engagement with the local groups and organisations identified above. However, the following health characteristics in Cambridge have been identified at this stage:

- Cambridge is one of the 20% least deprived districts in England;
- 2.6% of Cambridge's population live in areas in the most deprived 20% of areas in England, lower than for Cambridgeshire as a whole. According to the Indices of Deprivation 2015 it has a deprivation score of only 13.8, below the England average although a higher level of deprivation than South Cambridgeshire. However, based on data from the fingertips website data shows that Cambridge has a worse level of children living in low income families (under 20s and under 16s) and more people living in fuel poverty than for the Cambridge benchmark and a higher proportion of income deprived over 60 years old;
- A higher percentage of all hospital admissions in Cambridge present as emergencies compared with the England average. Percentages are higher in Black ethnic groups compared to white ethnic groups. This may be due to higher levels of urgent need or lower use of services in the community;
- The health of people in Cambridge is varied compare to the England average. Statistics from 2013 show that there are statistically significantly fewer children living in low income families in the City (14% compared to 19% in England). Life expectancy for women higher than the national average. Life expectancy is not significantly different for people in the most deprived areas of South Cambridgeshire than in the least deprived areas. However, there are disparities, for instance life expectancy in the more deprived parts of Cambridge, such as in the north of the city, is almost 9 years lower for men and 7.5 years lower for women compared to the least deprived areas;
- For Cambridge there are some indicators that are statistically significantly worse than for the England average. These include the rate of violent crime increased in 2014/15 to a level statistically significantly worse than England, although over 5-years there has been a decrease. Higher rate of hospital admissions due to self-harm compared to the England average. This is in-keeping with the picture of the whole of Cambridgeshire, including South Cambridgeshire. The rate of hospital admission episodes for alcohol-related conditions or causes increased in Cambridge residents in 2014/15 and the rate is statistically higher than the England average;
- Cambridge also has the highest levels of statutory homelessness in Cambridgeshire, both in terms of households in temporary accommodation and homeless but not in priority need (which is getting worse);
- The percentage of children in low income families has statistically significantly decreased over the last 5 years;
- Long-term unemployment rate has statistically significantly decreased over the last 4 years;
- Pupil absence has been decreasing;

- The percentage of adults physically active has statistically significantly increased in the last 4 years;
- The rate of under 18 conceptions has statistically significantly decreased over the last 6 years (although with an increased rate in the last two years);
- The only identified indicator of health that have got worse over time is smoking prevalence, which has increased over the last 4 years;
- Public Health England states that the local priorities include supporting the independence of older people, ensuring access to mental health services and creating a healthy environment through new housing development.

- **Health Needs**

Health infrastructure provision includes:

- Primary care – GP practices, plus community pharmacists, dentists and opticians;
- Community healthcare – this covers a wide range of diagnostic and healthcare services, including non-acute mental health services, which provide a means of delivering care closer to home than from a hospital setting;
- Secondary / acute provision; and
- Tertiary / specialist provision

CPCCG and NHS England Midlands and East have responsibility for commissioning of healthcare services in the area. Discussions with these bodies will be needed to establish the most appropriate mechanism for meeting Health Needs of the new population at the CNFE.

- **Mixes of Uses and Healthy Housing**

The development will help to provide a diverse mix of uses to support a sustainable community where people can meet their day-to-day needs without needing to drive. The proposed development will also provide a range of housing types to meet the varied need of future residents. This will include some affordable homes.

The needs of vulnerable groups will need to be considered in the design of new housing. This includes the need for housing adaptability to meet the needs of those who have mobility difficulties, which may include some older people. Furthermore, access to affordable housing should help in reducing health inequalities for those on lower incomes.

A suggested approach for further action on ‘Healthy Housing’ might include ensuring housing standards are progressed through all stages of design and integrate affordable housing through the proposed development in terms of design quality and appearance.

- **Connectivity and Active Transport**

Walking and cycling will be promoted through provision of cycle spaces, connection of the proposed development to walking and cycling networks and provision of public open space in the scheme. The proposals are considered to provide safe and secure pedestrian and cyclist movement.

A suggested approach for further action on ‘Active Travel’ might include ensuring that the design of routes take into account the needs of the whole communities e.g. those with vision impairment and those with mental disabilities (including dementia). Signposting could be provided to the wider neighbourhood, such as shops, nearby parks and playing fields. Road closures should be minimised and wherever possible pedestrian routes should be maintained.

- **Open Space and Physical Activity**

Public open space and multiple areas of play space will be accessible to residents which will contribute to encouraging physical activity. Formal sports pitches associated with on-site education facilities might also be accessible. Opportunities will need to be considered to improve the biodiversity value of the site and residents can easily access existing sites designated for nature conservation along with open spaces and play areas.

The proposed development should help put in place the features of development that will help encourage an active lifestyle in new residents. The improved walking and cycling connectivity could also have benefits for existing residents near the site with new services on-site increasing the range of local opportunity for activity.

A suggested approach for further action on open space and physical activity might include considering how public space can be used for physical activity; incorporating long term maintenance of public open space and food growing beds into the site management plans; and ensuring inclusive play space should be provided that is accessible and welcoming to both disabled and non-disabled children.

- ***Pollution and Environmental Risk***

Objectives for minimising disturbance to local residents during construction from noise, dust and traffic will need to be met through the implementation of a Construction Environmental Management Plan (CEMP). A noise assessment will be undertaken to support a future Environmental Impact Assessment (EIA), which might identify that the site is influenced by noise from a variety of sources, including road traffic from the A14/Milton Road; and rail movements. Mitigation measures will need to be considered where significant impact is identified.

Air quality assessment (A14 AQMA), Geo-Environmental Risk Assessment and Flood Risk Assessment (amongst other potential topics) will also have to be undertaken for the EIA and mitigation measures identified where significant impacts are identified. These assessments will continue as the development progresses and the phases are designed in detail.

- ***Access to Public and Community Services and Jobs***

Opportunities for social engagement and activity will need to be encouraged through the provision of public open space, play areas and a vibrant community centre located at the heart of the proposed development to support community cohesion.

Objectives for residents to access education facilities might be met through on and/or off-site provision.

With regard to access to health care facilities, discussions will need to be progressed with health care providers to agree suitable mitigation for increased demand. This might include whether a health care centre should be provided on site or whether contributions through s106 are more appropriate to fit with the overarching NHS strategy for healthcare provision. It is assumed for this exercise that on-site provision will be sought.

The proposed development will create construction jobs and construction-related apprenticeships. The site will also be accessible to a significant number of skilled and unskilled jobs in the local area, including the Cambridge Science Park, St Johns Innovation Park, Cambridge Business Park, and new employment sites that are created around Cambridge North Station (Sites 2A and B).

A suggested approach for further action on access to public and community services and jobs might include that consideration should be given to how community events can be encouraged in public spaces and the long term management of that open space should be identified.

- ***Supporting Community Wellbeing***

Overall, it is likely that the proposed development will support the objective of helping to reduce social isolation including supporting access to community facilities and community groups, providing opportunities for a local community role in decision making and integrating new and existing communities. However, at this early stage there are still many factors yet unknown that will help create a community, including the characteristics of future populations.

STP Supporting Information

QUESTION 1.4.4.2: Have you engaged with your Sustainability and Transformation Partnership?
More information on STPs can be found here: [NHS England > System change \(STPs and ICSs\)](#)

SUSTAINABILITY AND TRANSFORMATION PARTNERSHIPS

The NHS and local government officers in Cambridgeshire have come together to develop a major new plan to keep Cambridgeshire and Peterborough *Fit for the Future*. The Sustainability and Transformation Partnership covers hospital services, community healthcare, mental health, social care and GP services. The STP's plan (prepared in October 2016) aims to:

- improve the quality of the services it provides;
- encourage and support people to take action to maintain their own health and wellbeing;
- ensure that its health and care services are financially sustainable and that it makes best use of the money allocated to it;
- align NHS and local authority plans.

Fit for the Future sets out a single overall vision for health and care, including:

- supporting people to keep themselves healthy
- primary care (GP services)
- urgent and emergency care
- planned care for adults and children, including maternity services
- care and support for people with long term conditions or specialised needs, including mental ill health.

Through discussion with staff, patients, carers and partners the STP has identified four priorities for change and developed a 10-point plan to deliver these priorities:

Fit for the Future programme	
At home is best	1. People powered health and wellbeing 2. Neighbourhood care hubs
Safe and effective hospital care, when needed	3. Responsive urgent and expert emergency care 4. Systematic and standardised care 5. Continued world-famous research and services
We're only sustainable together	6. Partnership working
Supported delivery	7. A culture of learning as a system 8. Workforce: growing our own 9. Using our land and buildings better 10. Using technology to modernise health

As part of the overall Health strategy for the proposed development it will be important to discuss existing issues, potential impacts arising from the scheme, and opportunities to address future needs, with Fit for Future

contact@fitforfuture.org.uk).

DRAFT

DRAFT Land Assembly Strategy

**Cambridge Commercial Park, Cambridge
Northern Fringe East**

Strictly confidential and commercially sensitive

November 2018

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Appendices

Appendix I	Indicative Interests Plan
Appendix II	Third Party Site Acquisition Estimates: Summary Schedule
Appendix III	Summary of Caveats and Assumptions

Prepared By: [REDACTED]
Status: Final draft
Draft Date: November 2018

For and on behalf of GVA Grimley Limited

DRAFT

1. Executive Summary

- 1.1 Cambridge City Council ("the Council") is seeking large scale redevelopment of a ■ hectare brownfield site located to the north of Cambridge City Centre. The area known as Cambridge Northern Fringe East (CNFE) is home to a number of uses including a water recycling centre, Cambridge Commercial Park/Cowley Road and Cambridge Golf Driving Range.
- 1.2 The Council recently appointed U+I and TOWN as their development partner to bring forward the redevelopment of CNFE. The intention is to bring forward a large mixed use development. A joint venture between Anglian Water Group and the Council ("the JV") has control over the core site within CNFE. However, in order to facilitate transport arrangements and improvements to the overall scheme at CNFE, it may be necessary to include part of the site currently not within the JV's full control at Cambridge Commercial Park/Cowley Road.
- 1.3 U + I has appointed GVA and DDC Ltd to advise on how best to assemble the Cambridge Commercial Park site to obtain vacant possession and ensure timely delivery of the wider CNFE scheme. This Land Assembly Strategy report is intended to provide advice to U+I and the JV to assist them in considering how best to acquire the interests and assemble the Site to contribute towards the wider redevelopment at CNFE.
- 1.4 U+I is exploring options to potentially acquire the interests at Cambridge Commercial Park by agreement where possible. However, in our experience, where there are multiple ownerships and occupations such as at Cambridge Commercial Park, compulsory purchase powers will be needed to assemble the site within the required timeframe. This Land Assembly Strategy thus sets out the various methods of assembling the required land to facilitate the development of CNFE including the use of compulsory purchase powers.
- 1.5 The report sets out that compulsory purchase powers most commonly used for this type of scheme are set out in section 226(1)(a) of the Town and Country Planning Act 1990. These compulsory purchase powers should only be used where it can be demonstrated that there is a "compelling case in the public interest" and that there are 'wellbeing' benefits deriving from the scheme which will outweigh the interference with the human rights of the individuals whose land is being taken.
- 1.6 Compulsory purchase powers are only available to certain statutory bodies including local authorities. The report therefore sets out that U+I will need to reach agreement with the Council that the Council is prepared to use their compulsory purchase powers and a contractual agreement will need to be in place before any Compulsory Purchase Order (CPO) is made for Cambridge Commercial Park.
- 1.7 The report sets out the three key tests considered by the Secretary of State in making the decision whether to authorise a CPO. These are; 1. Policy basis, 2. Deliverability, 3. Efforts to acquire. The Strategy provides advice on the range of factors which should be considered early in the process and re-visited throughout the process to ensure these tests can be met, including; planning permission; planning policy; wider Council priorities; ensuring correct Council delegation; and considering any other impediments to delivery.
- 1.8 The report sets out that the timetabling of any CPO should be linked to the planning application for the Scheme, with a strong recommendation that at least a resolution to grant planning permission should be in place before any CPO is made. As a minimum there should be an outline planning permission for the entire

CNFE redevelopment to ensure that not only are there no planning impediments to delivery but also that the site subject to compulsory purchase forms parts of a wider scheme and delivers all the associated wellbeing benefits.

- 1.9 The Council is preparing an Area Action Plan (AAP) for CNFE and the report sets out recommendations on the importance of U+I working with the Council to inform the AAP as it will be important in demonstrating that there is a clear planning policy framework for the delivery of the Scheme and the use of compulsory purchase powers.
- 1.10 The report provides information on the possible timetable for using compulsory purchase powers and highlights the other key work streams which will have an impact on the CPO timetable. We set out that the CPO timetable should be kept under review and should be incorporated into the wider project programme. In particular the Strategy highlights a number of workstreams which will have an impact on the CPO timetable and the strength of the case for the CPO including: obtaining planning permission; preparation of the AAP; the Housing Infrastructure Fund bid; and the Development Consent Order for a new water recycling centre.
- 1.11 Section 6 of the report and the associated appendices provides an overview of the compensation that a claimant is entitled to under the statutory Compensation Code. We also provide an Initial Third Party Site Acquisition Strategy Estimates at Appendix II, alongside information on the assumptions made, information relied on and caveats to this at Appendix III. The Site Acquisition Strategy Estimates addresses the cost of acquiring all the required property interests at Cambridge Commercial Park, setting out an assessment of the costs of acquiring all the interests currently identified within the Site, mostly on the assumption that compulsory purchase powers are exercised. At this stage it does not include estimates for the acquisition of any rights or easements.
- 1.12 Section 7 of the report provides advice on the three principal options to acquire the required interests and sets out a suggested acquisition strategy.
- 1.13 Section 8 of the report sets out that where there are special types of land, additional procedures apply if the land is acquired by compulsory purchase and the importance of carrying out a full review to identify whether there are any such special types of land.
- 1.14 The final section of the Strategy summarises our advice, and set out suggested next steps for the following six to twelve months. We conclude that, based on our initial review, there is considerable scope within the current CNFE project programme to assemble the Cambridge Commercial Park site using compulsory purchase powers within the required timeframes. Providing that all the required due diligence, negotiation and preparation is carried out prior to making the CPO, there is a strong opportunity for U+I to work with the Council to use their statutory compulsory purchase powers.

2. Introduction

- 2.1 Cambridge City Council ("the Council") is seeking large scale redevelopment of a ■ hectare brownfield site located to the north of Cambridge City Centre. The area known as Cambridge Northern Fringe East (CNFE) is home to a number of uses including a water recycling centre, Cambridge Commercial Park/Cowley Road and Cambridge Golf Driving Range. A new train station opened, serving this area, at Cambridge North in 2017, increasing the accessibility of this part of Cambridge. The station provides the potential to act as a catalyst for future development and growth. Anglian Water Group is planning to relocate the water recycling centre away from their current site, providing the opportunity for comprehensive redevelopment of the whole of this area.
- 2.2 The Council recently appointed U+I as their development partner to bring forward the redevelopment of CNFE. The intention is to bring forward a large mixed use development including commercial and residential uses ("the Scheme"). A joint venture between Cambridge City Council and Anglian Water Group ("the JV") has control over most of the land within the CNFE core site. However, in order to facilitate transport arrangements and improvements to the overall Scheme, it may be necessary to include part of the site currently not within the JV's full control at Cambridge Commercial Park/Cowley Road.
- 2.3 Cambridge Commercial Park/Cowley Road, also known as Cowley Commercial Park, Cowley Road Industrial Park, Cowley Road and Cambridge Industrial Estate, (referred at as "Cambridge Commercial Park" or "the Site" throughout this report) is under a number of third party ownerships, albeit the Council holds an interest in some of the properties. Whilst there may be some opportunities to secure vacant possession through the use of the Council's Landlord and Tenant powers and through agreement by negotiation, it is unlikely that all of the Site will be able to be secured without the use of compulsory purchase powers. On this basis, the JV and U+I are jointly considering whether the Council's statutory compulsory purchase powers could be used to assist in timely site assembly to enable comprehensive, coordinated development of the wider CNFE area.
- 2.4 U+I has appointed land assembly and compulsory purchase specialists consultants at GVA and DDC Ltd to consider how best to assemble the Site in order to obtain vacant possession and ensure timely delivery of the entire Scheme. This Land Assembly Strategy report is intended to be used by U+I and the JV to assist them in considering how best to acquire the interests and assemble the Site to contribute towards the wider redevelopment at CNFE. It is important to integrate the timetable and process for compulsory purchase of Cambridge Commercial Park into the overall CNFE's site assembly and wider project programme. GVA has prepared the overarching Land Assembly Strategy report, and DDC Ltd has prepared the Third Party Site Acquisition Estimates and accompanying indicative plan and assumptions and caveats documents (Appendices I, II and III).
- 2.5 This Land Assembly report covers the following;
- **Section 3. Background.** This section sets out a brief background to the proposed redevelopment of CNFE as well as a brief description of the Site and its surroundings.
 - **Section 4. Compulsory purchase process.** Whilst the JV and U+I intend to acquire third party interests by agreement, in our experience where there are multiple ownerships and occupations such as at

Cambridge Commercial Park, compulsory purchase powers will be needed to assemble the site within the required timeframe. In practice compulsory purchase powers may not actually be exercised for all of the interests but by having at least an agreement by the Council in principle to use compulsory purchase powers, this will reinforce and strengthen negotiations. This section explains the compulsory purchase order (CPO) process and the key factors which U+I and the JV will need to consider in assembling the site and using statutory compulsory purchase powers.

- **Section 5. Timescale and programme.** This section considers the various timescales of the key work streams to assemble the Site and enable construction to begin including timescales for obtaining planning consent, funding from Homes England, and the timetable for using compulsory purchase powers.
- **Section 6. Third party acquisitions and compensation.** Third parties will be entitled to compensation if their interest is to be acquired. We set out the basis for calculating this compensation and the likely key heads of claim if compulsory purchase powers are exercised. We also provide an estimate of costs for acquiring the various third party interests under a CPO through a draft Third Party Site Acquisition Estimates for the Cambridge Commercial Park. An indicative plan of the interests within the Site is provided at Appendix I. The full Third Party Site Acquisition Estimates and explanatory note is provided at Appendices II and III to this report.
- **Section 7. Acquisition strategy and recommendations.** Taking into account the preceding sections, we set out our advice on how to acquire the third party interests within Cambridge Commercial Park and key factors for U+I and the JV to consider.
- **Section 8. Special types of land.** Certain types of land are very difficult to compulsory purchase and pose risks to the process if they are included in a CPO. We explain these categories of land and review whether there appear to be any of these types of land within the Cambridge Commercial Park site.
- **Section 9. Conclusions and next steps.** We conclude and set out our recommended next steps.

3. Background

- 3.1 Cambridge North Station opened in May 2017, providing key connections to London's King's Cross and Liverpool Street stations, as well as Ely, Norwich and Cambridge. Located to the south east of CNFE, the development of and opening of the station has been a key catalyst for further development in this part of Cambridge.
- 3.2 CNFE is predominantly located within Cambridge City Council's administrative boundaries, with a small part of the site on the eastern side, known as Chesterton Sidings, within the administrative boundaries of South Cambridgeshire District Council. A large part of the area is a water recycling centre, owned and controlled by Anglian Water Group. It is understood that Anglian Water Group is moving the water recycling centre to an alternative site and intends to obtain permission for this through a Development Consent Order. This opens up significant development opportunities for comprehensive redevelopment across the whole of CNFE. This is a key growth priority for the Council and significant work has already been carried out to prepare the area for redevelopment including consideration of the various work streams and programming including the Development Consent Order for the replacement water recycling centre, the Housing Infrastructure bid ("the HIF bid), preparation of an Area Action Plan, appointing the development partner and obtaining planning consent for the Scheme.
- 3.3 Cambridge Commercial Park is located within the administrative boundaries of Cambridge City Council and is located at the far north-eastern extent of the Council's boundary. It lies approximately half a mile from Cambridge North Station which is positioned to the south east of the site. To the north of the site lies the A14, with junction 22 of the A14 to the north west. Milton Village is on the northern side of the A14. Cambridge City itself is approximately two and a half miles to the south west of Cambridge Commercial Park. The Site is located adjacent to the water recycling centre (on its western and northern sides), the Chesterton Sidings site (to the east) and Cambridge Golf Driving Range to its east.
- 3.4 Outside of CNFE, there are a number of other commercial parks located in close proximity including Cambridge Science Park to the west of Milton Road (A130), St Johns Innovation Park to the east of Milton Road, and Cambridge Business Park to the south.
- 3.5 Work has already been carried out to establish ownership within Cambridge Commercial Park and to seek to acquire the various interests through negotiation. Further information is set out in section 6 of this report and a plan showing the interests within the Site is provided at Appendix I to this report. The JV and U+I are working closely together to bring forward this Site to enable comprehensive redevelopment of the entire CNFE.

4. Compulsory Purchase Process and Justification

- 4.1 The compulsory purchase powers most commonly used for a scheme of this nature are set out in section 226(1)(a) of the Town and Country Planning Act 1990 (TCPA) which provides that a relevant planning authority (in this case the Council), on being authorised to do so by the Secretary of State, can compulsorily acquire land in its area "if the authority think that the acquisition will facilitate the carrying out of development, re-development or improvement on or in relation to the land". The body using compulsory purchase powers is known as the Acquiring Authority.
- 4.2 Subsection 1A provides that the authority must not exercise this power "unless they think that the development, re-development or improvement is likely to contribute to the achievement or the promotion of economic, social or environmental well-being of the area".
- 4.3 Best practice guidance for the use of compulsory purchase is set out in Government (Ministry of Housing, Communities and Local Government) Guidance from February 2018, titled 'Guidance on Compulsory purchase process and The Criche Down Rules' ("The MHCLG Guidance"). The MHCLG Guidance states that a council should only use its compulsory purchase powers where it can demonstrate that there is a "compelling case in the public interest" to do so. This means that the 'wellbeing' benefits which will derive from the scheme which is being promoted will outweigh the interference with the human rights of the individuals whose land is being taken.
- 4.4 There are three key 'tests' which are considered by the Secretary of State in making a decision whether to authorise a CPO.
1. **Policy basis.** The TCPA powers are available to facilitate delivery of planning policy. There needs to be sufficient planning policy support for the proposals including showing how the scheme fits in with the planning policy framework and wider council priorities.
 2. **Deliverability.** Justification is required to demonstrate that the scheme is able to progress and that there are no other impediments to delivery and that the developer has sufficient experience, funding and resources in place to deliver the scheme.
 3. **Efforts to acquire.** Demonstration that reasonable efforts to acquire the various interests have been taken.
- 4.5 These tests will be considered by the Inspector and Secretary of State in making their assessment of whether the scheme contributes to social, economic or environmental wellbeing and whether there is a compelling case in the public interest for the CPO. There is also consideration of whether the purpose for which the land is being acquired could be achieved by other means. Further detail on these tests and requirements is set out below.

Agreement with Cambridge City Council to use their compulsory purchase powers

- 4.6 Compulsory purchase powers are only available to certain statutory bodies including local authorities. Therefore an agreement will have to be reached between U+I and the Council that the Council is prepared to use their powers of compulsory purchase. We understand that the Council is open to explore

opportunities to use compulsory purchase powers if required and that this report will assist in providing information on the rationale and process for doing so.

4.7 This contractual arrangement between the Council and U+I will need to be in place before any CPO is made for the Cambridge Commercial Park. We have not covered the details of an agreement within this document, but it is likely that any agreement would cover responsibilities, control and management of the process, and how costs and liabilities will be dealt with. This could be covered within a separate Compulsory Purchase Indemnity Agreement or it may be covered within a wider development agreement between U+I as the Council's chosen development partner, and the Council/JV.

4.8 Once agreement has been reached between U+I and the Council, the Council will need to obtain formal approval from the relevant Council authority to use its statutory powers. This is usually obtained through a Cabinet or Full Council approval firstly, to obtain in principle agreement to use compulsory purchase powers, and secondly, to actually make the CPO. This will need to be factored in the CPO and wider project timetable.

1. Policy basis

Planning Policy

4.9 In considering the use of compulsory purchase powers under the TCPA 1990, the underlying planning policy will need to be considered to see if there is sufficient support to obtain a successful CPO. The MHCLG Guidance requires that any programme of land assembly is set within a clear strategic framework, founded on an appropriate evidence base, and to have been subjected to consultation. In making a decision on a CPO the Inspector and Secretary of State will consider whether the purposes for which the land is being acquired fits in with the adopted Local Plan and the National Planning Policy Framework. Where there is no up to date Local Plan, consideration is given to the draft Local Plan. Paragraph 104 of the Guidance makes clear that where the justification for a scheme is linked to proposals identified in a development plan document which has been through the consultation processes but has either not yet been examined or is awaiting the recommendations of the inspector, this will be given due weight. We consider this further in relation to the proposed Area Action Plan (AAP) for CNFE below.

4.10 We have carried out an initial planning policy review and have summarised this below. Cambridge City Council and South Cambridgeshire District Council's two local plans were prepared in parallel, with much of the evidence base being shared between the two councils and informing both local plans. Both were recently adopted and both refer to the preparation of an AAP for CNFE.

Cambridge Local Plan 2018

4.11 The Cambridge Local Plan was adopted by Cambridge City Council on 18th October 2018. The Local Plan sets out the spatial strategy for the Council up to 2031 and includes a vision and a number of objectives and policies which support the principles of redevelopment of CNFE. The majority of CNFE, and all of Cambridge Commercial Park, is within Cambridge City Council's administrative boundary and thus covered by the Cambridge Local Plan 2018.

4.12 Key relevant parts of the Local Plan are;

- o *The vision for Cambridge to 2031.* The vision includes the aspiration to achieve a sense of place in all parts of the city and well-designed architecture. It also focuses on promotion of the use of sustainable transport. It seeks to continue the development of the city as a centre of excellence for higher education and research, with a focus on economic success. It promotes high quality housing provision and mixed and balanced communities with a range of housing sizes and types.
- o *Strategic objectives.* Key relevant objectives include;
 - o Contributing to an environmentally sustainable city.
 - Making the best use of energy (including community energy projects), water and other natural resources, significantly reducing carbon emissions and adapting to the impacts of climate change so that people can easily transition to a low carbon lifestyle.
 - o Highest quality design
 - Using the principles of sustainable design and construction to minimise the development's impact upon its surroundings through designs that are innovative and of the highest quality.
 - o Meeting the housing needs of the city within its sub-region
 - Delivering a suitable mix of housing types (including affordable housing), sizes and tenures to meet existing and future needs.
 - o Creation of inclusive, environmental sustainable communities
 - o Promoting and supporting economic growth
 - Stimulating growth in environmentally sustainable and accessible locations, encouraging innovation and supporting Cambridge's role as a world leader in research, higher education and knowledge based industries whilst maintaining the quality of life that is conducive to economic success.
- o *Spatial strategy.* The plan, including through the key diagram at Figure 2.1 identifies CNFE as an Area of Major Change. Policies throughout the plan promote significant changes in this area including employment and housing development.

Spatial strategy for employment:

- o The strategy is to support Cambridge's economy, offering a wide range of employment opportunities, with emphasis on growth of the Cambridge Cluster of knowledge-based industries, institutions and other existing clusters in the city, thus building on existing strengths in these areas.
- o The Council is targeting employment in these "knowledge-based" activities via close work with relevant partners such as the universities and The Business Board, and the Areas of

Major Change have been identified as one of several locations to be the focus of employment development.

Spatial strategy for location of housing development:

- o The development strategy focuses on creating strong, sustainable and inclusive mixed-use communities, making the most effective use of previously developed land to enable the maximum number of people to access services and facilities locally.
- o The strategic housing market assessment for the Cambridge housing market area recognised the need for 14,000 additional homes between 2011-2031, thus the Cambridge Local Plan 2018 provides for the development of these homes within Cambridge City Council's administrative boundary.
- o Over the period of the plan, this figure of 14,000 indicates an average delivery rate of 700 dwellings per year. Areas of Major Change including CNFE, have been identified as locations that can contribute significantly to the achievement of this target.
- o *Policy 14: Areas of Major Change and Opportunity Areas –general principles.* This policy sets out a range of requirements for development in the Areas of Major Change including requirements for the necessary infrastructure, higher density around key transport infrastructure including Cambridge North Station, and creating places with a sense of community. The expectation is for significant change and sustainable development in these locations including the CNFE Area of Major Change.
- o *Policy 15: Cambridge Northern Fringe East and new railway – area of major change.* This is the key policy supporting the Scheme. It identifies and allocates the area as the location for high quality mixed-use development that will create a revitalised and employment focussed area centred on Cambridge North Station.
 - o The development will comprise employment uses of primarily B1, B2 and B8, as well as supporting commercial, retail, leisure and residential uses (subject to acceptable environmental conditions).
 - o It also refers to an Area Action Plan (AAP), to be developed jointly by Cambridge City Council and South Cambridgeshire District Council for the Area of Major Change, which will determine the amount of development, site capacity, viability, timescales and phasing of the development. The policy sets out that the precise boundaries for the AAP will be considered through the AAP preparation.
 - o The supporting text to the policies makes clear that the development of CNFE will require partnership working between landowners and developers, as well as the two local authorities and Cambridgeshire County Council.
- o *Policy 40: Development and expansion of business space.* This policy encourages new offices, research and development to come forward in specific locations including CNFE, which is explicitly identified in paragraph 5.9 as a key employment site within Cambridge that will deliver new jobs and prosperity to the Cambridge area. Further detail is set out as below;

- o Developments on these sites aim to grow the Cambridge Cluster, by ensuring that there is sufficient employment land available in the right locations.
- o The recently completed Cambridge North station has significantly enhanced the development potential of the site area, as this links up with the wider transport network.
- o The precise amount of employment floorspace to be provided in CNFE will be determined by planning permissions granted and the vision for the area established by the AAP.
- o *Policy 45: Affordable housing and dwelling mix.* The policy states that planning permission will only be granted for residential development on sites where the minimum percentage of affordable housing has been secured on site in line with the thresholds which is 40 per cent minimum affordable housing for schemes of 15 or more residential units.
- o *Policy 56: Creating successful places.* The policy requires development to be designed to be attractive, high quality, accessible, inclusive and safe. Successful places will balance the needs of all users through high quality design and will be integrated into their surroundings, having identified and responded to opportunities and constraints of a site, resulting in places that are attractive and enjoyable for everyone.
- o *Policy 80: Supporting sustainable access to development.* Development will be supported where it demonstrates that prioritisation of access is by walking, cycling and public transport, and is accessible for all. Major developments on the edge of the city and in the urban extensions should ensure that they are supported by high quality public transport, within walking and cycling distance from the development, linking them to Cambridge's city centre and major centres of employment.

Cambridge City Council Policies Map, 2018

4.13 The Cambridge City Council Policies Map was updated and agreed for publication by the Council, alongside the Local Plan on 18 October 2018.

4.14 The relevant designations on the Policies Map are;

- Designation of CNFE as an Area of Major Change. Cambridge Commercial Park is within this boundary.
- Transport Safeguarding Area across part of the Area of Major Change including Cambridge Commercial Park.
- Identification and allocation of the Anglian Water Group site as a defined Existing Site as a Waste Water Treatment Works Safeguarding Area and a Waste Consultation Area.
- Identification of a small part of Cambridge Commercial Park as an Existing Site at the southern end of the Site. There does not appear to be a policy within the Local Plan explicitly referring to this Existing Site designation.

- A Protected Open Space and small City Wildlife, Country Wildlife and Local Nature Reserve within the CNFE of Major Change. This is not within Cambridge Commercial Park itself.

4.15 In addition of note, there is a Green Belt designation outside, but adjacent to the designated Area of Major Change to the north east of the area. It does not directly adjoin Cambridge Commercial Park.

South Cambridgeshire Local Plan, 2018.

4.16 The South Cambridgeshire Local Plan was adopted by South Cambridgeshire Council on 27 September 2018. The Local Plan sets a number of policies, covering the period 2011 to 2031, which cover development across the wider CNFE. As set out above, whilst Cambridge Commercial Park itself is within Cambridge City Council, part of the wider area is covered by South Cambridgeshire Local Plan and the aspirations of the plan and its policies are important for the wider area.

4.17 Key relevant parts of the South Cambridgeshire Local Plan are:

- o *Policy S/6: The Development Strategy to 2031.* This policy identifies that the need for jobs and homes will be met as far as possible in order of preference starting with the edge of Cambridge, then at new settlements and finally in the rural area at rural centres and minor rural centres. Section 2 mentions that site allocations and the Area Action Plans for North West Cambridge, Northstowe, Cambridge Southern Fringe and Cambridge East are carried forward as part of the development plan to 2031.
- o *Figure 2: Key diagram for Cambridge and South Cambridgeshire.* The diagram identifies part of CNFE as a major development site within South Cambridgeshire and also within the proposed Area Action Plan boundary. It cross refers to the rest of the CNFE proposed development site area falling within the Area of Major Change within Cambridge City Council's boundaries.
- o *Policy SS/4: Cambridge Northern Fringe East and Cambridge North railway station.* Just as in the Cambridge Local Plan 2018, the policy states that CNFE and Cambridge North railway station will create a revitalised and employment focussed area centred on a new transport interchange. It also refers to:
 - o The Area Action Plan (AAP), to be developed jointly by Cambridge City Council and South Cambridgeshire District Council for the area, which will determine the amount of development, site capacity, viability, timescales and phasing of the development. The final boundaries of land that the joint AAP will consider will be determined through the preparation of the AAP.

South Cambridgeshire Policies Map 2018

4.18 The South Cambridgeshire Policies Map 2018 was agreed for publication on 27 September 2018, alongside the adoption of the South Cambridgeshire Local Plan.

4.19 The Policies Map allocates the Chesterton Sidings Site, adjacent to Cambridge Commercial Park. As referred to above, the South Cambridgeshire designates this site as a development site SS/4 and TI/1 and

includes it within the CNFE designation. The map designates this as a major development site for policies SS/4 and TI/1.

4.20 Cambridge Northern Fringe East Area Action Plan

4.21 Cambridge City Council and South Cambridgeshire District Council propose to jointly prepare an Area Action Plan (AAP) for CNFE to cover the designated Major Area of Change. As set out above this includes the Cambridge Commercial Park.

4.22 The Council consulted on an Issues and Options version of the AAP in 2014 which focused on employment led mixed use development across the whole of the area of change. However, we understand that the two councils are not proceeding with this version of the AAP and have instead recently begun the process of preparing a new AAP for the area.

4.23 A new Issues and Options draft AAP is being prepared jointly by the two councils. Consultation is planned for July 2020 and adopted is planned for July 2022.

Overall planning policy position and suggestions for the AAP

4.24 In summary, there is planning policy support for significant change and redevelopment across the whole of CNFE, with the area designed as an Area of Major Change. Cambridge Commercial Park lies within this Area of Major Change.

4.25 The Local Plans for both Cambridge City Council and South Cambridgeshire District Council provide clear policies for the Area of Major Change with the expectation of significant growth in this part of Cambridge. Both plans propose coordinated, comprehensive redevelopment of CNFE. Further policies within both plans also provide a clear policy framework for significant development in this area close to Cambridge North Station including the provision of new homes, employment and associated other uses. The overarching policy in the Council's Local Plan at Policy 15 allocates the CNFE for high quality mixed-use development, primarily for employment uses as well as supporting uses including residential.

4.26 Whilst these policies provide a good overarching framework for redevelopment, the emphasis remains on employment led mixed use development within CNFE. There also remains uncertainty within the Council's Local Plan on the precise redevelopment and relocation of the water recycling centre, although helpfully there is reference with the Council's Local Plan that as part of the feasibility investigations for the AAP, this will be looked at and residential development could be an option. There is not a detailed site specific policy or proposal site allocation for the Site (with the exception of the small designation as an Existing Site, which does not appear to have a correlating policy), only the overarching Area of Major Change designation.

4.27 The preparation of the joint AAP provides an ideal opportunity for U+I and the Council to ensure that there is a clear strategic planning framework which supports the complete redevelopment of the area including Cambridge Commercial Park. This would strengthen the case for using compulsory purchase powers for the Site. We would suggest the following;

- U+I work with the Council as its development partner and South Cambridgeshire District, as well as the wider JV to ensure that the AAP provides the required policy support to deliver the aspirations and objectives of the scheme. As part of this, key things to consider are;

- o A clear statement from the Council within a 'Delivery or Implementation' section of the AAP that they are prepared to use their statutory powers, including compulsory purchase, to facilitate delivery of planning policy objectives and improve their areas.
- o A clear reference to the Council working with its partners to deliver the redevelopment.
- o An emphasis and consideration on the need for comprehensive redevelopment of CNFE and how that is reflected in the AAP planning policy and planning application strategy. The AAP should be drafted to be clear that comprehensive redevelopment of all of the CNFE is required including the water recycling centre, Cambridge Commercial Park and the rest of the CNFE area.
- o Focus on the type of development that is expected and the benefits this will bring to the area within the policies and objectives including potentially social, economic and environmental benefits. The Council may wish to consider preparing more detailed land use allocations as part of the AAP, with detailed objectives and policies for key proposals sites.
- That the AAP is progressed as quickly as possible to support the compulsory purchase process and where possible there is an adopted AAP prior to at least the CPO Inquiry. The more weight that can be afforded to the AAP, the stronger the position for the CPO in terms of complying with the Local Plan and wider planning framework including justification that the Scheme delivers the benefits and objectives of the AAP.

Wider Council policy

- 4.28 U+I and the JV will also need to consider how the delivery of the Scheme, and the use of compulsory purchase to do so, delivers other Cambridge City Council and South Cambridgeshire District Council objectives and policies. It is helpful to do this at an early stage and summarise these policies to understand the wider policy support for delivering mixed use development in this location.
- 4.29 From our initial review, both councils place a strong emphasis on the need and aspiration to deliver new high quality homes. Cambridge City Council has an Interim Housing Strategy 2017 which sets out a vision for housing in Cambridge to include providing a wider and varied choice of good quality housing and ensuring that homes are located in high quality sustainable environments, served by jobs, neighbourhood facilities, transport links and other necessary infrastructure. The Strategy refers to the Council working with stakeholders to accelerate the delivery of housing and infrastructure as well as making the best use of Council land to maximise the supply of housing for those who cannot afford or access the private market.
- 4.30 Likewise, there is strong aspiration and support for further economic development across Cambridge. The Greater Cambridge Partnership, which is a local delivery body for the City Deal with central Government is governed by four partners; Cambridge City Council, Cambridgeshire County Council, South Cambridgeshire District and the University of Cambridge. It seeks to improve the Cambridge area including investments to improve infrastructure, supporting and accelerating the creation of [REDACTED] new jobs and [REDACTED] new homes.

- 4.31 The delivery of the JV and U+I's Scheme to provide new homes, employment opportunities and schools will help to deliver these Council and wider Greater Cambridge Partnership priorities for Cambridge. A further more comprehensive review should be carried out as part of the preparation for the use of compulsory purchase powers and may also be helpful to feed into the Housing Infrastructure Fund bid.

2. Deliverability

Delivery of the Scheme

- 4.32 In deciding whether to confirm compulsory purchase orders, Inspectors and the Secretary of State require clear evidence that the confirmation is the only remaining impediment to enable delivery. They will not approve use of these powers, with the consequent impact on existing owners and occupiers, if they cannot be certain that the benefits of the proposed scheme will actually be delivered. In this situation, the Council would therefore require U+I as its development partner to provide this certainty.
- 4.33 This will include demonstrating that a number of statutory requirements, such as planning, stopping up orders or other consents are in place or can be delivered, as well as demonstrating that U+I has experience, resources, finance etc to deliver the scheme, and is committed to doing so.
- 4.34 We set out further detail below.

Land and rights included

- 4.35 U+I and the Council will need to carefully consider the land and rights to be included in any CPO. It is necessary to justify the need for each and every plot or third party right within a CPO. The CPO should include the minimum necessary land and rights required.

Experience, resources and finances

- 4.36 Compulsory purchase powers should only be used where there is a scheme which is intended to actually be delivered. U+I and the JV will need to demonstrate to the Inspector/Secretary of State that it has the capacity and intention to actually deliver the Scheme. This will include providing evidence of U+I and the JV's experience of delivering on other developments, information on how it intends to fund the delivery of the scheme as well as the resources relied on to ensure timely delivery.

Planning permission

- 4.37 Generally, we would recommend that acquiring authorities ensure planning permission for the scheme is in place before making the CPO. This is not a statutory requirement and the legislation does allow for the making of a CPO in circumstances where there is not a planning permission in place. However, paragraph 15 of the MHCLG Guidance makes clear that the acquiring authority will need to show that the scheme is unlikely to be blocked by any physical or legal impediments and expressively refers to the need for planning permission. The Guidance states that if planning permission is yet to be granted, the acquiring authority should demonstrate to the confirming minister that there are no obvious reasons why it might be withheld.

- 4.38 Furthermore, if a CPO is made without a consented planning permission for the scheme, there is greater risk and uncertainty and an increased likelihood of challenge at a CPO Inquiry. It is very important that the supporting documents for any planning application consider and emphasises the benefits of the scheme, explaining how the delivery of the planning application will deliver social, economic and environmental wellbeing benefits. The supporting documents provide the opportunity to support the case for the use of CPO for the site. Accordingly, we recommend the planning permission (or at least a resolution to grant planning permission) is in place before the CPO is made. The early CPO preparatory work, up to the point of making the CPO, can be progressed prior to the grant of planning permission.
- 4.39 We understand from the information provided by U+I that a hybrid planning application for the redevelopment of CNFE is expected to be submitted to the Local Planning Authority in March 2022 and determination is programmed for December 2022. The planning application needs to cover the whole of the CNFE site to ensure that there is a planning permission in place for the whole Scheme to demonstrate that there are no planning impediments to delivery and to demonstrate the wider wellbeing benefits of the Scheme. This could be on the basis of the application being a combination of an outline for part of the CNFE site and a full detailed planning application for part of the CNFE site. There could be recognition within the planning application that the Cambridge Commercial Park site will be within one of the later phases of redevelopment. On this basis we would advise that the CPO is not made until the earliest at January 2023, with vacant possession unlikely until May [REDACTED]. We understand that the current programme envisages construction to begin in early [REDACTED] across the Council owned sites within CNFEs, and that various other construction and remedial work including relocating the water recycling centre will be carried out prior to the potential transport works and improvements required across Cambridge Commercial Park. In practice therefore, we understand, that it is likely that work will not need to begin on the Site for a further two to three years post [REDACTED], especially as practicable completion of the entire Scheme is not programmed until October [REDACTED]. On this basis, linking and integrating the formal making of the CPO to the timetable for the planning permission is a sensible approach as it reduces risk by ensuring planning consent is in place whilst also enabling vacant possession at the required time. We set out further information on timetabling in section 5 of this report.
- 4.40 In summary, we would recommend U+I and the JV, as a minimum, ensure that there is a planning consent for the full comprehensive redevelopment of CNFE prior to the making of the CPO (minimum of a resolution to grant) to enable a case to be made that there are no planning impediments to the delivery of the Scheme. This is important in demonstrating that the Site for which compulsory purchase powers are being used is part of a much larger scheme and thus delivers extensive benefits and contributes to the delivery of coordinated, comprehensive redevelopment. The planning application could be an outline for the entire Scheme or a hybrid (combination of outline and full) to cover the entire Scheme. The key point is the planning application covering the Cambridge Commercial Park Site should be part of the wider Scheme to demonstrate the coordinated, comprehensive redevelopment and delivery of all the benefits. This will assist in making the case for CPO.
- 4.41 U + I and the JV should also consider ensuring that by at least the CPO inquiry that there is also a clear programme for progressing the reserved matters applications for the outline planning consent as well as discharging any planning conditions.

Stopping Up Orders (if applicable)

4.42 If stopping up orders are required to deliver the Scheme, it would be sensible to consider making these at the same time as the relevant compulsory purchase order. This will ensure that if any objections are made to the stopping up order, they can be considered at a joint CPO/SUO Inquiry.

4.43 In addition, the need for a stopping up order is a further potential impediment to delivery of a scheme, and therefore once this has been granted, it will provide further credibility to demonstrations of deliverability.

Development Consent Order for the new Anglian Water water recycling centre

4.44 The Anglian Water Group's water recycling centre covers a significant part of CNFE. The relocation of the water recycling centre to an alternative site outside of CNFE is a crucial part of the process to enable the Scheme to come forward. Anglian Water Group is seeking to apply to the Secretary of State for the new water recycling centre to be designated as a Nationally Significant Infrastructure Project (NSIP).

4.45 Assuming the project is designated as an NSIP, Anglian Water Group will then prepare a Development Consent Order for the new water recycling centre, with a timetabled decision from the Secretary of State on the DCO by February 2021. We set out further detail on this in section 5 on timetabling and programme but the key point to note is that once the DCO has been approved, it will provide further credibility to demonstrations of deliverability.

Other impediments to delivery

4.46 There may be specific issues or concerns which could be seen as impediments to delivery if not adequately resolved. These might include, for example, environmental consents, or central government approvals of land disposals.

3. Efforts to acquire

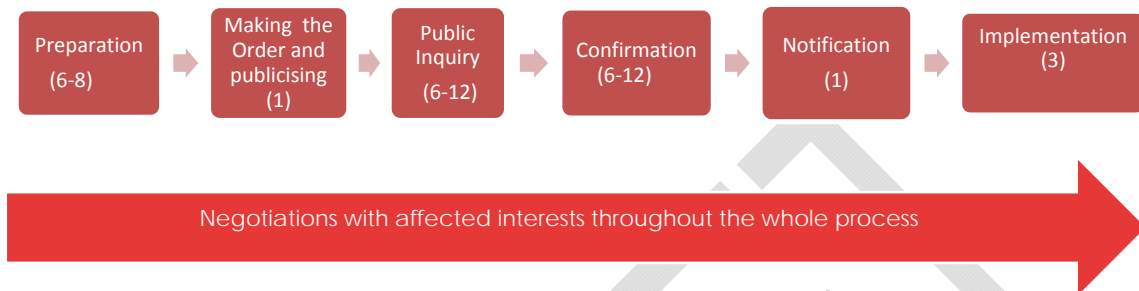
Before Commencing the Process/Efforts to acquire by agreement

4.47 The MHCLG Guidance requires acquiring authorities to attempt to acquire land by agreement where practicable before embarking on the CPO process. However, it is recognised that for schemes involving the acquisition of the number of interests such as in this case, it is sensible to run the CPO process in parallel with negotiations. Paragraph 2 of the MHCLG Guidance makes clear that if an acquiring authority waits for negotiations to break down before starting the compulsory purchase process, valuable time will be lost and therefore it is often sensible for acquiring authorities to plan a compulsory purchase timetable as a contingency measure and initiate formal procedures. Furthermore, starting the formal compulsory purchase process usually assists in highlighting the seriousness of the acquiring authority's intentions, which often encourages those whose land is affected to enter more readily into meaningful negotiations.

4.48 U+I has begun the undertaking of negotiations to acquire the required interests by agreement and will continue this process. It is vital that U+I make reasonable attempts to acquire by negotiation and that they document all their efforts. Further information and the suggested strategy for dealing with negotiations is set out in more detail in section 7 of this report.

5. Timescale and Programme

5.1 For the purposes of preparing your project programme, we would suggest allowing ■ months for the complete compulsory purchase process. The process of obtaining and executing a CPO is summarised below (number of months per stage in brackets).



5.2 As set out in section 4 above, in general we would recommend linking the CPO timetable to the planning application timetable as the ability to demonstrate that the Scheme will be delivered is crucial to a successful CPO. This would mean that the CPO should not be made until at least a resolution to grant planning permission is secured.

5.3 Assuming that this is the case, the 'best case' CPO timetable for securing vacant possession of Cambridge Commercial Park would be as set out below (suggested dates in brackets). We have relied on information provided by U+I for the current proposed dates for the various work streams including obtaining planning consent.



5.4 As set out in section 4, we understand that in reality U+I and the JV do not need to start works on Cambridge Commercial Park until later in the timetable, potentially around 2024/2025. The CPO timetable should be integrated into the wider CNFE programme accordingly. In particular it is important to note that a confirmed CPO usually only has a 'lifespan' of three years once the notices are served. It therefore may be more appropriate to delay the making of the CPO until later in the timetable. In addition, the Inspector and Secretary of State in considering the case for the CPO will consider whether there are any other impediments to delivery of the Scheme and will want to be reassured it is only vacant possession which is required to enable delivery and that there is a clear programme to start on site within a reasonable time once the CPO is confirmed and implemented. It is therefore important to also consider the many other work streams which impact on this project and how to ensure a strong case for a CPO for the Site as possible by minimising risk to the confirmation of the CPO. These include;

- Obtaining planning permission
 - As set out above, the current timetable proposes that planning consent will be granted in December 2022. The CPO timetable above is predicated on this, with the proposed date to make the CPO as a month after the planning consent.
 - It is unclear within the current timetable whether the December 2022 planning permission date is for a resolution to grant, or the granting of the application including the section 106 agreement. In practice it is likely that there will be a three to six month gap between the resolution to grant and the granting of planning permission. In terms of the CPO, we would be content to make the CPO following a resolution to grant if this was required to quicken the timetable.
- Preparation of the Area Action Plan for CNFE
 - As set out in section 4, the AAP for CNFE is important in providing the planning policy support for the CPO.
 - Ideally there would be an adopted AAP in place by the time of the CPO Inquiry to provide a stronger policy support for the Scheme and its objectives. However, it is not imperative and the MHCLG Guidance recognises that weight can be afforded to draft planning policy which has progressed through the consultation and submission to PINS process.
 - The current proposed AAP timetable sees the AAP submitted to the Secretary of State/PINS in July 2021 and adoption planned by June 2022.). This timetable would see the AAP adopted before the CPO Inquiry anticipated earliest date of [REDACTED] which would strengthen the case for the CPO and the Scheme delivering the Council's planning policies for the site.
- Housing Infrastructure Fund bid
 - This is important in assisting in demonstrating to the Inspector and Secretary of State that the Scheme and its supporting infrastructure can be delivered and that there is funding in place for this.
 - Paragraph 106 of the MHCLG Guidance states that the timing of any available funding may be important as part of the case for deliverability of a CPO. U+I and the JV should consider the timing of HIF monies and integrate these into their timetable.
- Any other consents such as Stopping Up Orders or other traffic regulatory orders
- DCO timetable for the replacement Anglian Water water recycling centre.

5.5 In addition there are a number of factors which may impact on the timetable, of which their impact is as yet fully established. This include;

- Elections. There are a number of Council elections throughout the next four years which may have an impact on the timetable including the CPO process as in our experience members are often reluctant to make a CPO in the run up to an election.
- Land condition and scope of remedial work to prepare CNFE for redevelopment. In particular there could be considerable work to prepare the existing water recycling centre for redevelopment or through surveys and investigations for the Environmental Impact Assessment.

5.6 At this early stage in the project, there is much uncertainty in the precise timetabling of the scheme, particularly as there are so many different work streams. We would therefore suggest keeping the overarching timetable under regular review including integration and review of the CPO timetable throughout the project to ensure that work can start on site within the required timeframe.

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6. Third Party Acquisitions and Compensation

6.1 If an interest is compulsorily acquired, the claimant is entitled to compensation which is assessed based on the statutory principles which govern the assessment of compulsory purchase compensation, commonly referred to as the Statutory Compensation Code (sometimes also known as the Compulsory Purchase Code).

Basic principle

6.2 The overriding principle at the core of compensation is the principle of equivalence. This means that when a claimant has land taken he should end up in financial terms in a position where he is no worse or no better off than he was prior to the acquisition.

6.3 Compensation is assessed in accordance with what is commonly referred to as the "Compensation Code" which is the name given to the collection of statutes, case law and established principles used in settling compensation claims. The principal legislation is the Land Compensation Act 1961.

Third Party Site Acquisition Estimates

6.4 The Third Party Site Acquisition Estimates Summary Schedule at Appendix II ("Site Acquisition Estimates") addresses the total cost of acquiring all the required property interests at Cambridge Commercial Park. The summary Site Acquisition Estimates set out an assessment of the costs of acquiring all of these property interests currently identified within the Site, mostly on the assumption that compulsory purchase powers are exercised. This includes all the compensation payments for property interests which would be payable in the event that compulsory purchase powers are exercised. At this stage it does not include any estimated compensation for the acquisition of rights or easements as this is premature pending a full title search and detailed review of the site and its surroundings (see also section 8 of this report). The Site Acquisition Estimates set the estimated compensation entitlements under the heading 'Capital Value' for the land take/market value element of compensation and 'Disturbance' as the broad heading for all the other heads of claim.

6.5 Some of the interests are in Council freehold ownership and where this is the case and where it would be possible to secure vacant possession using Landlord and Tenant powers within the required timeframe, we have assumed these will be exercised rather than compulsory purchase powers. Further detail on the assumptions made, information relied upon and caveats to the Site Acquisition Estimates are provided at Appendix III to this report. Further information is also set out within this appendix on the purpose of these estimates in the negotiation process.

6.6 At present, as per the current timetable as part of our instructions, we have assumed vacant possession is required in [REDACTED] and thus only allowed for the use of Landlord and Tenant powers where it is possible to obtain possession by the start of [REDACTED]. In reality, especially as it is likely that vacant possession of Cambridge Commercial Park is not required until later in the programme, there may be scope to secure further interests through the use of Landlord and Tenant powers.

6.7 A summary of Caveats and Assumptions applied to the Site Acquisition Estimates is set out at Appendix III and a plan illustrating the interests considered is provided at Appendix I.

6.8 The Site Acquisition Estimates should set the framework for making offers that reflect the additional compensation over and above market value, and will assist with setting budgets. We would suggest regular reviews of these as further information becomes available and as timescales are updated.

Valuation date

6.9 The date of valuation for the assessment of compensation is the earlier of:

- date values are agreed;
- date possession is taken;
- date of the Lands Tribunal decision.

6.10 In this case, possession of the land has not yet occurred and the valuation date will remain "floating" until one of the above has occurred.

The Statutory Basis of Claim

6.11 Section 5 of the Land Compensation Act 1961 sets out six rules which govern the assessment of compensation. Rules (2) and (6) are the most relevant. They provide:

- Rule 2: "The value of the land shall...be taken to be the amount which the land if sold in the open market by a willing seller might be expected to realise."
- Rule 6: "The provision of rule (2) shall not affect the assessment of compensation for disturbance or any other matter not directly based on the value of land."

Heads of Claim

6.12 The heads of claim likely to be relevant in this case assuming the interest has been compulsorily acquired, are as follows:

- land taken;
- statutory loss payment;
- disturbance or any other matter not directly based on the value of land;
- and reasonable professional fees.

6.13 Each of the heads of claim which may be applicable in this instance is considered further below.

Land Taken

6.14 Other than in exceptional circumstances the value of an interest is based on its market value and the seller is assumed to be a willing seller.

6.15 The valuation should reflect the actual physical condition of the property at the valuation date.

The "No Scheme World"

6.16 In considering the appropriate market value for the interest it is necessary to disregard the scheme underlying the acquisition. This is commonly referred to as the no scheme world. This is a hypothetical

position where it is necessary to identify the scheme for which the land is being acquired and then to disregard any effects, positive or negative, it may have on value. This is sometimes referred to as the "Pointe Gourde" principle following the case of *Pointe Gourde Quarrying and Transport Company v. Sub-Intendent of Crown Lands* [1947], although it subsequently received a statutory equivalent in section 6 of the Land Compensation Act 1961. It is also necessary to disregard any impact on value arising from the fact that the land is being compulsorily acquired. This is set out in section 9 of the 1961 Act and has been updated via more recent legislation.

Statutory Loss Payment

- 6.17 Commercial tenants are entitled to a Basic Loss Payment of 7.5 per cent of the value of the interest capped at £75,000. We consider it unlikely that the commercial tenants will have any value in their leases and therefore will not be receive a basic loss payment, but this should be kept under review.
- 6.18 Commercial property occupiers are entitled to an Occupiers Loss Payment based on the greater of 2.5 per cent of value of the interest or £25 per sq m applied to the gross area of the property subject to a cap of £25,000.

Disturbance

- 6.19 For the most part this only applies to occupiers of land and it relates to the costs incurred of moving out of the property. The general rule is that the claimant is entitled to the costs incurred and the losses sustained which flow as a direct and reasonable consequence of being removed from the property.
- 6.20 There is a general rule that the claimant must act reasonably and mitigate his loss. This means he is required to seek the most economically sensible route. This would include things like seeking three quotes for items of expenditure and choosing the one which provides best value for money. In order to comply with the principle of equivalence, if for example new blinds and carpets are required, then the compensation in respect of these items should take into account the age and condition of the items that are being replaced and not the full cost of the new items. In addition, the compensation claimed must not be too remote. It must arise as a direct consequence of the acquisition.
- 6.21 Investment owners are entitled to be compensated for the costs incurred in investing in another property (subject to qualifying criteria) under s.10a of the Land Compensation Act 1973.
- 6.22 For commercial occupiers, if they relocate the business, the compensation is likely to include:
- o the costs of acquiring relocation premises – agents fees, legal fees, survey, SDLT;
 - o loss on unwritten down value of existing fit out, fixtures and fittings;
 - o physical removal costs;
 - o temporary loss of profits;
 - o other items of expenditure which arise as a direct consequence of the acquisition.

6.23 If suitable relocation premises cannot be found, then a claim can be made on the basis of total extinguishment of the business. A claim can also be made on this basis if the proprietor of the business is over the age of 60. Compensation for extinguishment will include:

- o the value of the business goodwill – assessed by capitalising the net adjusted profits of the business by the appropriate multiplier
- o loss on forced sale of stock, vehicles and plant and machinery
- o redundancy costs
- o administrative costs of winding up the business

Professional fees

6.24 Each claimant is also entitled to their reasonable surveyor's and legal fees incurred in preparing their claim and negotiating compensation, together with legal fees for deducing title and dealing with the conveyance.

Blight

6.25 Once a property is within a CPO made under TCPA 1990, (the most likely process for this scheme) the owner / occupier may be entitled to serve what is known as a 'Blight Notice' in order to force the acquiring authority (the Council) to purchase their property in advance of the project timetable.

6.26 This is subject to them satisfying the occupational requirement – subject to very limited exceptions, they must either be an owner/occupier of residential private dwelling or an owner-occupier of any commercial hereditament where the annual rateable value does not exceed a specified limit – currently £36,000 although this is regularly reviewed.

6.27 The acquiring authority has limited defence to a blight notice – if the property is required for the scheme and the person serving the notice meets the above criteria, then the acquiring authority will have to accept the blight notice.

6.28 Once a blight notice has been accepted, this is treated as a deemed notice to treat, with all the liabilities and time scales which flow from this.

7. Acquisition Strategy

7.1 There are a number of different ownerships and occupiers within the commercial estate at Cambridge Commercial Park. The Site Acquisition Estimates at Appendix II to this report set out the detail on this, relying on information from the Land Registry and Cambridge City Council. In summary, the Site includes a number of different commercial uses with a variety of different tenancies, occupations and uses.

7.2 There are three principal options available to U+I, working with Cambridge City Council and the wider JV, to acquire the required interests. These are:

1. Acquisition by agreement
2. Termination of leasehold interests using Landlord and Tenant powers
3. Compulsory Purchase

7.3 Each of these methods has its benefits and it is envisaged they will all be used in combination to ensure vacant possession of the site is achieved, at the time required, in a cost-effective manner.

1. Acquisition by agreement

Negotiations

7.4 The objective is that acquisition of all property interests should be agreed via negotiation, based on the statutory compensation framework, in order to demonstrate that U+I and the JV is being reasonable in its approach, thereby securing their support for its proposals and to reduce the number of properties that will have to be compulsorily acquired.

7.5 Negotiations have already begun with the various property interests.

2. Termination of leasehold interests using Landlord and Tenant Powers

7.6 The Council holds a number of freehold interests within the Site and there is thus potential for the Council to secure vacant possession of some of the properties through its Landlord and Tenant powers. As set out in the Site Acquisition Estimates and the underlying Assumptions and Caveats document (Appendices II and III to this report), we have not had sight of all the various leases and so to apply caution at this stage in the process we have assumed that all occupiers have the benefit of being within Part II of the Landlord and Tenant Act 1954. This provides tenants with a right to renew the lease at the end of the contractual lease term. There are only limited grounds on which the landlord can obtain vacant possession. The grounds are set out below:

- a. Premises are in disrepair
- b. Arrears of rent
- c. Other breaches of covenant
- d. Suitable alternative accommodation
- e. Tenancy was created by sub-letting

- f. Landlord's intention to redevelop or reconstruct
- g. Landlord's intention to occupy.

- 7.7 Ground (f) is likely to be the most relevant in this case. In order to terminate the lease on this basis, U+I/the Council will need to serve a s.25 Notice between [REDACTED] before the end of the contractual term.
- 7.8 If the tenant should apply to the Court for the right to a new lease, then U+I/the Council will need to demonstrate by the Court date that there is a firm and settled intention to demolish and redevelop. Such evidence can include, for example, board minutes, architect's plans, planning permissions, business plans, consultations and feasibility studies. U+I/the Council will also need to demonstrate a reasonable prospect of achieving the redevelopment.
- 7.9 If the lease is terminated on this ground, then the tenant is entitled to compensation. If the tenant has occupied the premises for less than 14 years, compensation is 1 x the rateable value of the property. If the tenant has been in occupation for more than 14 years then the compensation is 2 x the rateable value of the property. We have applied estimates of compensation under Landlord and Tenant powers within the Site Acquisition Estimates where there is the possibility of achieving vacant possession through this means by the start of [REDACTED]. These should be kept under review as part of the suggested regular review of the Site Acquisition Estimates and the project timetable.

3. Compulsory Purchase

- 7.10 As the Council is considering using its compulsory purchase powers on behalf of U+I, it will be important to ensure that negotiations in advance of that can be demonstrated to be reasonable efforts to acquire by agreement. The Council/U+I will need to demonstrate that they have treated affected parties consistently and fairly, and that they have based the negotiations on their reasonable opinion of the value of the assets they are trying to acquire.
- 7.11 Further information is set out below as well as in Appendix III to this report.

Negotiations in advance of CPO

- 7.12 We understand that U+I has begun negotiations on the Site to seek to acquire the various interests by agreement and that some offers have been made.
- 7.13 The prospect of acquisition will result in a high level of uncertainty for affected parties, ensuring they are unable to plan for the future. Therefore, U+I must ensure they can provide as much certainty as possible to affected parties. For example, providing undertakings for professional fees (albeit appropriately limited in quantum) or being prepared to proceed with acquisitions if property occupiers find relocation premises ahead of project programme, can assist in reaching agreement. U+I will need to decide in advance what certainty and undertakings they can provide and any pre-conditions to these, and then apply these consistently. U+I and the JV may also wish to consider whether they will actually acquire any of the third party interests prior to any Council resolution to use CPO powers. Consideration should be given to the use of conditional contracts to acquire the third party interests at a later date post the CPO being progressed.

- 7.14 Until the Council has made a public decision on the principle of using its compulsory purchase powers, U+I should not raise the prospect of using these powers with affected parties.

General principles

- 7.15 The MHCLG Guidance and best practice recognises that it is reasonable to prioritise acquisition of some interests within a site, and it is common practice to commence negotiations with freeholders and long term leaseholders ahead of short term occupiers. It is also sensible to identify any particularly sensitive third party interests to be acquired, or those who may have more difficulty in relocating or dealing with the impact of the acquisition. The MHCLG Guidance and best practise advises that acquiring authorities and their partners should be prepared to offer compensation based on compulsory purchase compensation when negotiating in the shadow of a compulsory purchase order.
- 7.16 However, a balance has to be reached as to when it is appropriate to make additional payments over the market value so as to ensure that the scheme is financially viable and that U+I reduce the risk of making payments above the market value in the event that the Scheme does not proceed, U+I could recoup the money spent by disposing of the property on the open market.
- 7.17 As yet, U+I do not have agreement with the Council on the use of their compulsory purchase powers and there is no general public knowledge that U+I will work with the Council to use their compulsory purchase powers to deliver the redevelopment, and thus a case could be made that it is reasonable to state that the current negotiations are not 'in the shadow' of a compulsory purchase, and therefore consideration over and above market value need not be offered.
- 7.18 There is no definitive date within legislation from which consideration reflecting full compulsory purchase compensation must be offered. However, it is public information that U+I is the Council's chosen development partner for CNFE and it is public information that Anglian Water Group is proposing to relocate the water recycling centre and large scale comprehensive redevelopment is planned for the whole of CNFE. Furthermore, reasonably on a development site of this size, one would expect compulsory purchase powers to be used for at least part of the site assembly.
- 7.19 However, the timetable for making the CPO is, at the earliest, November 2021, and in reality may be considerably later if the Site is not required until [REDACTED] onwards. The Council would reasonably take a formal decision to in principle use compulsory purchase powers for the Site around [REDACTED] before making the CPO, which at the earliest would be the in principle decision at April 2021. This could be as late as [REDACTED] depending on the eventual timetabling for works on this Site.
- 7.20 On this basis, as there is considerable time before there will be any public announcement of using compulsory purchase powers, and as there are so many other work streams with associated risks to progress prior to making the CPO, a reasonable approach could be for U+I to continue negotiating with affected parties on the basis of market value only rather than the full compulsory purchase compensation. Reasonably, this could be up to the timing of the in principle Council decision and at that point U+I will be able to inform those affected that, if agreement cannot be reached, their properties will be acquired using compulsory purchase. From this stage onwards, those affected will also receive requisitions for information, the first formal stage of the compulsory purchase process, which is usually considered the start of the 'shadow period' of the CPO.

- 7.21 By this stage, U+I should make offers based on full compulsory purchase compensation. However, U+I should review the approach they wish to take early on in the process with the Council as they may decide to do so earlier when taking into account the community and political implications of the site assembly process. Furthermore if the prospect of compulsory purchase is made public earlier in the process, it would normally be best practice to negotiate as if in the shadow of a CPO and to negotiate in line with the Compensation Code. We would therefore recommend careful monitoring and the review of this timescale in order to ensure that if the potential for use of compulsory purchase powers for the different phases becomes public knowledge, then offers being made include the relevant compensation for that stage. U+I and the Council must ensure that they keep accurate records of all their negotiations.

Additional assistance

- 7.22 Whilst it is not a requirement under the Compensation Code to relocate occupiers, it is important to consider whether there is scope for U+I or the JV to relocate at least some of the occupiers. U+I will need to satisfy itself that there are sufficient relocation opportunities to ensure that arguments for extinguishment are minimised. We understand that there may be opportunities for offering relocation continuity to affected parties within the CNFE wider area.
- 7.23 In our view, and as set out in the Site Acquisition Estimates (Appendix II), the key occupiers where relocation should be prioritised are Stagecoach (100 Cowley Road, plan reference 27, and 80 Cowley Road, plan reference 15) and Lafarge Tarmac (plan reference 28). The Stagecoach sites operate as a main operational centre serving Cambridge and require close proximity to mitigate claim for dead mileage. At present they cover over 2.4 acres of the Site and thus a considerable site could be required for relocation. Likewise consideration should be given to Lafarge Tarmac as the site is strategically located next to the railway sidings and consideration will need to be given to retaining proximity.

Other rights such as access rights

- 7.24 The proposed scheme may require the creation of new access rights in addition to land take. In general, owners of land cannot be compelled to grant a right to an authority with statutory powers under the Town and Country Planning Act 1990. However, section 13 of the Local Government (Miscellaneous Provisions) Act 1976 provides that where an authority is authorised to acquire land, it may be authorised to acquire specific rights over land. These rights must be specified in a compulsory purchase order. Therefore, if the required rights cannot be agreed between the parties, there may be opportunity to acquire specific rights through a compulsory purchase order as part of the acquisition of land and leasing back the land to the stakeholder.

8. Special Types of Land

- 8.1 There are categories of special land where additional procedures apply if the land is to be acquired via compulsory purchase. These are set out in the Acquisition of Land Act 1981. When preparing to assemble any site using compulsory purchase powers, the acquiring authority should satisfy itself that the site does not contain any of these special types of land.

Statutory Undertakers

- 8.2 Statutory undertakers include bodies responsible for supplying electricity, gas, water and telecoms. Their interests can only form part of a CPO if the minister responsible for their affairs certifies that the land can be taken without serious detriment to the carrying on of the undertaking, or it can be replaced by other land without serious detriment to the undertaking. It is considered best practice to reach an agreement with any statutory undertakers prior to a Public Inquiry.
- 8.3 It is also important that possession of statutory utility land is taken via the agreement, if possible, rather than by serving notice under a confirmed CPO, as the latter may give rise to a compensation entitlement. We have not yet investigated utilities within the Site.

National Trust land

- 8.4 S.18 states that a compulsory purchase order relating National Trust land shall be subject to special parliamentary procedure where an objection to the order by the National Trust and has not been withdrawn.
- 8.5 We are not aware of any National Trust land within the Site. Therefore this provision should not apply.

Open Space

- 8.6 S.19 provides:

'(1) In so far as a compulsory purchase order authorises the purchase of any land forming part of a common, open space or fuel or field garden allotment, the order shall be subject to special parliamentary procedure unless the Secretary of State is satisfied—

(a) that there has been or will be given in exchange for such land, other land, not being less in area and being equally advantageous to the persons, if any, entitled to rights of common or other rights, and to the public, and that the land given in exchange has been or will be vested in the persons in whom the land purchased was vested, and subject to the like rights, trusts and incidents as attach to the land purchased, or...

(b) that the land does not exceed 250 square yards in extent... and certifies accordingly...

(4) In this section— ... "open space" means any land laid out as a public garden, or used for the purposes of public recreation...'

- 8.7 Special parliamentary procedure is an additional process that takes place after the normal passage of the CPO through public inquiry and confirmation. There is then an additional requirement for the confirmed CPO to be laid before Parliament where petitions against the CPO can be presented to Parliament.

Anybody can present a petition. A report of the petitions is laid before both Houses of Parliament who can at this stage pass a resolution to annul the CPO. If no resolution to annul is passed the petitions are referred to a joint committee of both Houses who can report that the CPO should either be approved (with or without amendment) or not approved.

- 8.8 Special parliamentary procedure is an uncertain process and can add many months to the CPO process. It should be noted that the whole CPO would be subject to special parliamentary procedure and no land could be acquired under the CPO until the special parliamentary procedure had been completed and the CPO had been approved by Parliament.
- 8.9 Special parliamentary procedure can be avoided by providing replacement land, which has to be provided at the time of the acquisition or by not putting the open space land in the CPO.
- 8.10 Finding replacement land in the locality could be difficult and expensive. However if replacement land could be found it could be included in the CPO and acquired using compulsory purchase powers.
- 8.11 As far as we are aware there is no open space within Cambridge Commercial Park. Therefore this provision should not apply. However, it should be noted that there is a planning policy designated Protected Open Space and small City Wildlife, Country Wildlife and Local Nature Reserve within the CNFE of Major Change to the south of Cambridge Commercial Park but within the wider area boundary. This is likely be open space in compulsory purchase terms.

Third party rights

- 8.12 The ownership of these areas needs to be reviewed in order to establish whether any parties have rights over them. If for example all whether anyone outside Cambridge Commercial Park has a right to park in the communal parking areas of the park, then these rights will need to be included in the CPO. If these rights are acquired, then the owners who benefit from them are entitled to compensation under Section 10 of the Compulsory Purchase Act 1965. The compensation is based on the depreciation of the value of the land which has the benefit of these rights and so we would recommend checking ownership and rights.
- 8.13 It will be important to identify third party right such as:
- Restrictive covenants;
 - Rights of way;
 - Rights of light.
 - Rights over communal areas such as car parking areas
- 8.14 If these rights are acquired, then the owners who benefit from them are entitled to compensation under Section 10 of the Compulsory Purchase Act 1965. The compensation is based on the depreciation of the value of the land which has the benefit of these rights.
- 8.15 If not acquired by compulsory purchase, section 203 of the Housing and Planning Act 2016 can be used to override any rights or covenants in the land to be acquired. The interests and rights to which this section applies are any easement, liberty, privilege, right or advantage annexed to land and adversely affecting other land, including any natural right to support. Where Local Planning Authorities acquire or appropriate

land for planning purposes under Section 122 of the Local Government Act 1972, section 203 of the Housing and Planning Act can then be used. Increasingly Local Planning Authorities are willing to work with developers to enable use of their section 203 powers to override third party rights where this is a public benefit in the scheme being delivered. As with the use of compulsory purchase powers, U +I would need to reach agreement with the Council if they wanted to utilise section 203 powers.

- 8.16 The claim for compensation is under S.10 of the Compulsory Purchase Act 1965 as advised above.

Crown Land

- 8.17 Crown land, which includes most operational central government property, cannot be acquired by compulsory purchase. However we are not aware of any Crown land needed for the scheme and therefore this should not be an issue.

Land referencing support

- 8.18 In order to ensure all third party interests in the site have been identified, and any special types of land also, we recommend instructing a specialist land referencing company to carry out an initial referencing exercise at an early stage. Using specialist mapping software and expert knowledge, this will ensure that all interests are identified, accurately plotted onto a plan which links with a schedule of interests and ensures there are no gaps within the site and identifies any unknown ownership or risk items.
- 8.19 Going forward this would also form the basis of any future CPO schedule.

9. Conclusions and Next Steps

- 9.1 In summary, based on our initial review there is considerable scope within the current CNFE project programme to assemble the Cambridge Commercial Park Site using compulsory purchase powers within the required timeframes. In our view, it is unlikely that a site of this size and number of different ownerships will be assembled in a timely manner without the use of compulsory purchase powers. Providing that U +I and the JV carry out all the required due diligence, negotiation and preparation prior to making the CPO, there is a strong opportunity for U+I to work with the Council to use their statutory compulsory purchase powers.
- 9.2 The precise timescale as to when vacant possession of the Site is required is currently unknown as it depends on the progression of a large number of related projects. The works to be carried out on the Site are considerably later in the programme than some of the initial construction works on adjoining sites in CNFE. Integrating the CPO timetable and process with the planning application is crucial and on this basis under the current timetable, the earliest that vacant possession could reasonably be achieved under a CPO is May 2024. U+I and the JV are currently at a very early stage of the redevelopment of CNFE and there is adequate time to ensure that the required work streams can be carried out prior to the making of the CPO, particularly if, in reality, as set out in this report, vacant possession of the Site is unlikely to be required until post 2024.
- 9.3 Considering the compulsory purchase case this early in the overall project timetable and programme is sensible and enables U+I to ensure that they maximise the chance of a confirmed CPO through ensuring that all the required preparatory work is carried out and that the CPO timetable is integrated into the overall programme.
- 9.4 We would recommend the following steps are carried out over the next six to twelve months to support the site assembly requirements of Cambridge Commercial Park to enable the comprehensive redevelopment of CNFE to progress in a timely manner.
- Continue to review the overarching project programme and integrate the CPO process for the Site into this timetable. As a minimum, ■ months should be allowed for the CPO process, with the making of the CPO integrated into the planning application timetable. The CPO should not be made until at least a resolution to grant is obtained for the planning application for the entire CNFE.
 - Ensure all other delivery areas are progressed within the overarching programme and continue to review this. The key delivery areas which impact on the CPO timetable are; the planning application, Anglian Water DCO application and the AAP progression.
 - Continue with the masterplanning and early preparation for the hybrid planning application for the entire Scheme. This is important in ensuring not only that the Site has planning permission but also that the redevelopment of the Site contributes to the much larger and wider regeneration of CNFE. This will strengthen the case for the use of CPO powers including contribution to economic, social and environmental wellbeing.
 - Continue to progress the Housing Infrastructure Fund bid. As set out, a key test within the CPO is that the Scheme can be funded, and the HIF funding will contribute to this.

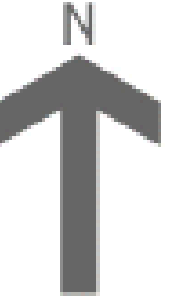
- U +I should ensure that the Council progress the AAP for CNFE. Whilst there is planning policy support for the redevelopment of CNFE through both Cambridge City Council and South Cambridgeshire District Council's Local Plans through the designation of the area as a Major Area of Change, there is considerable scope to strengthen the planning policy support for both the Scheme and redevelopment of the Site through the AAP. U+I should seek to work with both councils on the preparation of the joint AAP as there is opportunity to ensure as much planning policy support as possible for the use of CPO powers on this Site and for its policy objectives to be consistent with U+I's and the JV's. This may include inputting directly into sections of the AAP if possible and/or submitting representations to the plan process. Further detailed suggestions are set out in section 4 of this report. A key emphasis within the AAP should be the need for comprehensive redevelopment across the CNFE area including ensuring that various parts of the site are tied together, including the water recycling centre relocation.
- U+I should engage in discussions with the Council as to their decision making process for using compulsory purchase powers. This should include entering into a legal agreement as well as the required Cabinet/Council Assembly/delegated etc process for using compulsory purchase powers. These pieces of work and timetabling should be integrated into the overarching project programme.
- U+I should review with the Council how they wish to progress negotiations by agreement, and from when they will offer compensation in accordance with the Compensation Code. Once there is agreement to negotiate on the basis of the Compensation Code, U+I should use the Third Party Site Acquisition Estimates as the basis of their budgeting and negotiations. The Third Party Site Acquisition Estimates should be regularly reviewed and updated as further information becomes available.
- Following this, U+I should continue progressing negotiations to acquire all the interests on the Site by agreement and ensure that there are accurate records of all the negotiations. U + I will need to discuss with the Council how the Council's interests in the Site will be dealt with in terms of the negotiations.
- Review the Site to establish if there are any third party rights and to confirm whether there are any special types of land. U + I should consider using a land referencing company to carry out this initial desk based land referencing exercise. This could potentially be carried out later on within the programme due to the required vacant possession date being so far in the future.
- Review of rights and land outside Cambridge Commercial Park, within the wider CNFE to see if there are any other third party rights or land which may need to be acquired through compulsory purchase to enable the Scheme to be delivered, potentially also including required land and rights for the transport strategy, seeing as a CPO is likely to be required as a minimum for Cambridge Commercial Park. Following this review the CPO red line boundary may include areas outside of Cambridge Commercial Park.

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Appendices

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Appendix II Third Party Site Acquisition Estimates: Summary Schedule

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CAMBRIDGE COMMERCIAL PARK | COWLEY ROAD CAMBRIDGE CB4 0DL

THIRD PARTY SITE ACQUISITION ESTIMATES | SUMMARY SCHEDULE

STRICTLY CONFIDENTIAL. CONTAINS FINANCIALLY SENSITIVE INFORMATION / FOI EXEMPT



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01-Oct-18

PLAN REF	DETAILS			ACQUISITION COSTS			COMMENTS / ASSUMPTIONS
	DESCRIPTION	FREEHOLDER	TENANT	CAPITAL VALUE	DISTURBANCE	TOTAL	
				£34,631,083	£10,660,500	£45,293,000	
1	Recycling Centre & Offices	Cambridge City Council	Cleanaway Ltd. t/a Veolia ES (UK) Ltd.				
2	Coulson House (William James House), 49, 50-55, 56 Cowley Road	Coulson Group Limited	Owner-occupied with sublet multi-tenanted business units				
3	Speedy Asset Services, 57 Cowley Road	IPM Trustees Ltd.	Speedy Asset Services Ltd.				
4	Vindus VW Car Dealership, 59 Cowley Road	Cambridge City Council	Vindus				
5	67 Cowley Road	Cambridge City Council	Logic Scaffolding				
6	68 Cowley Road	Cambridge City Council	Betson Building Contractors				
7	69 Cowley Road	Cambridge City Council	Portakabin Ltd.				
8	70-71 Cowley Road	Cambridge City Council	Cambridge Storage Ltd.				
9	72 Cowley Road	Cambridge City Council	Cowley Road Garage				
10	74 Cowley Road	Cambridge City Council	Practical Car & Van Rental				
11	75 Cowley Road	Cambridge City Council	Summit Scaffolding				
12	76 Cowley Road	Cambridge City Council	Edan Recovery				
13	77/78 Cowley Road	Cambridge City Council	Drain Centre				
14	79 Cowley Road	Cambridge City Council	AASP Recovery				
15	80 Cowley Road (also referred to as 4a, Cambridge Commercial Park)	BBC Pension Trust	Cambus Ltd. t/a Stagecoach				
16	125 Cowley Road (also referred to as 4b, Cambridge Commercial Park)	BBC Pension Trust	Conductive Inkjet Technology Ltd.				
17	130 Cowley Road	Compserve	Cambridge City Council				
18	135 Cowley Road	John Woolley & Son Ltd.	Abbey Tyre Centre (owner occupied)				
19	140 Cowley Road	Outspoken Property Ltd.	Bike Depot - Multi-tenanted business units				
20	150-151 & 152-153 Cowley Road (also referred to as 8&9, Cambridge Commercial Park)	BBC Pension Trust	Rexel Uk Ltd.				
21	154-155 Cowley Road (also referred to as 10, Cambridge Commercial Park)	BBC Pension Trust	Cambridge Consultants Ltd.				
22	156 Cowley Road (also referred to as 11, Cambridge Commercial Park)	BBC Pension Trust	Heat Group (UK) Ltd. t/a Cambridge Heating Components				
23	Deanland House, 160 Cowley Road	Temple Quay Pensis Trustees Ltd.	Volker Fitzpatrick (gnd), Cambridge CMOS Sensors (1st), Vix Technology (2nd)				
24	Asta House, 168 Cowley Road	Cranmer Estates Ltd.	Owner-occupied				
25	90-92 Cowley Road	Barr Tech	Owner-occupied				
26	Small Workshop f/o 90-92 Cowley Road	Unex Group	{Barr Tech} Tbc.				
27	100 Cowley Road	Cambus Ltd.	Owner-Occupier t/a Stagecoach				
28	Batching Plant	Cambridge City Council	Lafarge Tarmac				

KEY:	
	Owned by Cambridge City Council
	Part of BBC Pension portfolio

Appendix III Summary of Caveats and Assumptions

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Third Party Site Acquisition Estimates
ASSUMPTIONS & CAVEATS

The assumptions outlined below are in conjunction with the Schedule of Land Acquisition Estimates dated 01 October 2018:

1.0 GENERAL ASSUMPTIONS

Purpose of the Estimates

- 1.1 The Third Party Land Acquisition Estimates have been prepared as 'high level' indicative estimates to inform a decision around the cost/benefit analysis for the potential inclusion of the Cambridge Commercial Park and Cowley Road Interests within the wider CNFE Redevelopment Scheme.
- 1.2 The client has confirmed that the estimates are to be prepared in the strictest confidence. It should be noted that in the absence of any requisition information, site inspections and general discussions with affected parties it has been necessary to make prudent (but unverified) assumptions in respect of tenancy information and building condition, as necessary.
- 1.3 At this stage it is premature to ascertain, with any certainty, whether there are opportunities to employ active asset management techniques in order to secure vacant possession under the provisions contained within the Landlord and Tenant Act 1954. If this is possible then it will reduce the amount of business disturbance payable. Similarly, it is not possible to confirm at this juncture whether any existing occupiers may benefit from Statutory extinguishment, be forced to extinguish their business for other reasons or, whether they may be entitled to secure Redevelopment Value as an higher alternative compensation method. All of these issues could have a significant impact upon the compensation payable.
- 1.4 These estimates should be considered as the starting position of an ongoing process. The estimates will necessarily need to evolve as more background evidence is made available.
- 1.5 We set out below the principal assumptions that we have made to arrive at the estimates. Please note that changes to any of the inputs will directly impact upon the corresponding compensation estimates.
- 1.6 The assumptions are made on the basis of information available to us as at 01 October 2018. Any information provided, statutory or common law developments etc. after this date are not reflected and may significantly affect the estimate. Should further or different information become available we reserve the right to vary the acquisition estimates.

Duty of Care

- 1.7 In accordance with standard practice this acquisition summary is confidential to U+I Group Plc. No responsibility is accepted to any party other than U+I Group Plc.
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- 1.8 The Summary of acquisition estimates is highly confidential and may not be reproduced or referred to in any document, circular or statement without DDC's prior written approval. Release of the information contained in the estimates into the public domain may significantly prejudice any future private treaty negotiations.
- 1.9 It should be noted that this Schedule of Third Party Land Acquisition Estimates and the values contained therein do not constitute a formal valuation. The estimates have not been produced in accordance with the RICS Valuation Manual.

The Site

- 1.10 The extent of the site under consideration is illustrated by the red-line boundary contained on the 'Indicative Interests Plan' attached hereto.
- 1.11 The estimates make no allowance to remediate the site of any contamination should that be evident.

Site Inspection & Floor Areas

- 1.12 DDC has undertaken an external visual inspection only of the premises and can make no representation as to the condition of the individual properties.
- 1.13 No measured survey has been undertaken by DDC. The floor areas used are based upon those published by the Valuation Office and/or other third party sources but remain unverified. Where necessary, the number of floors has been assessed via external visual inspections only and/or photographic evidence or other such information sources available.

Title Verification

- 1.14 DDC has received partial Title information only in relation to the interests vested in Cambridge City Council. The relevant information has been used to underpin reasoned assumptions on vacant possession, as appropriate. The full title has not been inspected to date as part of this exercise.
- 1.15 For the time being, it is assumed that there is clear title, and no onerous covenants or encumbrances that would impact upon future value.

Planning Assumptions

- 1.16 It is assumed that all existing uses are lawful and, that there are no extant planning applications at the date of the assessment.
- 1.17 Where alternative development is considered a reasonable prospect (and rendering a residual land value higher than Market Value + Disturbance) within a reasonable timeframe in the 'no scheme' world, this has been identified. Full analysis of any Freeholder arguments for redevelopment of any component parts of the site has not been assessed at this stage.

Assessment of Values

- 1.18 The estimated rental and capital values for the commercial accommodation is based upon information available to DDC and our opinion. Whilst every effort has been made to provide an accurate estimate of the rental values, investment yields and tenant inducements etc. at the current time it should be noted that these are only valid at a particular point in time. Similarly, once full tenure information has been provided by the current property owners, occupiers or their agents, it will be necessary to reflect any such occupational differences.
- 1.19 It has been assumed that the commercial units have been let to tenants of reasonable financial standing where information on covenant is not available, on the best lease terms currently available in the open market. We have further assumed that the leases do not contain any onerous or adverse clauses that may affect either rental value or the yield attributable to them.
- 1.20 DDC has not carried out any building or structural surveys on the properties in question and has assumed that all the premises are in a good state of repair. We recommend that any offers put forward for any of the properties in question are conditional upon a satisfactory structural survey of buildings being provided.
- 1.21 The properties in question are assumed to not suffer from any onerous or adverse site or soil conditions, that they are subject to satisfactory planning consents and that they are not subject to any onerous legal rights, easements or obligations (as noted above).
- 1.22 Stamp Duty and Purchasers Costs have been deducted to provide an estimated Net Capital Value.
- 1.23 No allowance is made for VAT in respect of the costs of realisation or any tax liability arising. All figures are reported Net of VAT.

Active Estate Management / Prudent Purchases/ Vacant Possession

- 1.24 It is assumed that all the relevant freehold and leasehold interests within the site's boundary are to be assessed as being acquired through the use of the Council's statutory powers and full compensation is payable with the exception of several Council owned interests which fall-in prior to the assumed cut-off date of **1 January 2023**.
- 1.25 It is further assumed that all leases are protected through security of tenure (unless specific information is available to the contrary).
- 1.26 In practice, the developer/Council will necessarily endeavour to reach agreement through private treaty negotiations which may lead to considerable cost savings, particularly where no disturbance is required.
- 1.27 Early negotiations in respect of prudent purchases is advisable once the CPO resolution is granted.

Further Due Diligence

- 1.28 In due course we would recommend a full title report, the service of s.16 requisition notices and that a referencing agent is appointed with the intention of producing a plan determining the area to fall within a CPO. We have assumed that no land is taken from properties adjoining the boundary, and that if part of a title is taken no severance or injurious affection claim would arise.

2.0 GENERAL VALUE /DISTURBANCE/STATUTORY PAYMENT ASSUMPTIONS*Capital Value*

- 2.1 In respect of the commercial accommodation, it is generally assumed that the units are let at market terms, on fully repairing and insuring terms, for a term of 10 year certain, incorporating 5 yearly upward only rent reviews to tenants of acceptable covenant status.
- 2.2 Tenant incentive packages of 3-6 months has been allowed for in respect of each letting to cover incentives to the commercial tenants together with an appropriate void periods.
- 2.3 Where premises are vacant or, tenancies expire prior to the assumed Possession Date, it is assumed that they would be re-let on market terms by the time the building is required. Potential savings would be achieved, for example, in the event that the property remained vacant and/or if it were possible to acquire the freehold and asset manage.

Freeholder Disturbance Compensation & Statutory Payments

- 2.4 Freehold Agents / legal Fees on Settlement – Varies dependent upon complexity.
- 2.5 Reinvestment Costs – 1.8% of Capital Value + Relevant Stamp Duty.
- 2.6 Basic Loss Payment of 7.5% of Capital Value, capped at £75,000 per interest (assumes all interests > 1yr).

Leaseholder Business Disturbance & Statutory Payments

- 2.7 It is assumed, as a default position, that all occupational interests have the benefit of Security of Tenure in accordance with the Landlord and Tenant Act 1954 (part II) (unless identified to the contrary).
- 2.8 All interests are assumed to be acquired using the Council's statutory powers for compulsory acquisition. However, it is noted that Cambridge City Council owns a significant number of interests within the site in its estates capacity, some of which may present opportunities for active management under Landlord and Tenant powers in order to secure vacant possession thus mitigating business disturbance compensation. Where tenancies expire prior to the assumed possession date, this has been reflected.

-
- 2.9 Agents / legal Fees on Relocation – Assumes % of ERV (minimum cap of £5,000).
Agents / legal Fees on Settlement – Varies dependent upon complexity.
 - 2.10 Unless specifically identified, it is assumed that no tenants can successfully argue for extinguishment or permanent loss of profits. No allowance is currently made in respect of temporary loss of profits given that would be premature to ascertain at this stage.
 - 2.11 Removal costs – assumption made based upon circumstances of the business/comparable experience elsewhere.
 - 2.12 Refitting and adaptation costs are assumed based upon experience with other projects and in accordance with industry standards (notional depreciation allowed). We have not verified these assumptions or sought specialist cost consultancy advice in this respect.
 - 2.13 Double overheads – Various headings assumed (notional 3 month period). Broad allowances – to be refined.
 - 2.14 SDLT – New lease based upon statutory calculation from HMRC / assumed contractual rent.
 - 2.15 Occupier loss payment of 2.5% (varied bases), capped at £25,000 per interest (subject to other restrictions).
 - 2.16 Project Manager – varies dependent upon complexity of proposed relocation.
 - 2.17 Timespent – notional allowance.
 - 2.18 Misc. - Bridging finance etc. – various allowances dependent upon complexity.

3.0 OTHER PROPERTY SPECIFIC ASSUMPTIONS

- 3.1 Site specific observations are incorporated into the detailed proformas (subject to the caveats noted above).
- 3.2 No allowance has currently been made in respect of the rentalisation of mobile Portacabins on Council owned land. It is assumed that these can be easily relocated.

Contact Details

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DRAFT

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3.3 Options Summary

3.3.1 Please summarise why the preferred option, with the requested HIF funding, has been chosen and why the other shortlisted options have been discounted – this should make reference to advantages and disadvantages of the options in relation to scheme objectives and CSFs.

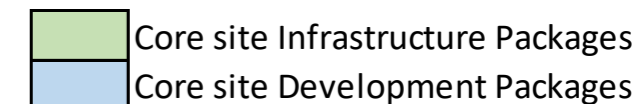
Performance of Options against Strategic Objectives

Objective	Option 1	Option 2	Option 3
1. Relocate the CWRC to a suitable new site.	Met.	Not met – CWRC is not relocated	
2. Unlock 47ha of fully serviced brownfield land for residential-led mixed use development within the Core Site.	Able to be met.	Not able to be met – land is unable to be released for housing because CWRC remains in situ.	
3. Deliver 5,600 homes within the Core Site by 2035.	Able to be met.	Not able to be met – only employment uses allowed on Core Site.	
4. Deliver a further 3,025 homes across the wider CNFE area over the Area Action Plan Period.	Able to be met.	Not able to be met – only employment uses likely to be allowed in wider CNFE area over Plan period.	
5. Transport-neutral growth across the CNFE area	Able to be met.	Not able to be met – growth does not occur on a significant scale and is employment-dominated, making trip internalisation/ reduction unachievable.	
6. Deliver a new city quarter achieving exemplary standards of design and sustainability.	Able to be met.	Partly able to be met – design and sustainability standards could be applied to employment-led development within CNFE, but cannot be a 'new city quarter'.	
7. Create a mixed community with good homes for all.	Able to be met.	Not able to be met – scope for housing development severely limited.	

Performance of Options against Critical Success Factors

Critical Success Factor	Option 1	Option 2	Option 3
<i>Recycling brownfield land for housing development</i>	Success – target would be met.	Failure – target could not be met as CWRC land could not be recycled.	
<i>Enabling rapid additional large-scale housing delivery</i>	Success – target could be met.	Failure – target could not be met as no new housing would be enabled.	
<i>Maximising social, economic and environmental benefits relative to costs</i>	Success – benefit to cost ratio achievable.	Failure – no housing would likely be delivered.	Not applicable – nothing delivered and no cost incurred.
<i>Maximising the number of dwellings delivered for the level of public investment</i>	Success – cost-per-unit benchmark could be reached.	Failure – no housing would likely be delivered.	Not applicable – nothing delivered and no cost incurred.
<i>Facilitating operational continuity of water recycling for Greater Cambridge</i>	Success – provision of new CWRC facility.	Success – operational continuity of existing CWRC facility.	
<i>Releasing a development opportunity that the private sector is able to deliver</i>	Success – modelling shows required level of private investment would be viable.	Not applicable – no development opportunity released. Private sector likely to be able to deliver residual employment-led development.	
<i>Public funding requirement is focused specifically on the relocation/remediation of the CWRC</i>	Success – modelling shows 100% of non-CWRC cost commercially fundable.	Failure – level of public funding would not achieve relocation.	Not applicable – no public funding deployed.
<i>Public funding is affordable from available sources of finance</i>	Success – funding requirement is less than upper limit.	Failure – level of public funding would not achieve relocation.	Not applicable – no public funding deployed.
<i>Deliverable by the partners involved</i>	Success – capability exists to deliver.	Failure – partners could not deliver with the level of funding.	Not applicable – no change to existing CWRC arrangements
<i>Private sector delivery capacity for housing</i>	Success – master developer already identified.	Failure – private sector capacity would not come forward as CWRC would remain to be relocated.	

CNFE – Core Site Procurement Package Strategy

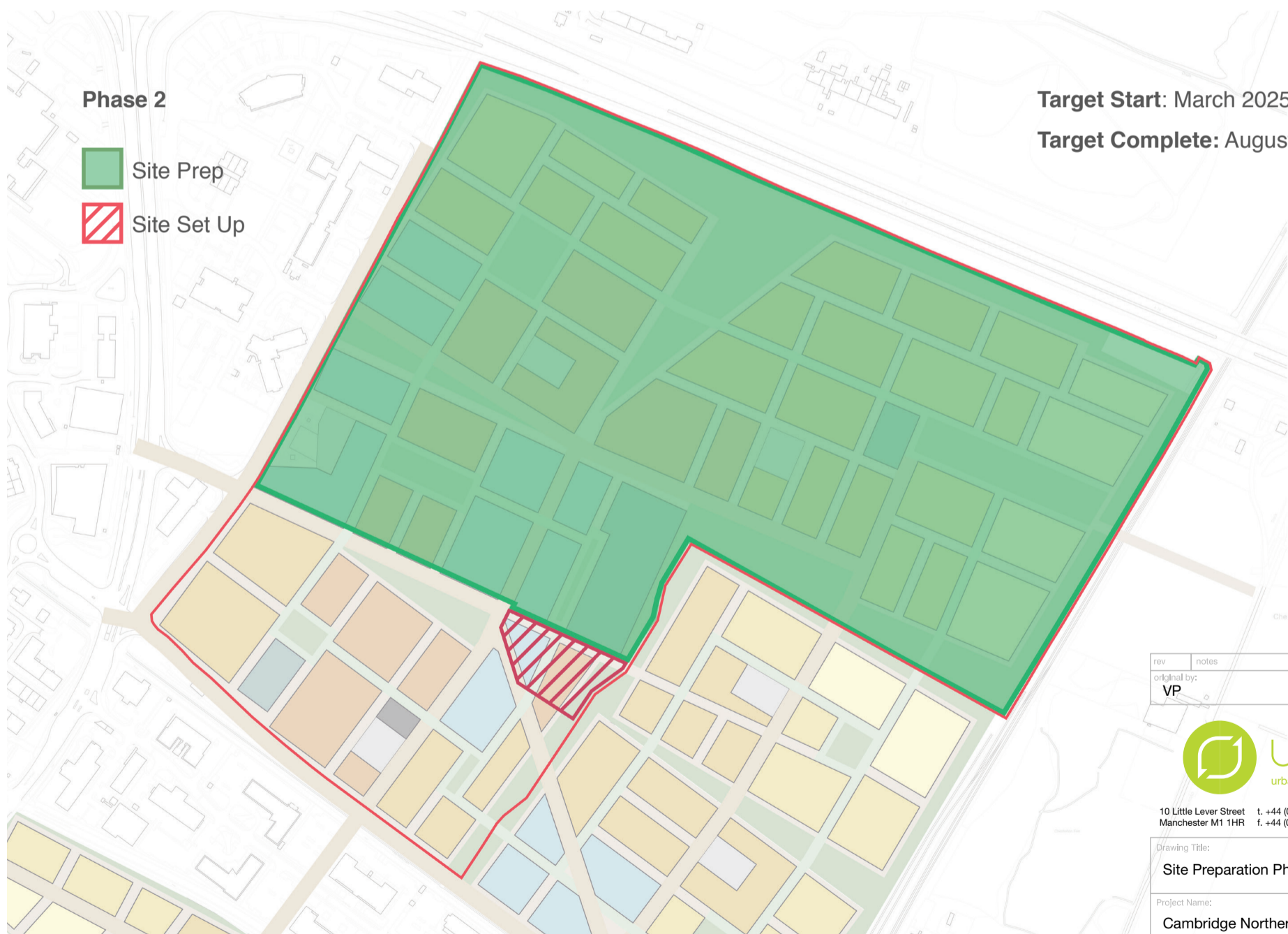


Package Suite Ref	Package Type	Potential Sub-Packages	Brief Description / Scope of Works	Supply Chain Contractor(s) Procured By Master Developer (U+I)	Phasing	Target Commencement Date	Target Completion Date
Infrastructure Package 1	Site Preparation	N/A	<ul style="list-style-type: none"> Decommissioning of Anglian Water facilities Demolitions Site clearance Remediation Ground profiling Acoustic berm Remove redundant services 	Specialist groundworks & remediation contractor	<ul style="list-style-type: none"> Phase 1 – VP of Cambridge City Council land Phase 2 – VP of 10% of Anglian Water land Phase 3 – VP balance of Anglian Water land 		
Infrastructure Package 2	Diversion of existing utilities / services	2A – Diversion of overhead power cables	<ul style="list-style-type: none"> Create 2 no. pylon switch areas on-site Bury new cables under acoustic berm on-site Bury new cables under Cowley Road off-site Remove pylons and cables 	National Grid	Single phase		
		2B – Relocate telecoms	Relocate mobile phone mast	Telecommunications Operator	Single Phase		
Infrastructure Package 3	Reinforcement of utilities off-site	3A – Power reinforcement	Power supply reinforcement	UKPN	Phased reinforcement by neighbourhood expansion?		
		3B – Gas reinforcement	Gas supply reinforcement	Gas Provider			
		3C – Water reinforcement	Water supply reinforcement	Anglian Water			
		3D – Sewer reinforcement	Sewer reinforcement	Anglian Water			
		3E – Telecoms reinforcement	Telecoms reinforcement	British Telecom			
Infrastructure Package 4	Primary roads and utilities	4A – On site primary roads and utilities	<ul style="list-style-type: none"> multi-utility service trench primary roads attenuation under roads on-site substations non-278 junction improvements gas pressure reduction stations 	Specialist civil engineering contractor	6 phases – 1 for each neighbourhood		
		4B – Section 278 highways improvements	<ul style="list-style-type: none"> Improvements to 4 no. road junctions Underpass to Cowley Road 	Specialist highways contractor approved by CCC	Phased to suit CCC Highways Authority		
Infrastructure Package 5	Green infrastructure	N/A	Hard and soft landscaping off-plot to: <ul style="list-style-type: none"> Green boundaries Main Park Green corridors Public realm Green attenuation Watercourse improvements 	Specialist landscaping contractor	6 phases – 1 for each neighbourhood		
Infrastructure Package 6	Off-site linkages and interventions	6A – A14 link bridge	Pedestrian and cycle link bridge over A14 trunk road	Highways England	Single phase		
		6B – Railway link bridge	Pedestrian and cycle link bridge over railway	Network Rail	Single phase		

CNFE – Core Site Procurement Package Strategy

Core site Infrastructure Packages
 Core site Development Packages

Infrastructure Package 7	Social infrastructure including section 106	7A – Primary school in neighbourhood 1	Primary school 1	Via s106 or directly through specialist building contractor approved by CCC	Single phase		
		7B – Primary school in neighbourhood 6	Primary school 2				
		7C – Secondary school in neighbourhood 4	Secondary school				
		7D – Health centre in neighbourhood 4	Health centre				
		7E – Community centre in neighbourhood 4	Community centre				
Development Package 1	Neighbourhood Development 1	N1 Plot A, N1 Plot B, N1 Plot C, etc etc	<ul style="list-style-type: none"> On-plot infrastructure (including secondary and tertiary roads) On-plot residential buildings On-plot commercial / retail buildings On-plot car barns On-plot external works 	Specialist housebuilders / developers	Phased by Plot A, B, C, D, E etc in each of 6 neighbourhoods		
Development Package 2	Neighbourhood Development 2	N2 Plot A, N2 Plot B, N2 Plot C, etc etc					
Development Package 3	Neighbourhood Development 3	N3 Plot A, N3 Plot B, N3 Plot C, etc etc					
Development Package 4	Neighbourhood Development 4	N4 Plot A, N4 Plot B, N4 Plot C, etc etc					
Development Package 5	Neighbourhood Development 5	N5 Plot A, N5 Plot B, N5 Plot C, etc etc					
Development Package 6	Neighbourhood Development 6	N6 Plot A, N6 Plot B, N6 Plot C, etc etc					



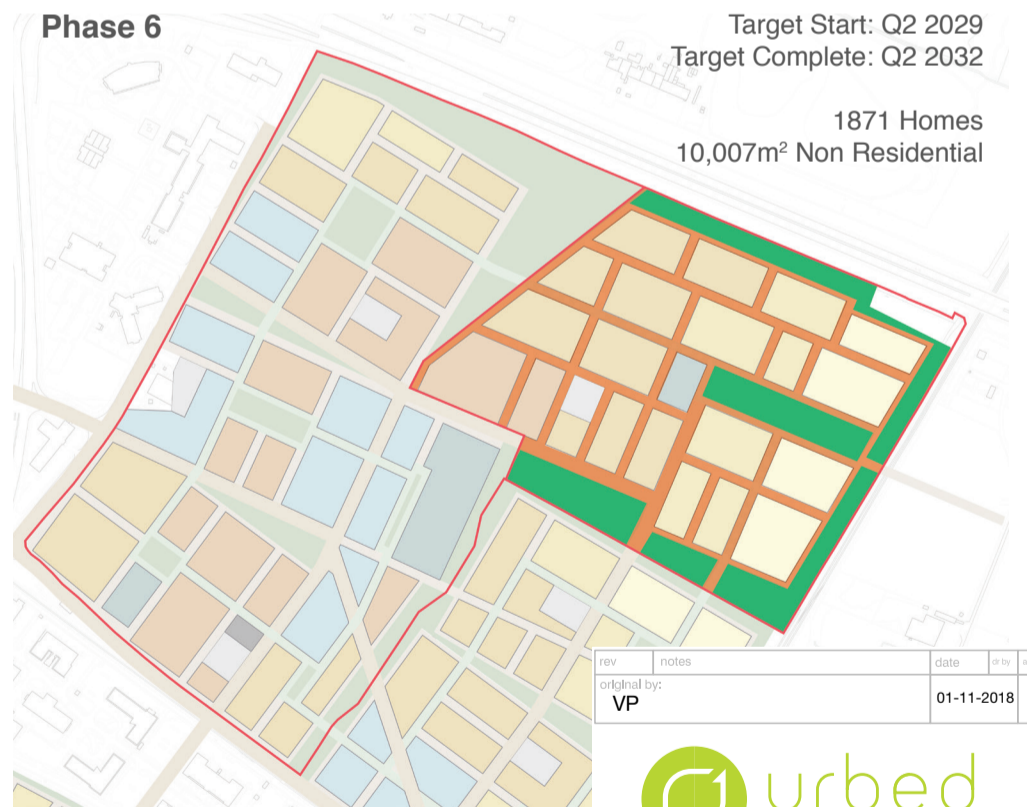
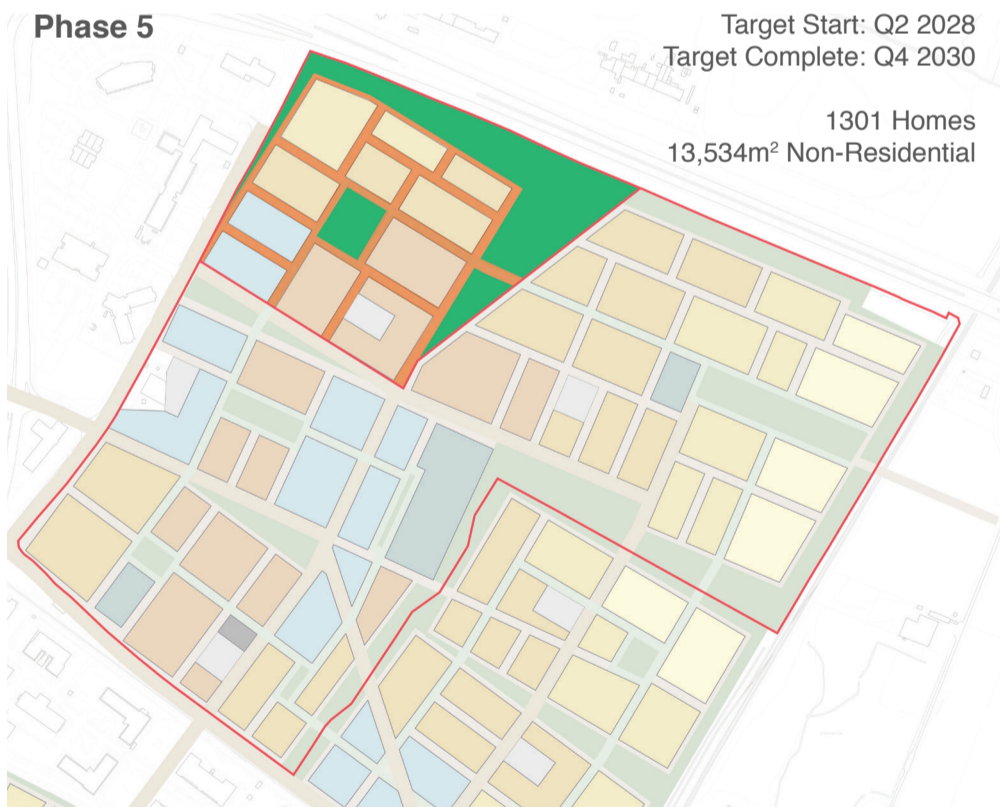
rev	notes	date	by	app'd
original by:	VP	01-11-2018		



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Drawing Title: Site Preparation Phasing	
Project Name: Cambridge Northern Fringe East (CNFE)	
Client: TOWN/ U+I	
Project Number: 1082	Issue Status: For Information
Drawing Number: 1081-URB-Z0-00-DR-U-Site Prep	Rev: A
Scale: NTS	Date: 01-11-2018

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**Strategic Infrastructure Phasing
(Packages 4-6)**

- Green Space
- Highways

rev	notes	date	by	app
original by:		01-11-2018		
VP				



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Drawing Title: Strategic Infrastructure Phasing	
Project Name: Cambridge Northern Fringe East (CNFE)	
Client: TOWN/ U+I	
Project Number: 1082	Issue Status: For Information
Drawing Number: 1081-URB-Z0-00-DR-U-Infra_Phasing	Rev: A
Scale: NTS	Date: 01-11-2018

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Cambridge Northern Fringe Development

McGee Group has undertaken review of demolition and site remediation requirements for the Cambridge Northern Fringe Development. We believe the programme for the works is achievable, the contamination testing to date appears to show fairly low levels of contamination but insufficient testing has been carried out to confirm that this is reflective of the whole site.

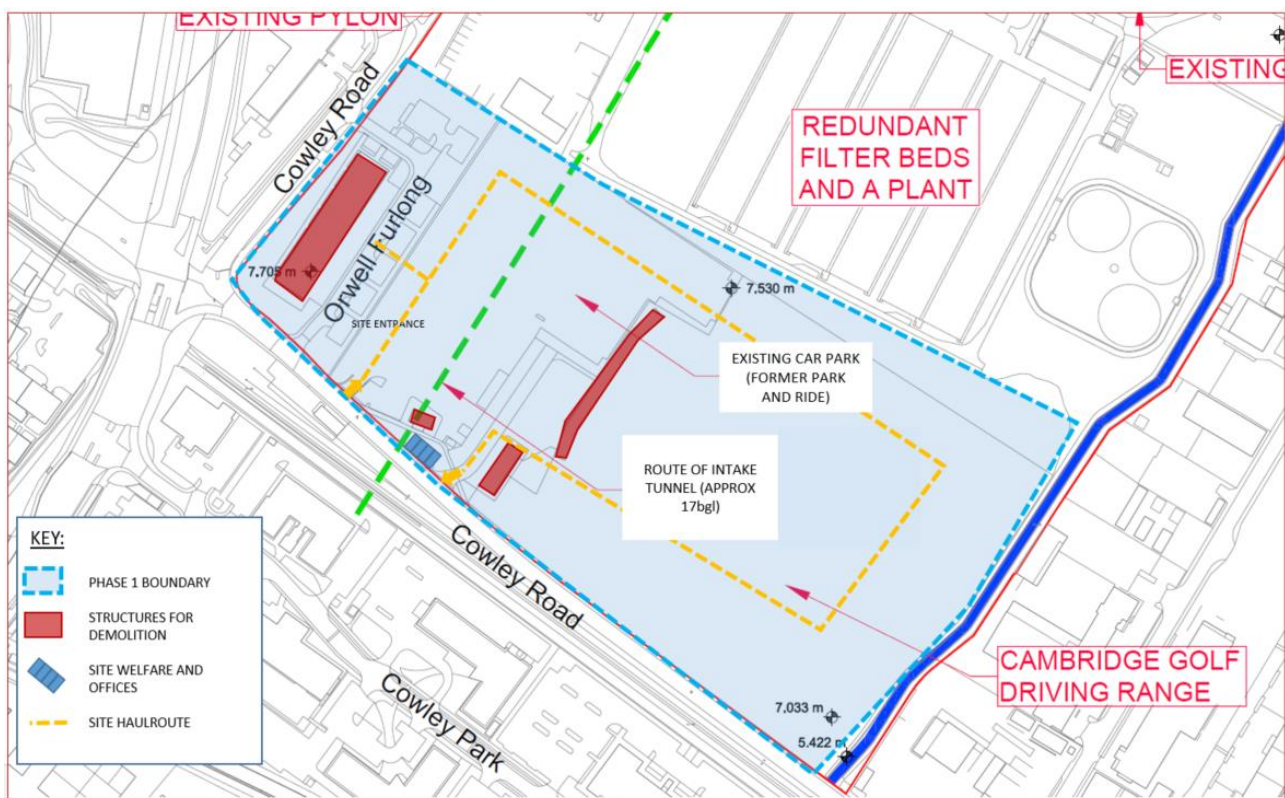
Logistics

The proposed logistics plans for each phase of works are identified below, further work needs to be carried out to coordinate with the planned build out sequence.

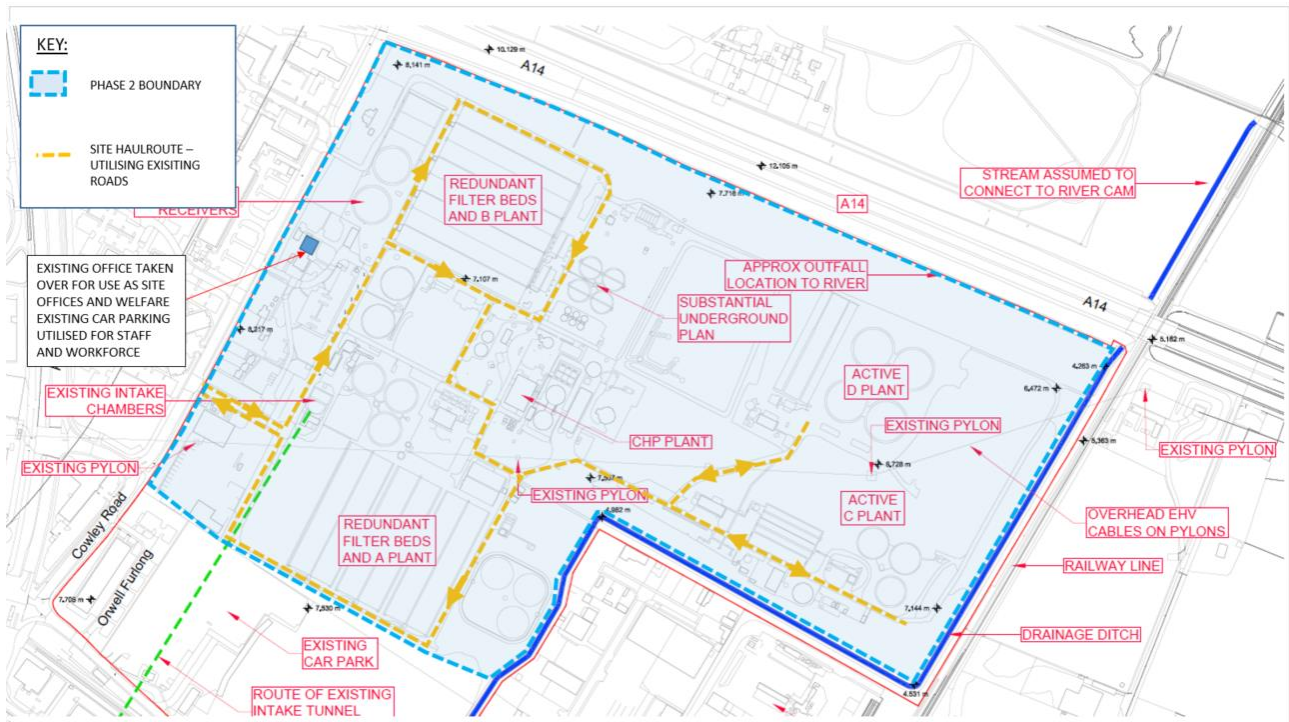
Phase 1

An outline plan has been developed to demonstrate the logistic requirements for the phase 1 works. The first activity will be to secure the site, erect site offices and welfare facilities and establish haul routes within the site.

Existing accesses from Cowley Road will be used as the main access and exit points to the phase 1 site. The proposed layout of site haul roads is shown below, existing hardstanding will be used where possible.



Phase 2



Programme

Phase 1

The programme allowance for demolition and site remediation is [REDACTED] ([REDACTED] months). Based on the information we have reviewed there are no concerns with this duration.

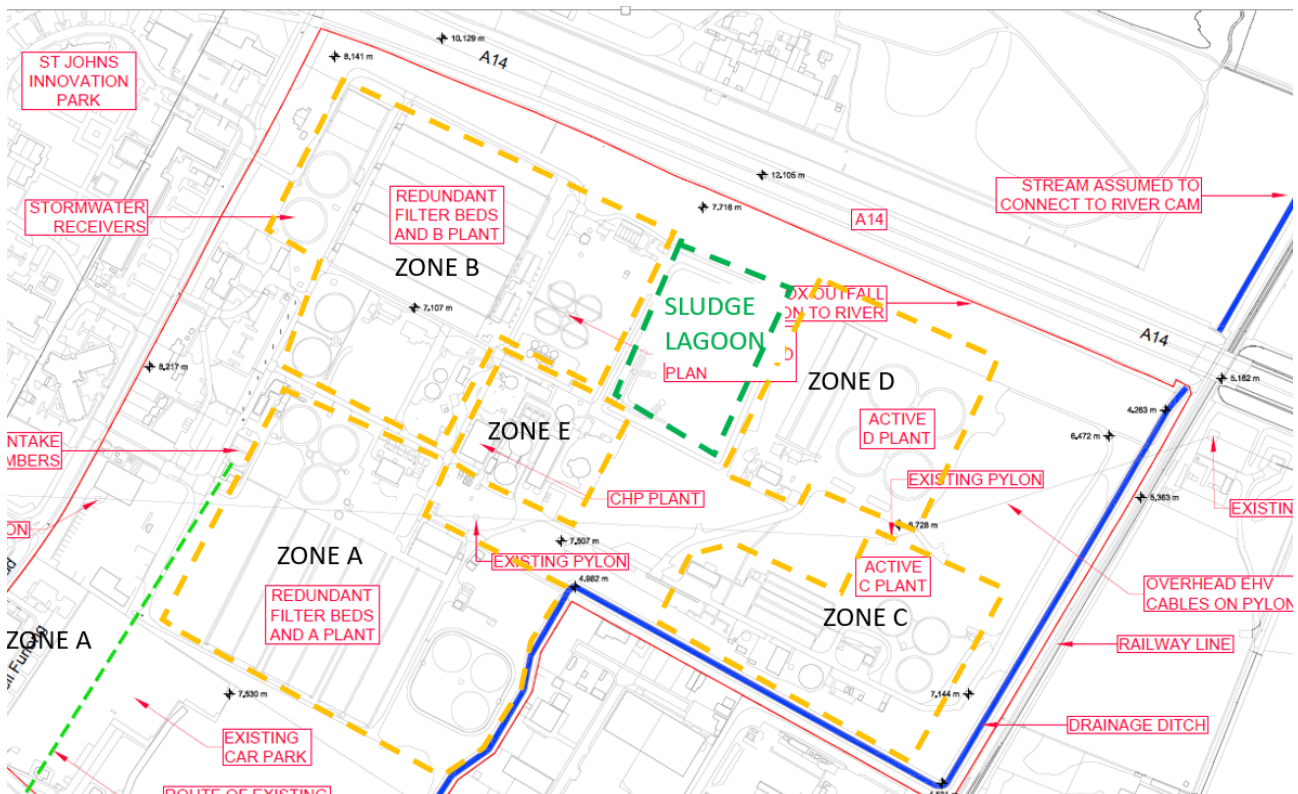
The outline durations for each activity are as follows

- Site establishment; [REDACTED]
- Demolition
 - o Orwell House soft strip – [REDACTED]
 - o Demolition Orwell House – [REDACTED]
- Top Soil Strip (stockpile on site) – [REDACTED]
- Car park removal – [REDACTED]
- Import capping to full footprint of site (600mm deep) – 30 weeks of import which can be commence early in the programme to ensure sufficient supply.
- Site remediation (Subject to ground investigation).

Phase 2

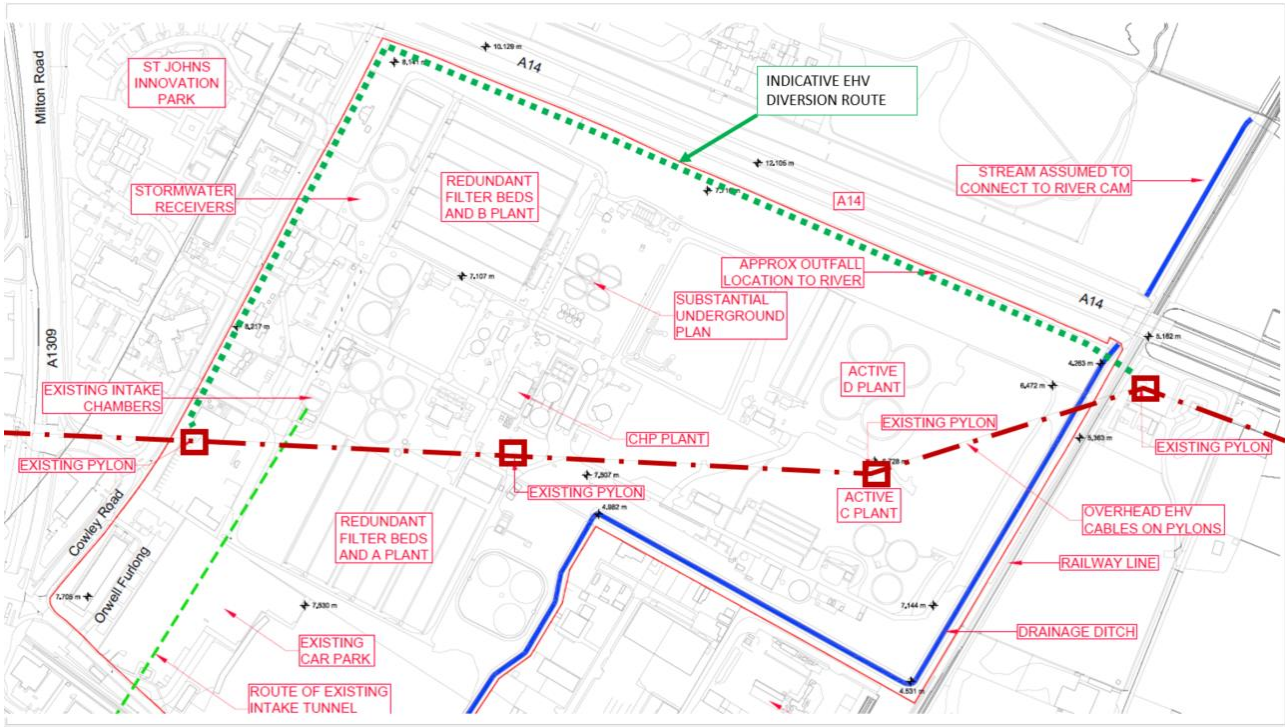
The advised programme for demolition and site remediation is [REDACTED]. There is a significant amount of work to be carried out in a relatively short period of time, and there is a degree of uncertainty regarding the scope (based on the information provided to date). However, the layout of the site will allow multiple work fronts to be opened up and to run concurrently. The demolition will form a large part of the programme duration, with the remediation duration subject to contamination encountered.

The key demolition work fronts are shown below, in order to meet the programme each area would need to be worked on concurrently. It is noted that a number of the structures are redundant, if there is any opportunity to commence demolition works on redundant structures in advance of the proposed start date the programme would be significantly de-risked.



Overhead Cable Diversion

Overhead EHV cables cross the phase 2 site with two pylons located within the site boundary. It is understood that these lines are to be undergrounded on the Northern and Western boundary of the site. It appears that the cable route will require tree removal on the northern boundary to maximize development footprint. It is thought that the cable diversion be direct buried cable for the most part with ducting only installed at road crossings.



A number of constraints are likely to affect the timing of this diversion

- Nesting birds season will affect tree clearance to the northern boundary
- The cable diversion will likely need to be carried out during the summer months when power demand is reduced
- The site remediation will need to be complete within the service corridor
- Ducting will need to be installed at road crossings
- Directional drilling or similar will need to be carried out to provide a crossing under the railway line and stream to the east side of the site. The approvals process for this is likely to be significant

The diversion can be significantly de-risked by undertaking the enabling works early, there is no apparent reason why the vegetation clearance, ground remediation, duct crossings and railway crossing cannot be carried out during the phase1 works or earlier.

Site Remediation

The Mott MacDonald 'Geo-environmental Preliminary Risk Assessment' has been reviewed to understand the extent of testing undertaken and the extent and type of contamination encountered to date. The report summarises previous site investigations carried out over a number of years, only 27No samples have been tested across the site and none in the driving range.

Previous Investigation Results

The soil contamination identified is detailed in table 3 below extracted from the document. The majority of contamination is within the made ground, the majority is heavy metal exceedances with some hydrocarbons.

Table 3: Summary of main soil exceedances above residential assessment criteria

Contaminant	Made ground exceedances	River Terrace Deposit exceedances	Maximum recorded value (mg/kg)	Assessment criteria value (mg/kg)	Assessment criteria source
Cadmium	6 out of 27	0 out of 8	180	85	S4UL
Chromium	1 out of 27	0 out of 8	1014	910	S4UL
Lead	11 out of 27	1 out of 8	658	310	Category 4 Screening Levels for 6% SOM
Cyanide (free)	1 out of 4	-	20	12	Calculated from Environment Agency CLEA Model
Benz(a)anthracene	1 out of 27	0 out of 8	22.2	11	S4UL
Benzo(b)fluoranthene	1 out of 27	0 out of 8	15.6	3.9	S4UL
Benzo(a)pyrene	1 out of 27	0 out of 8	19.2	3.2	S4UL
Dibenz(ah)anthracene	1 out of 27	0 out of 8	2.9	0.31	S4UL

Source: (@one Alliance, 2014)



Above: Locations where **soil contamination** has been identified in previous site investigations

Table 4: Summary of exceedances of assessment criteria from leachate

Contaminant	Made ground exceedances	River Terrace Deposit exceedances	Maximum recorded value	EQS	DWS
Cadmium (µg/l)	6 out of 12	3 out of 7	25.4	0.25	5
Copper (µg/l)	2 out of 12	0 out of 7	160	112	2000
Nickel (µg/l)	3 out of 12	0 out of 7	82	20	20
PAH (total) (µg/l)	11 out of 12	6 out of 7	5.3	-	0.1

Source: (@one Alliance , 2014)



Above: Locations where **soil leachate** contamination has been identified in previous site investigations

Table 5: Summary of exceedances of assessment criteria from groundwater

Contaminant	No. of EQS exceedances	No of DWS exceedances	No. of MDL exceedances	Maximum recorded value	EQS	DWS	MDL
Arsenic** (µg/l)	0 out of 16	3 out of 16	4 out of 16	30.8	50	10	5
Chromium** (µg/l)	-	-	4 out of 16	51.8	-	-	5
Lead** (µg/l)	5 out of 16	5 out of 16	5 out of 16	175.3	7.2	10	10
Nickel (µg/l)	5 out of 16	5 out of 16	-	79	20	20	-
Ammonia as N (mg/l)	6 out of 16	8 out of 16	-	5.1	0.78	0.5	-
Nitrate as N (mg/l)	-	3 out of 11	-	110	-	11.3	-
Naphthalene (µg/l)	1 out of 16	-	-	7.5	2.4	-	-
Anthracene** (µg/l)	1 out of 16	-	6 out of 16	1.7	0.1	-	0.01
Fluoranthene** (µg/l)	4 out of 16	-	11 out of 16	21	0.1	-	0.01
Benzo(a)pyrene** (µg/l)	2 out of 16	4 out of 16	4 out of 16	0.17	0.05	0.01	0.01
Benzo(b)fluoranthene** (µg/l)	4 out of 16	1 out of 16	4 out of 16	1.3	0.015	0.2	0.01
Benzo(k)fluoranthene** (µg/l)	0 out of 16	0 out of 16	3 out of 16	0.13	-	-	0.01
Benzo(ghi)perylene** (µg/l)	4 out of 16	-	4 out of 16	0.15	0.001	-	0.01
Ideno(123cd)pyrene** (µg/l)	-	-	4 out of 16	0.14	-	-	0.01
PAH (total)** (µg/l)	-	11 out of 16	-	130	-	0.1	-
TPH** by GC (>C6 - C40) (µg/l)	-	2 out of 11	-	74000	-	10*	-

Source: (@one Alliance, 2014) Note: Groundwater samples do not represent any single strata. *value now revoked.
**Hazardous.



Above: Locations where **groundwater contamination** has been identified in previous site investigations

Remediation

The requirement to remove contamination depends on the end use and the depth to contamination. There should be no reason to remove contamination at depth unless that is a risk to the aquifer.

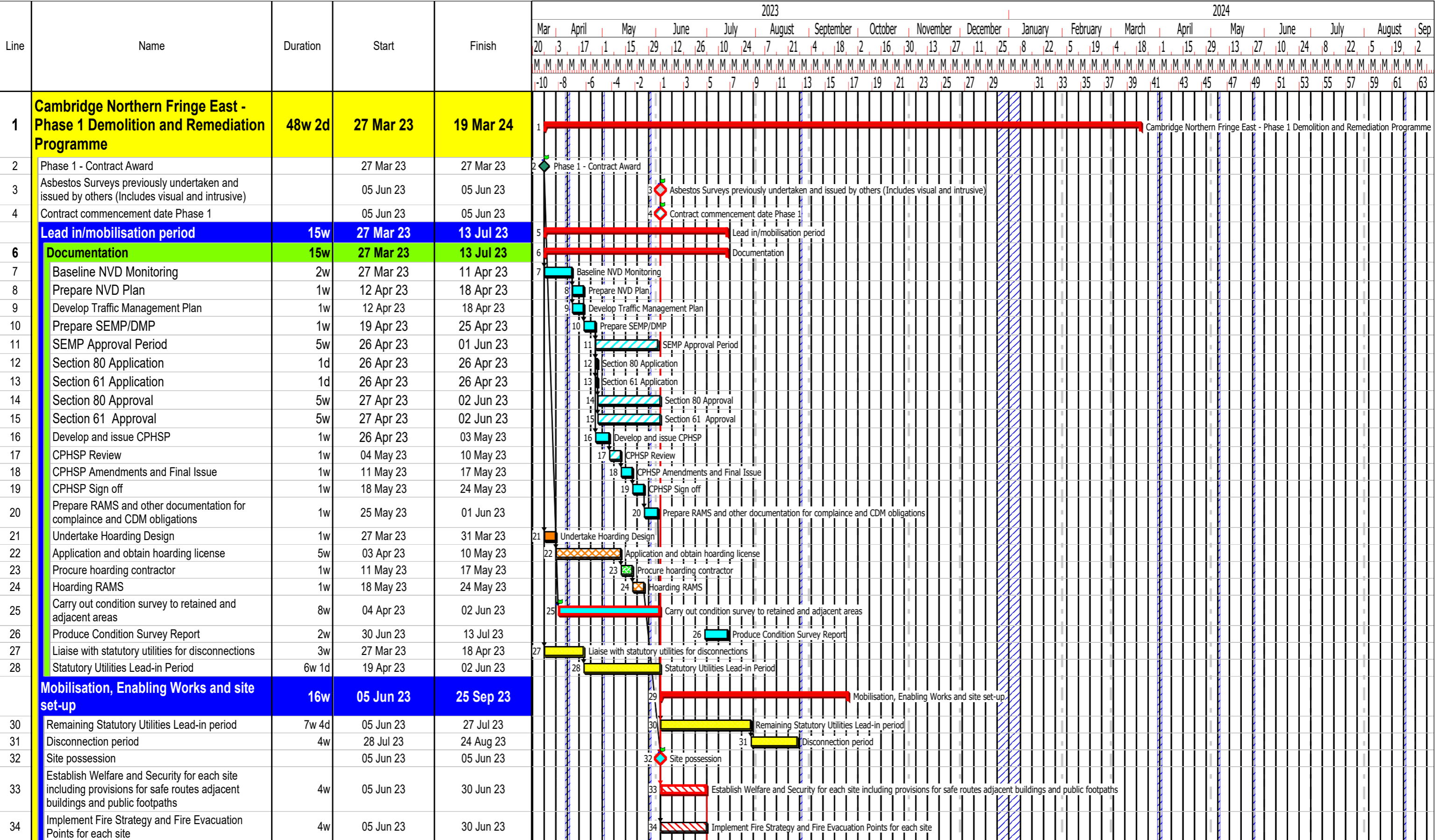
Heavy Metals – Heavy metals can be detected on site with hand held instrumentation, as such the extent is relatively easy to define. It is most likely that contaminated materials will be removed from site. If significant quantiles are identified there are some on site treatment techniques that could be considered.

Hydrocarbons – As above, hydrocarbons can be identified by site testing. There were relatively few instances hydrocarbon contamination. Dependant on the level of contamination the material could be treated on site by aerating stockpiled material.

Biological Contamination – There may be areas which have been contaminated with sewage in particular the overflow pond. Any biological contamination would be treated with an on-site soil hospital where chemicals are added to the soil to accelerate the breakdown of biological contaminants and the stockpile regular turned over to promote treatment.

Principal Risks

Risk	Comment
EHV Diversion	The diversion will only be carried out during the summer period. If a window is missed it is likely to cause a 9month delay. Approval for and installation of a crossing beneath the railway should be prioritised and carried out as early as possible.
Capping Material Availability	If 600mm is applied to the whole site sourcing in required time frame may be problematic. Consider re-use over the site as development is built out
Contamination	Site contamination does not appear to be wide spread on site based on testing to date. The limited nature of site investigation however is a significant risk. At present there is one sample per 1.5ha and the testing to date may not be representation of the whole site. We would recommend additional trial holes are carried out and samples tested within the made ground in addition to the testing proposed.
Plant Availability	Significant amount of plant likely to be needed for demolition
Asbestos	Cost associate with disposal and potential for programme delay to undertake controlled removal and disposal.
Statutory Utilities	Disconnection of utilities Identification of utilities



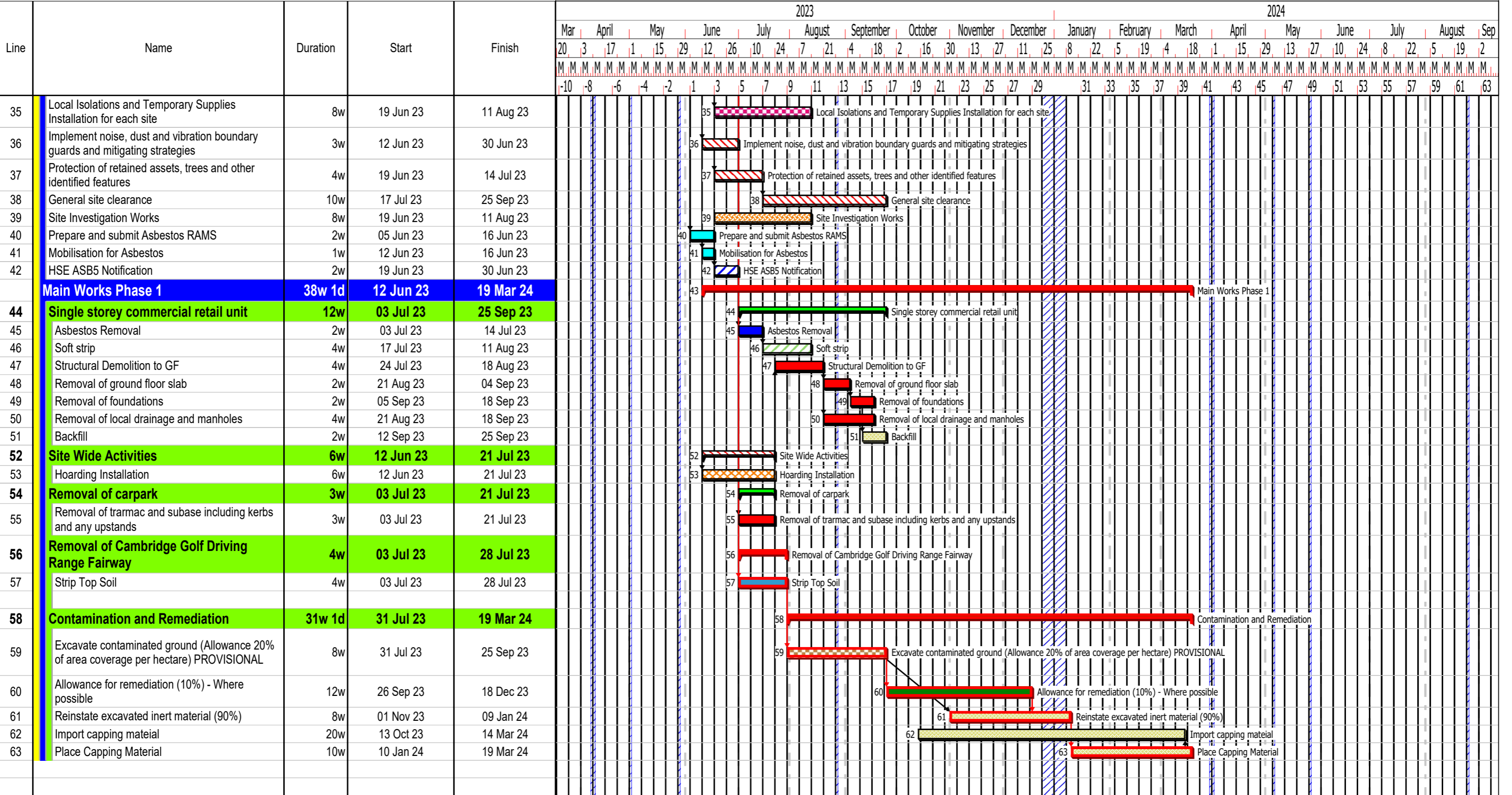
Issue Date: 16/11/2018
Print Date: 19/11/2018

Drawn By: [Redacted]

COMMENTS:

INDICATIVE PROGRAMME

Programme Number: CNFE/DB/Prog/Demolition/T1
Revision: T1
Revision Date: 16/11/2018



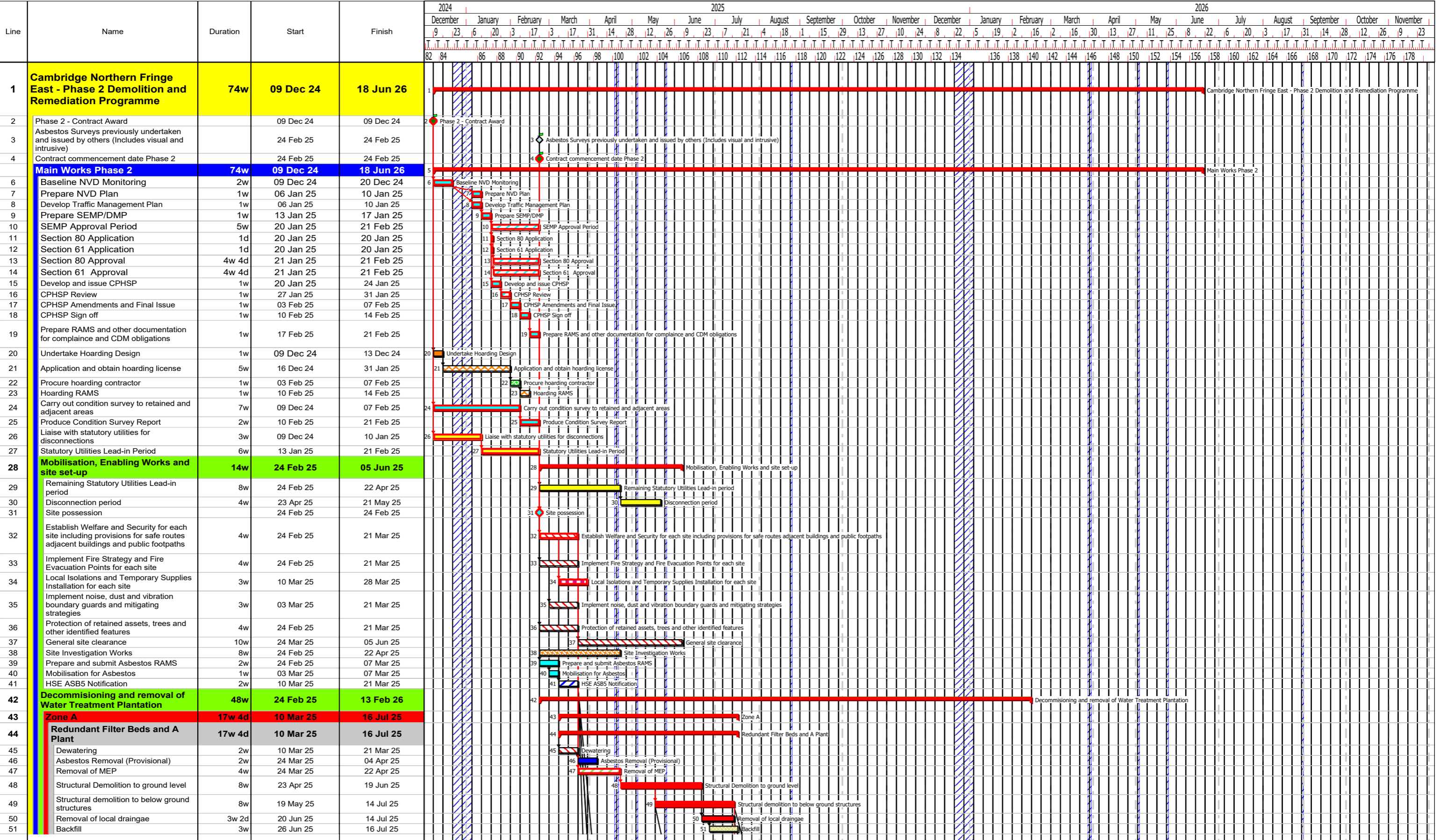
MGL Category

by Others	Approval	Preliminaries	Temporary Works	Hoarding	Procurement	Enabling Works	Temporary services	Investigation / Opening Up
Hazardous Material Approval	Hazardous Material Removal	Strip Out	Demolition	Backfill	Excavation works	PDR Survey	Groundworks	Default
UKPN								

Issue Date: 16/11/2018
Print Date: 19/11/2018
Drawn By: [REDACTED]

COMMENTS: INDICATIVE PROGRAMME

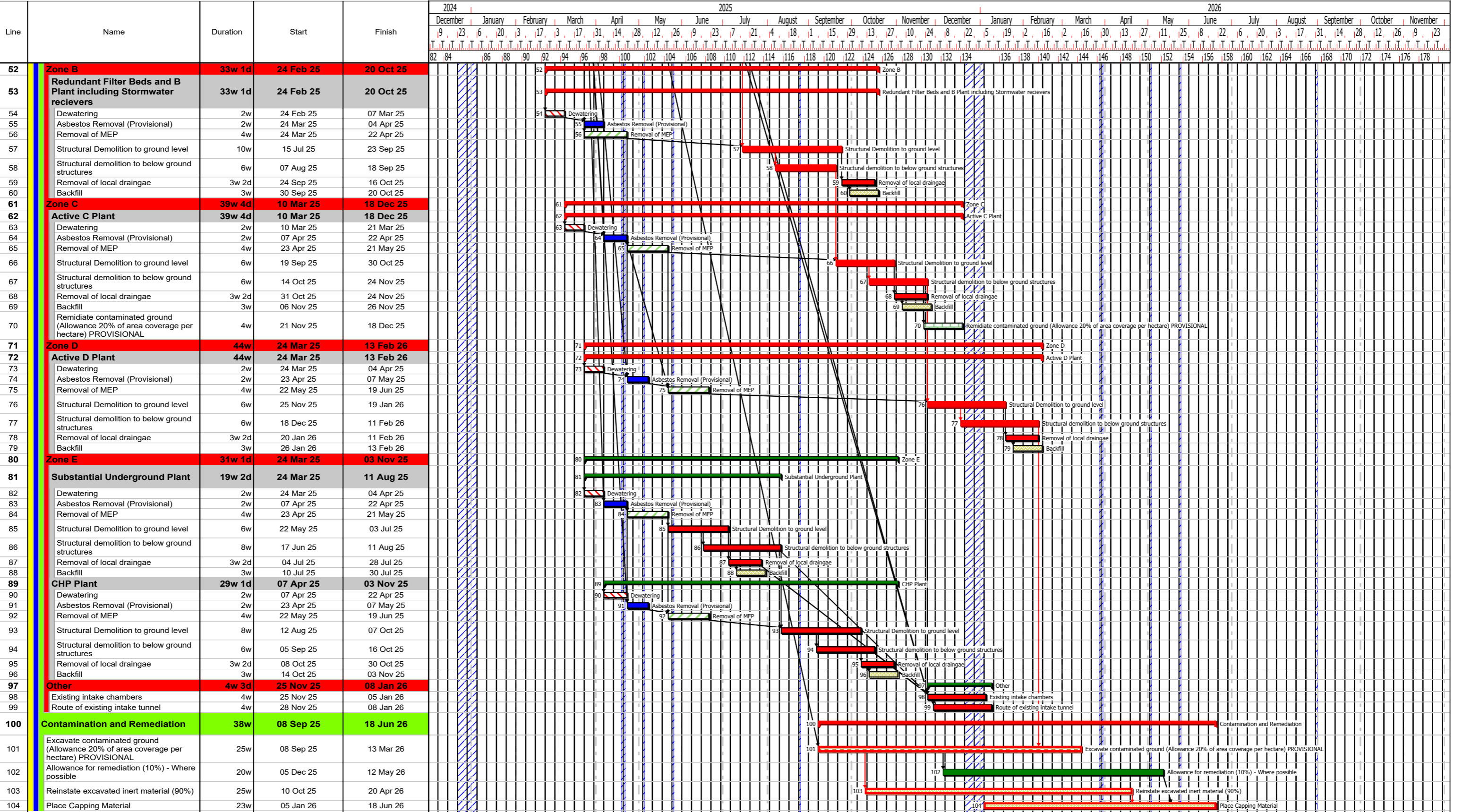
Programme Number: CNFE/DB/Prog/Demolition/T1
Revision: T1
Revision Date: 16/11/2018



Issue Date: 16/11/2018
Print Date: 19/11/2018
Drawn By: [Redacted]

COMMENTS: OUTLINE PROGRAMME

Programme Number: CNFE/P2/DB/Prog/Demolition/T2
Revision: T2
Revision Date: 16/11/2018



Preliminaries	Approval	Temporary Works	Hoarding	Procurement	Enabling Works	Temporary services	Investigation / Opening Up	Hazardous Material Approval	Hazardous Material Removal
Strip Out	Demolition	Backfill	Remediation	Excavation works	PDR Survey	Default	UKPN		

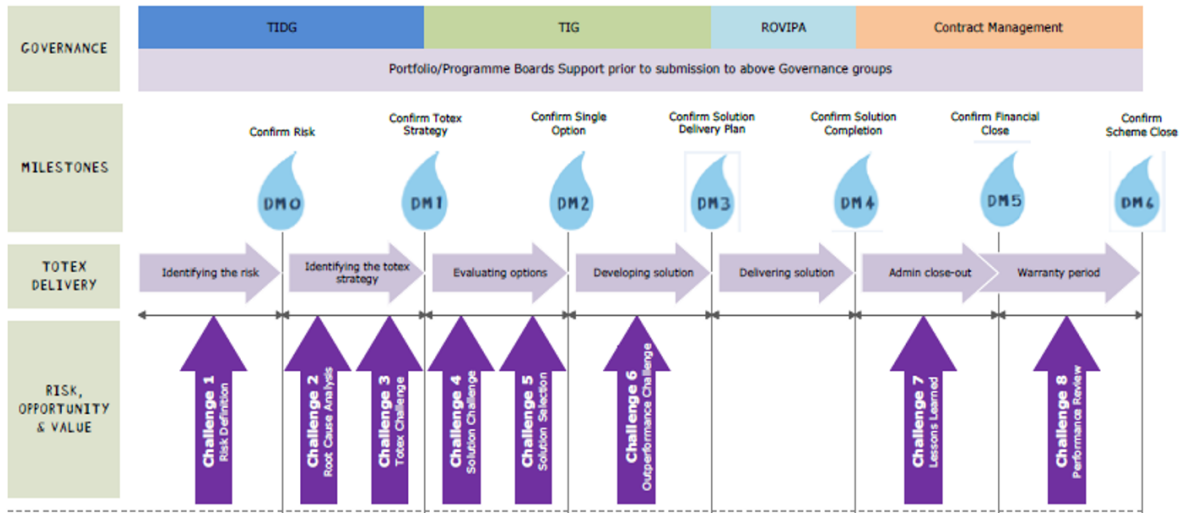
Issue Date: 16/11/2018
Print Date: 19/11/2018
Drawn By: [Redacted]

COMMENTS: OUTLINE PROGRAMME

Programme Number: CNFE/P2/DB/Prog/Demolition/T2
Revision: T2
Revision Date: 16/11/2018

Anglian Water Governance Structure

AMP6 STANDALONE GOVERNANCE FRAMEWORK & DELIVERABLES



Dependencies

7.1 Project Dependencies

7.7.1 Please outline any project dependencies.

Dependencies for delivery of the CWRC

Critical dependencies with our direct control

Dependency	Outline Plan
Supply chain engagement	To use their framework partner @One Alliance and its supply chain to deliver the project within overarching programme governance.

Critical dependencies outside our direct control

Dependency	Outline Plan
Secure HIF grant	Submit a compelling business case.
Confirm automatic status of CWRC relocation as an NSIP	Submit a compelling case to PINS.
Secure NSIP status for the project through Section 35 should the need arise	Submit a credible application to the Secretary of State.
DCO confirmation	Submit a high quality DCO application.
Planning permission/CPO route (if automatic NSIP status is not confirmed or Section 35 not approved)	Submit a robust planning application and justification for the CPO.

Dependencies for delivery of the housing masterplan

Critical dependencies within our control

Dependency	Outline Plan
Vacant Possession	<p>The Council and Anglian Water will provide access to U+I to undertake intrusive site investigations to inform the remediation strategy and the development of the Environmental Impact Assessment. Early access for intrusive investigations will be agreed in advance of vacant possession. The vacant possession dates are as follows:</p> <p>The core site will be released for re-development in 3 parts:</p> <ol style="list-style-type: none"> a. Phased vacant possession of Cambridge City Council land will commence from [REDACTED] b. 10% of Anglian Water land can be released [REDACTED] months ahead of completion of decommissioning period in Q1 - 2024

	c. 90% balance of Anglian Water in Q2 – 2025
Environmental Impact Assessment	The Council will work with U+I to screen the requirements for an EIA with the local planning authority, Cambridge City Council. U+I will make an EIA screening request at an early stage in the project to inform project strategy and programme. It is expected that the local planning authority will confirm a positive screening opinion and that an EIA will be required. The scope of the EIA will be agreed early and all project timeline implications including required geotechnical investigations, ecological surveys, technical studies, Environmental Statement (ES) preparation, and the planning determination period, are currently allowed for in the target programme. The EIA activities across the CNFE core site are currently scheduled to take place between EIA scoping in Q4 2019 through to planning application with EIA in Q2 2021.
Decommissioning of the Anglian Water's existing water recycling centre	Major land owner Anglian Water will commence the decommissioning of their existing water recycling centre in Q2 2024 following completion of their relocation to a new site. The decommissioning period will take ■ months during which the Master Developer will have access to undertake elements of site preparation. Vacant possession of the remainder of Anglian Water's site will take place in Q2 2025.
Delivery of strategic infrastructure	All strategic infrastructure outside of the development plots (site preparation and remediation, primary roads, utility distribution, highway junction improvements, green infrastructure and public realm) will be delivered in phases reflecting the site vacant possession dates. The completion of this strategic infrastructure will be aligned with the subsequent development of the housing plots.
Procurement of neighbourhood plot developers	A delivery and marketing strategy will be agreed so that each land parcel is brought to market at the optimum time with an emphasis on placemaking and speed of delivery. This will be aligned with planning obligations, infrastructure delivery, and market conditions at the time.

Critical dependencies outside our direct control

Dependency	Outline Plan
Alignment with the evolving Area Action Plan (AAP) for the wider CNFE area	The Greater Cambridge Planning Services team are working closely with U+I and keeping them informed of AAP development. The hybrid planning application will (within reason) reflect the evolving AAP but the direction of the AAP is outside the control of the Council (and JV) as landowners.
Hybrid planning consent	U+I are appointed to prepare a hybrid planning application for the CNFE core site (sites 1A and 1B). The hybrid application will seek consent for outline planning on the housing and mixed-use development plots while seeking detailed planning consent for all strategic infrastructure to enable the development plots. The hybrid application is planned for submission in Q2 2021 with determination including allowance for the risk of a judicial review in Q4 2021. This period and decision is subject to Greater Cambridge Planning Services and other planning stakeholder and outside the control of the land owners.
Diversion of the overhead HV power cables	We will aim to procure UK Power Networks to divert the existing overhead 132KV power cables as soon as possible in the site preparation stage. The earliest this work can commence will be during the decommission period of the existing CWRC by Anglian Water which is planned for 2024. This is subject to negotiations with UKPN and Anglian Water and is outside the control of the land owners.

Governance in the Authority

7.2.3 Please attach an organogram depicting the governance structure and/or roles and responsibilities within the authority.

Cambridge City Council is committed to upholding the highest possible standards of good corporate governance, believing that good governance leads to high standards of management, strong performance, effective use of resources, increased public involvement and trust in the Council and ultimately good outcomes.

The core governance principles of the council are:-

- A. Behaving with integrity, demonstrating strong commitment to ethical values, and respecting the rule of law.
- B. Ensuring openness and comprehensive stakeholder engagement.
- C. Defining outcomes in terms of sustainable economic, social, and environmental benefits.
- D. Determining the interventions necessary to optimize the achievement of the intended outcomes.
- E. Developing the entity's capacity, including the capability of its leadership and the individuals within it.
- F. Managing risks and performance through robust internal control and strong public financial management.
- G. Implementing good practices in transparency, reporting, and audit, to deliver effective accountability.

The Council first adopted a Code of Corporate Governance in 2002. It has been reviewed annually since then.

Our statement of governance is attached in Appendix titled Cambridge City Council Local Code of Governance.

The council is governed by the [Constitution](#), which sets out rules determining how it functions and makes decisions.

Executive Councillors

The executive comprises the leader of the council and six executive councillors. The executive councillors make decisions relating to the major service areas.

These councillors can make decisions individually, usually at a meeting of a scrutiny committee relevant to their executive area. They also meet collectively to determine the council's budget and medium term financial strategy.

Councillor Herbert is the current Leader of the Council and also the executive Councillor for Strategy and External Partnerships, and represents the Council on the Combined Authority Board and the Greater Cambridge Partnership Board. He is the Lead Councillor for the CNFE project.

Decisions by [executive councillors](#) are subject to scrutiny by a different group of councillors, who meet in [scrutiny committees](#) to check and monitor what the executive does.

Cambridge City Council has the following four scrutiny committees, which meet four times per year.

- [Environment and Community Scrutiny Committee](#)
- [Housing Scrutiny Committee](#)
- [Planning and Transport Scrutiny Committee](#)
- [Strategy and Resources Scrutiny Committee](#)

By law, some decisions and functions cannot be exercised by the Executive. These are usually referred to as regulatory decisions.

The council has allocated responsibility for regulatory decisions between the following committees and subcommittees.

- [Civic Affairs](#)
- [Employment \(Senior Officer\) Committee](#)
- [Employment Appeals](#)
- [Licensing Committee](#)
- [Licensing Sub Committee](#)
- [Planning](#)

Roles and Responsibilities

The Council employ around 800 staff who work to provide local services.

Council staff work in one of three areas, each of which consists of a number of services and sections. A Corporate Strategy service sits outside of the main structure.

Staff are led by a team that includes:

- [Antoinette Jackson, Chief Executive](#)
- Fiona Bryant, Strategic Director
- Suzanne Hemingway, Strategic Director
- Stephen Kelly, Joint Director of Planning and Economic Development (shared with South Cambridgeshire District Council)

The Chief Executive, Directors, Head of Corporate Strategy and the Head of Finance (section 151 officer) meet monthly with the Executive to as outlined in the corporate plan.

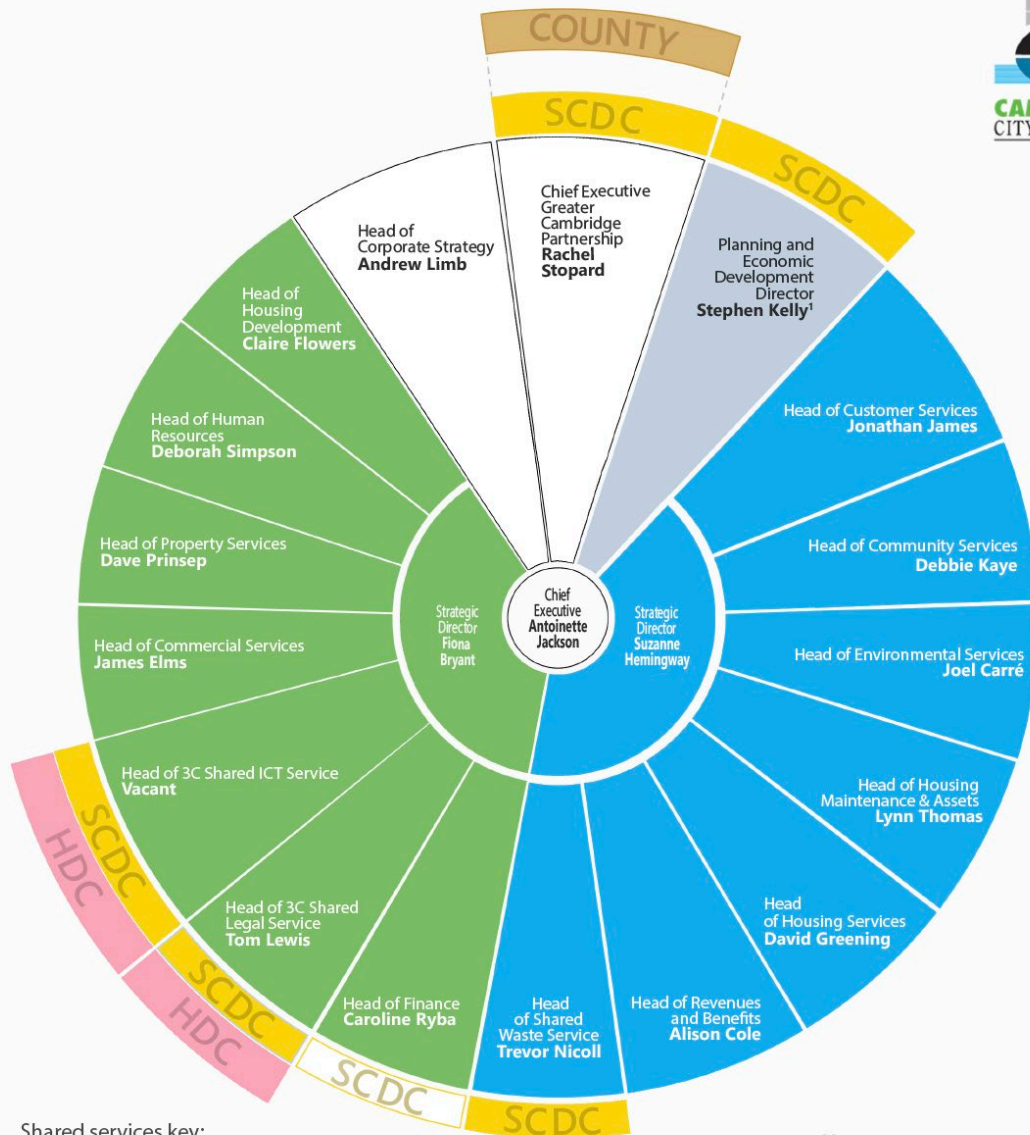
They also meet every two weeks as the Senior Leadership team (SLT) to oversee manage and monitor delivery of Council Services and performance in line with policy. The Senior Management Team meets monthly with the Senior Leadership team to ensure that services, performance and risks are effectively managed and monitored.

Fiona Bryant, the SRO for the CNFE core site project, has responsibility for leading corporate services, including finance, internal audit, human resources and shared legal and ICT services. Fiona is the Council's Senior Information Risk Owner (SIRO). Fiona also leads on the Council's Business Transformation Programme, the Council's commercial services, our extensive commercial property portfolio, and the Housing Development Agency (New Housing Development)

Fiona is a professionally accredited (Prince 2, MSP and P3O) and award winning portfolio, programme and project director with more than 20 years experience in leading successful delivery of services and programmes across multiple organisations.

The structure chart for the Council is attached below.

Cambridge Council City's governance structure



Shared services key:






Cambridgeshire County Council	
Huntingdonshire District Council	
South Cambridgeshire District Council	Head of Service (only)

Notes:

1 Building Control shared with HDC and SCDC

Last updated 10.10.2018

Organisation	Role	Individual's time dedicated to CNFE
Principle Partners		
Cambridge City Council (Applicant and JV Partner) 	Strategic Director	20%
	Head of Property Services	20%
	Joint Director of Planning and Economic Development for CCC & SDCD	20%
	Director of Housing	10%
	Project Manager for Infrastructure and Growth	10%
	Head of Internal Audit	10%
	Head of Finance and Section 151 Officer	10%
Optimum Proper Consultancy 	Cambridge City Council's Programme Manager	75%
Eversheds EVERSHEDS SUTHERLAND	Legal Advisors	10%
Freeth's FREETHS	Legal Advisors	10%
Anglian Water  	Group Property Director - Will lead the Anglian Water team to relocate the CWRC.	75%
	Head of Policy & Regulatory Strategy.	20%
	Savills - Anglian Water's Project Advisor	20%
U+I (Master Developer) 	Master Developer – Lead Development Director	40%
	Master Developer – Lead Delivery Director	40%
	Master Developer – Supporting Development Manager	40%
	Master Developer's Head of Regeneration	5%
	Master Developer - Administrator	20%
CWRC Relocation		
Anglian Water 	Head of Supply Chain	50%
	Engineering expert	75%
	Water resources expert	75%
One Alliance (Anglian Water Framework) 	One Alliance Frameworks Supply Chain	N/A
CNFE Development		
TOWN (U+I's Delivery Partner) 	Lead Development Manager	40%
	Development Manager	40%
	Development Manager	60%
	Masterplan – Lead Project Manager	60%

Faithful+Gould (Project and Cost Management)  <small>Member of the SNC-Lavalin Group</small>	Masterplan - Project Manager	80%
	Masterplan - infrastructure Project Manager	40%
	Masterplan – Lead Cost Manager	40%
	Masterplan – Cost Manager	60%
	Masterplan – Infrastructure Cost Manager	40%
	Masterplan – Health and Safety / CDM Advisor	25%
URBED (Masterplan Overarching Design) 	Masterplan Designer Overall Lead	25%
	Urban design project lead	75%
	Master planner	25%
	Master planner	100%
Carter Jonas (Masterplan Town Planner) 	Town planner	40%
Pell Frischmann (Masterplan Civil Engineering and Transport Planning) 	Engineering Lead	10%
	Civil Engineering Lead	40%
	Geo-technical Lead	20%
	Transport Planning Lead	20%
	Transport Engineer	20%
Max Fordham (Masterplan Energy, Utilities and Sustainability Engineer) MAX FORDHAM	Utilities Lead	25%
	Energy Lead	25%
	Sustainability Lead	25%
	Sustainability Engineer	25%
Hatch Regeneris (Masterplan Economic Impact Advisor) 	Lead economic advisor	20%
	Economic advisor	20%

Housing delivery

7.3.3 Please provide details of your project delivery plan to deliver the homes unlocked by the infrastructure. Please detail any expected controls or levers you will put in place to ensure the delivery of housing on the sites.

On the core site, the planned housing will be delivered through 6 neighbourhoods as below:

Accommodation Mix (units)		Core Site Neighbourhoods						Total														
		1	2	3	4	5	6															
Apartments	1 bed																					
	2 bed																					
	3 bed																					
Total Apartments (Nr)																						
Houses	2 bed																					
	3 bed																					
	4 bed																					
Total Houses (Nr)																						
Overall Units (Nr)																						
Split																						

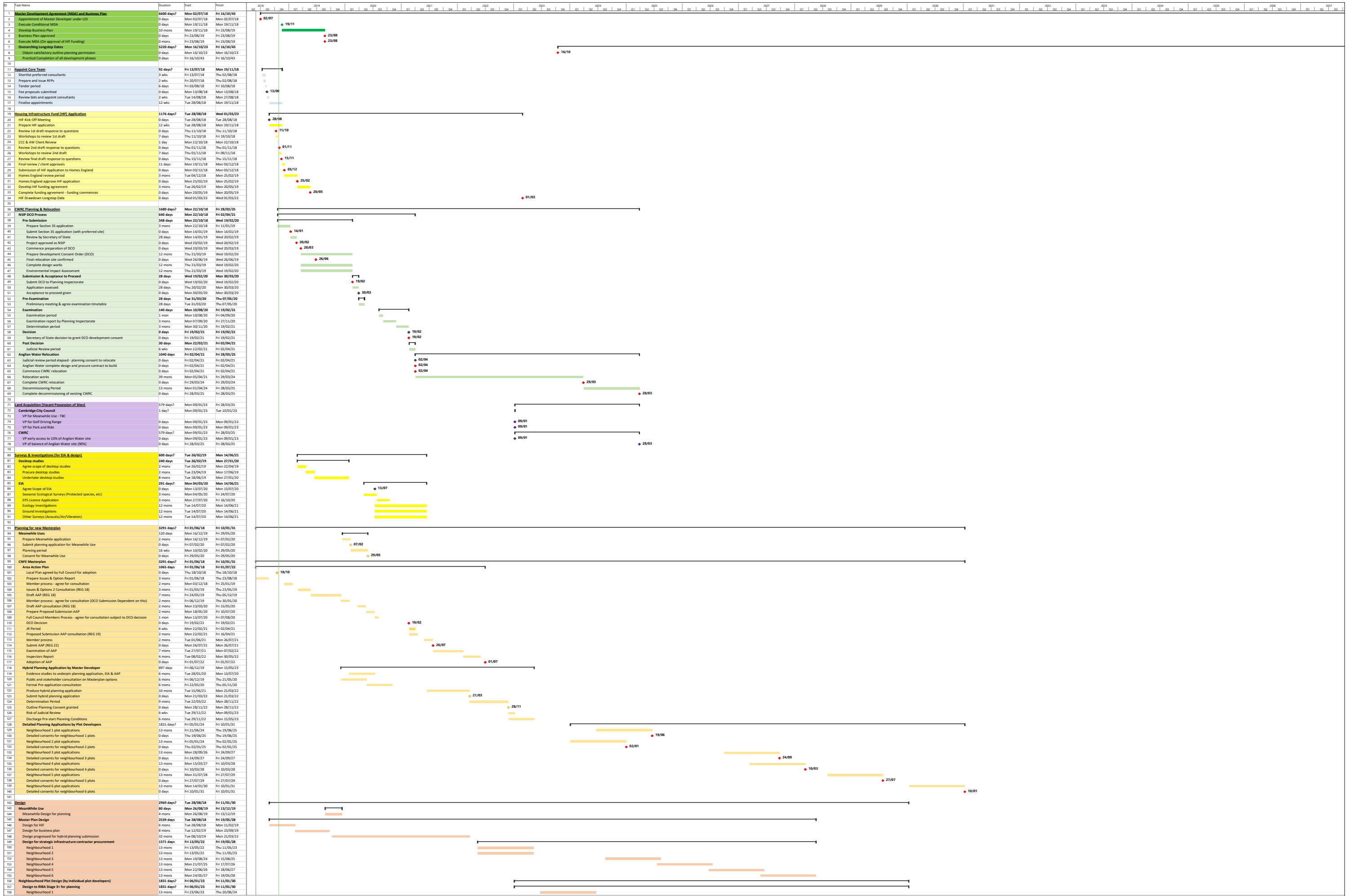
Development plot procurement strategy:

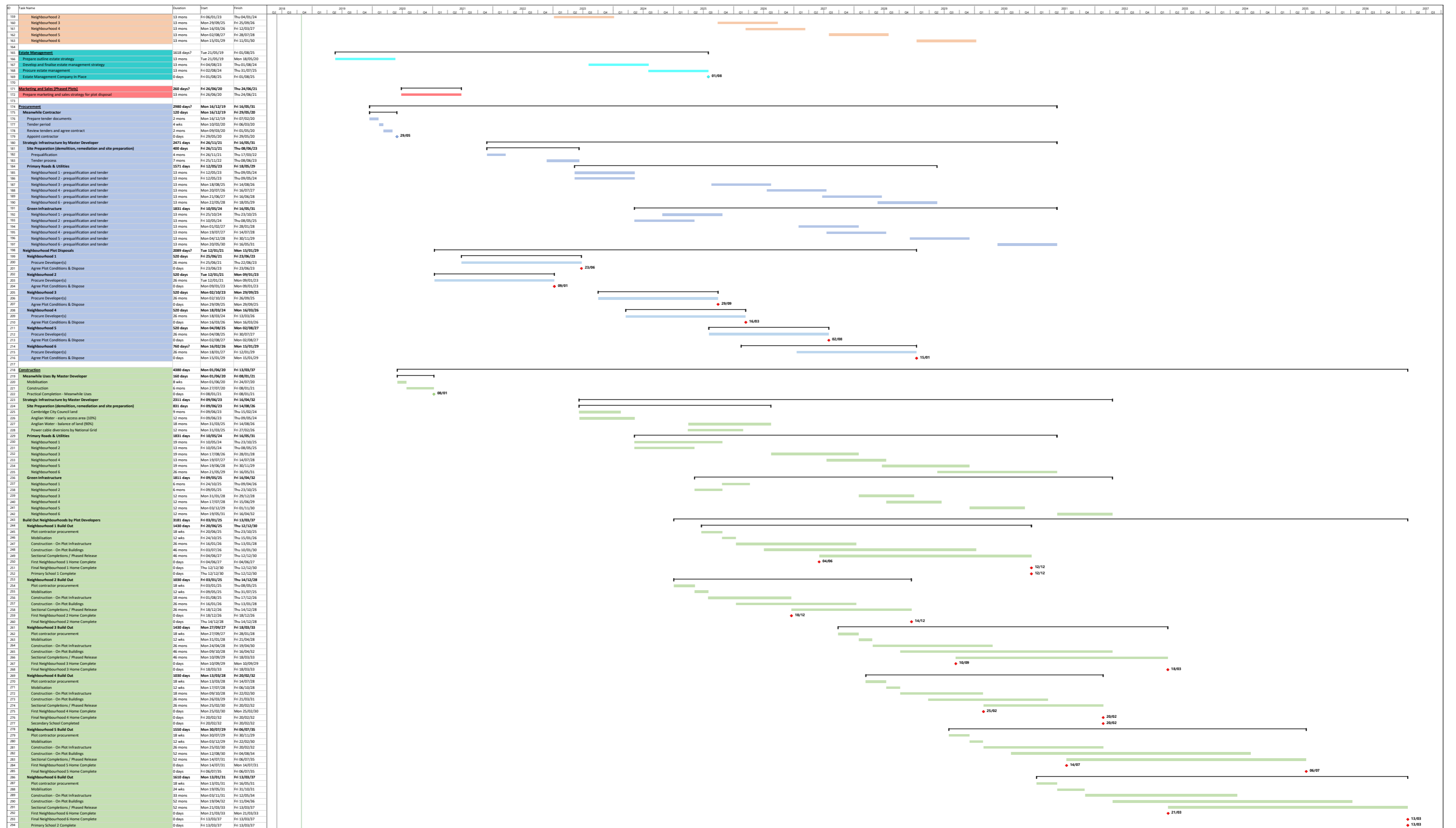
Package Suite Ref	Neighbourhood	Individual Plots	Brief Description / Scope of Works	Supply Chain Contractor(s) Procured by Master Developer (U+I)	Phasing
Development Package 1	Neighbourhood Development 1	N1 Plot A, N1 Plot B, N1 Plot C, etc	On-plot infrastructure (including secondary and tertiary roads) On-plot residential buildings On-plot commercial / retail buildings On-plot car barns On-plot external works	Specialist housebuilders / developers	Phased by Plot A, B, C, D, E etc in each of 6 neighbourhoods
Development Package 2	Neighbourhood Development 2	N2 Plot A, N2 Plot B, N2 Plot C, etc			
Development Package 3	Neighbourhood Development 3	N3 Plot A, N3 Plot B, N3 Plot C, etc			
Development Package 4	Neighbourhood Development 4	N4 Plot A, N4 Plot B, N4 Plot C, etc			

Development Package 5	Neighbourhood Development 5	N5 Plot A, N5 Plot B, N5 Plot C, etc			
Development Package 6	Neighbourhood Development 6	N6 Plot A, N6 Plot B, N6 Plot C, etc			

Phased access and sequence of infrastructure works:

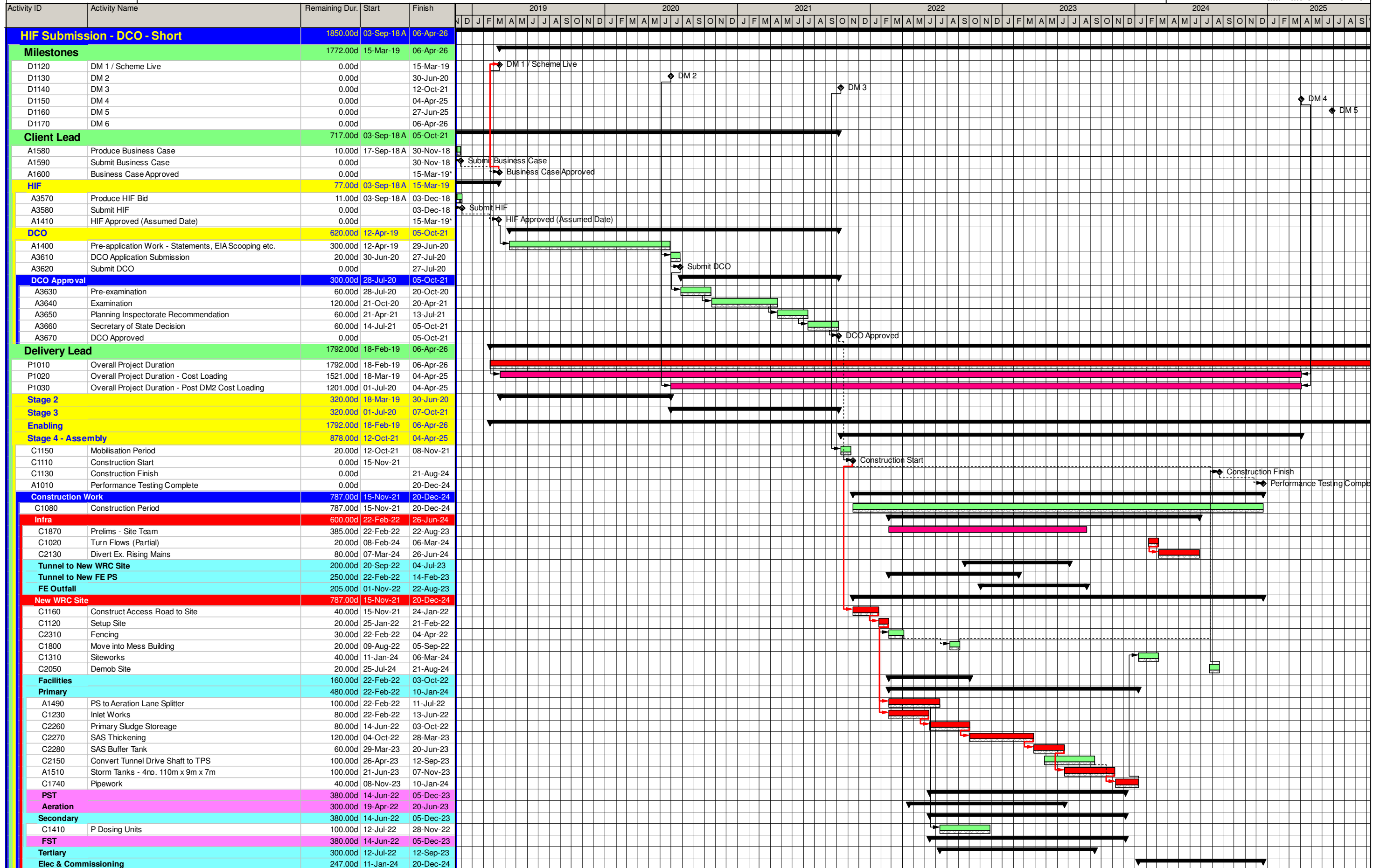
Land release	Land Owner	Definition of land	Approximate date for vacant possession by the Developer Partner	Neighbourhood Housing
Site Area 1	Cambridge City Council	100% of Site 1B as shown on the site plan.	██████████	Neighbourhoods 1 and 2
	Anglian Water	10% of Site 1A as shown on the site plan (an area immediately adjacent to the Site 1B).	██████████	Neighbourhoods 1 and 2
Site Area 2	Anglian Water	The remaining 90% of Site 1A as shown on the site plan.	██████████ - following completion of the relocation by Anglian Water and decommissioning of their existing water recycling facility on the site	Neighbourhoods 3, 4, 5 and 6





HIF Submission - DCO - Short - 17-Nov-18

Printed on 30-Nov-18 at
Data Date of 17-Nov-18



◆ Milestone ◆ Last Month MS Progress Activity Last Month
 ◆ LoE Critical Activity Summary

HIF Submission - DCO - Short - 17-Nov-18

Printed on 30-Nov-18 at
Data Date of 17-Nov-18

Activity ID	Activity Name	Remaining Dur.	Start	Finish	2019												2020												2021												2022												2023												2024												2025																																																																							
					N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D										
	Sludge Treatment Centre	420.00d	04-Jan-23	21-Aug-24																																																																																																																																																
	Plant	240.00d	04-Jan-23	05-Dec-23																																																																																																																																																
	Commissioning	180.00d	06-Dec-23	21-Aug-24																																																																																																																																																
	Close Out	67.00d	02-Jan-25	04-Apr-25																																																																																																																																																
	Decommissioning Milton WRC	340.00d	05-Aug-24	03-Dec-25																																																																																																																																																
	Phase 1 - A&B	100.00d	05-Aug-24	20-Dec-24																																																																																																																																																
	Phase 2 - C&D	240.00d	02-Jan-25	03-Dec-25																																																																																																																																																
	Stage 5&6 - Close Out	251.00d	07-Apr-25	06-Apr-26																																																																																																																																																

- ◆ Milestone
- ◆ Last Month MS
- Progress
- LoE
- Activity
- Critical Activity
- ▬ Last Month
- ▬ Summary

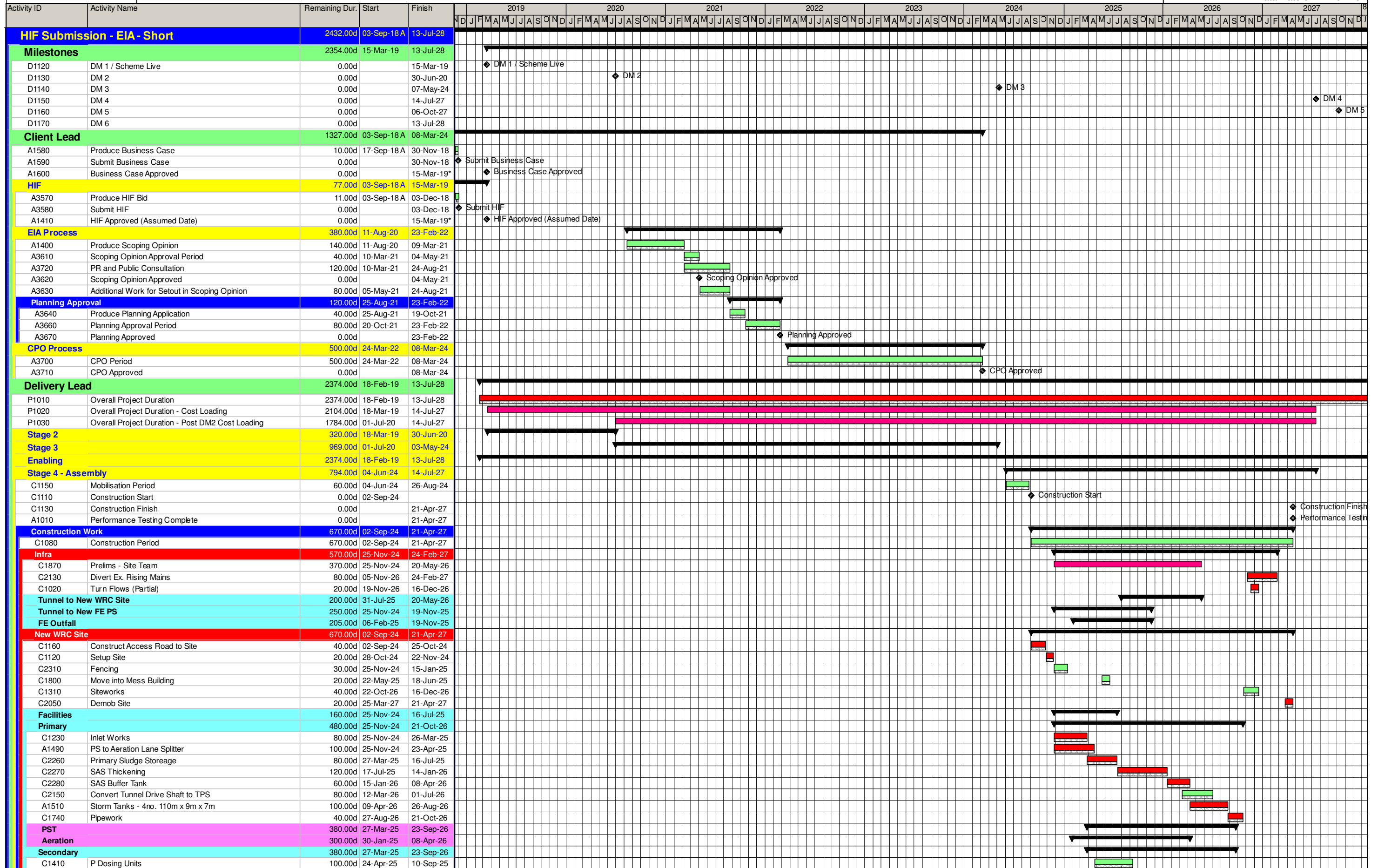
HIF Submission - DCO - Long - 17-Nov-18

Activity ID	Activity Name	Remaining Dur.	Start	Finish	2019												2020												2021												2022												2023												2024												2025												2026																														
					J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
HIF Submission - DCO - Long					2190.00d	03-Sep-18 A	26-Jul-27																																																																																																																
Milestones					2112.00d	15-Mar-19	26-Jul-27																																																																																																																
D1120	DM 1 / Scheme Live	0.00d		15-Mar-19	◆ DM 1 / Scheme Live																																																																																																																		
D1130	DM 2	0.00d		30-Jun-20	◆ DM 2																																																																																																																		
D1140	DM 3	0.00d		12-Oct-21	◆ DM 3																																																																																																																		
D1150	DM 4	0.00d		24-Jul-26	◆ DM 4																																																																																																																		
D1160	DM 5	0.00d		16-Oct-26	◆ DM 5																																																																																																																		
D1170	DM 6	0.00d		26-Jul-27																																																																																																																			
Client Lead					717.00d	03-Sep-18 A	05-Oct-21																																																																																																																
A1580	Produce Business Case	10.00d	17-Sep-18 A	30-Nov-18																																																																																																																			
A1590	Submit Business Case	0.00d		30-Nov-18	◆ Submit Business Case																																																																																																																		
A1600	Business Case Approved	0.00d		15-Mar-19*	◆ Business Case Approved																																																																																																																		
HIF					77.00d	03-Sep-18 A	15-Mar-19																																																																																																																
A3570	Produce HIF Bid	11.00d	03-Sep-18 A	03-Dec-18																																																																																																																			
A3580	Submit HIF	0.00d		03-Dec-18	◆ Submit HIF																																																																																																																		
A1410	HIF Approved (Assumed Date)	0.00d		15-Mar-19*	◆ HIF Approved (Assumed Date)																																																																																																																		
DCO					620.00d	12-Apr-19	05-Oct-21																																																																																																																
A1400	Pre-application Work - Statements, EIA Scoping etc.	300.00d	12-Apr-19	29-Jun-20																																																																																																																			
A3610	DCO Application Submission	20.00d	30-Jun-20	27-Jul-20																																																																																																																			
A3620	Submit DCO	0.00d		27-Jul-20	◆ Submit DCO																																																																																																																		
DCO Approval					300.00d	28-Jul-20	05-Oct-21																																																																																																																
A3630	Pre-examination	60.00d	28-Jul-20	20-Oct-20																																																																																																																			
A3640	Examination	120.00d	21-Oct-20	20-Apr-21																																																																																																																			
A3650	Planning Inspectorate Recommendation	60.00d	21-Apr-21	13-Jul-21																																																																																																																			
A3660	Secretary of State Decision	60.00d	14-Jul-21	05-Oct-21																																																																																																																			
A3670	DCO Approved	0.00d		05-Oct-21	◆ DCO Approved																																																																																																																		
Delivery Lead					2132.00d	18-Feb-19	26-Jul-27																																																																																																																
P1010	Overall Project Duration	2132.00d	18-Feb-19	26-Jul-27																																																																																																																			
P1020	Overall Project Duration - Cost Loading	1851.00d	18-Mar-19	24-Jul-26																																																																																																																			
P1030	Overall Project Duration - Post DM2 Cost Loading	1531.00d	01-Jul-20	24-Jul-26																																																																																																																			
Stage 2					320.00d	18-Mar-19	30-Jun-20																																																																																																																
Stage 3					320.00d	01-Jul-20	07-Oct-21																																																																																																																
Enabling					2132.00d	18-Feb-19	26-Jul-27																																																																																																																
Stage 4 - Assembly					1208.00d	12-Oct-21	24-Jul-26																																																																																																																
C1150	Mobilisation Period	20.00d	12-Oct-21	08-Nov-21																																																																																																																			
C1110	Construction Start	0.00d		15-Nov-21	◆ Construction Start																																																																																																																		
C1130	Construction Finish	0.00d		05-Jan-26	◆ Construction Finish																																																																																																																		
A1010	Performance Testing Complete	0.00d		22-Apr-26	◆ Performance Testing Complete																																																																																																																		
Construction Work					1117.00d	15-Nov-21	22-Apr-26																																																																																																																
C1080	Construction Period	1117.00d	15-Nov-21	22-Apr-26																																																																																																																			
Infra					940.00d	22-Feb-22	27-Oct-25																																																																																																																
C1870	Prelims - Site Team	940.00d	22-Feb-22	27-Oct-25																																																																																																																			
C1020	Turn Flows (Partial)	20.00d	10-Jun-25	07-Jul-25																																																																																																																			
C2130	Divert Ex. Rising Mains	80.00d	08-Jul-25	27-Oct-25																																																																																																																			
Tunnel to New WRC Site					420.00d	11-Oct-23	09-Jun-25																																																																																																																
Tunnel to New FE PS					440.00d	22-Feb-22	07-Nov-23																																																																																																																
FE Outfall					205.00d	25-Oct-23	14-Aug-24																																																																																																																
New WRC Site					1117.00d	15-Nov-21	22-Apr-26																																																																																																																
C1160	Construct Access Road to Site	40.00d	15-Nov-21	24-Jan-22																																																																																																																			
C1120	Setup Site	20.00d	25-Jan-22	21-Feb-22																																																																																																																			
C2310	Fencing	30.00d	22-Feb-22	04-Apr-22																																																																																																																			
C1800	Move into Mess Building	20.00d	09-Aug-22	05-Sep-22																																																																																																																			
C1310	Siteworks	40.00d	28-Nov-24	03-Feb-25																																																																																																																			
C2050	Demob Site	20.00d	25-Nov-25	05-Jan-26																																																																																																																			
Facilities					160.00d	22-Feb-22	03-Oct-22																																																																																																																
Primary					710.00d	22-Feb-22	27-Nov-24																																																																																																																
C1230	Inlet Works	80.00d	22-Feb-22	13-Jun-22																																																																																																																			
A1490	PS to Aeration Lane Splitter	100.00d	22-Feb-22	11-Jul-22																																																																																																																			
C2260	Primary Sludge Storage	80.00d	14-Jun-22	03-Oct-22																																																																																																																			
C2270	SAS Thickening	120.00d	04-Oct-22	28-Mar-23																																																																																																																			
C2280	SAS Buffer Tank	60.00d	29-Mar-23	20-Jun-23																																																																																																																			
A1510	Storm Tanks - 4no. 110m x 9m x 7m	100.00d	21-Jun-23	07-Nov-23																																																																																																																			
C2150	Convert Tunnel Drive Shaft to TPS	100.00d	16-May-24	02-Oct-24																																																																																																																			
C1740	Pipework	40.00d	03-Oct-24	27-Nov-24																																																																																																																			
PST					380.00d	14-Jun-22	05-Dec-23																																																																																																																
Aeration					300.00d	19-Apr-22	20-Jun-23																																																																																																																
Secondary					380.00d	14-Jun-22	05-Dec-23																																																																																																																
C1410	P Dosing Units	100.00d	12-Jul-22	28-Nov-22																																																																																																																			
FST					380.00d	14-Jun-22	05-Dec-23																																																																																																																
Tertiary					300.00d	12-Jul-22	12-Sep-23																																																																																																																
Elec & Commissioning					347.00d	28-Nov-24	22-Apr-26																																																																																																																

◆ Milestone ◆ Last Month MS Progress Activity Last Month
 ◆ Last Month MS LoE Critical Activity Summary

HIF Submission - EIA - Short - 17-Nov-18

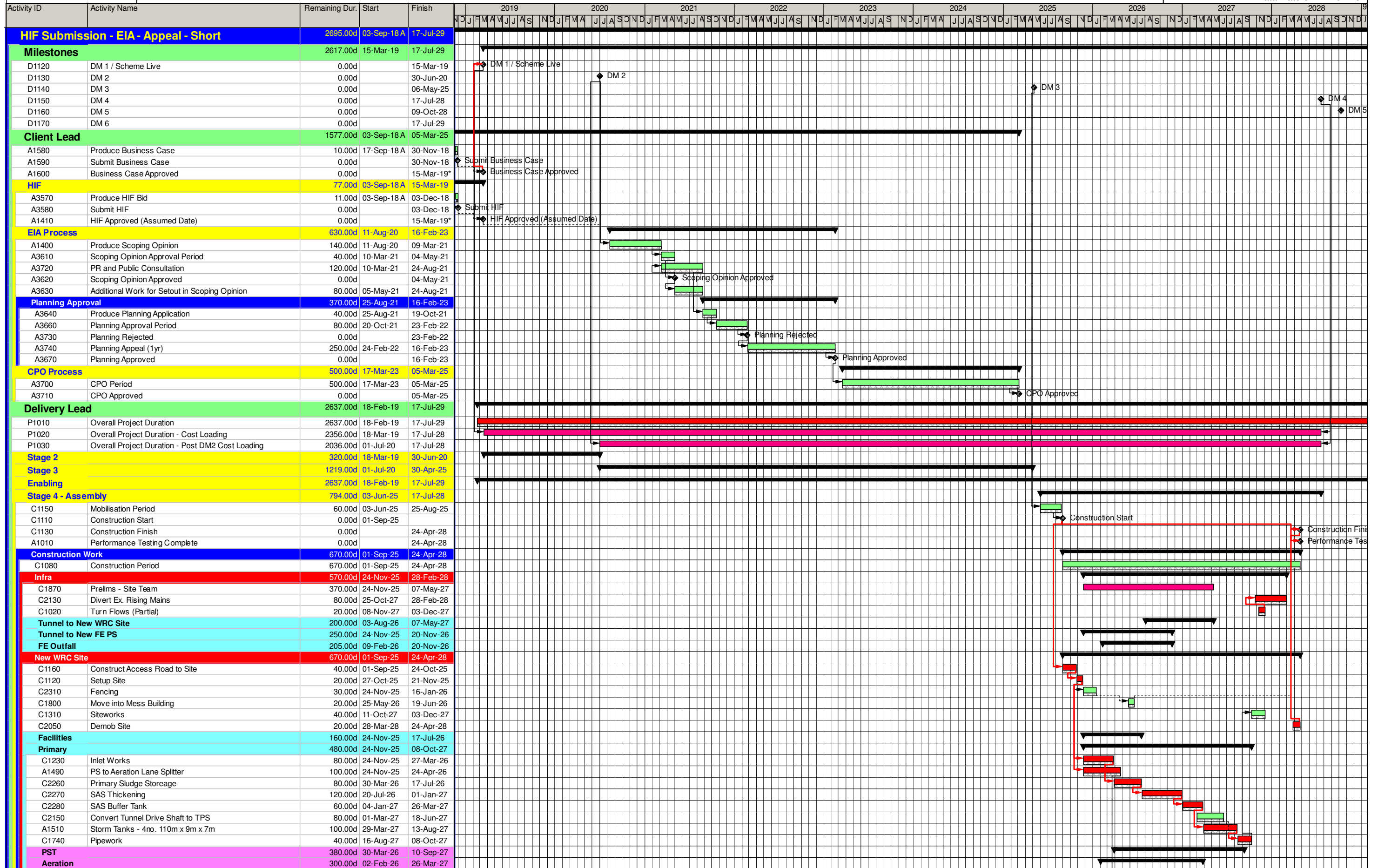
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◆ Milestone ◆ Last Month MS Progress Activity Last Month
 ◆ Last Month MS LoE Critical Activity Summary

HIF Submission - EIA - Appeal - Short - 17-Nov-18

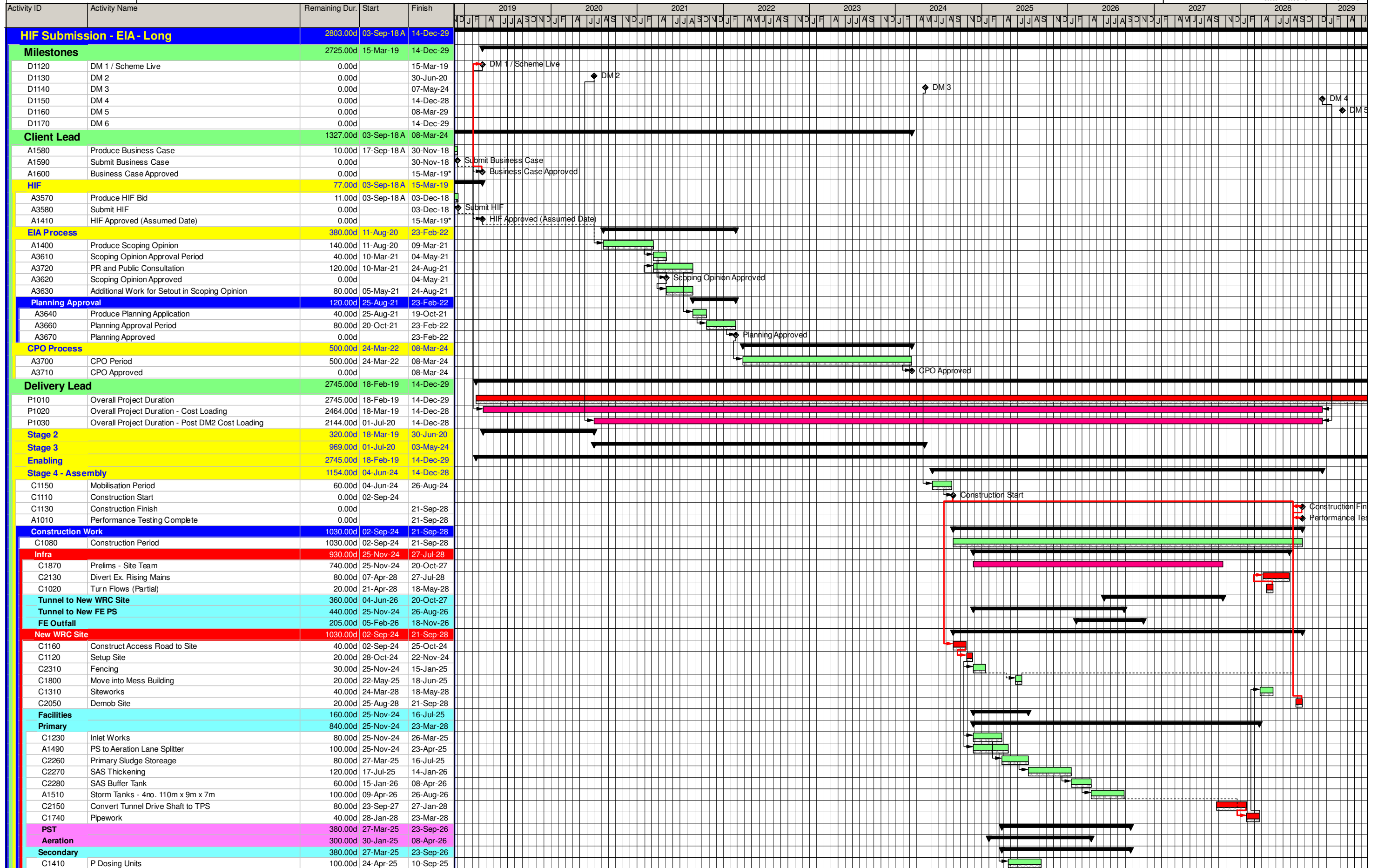
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Data Date of 17-Nov-18



- ◆ Milestone
- ◆ Last Month MS
- Progress
- LoE
- Activity
- Critical Activity
- Last Month
- Summary

HIF Submission - EIA - Long - 17-Nov-18

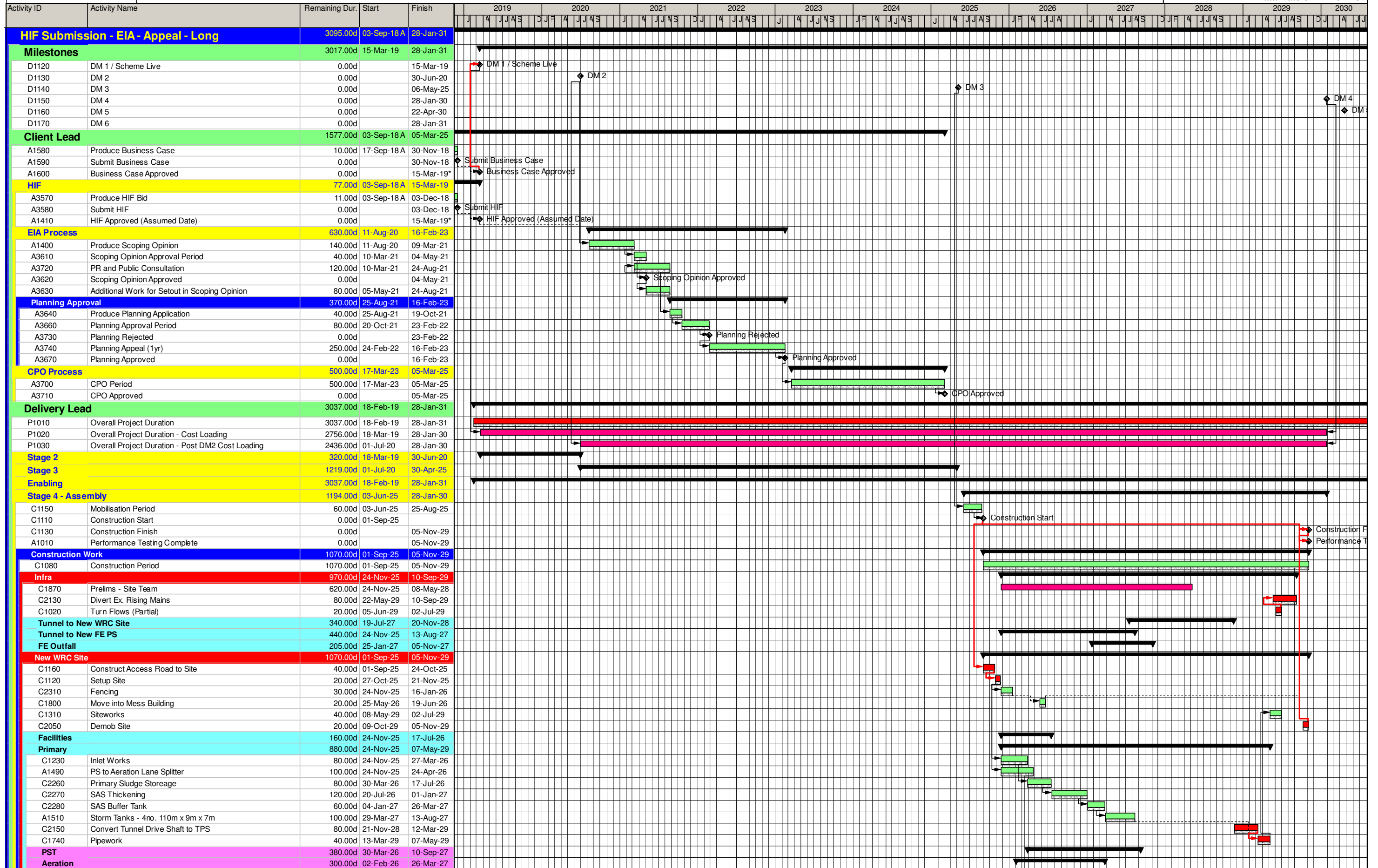
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◆ Milestone ◆ Last Month MS Progress Activity Last Month
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HIF Submission - EIA - Appeal - Long - 17-Nov-18

Printed on 30-Nov-18 at
Data Date of 17-Nov-18

Activity ID	Activity Name	Remaining Dur.	Start	Finish	2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030	
					J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
	Secondary	380.00d	30-Mar-26	10-Sep-27																								
C1410	P Dosing Units	100.00d	27-Apr-26	11-Sep-26																								
	FST	380.00d	30-Mar-26	10-Sep-27																								
	Tertiary	300.00d	27-Apr-26	18-Jun-27																								
	Elec & Commissioning	160.00d	27-Mar-29	05-Nov-29																								
	Sludge Treatment Centre	420.00d	28-Mar-28	05-Nov-29																								
	Plant	240.00d	28-Mar-28	26-Feb-29																								
	Commissioning	180.00d	27-Feb-29	05-Nov-29																								
	Close Out	60.00d	06-Nov-29	28-Jan-30																								
	Decommissioning Milton WRC	340.00d	19-Jun-29	07-Oct-30																								
	Phase 1 - A&B	100.00d	19-Jun-29	05-Nov-29																								
	Phase 2 - C&D	240.00d	06-Nov-29	07-Oct-30																								
	Stage 5&6 - Close Out	261.00d	29-Jan-30	28-Jan-31																								

- ◆ Milestone
- ◇ Last Month MS
- Progress
- LoE
- Activity
- Critical Activity
- ▬ Last Month
- ▬ Summary

CNFE CORE SITE TARGET TIMETABLE & MILESTONE DATES v7

MASTER DEVELOPMENT AGREEMENT (MDA)

OJEU backed appointment of Master Developer under Letter of Intent	July 2018
Business plan approved – satisfied 1 st condition of the MDA	August 2019
Overarching MDA Longstop Dates:	
1 - Obtain satisfactory outline planning permission	October 2023
2 – Practical completion of all development phases	October 2043

HIF & OTHER FUNDING

Submit HIF application	3 rd Dec 2018
Homes England approve HIF application	February 2019
Complete funding agreement – funding commences	May 2019
HIF drawdown Longstop Date	March 2023

PLANNING

New Local Plan AAP	
Local Plan agreed by CCC Full Council for adoption	October 2018
CCC full members agree AAP can proceed for consultation	July 2020
Submit AAP	July 2021
AAP adopted	July 2022
Masterplan Hybrid Planning Application	
Commence hybrid planning application	September 2019
Submit hybrid application	March 2022
Hybrid application approved	December 2022

POLITICAL

Cambridge City Council elections	May 2019
Cambridge City Council elections	May 2020
Mayor, County and Cambridge City Council elections	May 2021
South Cambs District Council and Cambridge City Council elections	May 2022

CNFE CORE SITE TARGET TIMETABLE & MILESTONE DATES v7

CWRC RELOCATION

Submit Section 35 application (with preferred site)	January 2019
SoS approves as NSIP (Nationally Significant Infrastructure Project)	February 2019
Commence Development Consent Order (DCO)	March 2019
Submit DCO to Planning Inspectorate	June 2020
DCO permission obtained (including judicial review period)	October 2021
Anglian Water contracts with framework (commitment to spend)	November 2021
Commence CWRC relocation	November 2021
Complete CWRC relocation	August 2024
End of decommissioning of existing CWRC part 1	April 2025
End of decommissioning of existing CWRC part 2	December 2025

VACANT POSSESSION OF DEVELOPMENT SITES

Early access for intrusive investigations	June 2019
Cambridge City Council sites	January 2023
Anglian Water site – ■■■ adjacent to CCC land	January 2023
Anglian Water site – remaining site part 1 (circa ■■%)	April 2025
Anglian Water site – remaining site part 2 (circa ■■%)	December 2025

NEW DEVELOPMENT

Commence strategic infrastructure work to CCC & ■■% Anglian Water sites	June 2023
Commence strategic infrastructure works to remainder of Anglian Water site	September 2025
Select Neighbourhood 1 plot developers	June 2023
Select Neighbourhood 2 plot developers	January 2023
Select Neighbourhood 3 plot developers	September 2025
Select Neighbourhood 4 plot developers	March 2026
Select Neighbourhood 5 plot developers	August 2027
Select Neighbourhood 6 plot developers	January 2029
First homes complete	December 2026
Neighbourhood 1 housing complete	December 2030
Neighbourhood 2 housing complete	December 2028
Neighbourhood 3 housing complete	March 2033
Neighbourhood 4 housing complete	February 2032
Neighbourhood 5 housing complete	July 2035
Neighbourhood 6 housing complete	March 2037

STAKEHOLDER MAPPING FOR CAMBRIDGE NORTHERN FRINGE

Key Stakeholder	Sub-Group	Why They Matter
Anglian Water	Property and Estates Team	Major Landowner
	Infrastructures Team	Statutory Services Provider
Cambridge City Council	Property and Estates Team	Landowner
	Council Members	Decision Influencer
	Chief Executive	Decision Influencer
	Strategic Director	Decision Influencer
	Joint Director of Planning and Environment	Decision Influencer
	Technical Officers (e.g. New Communities, Urban Design, Sustainability, Landscape, Policy, Housing, Environmental Health, Cycling and Walking, etc)	Decision Influencer
South Cambridgeshire District Council	Council Members	Decision Influencer
	Chief Executive	Decision Influencer
	Technical Officers	Statutory Consultee
	Property and Estates Team	Landowner – Milton Country Park NB: re potential expansion
Cambridgeshire County Council	Local Education Authority	Statutory Consultee
	Local Highways Authority	Statutory Consultee
	Local Waste and Minerals Authority	Statutory Consultee
	Historic Environment Team (Archaeology)	Statutory Consultee
Combined Authority		Decision Influencer
Local MPs		Decision Influencer

Greater Cambridge Partnership		Decision Influencer
University of Cambridge		Influencer
Network Rail	Operations and Infrastructures Team (incl. liaison with TOCs)	Non-Statutory Consultee
	Property and Estates Team	Landowner
Brookgate Ltd		Landowner
Trinity College		Owner of Cambridge Science Park
St John's College		Owner of St John's Innovation Park
The Crown Estate		Owner of Cambridge Business Park
Cowley Road Industrial Park (various owners)		Landowner
Milton Parish Council		Statutory Consultee and Decision Influencer
Adjoining Landowners		Statutory Consultee
FECRA (Resident Associations)		Consultee
NHS England		Consultee
Highways Authority		Statutory Consultee
Historic England		Statutory Consultee
Natural England		Statutory Consultee
Environment Agency		Statutory Consultee
Sport England		Statutory Consultee
Cambridgeshire and Bedfordshire Wildlife Trust		Consultee
Health and Safety Executive		Non-Statutory Consultee
National Grid		Consultee
Cambridgeshire Fire and Rescue		Non-Statutory Consultee
Cambridge Ahead		Influencer
Cambridge Past Present and Future		Consultee
Cambridge Cycling Campaign		Consultee
Smarter Cambridge Transport		Consultee

Cambridgeshire Chamber of Commerce	Consultee
CamSight	Consultee
Cambridge Sport Lakes Trust (Milton Country Park)	Consultee
Property Agencies and Professional Expertise	Influencer
Local Media	Influencer

Housing Infrastructure Fund

Business Case - HIF/FF/000069/BC/01 - Cambridge Northern Fringe East (CNFE)

Bid Details

Lead Authority

Cambridgeshire and Peterborough

Is it a joint bid with other Local Authorities?

No

Contact Details

First name

reg. 13

Last name

reg. 13

Email Address

reg. 13

Telephone number

reg. 13

Are you an agent making this submission on behalf of one or multiple Local Authorities?

No

Are the contact details provided above for the lead responsible officer for the project at the local authority?

Yes

Project Summary

What is the name of the scheme

Cambridge Northern Fringe East (CNFE)

Please provide an Executive Summary for your proposal

This Business Case supports the investment of £227m HIF to relocate the Cambridge Water Recycling Centre (CWRC), from brownfield land in the Cambridge Northern Fringe (CNF). This has real potential to unlock over 8,600 housing units over 20 years and create up to 24,000 jobs.

This bid is submitted by Cambridge City Council on behalf of its partnership with Anglian Water. Having worked closely with Anglian Water under an MoU, we have agreed heads of terms for a formal joint venture, and jointly appointed U+I as master developer. The bid is prioritised by the Cambridgeshire and Peterborough Combined Authority, and has letters of support from key stakeholders.

The strategic case is clear

The National Infrastructure Commission's 2017 report emphasised national prioritisation of the Cambridge – Milton Keynes – Oxford growth arc in advancing UK prosperity. Greater Cambridge has the potential to underpin this prioritisation as the fastest growing city economy in the UK (2018 Irwin Mitchell) with Greater Cambridge demonstrating a blended employment growth rate of 3.3% (CPIER, 2018), double ONS GB 2010-16 average rate. Inclusive growth is, however, an acute challenge for the area, with under-supply of housing and house prices more than thirteen times the average salary, putting prosperity at risk. With the Combined Authority commitment to doubling the area's Gross Value Added over 25 years, the challenge is to ensure the growth in housing stock matches the area's ambitious plans for economic growth.

Relocating the CWRC will release the CNFE Core Site, a major brownfield area for 5,600 homes (including 40% affordable) in line with the Cambridge Sustainable Housing Design Guide. It will also remove 'odour zone' restrictions around the CWRC that limit 82 hectares of land to industrial use. This would enable a further circa 3,000 homes to be built on adjacent land and nearby employment sites to more than double employment densities. The new housing in the CNF area will be within walking and cycling distance of thousands of jobs at the Cambridge Science Park, to the Cambridge North railway station, and other public transport. It will be transport net neutral.

The economic case is strong

The HIF funding would produce a net present value of economic benefit from new housing of ^{reg. 12(5)(e)} [redacted], with an estimated additionality rate of 75% and a benefit-to-cost ratio of ^{reg. 12(5)(e)} [redacted]. There are also significant non-monetised benefits to the sustainable growth of Greater Cambridge. Without HIF funding no housing can be developed due to the odour zone. The deadweight percentage is therefore considered as zero. Addressing the market failure by relocating the CWRC is the only way to unlock the benefits on significant residential development as well as more economically advantageous jobs in the CNF area. The development will optimise the use of recent public transport investment. No other option produces similar benefits.

The commercial case is well developed

The pressure on Cambridge to ensure its housing development trajectory can support its economic aspirations is strong. Commercial analysis shows there is high demand for housing, retail and office space in the CNF area. Under a robust programme management framework Anglian Water will lead the relocation project, and the partners have procured a master developer for the core site, U+I, through OJEU process. The master developer will secure planning permission, fund site infrastructure and drive delivery of the development schemes. The joint Local Planning Authority for South Cambridgeshire and Cambridge City Council have started work on an Area Action Plan for the CNF area to create a sustainable planning framework. The timescales for the HIF funding are extremely challenging for such a major infrastructure project. In order to meet them, the Joint Venture will seek to use the Development Consent Order process to secure a relocation site for the CWRC, commissioning it and decommission the existing facility.

The financial case is robust

The £227m of HIF funding will be used to relocate the CWRC, addressing the major market failure to unlock development. The project will not need additional HIF funding. Cambridge's strong property market and underlying land values mean that conventional developer funding and planning can deliver the physical, environmental and social infrastructure that will underpin the housing delivery.

The management case is grounded in robust governance and management and strong, partnerships

Cambridge City Council will act as the HIF accountable body. Working closely with the Joint Venture to bring the project forward are

partners including the Combined Authority and the Greater Cambridge Partnership. The programme has a robust governance and project management structure in line with national best practice methodologies, combined with broad stakeholder engagement forums across the planning and project areas.

Please provide an overview of the project, including your project scope for the infrastructure and for the wider project

CNFE is the last large-scale undeveloped regeneration opportunity in Greater Cambridge. Its transformation from brownfield land into a new mixed-use neighbourhood will deliver thousands of new homes and jobs over the **reg. 12(5)(e)** across 82 hectares of underutilised land. The scope of the new masterplan project is defined in the following two appendices:

reg. 12(5)(e)

Relocating the CWRC will release a valuable brownfield site

The project will relocate the existing Anglian Water Cambridge Water Recycling Centre (CWRC) in order to release a core brownfield site of 47 hectares made up of the current CWRC site (39ha), and land owned by Cambridge City Council (8ha). The core site will be able to accommodate approximately 5,600 new homes.

Odour from the CWRC restricts land use within the vicinity of the plant to industrial uses and, further away, office and recreational use. **reg. 12(5)(e)**

Relocating the CWRC removes the odour zone restrictions, enabling a full range of land uses to be considered acceptable across the entire area, including residential development. As well as the core site, relocation will make a further 35ha of land available with capacity for a further 3,000 homes.

New homes and sustained economic prosperity are key ambitions

The relocation of the CWRC is the basis for transformation of CNFE to support Greater Cambridge's continued sustainable growth and help meet the ambition of Cambridgeshire and Peterborough Combined Authority to double GVA by reinforcing Cambridge's position as a global centre of excellence for research, development and business success. CWRC relocation would release scarce land for development, facilitate housing on public and private land and reduce pressure for major housing development elsewhere in Greater Cambridgeshire.

The proposed 5,600 homes across six neighbourhoods on the core site will be of mixed type, size and price and cater for many needs, with 40% affordable housing and around **reg. 12(5)** built for market rent and alternative housing models, including custom build, shared living, cohousing and micro housing being considered. The development will also deliver high quality commercial space, with potential to unlock expansion of the Cambridge Science Park and other sites to provide about **reg. 12(5)(e)** of additional floor space. A well connected, carefully planned place

The site is located in an area of Cambridge that is already well-connected by roads and the railway, making it a suitable site for a new housing-led quarter. By providing housing in an employment-dominated part of Cambridge, the development will enable a mixed-use neighbourhood with a balance of residential, employment and leisure use. More people will be able to live nearer where they work and shop, reducing the need to travel.

Development of CNFE will capitalise on the investment made in the new Cambridge North railway station a short walk to the south. The core site is bordered to the north by the A14 which links well to the highway network, and Milton Road, running between the Science Park and CNFE, leads into central Cambridge. The Cambridgeshire Busway runs along the southern edge of the quarter. The core site will be integrated into the transport network with an emphasis on sustainable means of transport. Walking and cycling will be attractive and convenient and are expected to be the dominant modes of movement. Investment will be put into new cycling infrastructure and walking routes to the city centre and key employment areas, and permeability to and within CNFE improved by direct connections between the core site and Cambridge North Station, the Busway, the Science Park and across the A14. The scale of development also lends itself to innovation in sustainability and transport such as pilot automated vehicle schemes and the Smart Cambridge programme.

Site Details

How many housing sites will the funding bring forward?

2

Please provide a list of the housing sites that the funding will bring forward, including the amount of units to be delivered on each site, the lower tier or unitary authority the site is in and the current land ownership

Site name	No of units	Local authority	Current ownership	Planning status	Planning reference
Core Site - CNFE	5600	Cambridge	Anglian Water / CCC	Allocated	

Commentary

Policy 15 of the CLP states that CNFE will be 'primarily for employment uses'. This allowed for a scenario with no HIF funding. With HIF funding, the Plan will emphasise housing. Policy 15 enables the AAP to determine the appropriate land use mix

Site name	No of units	Local authority	Current ownership	Planning status	Planning reference
Wider Site - CNFE	3025	Cambridge	Multiple ownerships – including investors, developers, private individuals, and owner occupiers	Allocated	

Commentary

Policy S/S4 of the SCLP states that CNFE will be 'primarily for employment uses'. This allowed for a scenario with no HIF funding. With HIF funding, Policy S/S4 enables the AAP to determine the appropriate land use mix.

Please provide site boundaries for all housing sites

(see final page of document)

Please attach scheme plan(s) for your proposal - these should include plans of housing sites and infrastructure

Filename	Description
reg. 12(5)(e)	

What is the total size of the development (in hectares)?

81.54 ha

Of the total development size, what is the total housing area (in hectares)?

61.29 ha

How much of the total housing area is on:

Brownfield land

58.83 ha

Public sector land

9.31 ha

What are the proposed tenures of the homes to be delivered?

Affordable sale	reg. 12(5)(c)
Affordable rent	reg. 12(5)(c)
Market sale	reg. 12(5)(c)
Market rent	reg. 12(5)(c)
Other	reg. 12(5)(c)

Infrastructure Requirements

Please provide further details on the HIF infrastructure requirements and their link to the delivery of housing

Infrastructure Type	Road / highway - SRN	Description	In relation to the Highways England (HE) managed Strategic Road Network (SRN), a contribution will be required towards improvements to the A14 / Milton Interchange that forms part of the A10 corridor, as identified in the A10 Study
HIF Funding	£0	Link to housing	It has been identified through the A10 Study, that in order for the additional housing to remain transport neutral, a contribution will be required to provide additional mitigation at the A14 Milton Interchange. The proposed scheme will be designed to also accommodate traffic associated with other development areas within the A10 Study and therefore the housing associated with the site will pay for a proportion of the cost to provide the junction upgrades.
Sites benefitting	Core Site - CNFE, Wider Site - CNFE		
Infrastructure Type	Road / highway - other	Description	Roads and streets will need to be built to provide access to, and within, new housing areas. These will be funded by developers. External to the site, modifications will be required to the existing junctions on Milton Road to facilitate site access and egress, based on expected site traffic generation. New site access junctions will be required to connect internal roads to the public highway.
HIF Funding	£0	Link to housing	Essential alongside housing. These will be delivered as part of new development, either within infrastructure packages or as part of the external works package for individual lots.
Sites benefitting	Core Site - CNFE, Wider Site - CNFE		
Infrastructure Type	Bridge	Description	A pedestrian and cycle bridge, deck or underpass to cross the Milton Road and connect the core site to the Cambridge Science Park via St John's Innovation Park is likely to be required. Pedestrian and cycle bridges are also expected over the A14 to the north and the railway to the East to open up the site to the greenbelt and river Cam.
HIF Funding	£0	Link to housing	Housing can be delivered without this connection but amenity would be lower and transport-neutral development would be harder to achieve. The bridge/ underpass is likely to be specified as area-wide infrastructure under the AAP and as such would be funded through developer contributions.
Sites benefitting	Core Site - CNFE, Wider Site - CNFE		

Infrastructure Type	Digital infrastructure	Description	New sitewide infrastructure will be required. The scale of the site provides the opportunity for cutting edge digital innovations in 5G, artificial intelligence, autonomous vehicles, data capture and smart city initiatives. All of which will be explored during design development.
HIF Funding	£0	Link to housing	Necessary to serve additional housing.
Sites benefitting	Core Site - CNFE, Wider Site - CNFE		
Infrastructure Type	Health facilities	Description	There is expected to be a community and health centre on the core site serving the wider CNFE area. The AAP may provide for an alternative/ additional location.
HIF Funding	£0	Link to housing	Necessary to serve additional housing. The health hub will be in line with the Cambridgeshire and Peterborough STP with the core aim being to deliver healthcare via neighbourhood care hubs, and a focus on people-powered health and wellbeing. The increased health provision will cater to the increased number of residents in the area.
Sites benefitting	Core Site - CNFE, Wider Site - CNFE		
Infrastructure Type	Green infrastructure	Description	Green Infrastructure will be required throughout the development to promote sustainability, well-being and biodiversity. Work on the core site will include both hard and soft landscaping to form the main park, perimeter boundaries, natural corridors and strategic green zones
HIF Funding	£0	Link to housing	On the core site, green infrastructure will provide an attractive and sustainable environment. Green infrastructure will be integrated throughout the masterplan, contributing to character, adding amenity and health, and mitigating climate change effects. Green corridors will provide connections between neighbourhoods and neighbouring areas, including the nearby Milton country park. And a network of green streets within neighbourhoods will link with a central green square. This green space will include provision for play and recreation to create a healthy district. Green roofs and green walls will soften the impact of higher-density development and create a highly visible habitat for nature.
Sites benefitting	Core Site - CNFE		

Infrastructure Type	Public realm works	Description	Public realm – squares, parks and informal green space – will be required across the core site and wider CNFE area as part of sustainable development of all sites.
HIF Funding	£0	Link to housing	Public realm will play an important role in creating high levels of amenity for housing and supporting transport-neutral development. The public realm typology will embrace the importance of the street, with walking and cycling the main modes of movement. This will create substantial areas of car-free public realm on the core site. Public realm will be delivered either as site infrastructure or as part of external works packages for individual lots
Sites benefitting	Core Site - CNFE, Wider Site - CNFE		
Infrastructure Type	Water works	Description	New water supply infrastructure to provide metered services to all users. In order to respond to water stress issues in the Cambridgeshire area and planning requirements, recycled water utility infrastructure is also planned (rainwater harvesting, rainwater attenuation and greywater harvesting and treatment).
HIF Funding	£0	Link to housing	The new housing developments will be required to provide sustainably sourced water resources that are consumed in an efficient manner. The water utilities infrastructure will enable the scheme to store and treat water on site for non-potable demands, ie toilet flushing, washing machines. The proposed infrastructure will be connected to the mains supply for water top up when needed, and when storage is required, the integrated landscape attenuation system will support on site storage needs.
Sites benefitting	Core Site - CNFE		
Infrastructure Type	Land remediation	Description	Standard remediation has been anticipated on the development account and so will be funded by the development.
HIF Funding	£0	Link to housing	Standard remediation has been anticipated to allow residential development.
Sites benefitting	Core Site - CNFE		
Infrastructure Type	Utility network extension	Description	Utilities network extension may be required into housing sites to provide energy and water supplies.
HIF Funding	£0	Link to housing	Will be procured/delivered by site developers.
Sites benefitting	Core Site - CNFE, Wider Site - CNFE		

Infrastructure Type	Utility capacity reinforcement	Description	We have engaged with Greater Cambridge partnership who have confirmed there is some spare capacity on the electricity network in the area but not enough for the scale of development envisaged (currently there is 11.5 MVA spare capacity which is enough for around 5,750 homes, estimates suggest that around 22 MVA will be needed). Therefore either traditional grid reinforcement will be required or different ways of freeing up some existing capacity will be explored (eg through the use of smart grids). Greater Cambridge Partnership have commissioned a study to review capacity on the electricity network to support growth and a report is expected in January 2019. We are also in discussion with UKPN
HIF Funding	£0	Link to housing	Necessary to serve additional housing. The housing will take an electric servicing approach to enable the project's low carbon aspirations.
Sites benefitting	Core Site - CNFE, Wider Site - CNFE		
Infrastructure Type	Other (Relocation of Cambridge Water Recycling Centre (CWRC))	Description	The relocation of the CWRC is required in order to unlock land for development.
HIF Funding	£227	Link to housing	The relocation of the CWRC will not only release land on the core site, but also in the wider area due to the removal of the odour constraint. This land is suitable for mixed use development including housing, due to its position near the Cambridge North rail stations and its location within Greater Cambridge, an area of strong economic growth and having significant potential to contribute to future housing supply and housing need in the next joint local plan.
Sites benefitting	Core Site - CNFE, Wider Site - CNFE		
Infrastructure Type	Education	Description	Two primary schools and one secondary school have been provided for in the masterplan on the core site. Although a secondary school may not be required on the core site, provision for it has been made in the masterplan at this stage. Additional primary schools may be needed for the wider CNFE area. Specific requirements will be defined by the AAP.
HIF Funding	£0	Link to housing	Essential alongside housing. The masterplan for the core site will require the delivery of new schools for the new urban quarter of Cambridge in order to cater to new residents.
Sites benefitting	Wider Site - CNFE, Core Site - CNFE		

Please outline, in further detail, the direct link between the infrastructure scheme(s) and how this unlocks the homes

The CWRC currently locks up 82 hectares of potential housing land

The Cambridge Water Recycling Centre (CWRC) provides water recycling for Cambridge and its surrounding villages. Parts of the facility date back to 1895, when it was originally well outside Cambridge, but the City has grown up to and around it.

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.

Relocating the CWRC could unlock 8,625 new homes

The HIF funding would cover the cost of relocating the CWRC, and remediation works to bring the site to a fully developable state. Our analysis shows that relocating the CWRC could unlock the delivery of 5,600 homes in a residential-led mixed use quarter on the 47 hectare core site (a combination of the 39-hectare CWRC site and 8 hectares of adjacent land owned by Cambridge City Council.) And removing the odour zone restrictions could:

- enable a further 3,025 homes on other sites within the CNFE area
- provide for double the density of space and jobs at adjacent high-value employment sites such as Cambridge Science Park.

Further infrastructure will be delivered through the housing scheme

Alongside new residential development, significant new infrastructure will be delivered as part of the housing-led scheme. This will include investment in utilities, transport, green space, public realm, health facilities, schools and affordable housing. Although an indirect outcome of the HIF funding, these will be funded wholly out of developer funding and will therefore come ultimately from land value.

Without full HIF funding the infrastructure scheme will not be delivered

The delivery of the 8,625 homes, together with associated mixed uses and infrastructure, is wholly dependent on the relocation and remediation of the CWRC. However, without HIF funding, this cannot happen

The requirement for the infrastructure scheme is £227m.

Assuming that HIF funding meets the full cost of the £227m, the total land value is approximately reg. 12(5)(e), split reg. 12(5)(e) to the core site (in which the applicants have an interest and therefore control) and reg. 12(5)(e) to the other sites. The core site's land value is less than the cost of delivering the infrastructure scheme. If the core site were to bear the cost of delivering the infrastructure scheme its land value would therefore be reg. 12(5)(e).

Assuming that HIF meets the whole cost of the infrastructure scheme, the projected value of the core site is reg. 12(5)(e) per gross acre (115.35 acres) or reg. 12(5)(e) per gross hectare (46.68 hectares). This is in line with the current value of residential development land in Cambridge. This is not an unreasonable level of value, given that:

- the land has considerable current value
- this value would be greater than current value through extended employment use
- the significant costs and risks associated with delivering the housing scheme.

Given that Anglian Water has no operational requirement or advantage to gain from relocation, the restrictions on its commercial activities, and the obligations on Cambridge City Council to achieve best value, this level of value is the base land value appropriate for the landowners and their partners to bring the project forward. This base value is included in the business plan of the Master

Development Agreement between the land-owning JV and U+I.

Consequently, without HIF funding, there is a viability gap associated with the project of £227m and without this funding the infrastructure project and associated housing delivery of 8,625 homes will not be delivered.

The project will not need additional HIF funding. Cambridge's strong property market and underlying land values mean that conventional developer funding and planning can deliver the physical, environmental and social infrastructure that will underpin the housing delivery.

Wider Development Impacts

Please provide a summary of what impact the scheme will have on the Transport Network

Transport analysis has been carried out in line with the Combined Authority's developing LTP and the Ely to Cambridge Transport Multi Modal Study using sub-regional model CSR2 which covers major development including CNF.

The impact of the scheme on the transport network after the implementation of a comprehensive package of mitigation identified in the A10 study will be net neutral. This will be achieved by working within a 'trip budget' which apportions trips at a level which is acceptable in highway terms offset by the mitigation measures identified.

The CNFE transport strategy will

Build on Cambridge's tradition of cycling with walking and cycling being the main forms of movement

Rebalance an employment-dominated part of Cambridge, achieving a sustainable mix of housing, work, retail & leisure and reducing the need to travel

Exploit its proximity to sustainable transport infrastructure including the guided busway, Cambridge North Station, cycling infrastructure & walking routes

Travel demand management measures and commitment to car parking restraint will reduce car use

Link into work undertaken by the Greater Cambridge Partnership linking to proposed improvements to bus, cycle & pedestrian facilities on Milton Road, as well as connecting to proposed Greenways and the Chisholm Trail

The trip generation of the site will be monitored on a phase by phase basis to ensure the trip budget is not exceeded. For the full scheme to be constructed, the mode share targets must be achieved.

The site strategy is supported by Cambridge County Council through the local planning process and has political backing for the development and the approach to sustainable transport. A sensitivity test with a significantly higher vehicle trip generation would not align with the above and would be contrary to the CNF AAP and the A10 study requirements.

The economic impact appraisal uses the Cambridge Sub-Regional transport model to provide inputs to a TUBA assessment in line with WebTAG guidance. The high-level assessment modelling of the transport external costs with the CNFE traffic demand shows a transport cost of -£310m across the network.

This figure is misleading as it assesses the whole impact of the development but excludes the benefit that the development will deliver through its contribution to the mitigation package set out in the A10 Study. The study gave the mitigation transport user benefits of [reg. 12(5)(e)] (2018 prices). The CNFE site provides a contribution of [reg. 12(5)(e)] towards this mitigation equating to 38% of the overall costs. Therefore, the same proportion of benefit should be attributed to CNFE, a transport user benefit of [reg. 12(5)(e)]

We consider the impact of the proposed development on the transport network is therefore only [reg. 12(5)(e)]. We have however modelled the more substantial impact through our economic case

At a future stage appraisal of the environmental and social impacts will be undertaken. A qualitative review of the impacts has been undertaken for the HIF submission and this is considered proportional.

The transport mitigation package and the masterplan will lead to significant improvements to travel options. The site will have a competitive advantage because of its accessibility and be a catalyst for improvements in air quality and noise.

The AAP transport modelling and strategic outline business case shows a mitigation package that could deliver the CNF wider development. These schemes will evolve through later stages when accident appraisal will be undertaken. Given the CNFE development is seeking to reduce severance and remove pedestrian-cyclist-vehicle conflict when crossing the Milton Road, it is considered that there will be a positive impact in terms of reducing accidents on Milton Road.

The impact of walking and cycling improvements on physical activity has been considered qualitatively at this stage. The masterplan will reduce severance and increase opportunity for walking & cycling. This will have a positive impact on physical activity through improved health and greater productivity through reduced absenteeism.

The masterplan will include a mix of uses, active at different times of the day, fronting streets that will be designed with people in mind. Routes to and from public transport will be legible, lit and landscaped with quality waiting facilities. A qualitative assessment of the security and journey quality impacts shows that these will have a positive impact.

The CNFE development will improve connectivity, reduce severance and improve permeability to destinations including Cambridge North Station and the Science Park via a permeable site masterplan, a new link over the A14 and across Milton Road creating a safe, direct route for pedestrians and cyclists between Cambridge North Station and the Science Park. The severance and accessibility impacts will be largely positive.

Please refer to the CNFE Transport Strategy included in Appendix F.

How many schools are expected to be funded through HIF?

3

Please complete a row in the table for each school to be funded through HIF

School No	1	Educational Phase	Primary	Due to Open	12/2030
Type	• LA-led Mainstream				
Capacity	Low Levels projection (Forms of Entry) = 908 (4.3FE) High Level projects (Forms of Entry) = 1210 (5.8FE)				
School No	2	Educational Phase	Primary	Due to Open	03/2037
Type	• LA-led Mainstream				
Capacity	Low Levels projection (Forms of Entry) = 908 (4.3FE) High Level projects (Forms of Entry) = 1210 (5.8FE)				
School No	3	Educational Phase	Secondary	Due to Open	02/2032
Type	• LA-led Mainstream				
Capacity	Low Level projections (Forms of Entry) = 514 (3.4FE) High Level projections (Forms of Entry) = 756 (5FE)				

What is the planned pupil yield for site(s) unlocked and how has this been calculated? Please attach relevant documents outlining pupil yield calculation if available

NB: Education is only indirectly funded by HIF, via the direct funding of the relocation of the CWRC, and removal of the odour zone. We have therefore answered question 1.4.2.7 only.

reg. 12(5)(e)

No attachments

How have you engaged with your Distribution Network Operator when developing this scheme? Please provide costs and timescales for connections and upgrading network infrastructure

@Html.Raw(Model.EngagedDistributionNetworkOperator)

No attachments

Please demonstrate your assessment of additional utility provision - (including but not limited to water, waste water, gas and telecoms) - for this scheme and future housing delivery'

Utility Capacity Reinforcement (save for some minor peripheral benefits of the CWRC relocation) is only indirectly funded by HIF, via the direct funding of the relocation of the CWRC, and removal of the odour zone. We have therefore answered question 1.4.3.3 only.

No attachments

What consideration have you given to ensuring that the health and care services locally will align with the additional homes to be built?

Ensuring Local Health and Care Services Align with Development

The core site could accommodate 5,600 homes, with adjacent sites accommodating 3,025 homes. The additional population growth, using the Cambridge City average household size of 2.3 people (2011 Census), will be 12,880 and 6,958 respectively or 19,838 people for the whole development.

The optimal list size for a single General Practitioner's (GP) practice (120m2) is 1,750 patients. The core site is likely to require 7 new GPs, and adjacent sites requiring 4 new GPs. A single multi-clinic practice may be the preferred model and will be evaluated as the AAP develops. It is envisaged that 11 new dental surgeries, provision of 42 Acute Healthcare beds, and 42 Extra Care beds, will be required. The masterplan is designed to accommodate the health facilities described above.

Background Context – Health Approach in Cambridgeshire

Good health is related to good quality housing and developments, well designed street scenes and neighbourhoods, quality and efficiency in transport systems, opportunities to experience leisure and cultural activities and green and open space. Greater Cambridge Planning Service are preparing a Health Impact and Needs Assessment (HINA) to inform the forthcoming Area Action Plan. This will define health needs arising for the development more accurately. The preparation of the HINA will engage with a number of groups and organisations in the local health and wellbeing system:

Director of Public Health at Cambridgeshire County Council;

The Health and Wellbeing Board;

NHS Cambridgeshire and Peterborough Clinical Commissioning Group (CPCCG) and NHS England

Engagement with the local community and other community groups as appropriate

The HINA will be structured to consider a range of topics, including

Health Priorities & Needs

Mixes of Uses and Healthy Housing

Connectivity and Active Transport

Open Space and Physical Activity

Supporting information can be found in Appendix H

Have you engaged with your Sustainability and Transformation Partnership?

We have engaged with the STP leads and will review plans as the development progresses

The NHS and local government officers in Cambridgeshire have come together to develop a major new plan to keep Cambridgeshire and Peterborough Fit for the Future. The STP covers hospital services, community healthcare, mental health, social care and GP services.

Fit for the Future sets out a single overall vision for health and care, including:

supporting people to keep themselves healthy

primary care (GP services)

urgent and emergency care

planned care for adults and children, including maternity services

care and support for people with long term conditions or specialised needs, including mental ill health.

Through discussion with staff, patients, carers and partners the STP has identified four priorities for change and developed a 10-point plan to deliver these priorities.

As part of the overall Health strategy for the proposed development it will be important to discuss existing issues, potential impacts arising from the scheme, and opportunities to address future needs, with Fit for Future (contact@fitforfuture.org.uk).

Please refer to the STP Supporting Information in Appendix I

If you have any further information to support your project overview, which has not already been captured in the above, please include this here

1.4.2.7 Please indicate whether the housing development generates a need for new school places and how this will be accommodated, either within the development site or elsewhere.

Forecasted number of children from CNFE development (combining Sites 1A and B, and 2A, B and C)

For development proposals where detail of development proposals is available only at a high level, the Council use general multipliers. These suggest that for a development of this scale the demand for education provision would be as follows:

-2 Primary Schools (3 F/E). Includes SEND places within mainstream provision. On-site Provision.

-It is considered, at this stage, that development will not generate sufficient demand for a new standalone secondary school.

However, provision has been made within the Masterplan for a school should that position change. Otherwise, off-site contributions for the expansion of existing provision within the City will be made. Includes SEND places within mainstream provision.

Please refer to Education Approach in Appendix G for further information.

1.4.3.3 How have you assessed that no new utility infrastructure – electricity capacity, water, waste water, gas and telecoms – will be required for this scheme and future housing delivery or, how additional utility infrastructure will be delivered without HIF funding? We have made an initial approach to obtain the existing services installation records from the statutory service providers. We have also reviewed information supplied by Anglian Water.

From this information our consultants have made an assessment of the likely extent of diversions required and enquiries have been made to the relevant providers for information on the viability and costs and programme of the proposed works.

The majority of the Anglian Water operation and service connections can be disconnected with only the supply and outfall of the sewage works forming part of the strategy for the development site

The site does have 132kV overhead power cables crossing diagonally on steel pylons. An approach has been made to UKPN as to the possibility of relocating these cable underground around the perimeter of the site to alleviate both visual and perceived health issues. The may also be a requirement to relocate an existing mobile phone mast.

The proposed Sustainability Strategy for the new residential development is based on low carbon electrical energy only using air source heat pumps in the dwellings and therefore no gas supply is required.

An initial assessment of the developments power needs has been undertaken which includes the following:

Electrical loading: 22MVA diversified design load.

Water: Flow rate of 75 litres per second likely to require off-site reinforcement.

Surface Drainage: 800 cubic metres of attenuation will be required for every 1 hectare of impermeable area of the development (based upon 100 year +40% design event) achieved through various Sustainable Drainage Systems (SuDS) methods.

Foul Drainage: connection to the new waste water operation can be accommodated.

All of the above has been costed in detail (included in cost plan) and the cashflow and financial model show that these can be paid for out of the development account. Funded by U+I, public/private sector loans, and by plot developers.

reg. 12(5)(e)

[Redacted content]

reg. 12(5)(e)	reg. 12(5)(e)
reg. 12(5)(e)	

Strategic Case

Strategic Approach

How will this scheme support your long term housing and economic growth ambitions? Please refer to any development plans and / or associated planning guidance policies

A key aim for Cambridgeshire and Peterborough Combined Authority is to double economic output over the next 25 years. This is a stretch target but is critical in underpinning the National Infrastructure Commission's prioritisation of Cambridge as part of a nationally important growth arc for UK future prosperity.

Supporting the economic success of the Greater Cambridge area

The adopted Local Plans for Cambridge and South Cambridgeshire set a requirement across Greater Cambridge for 33,500 new homes by 2031 and 44,000 jobs to support continued economic success. The Local Plans set a joint development strategy that sequentially focuses development: within the urban area of Cambridge, on the edge of Cambridge through Green Belt release, at new settlements, and finally at larger, better served villages.

The Local Plans provide sufficient land to meet those identified needs without reliance on CNF, due to the uncertainties of delivering a major regeneration on the site given previous challenges in relocating the CWRC. Nevertheless, the local plans allocate land at CNF for an area of 'Major Change' recognising the opportunity this major urban brownfield site brings. The area is not currently counted in assessments of planned housing or employment land supply. The Local Plans propose the preparation of a joint Area Action Plan (AAP) for the area, on which work has begun, with Issues and Options consultation in Spring 2019.

Work on the new joint Greater Cambridge Local Plan has begun with a new Local Development Scheme (October 2018) programming Issues and Options consultation for Autumn 2019. The joint Local Plan will include an update of objectively assessed housing and jobs needs for a period extending beyond 2031. Making best use of this brownfield site within the urban area will help reduce the need to consider other sites at locations lower in the development sequence, including pressure for further release of land in the Green Belt.

This additional growth will reduce housing pressures and contribute to maintaining the success of the local economy, and the provision of 40% affordable housing will make a significant contribution to supply of affordable housing for households in need in Greater Cambridge.

"An environmentally sustainable city"

A strategic objective of the Cambridge Local Plan (CLP) is to make Cambridge an environmentally sustainable city. The vision is for "a compact, dynamic city" building on the city's reputation for design excellence. CNFE will be planned, designed and developed in a sustainably innovative way and with the use of sustainable modes of transport, help support the transition to a more environmentally sustainable and successful low carbon economy."

The AAP will optimise the development of the area for employment and housing, creating more internalised trips and reducing the need to travel. CNF is located near Cambridge North railway station and the Cambridgeshire Busway and is therefore well positioned to support higher density development and encourage sustainable modes of transport. The core site development will be transport neutral with suitable infrastructure to support walking and cycling, building on Cambridge's reputation as the country's foremost cycling city. Housing will be built at or close to Passivhaus standards and supplied with very low carbon energy and local water recycling.

"Catalyst for regeneration"

The CLP identifies CNF as an area of major change. It is one of the last remaining substantial brownfield sites within the city. Options for the area's regeneration have been put forward in the past, but the nature of existing uses on site, particularly the Cambridge Water Recycling Centre (CWRC), has curtailed proposals for comprehensive redevelopment. The development of CNFE will maximise the investment already made in the provision of the Cambridge North station unlocking the development potential of the surrounding land and will serve as a catalyst for wider regeneration.

"Design excellence and innovation"

A strategic objective of the CLP is for all new development in Cambridge to "be of the highest quality, in terms of design excellence and innovation, addressing the development's impact upon its surroundings and embracing the principles of sustainable design and

construction."

New development will be of high quality, providing exceptional quality of life and place. Development will be compact in form and relatively dense, making for a street life that encourages face-to-face contact and exchange, as well as maximising the efficiency with which land is used. Access to green space and nature will be secured both on site and through new and enhanced links to nearby parklands and the Fens.

"Meet the housing needs of the city"

The CLP expects all new development to "meet the housing needs of the city within its sub-region, delivering an appropriate mix of housing types, sizes and tenures to meet existing and future needs, including affordable housing." Housing in Cambridge has an important part to play in supporting both the local and national economy. Cambridge is a thriving, prosperous and dynamic city, with successful universities and demand for housing is high, with high rents and house prices. It is important to increase the supply of all types of housing and maintain a mix of different sizes, types and tenures of housing to meet a wide range of housing needs. There is significant pressure on housing delivery in Cambridge across all tenures.

"World leader in higher education, research, and knowledge-based industries"

"Supporting Cambridge's role as a world leader in higher education, research, and knowledge-based industries, while maintaining the quality of life and place that contribute to economic success" is a strategic objective in the CLP. Capacity exists at CNFE to create a vibrant, economically sustainable mixed-use quarter that will deliver substantial employment growth and support the continued success of the local economy. The new quarter will increase employment uses, and build on Cambridge Science Park's existing global reputation.

"Social cohesion and sustainability and a high quality of life"

A strategic objective of the CLP is to "promote social cohesion and sustainability and a high quality of life by maintaining and enhancing provision for open space, sports and recreation, community and leisure facilities, including arts and cultural venues that serve Cambridge and the sub-region."

Community space will form a key part of the CNFE development. Squares, parks and informal green space will support the expected high levels of amenity for housing. The public realm typology will embrace walking and cycling as the primary modes of movement, creating substantial areas of car-free public realm on the core site. This will be an important part of supporting transport-neutral development.

"Sustainable modes of transport"

The CLP requires, new developments to "be located to help minimise the distance people need to travel, and designed to make it easy for everyone to move around the city and access jobs and services by sustainable modes of transport." Furthermore, major developments on the edge of the city and in urban extensions should be "supported by high quality public transport linking them to Cambridge's city centre and major centres of employment."

Central to the CNFE transport strategy is support for public transport, walking and cycling to, from and within the development.

What is your assessment of local housing requirements in your area and how will this scheme address these needs? Please refer to any data and evidence sources you have, including local housing need

The development will meet current est. housing needs

The recently adopted Local Plans for Cambridge (October 2018) and South Cambridgeshire (September 2018) set a requirement across Greater Cambridge for 33,500 new homes by 2031 (14,000 in the City, 19,500 in South Cambridgeshire) and 44,000 jobs (22,000 in each area) to support the continued economic success of the Greater Cambridge area. The Local Plans provide sufficient land to meet those identified needs without reliance on CNF, primarily due to the uncertainties of delivering a major regeneration on the site given challenges in relocating the CWRC, which had been explored several times over previous decades.

Nevertheless, the local plans each allocate land at CNF for an area of 'Major Change', recognising the opportunity this major urbanbrownfield site brings. Although the plans do not specify a quantum of development and the area is not currently counted in assessments of planned housing or employment land supply, they do propose a new joint Area Action Plan for the area, on which

work has begun, with Issues and Options consultation planned for Spring 2019.

The redevelopment proposed by the HIF bid would enable a comprehensive approach to major regeneration of CNF, allowing development identified through the AAP to be relied on to contribute additional housing above that already provided in the current Local Plans and help to meet strategic housing requirements of Greater Cambridge to be identified in the next round of plan making. This additional growth will reduce housing pressures and the provision of 40% affordable housing will make a significant contribution to the overall supply of affordable housing for the large number of households in Greater Cambridge.

The site meets key criteria and is well connected to transport links

The site is near existing employment areas and well connected to transport links. It is next door to Cambridge Science Park and St John's Innovation Park, and the future employment area at CB4.

The site is also well connected to employment sites elsewhere in Cambridge and South Cambridgeshire by the Cambridge North Station and the Cambridge Guided Busway.

The CNFE site meets several sustainable development criteria. It represents part of the solution to meeting Greater Cambridge's current and future local housing needs because it is:

- previously developed land
- accessible by sustainable modes of transport
- close to employment and amenities within the City Centre
- able to deliver higher density development, and provide a wide variety of house types, tenures and sizes

The affordable component will help house low-income households and tackle homelessness

The scheme presents a real opportunity to increase the local supply of social housing at rents which are at or below Local Housing Allowance rates, and to support us in preventing and tackling homelessness.

The scheme would enable a range of affordable housing options to be delivered, to meet the needs across the low to medium income spectrum. The site would provide housing for first-time buyers, young professionals, families, students and older people, and would provide a variety of dwelling types, sizes and price points to meet the full range of housing needs. Alternative housing models such as custom build, shared living, cohousing and micro housing will also be explored.

The variety of house types and sizes that would be provided at the site would meet the findings of Oliver Letwin's Independent Review of Build Out, that delivery rates at larger sites could be increased by offering different house types and tenures.

There are around 4,500 applicants on the social housing register across Greater Cambridge. Local Housing Allowance rates are significantly lower than lower quartile rents in the area, making access to private rented housing for those on low incomes extremely difficult. For example, the lower quartile private rent for a two bedroom property in Cambridge City is around £1,000 per month, and £825 per month in South Cambridgeshire. This compares with a Local Housing Allowance rate of around £650 per month across Greater Cambridge.

Local affordability analysis suggests that the 35% of households resident in Greater Cambridge who are on incomes of less than £30k could, in theory, only afford social housing. Even at the higher end of this income group nothing larger than a one bedroom private rent or lower quartile resale in South Cambridgeshire would be affordable, with no rent or market housing affordable in the City.

Homelessness is a significant local issue. For example, during 2017-18, 112 homelessness applications were accepted in Cambridge, and 158 in South Cambridgeshire for those found to be unintentionally homeless, eligible for housing, and in priority need.

Affordable rents and affordable homes will help mid-income people too

Research commissioned for Greater Cambridge from Savills in 2017 found a significant shortfall in new supply to meet the needs of those with incomes below £50,000 in Greater Cambridge.

The City Council's local affordability analysis, carried out to build on Savills' findings, backs this up. It suggests that as well as those on low incomes, options for the 26% of households on incomes of £30k to £50k are also limited. For this group, the only housing assessed as affordable in Cambridge is a one bed average private resale or a one/two bedroom median private rent or shared ownership property. For South Cambridgeshire, anything larger than a two bedroom property in terms of average new-build or resale

is likely to be unaffordable.

The scheme can help house people with specific needs

The scheme may also present opportunities to contribute to meeting the housing needs of specific groups.

-Older people. Research recently carried out for Greater Cambridge suggests that, if similar levels of current forms of provision were projected forward, Greater Cambridge would need an additional 1,823 units of age exclusive housing, 2,883 units of specialist housing (sheltered, enhanced sheltered or extra care), and 2,051 additional care beds by 2035.

-Accessible housing. National research suggests that, in 2014, just 7% of homes in England had all four accessibility features that provide the ability to visit by most people including wheelchair users. These features are level access to the entrance, a flush threshold, sufficiently wide doorways and circulation space, and a toilet at entrance level. Nearly 30% of existing homes were not capable of being adapted to this level. Cambridge City Council's emerging Local Plan requires that 5% of housing on strategic sites to meet higher accessibility standards.

-Gypsy and Traveller Accommodation. There is also the opportunity to consider whether provision of a transit and/or emergency stopping place for Gypsies and Travellers would be appropriate. There has been a noticeable increase over the last year or so of temporary unauthorised encampments across Greater Cambridge, particularly by those needing to access hospital treatment. The Greater Cambridge councils have tried to identify an appropriate location for a transit and/or emergency stopping place site in the area but have so far been unable to find anything suitable.

-Essential workers. Through development of the local housing strategy Cambridge City and South Cambridgeshire District Council are considering their policy position in relation to delivery of new homes specifically for local workers who cannot access social housing but are unable to afford to rent or buy in or around Cambridge. This follows a noticeable increase over the last year or so in the number of businesses and other organisations approaching the council with a potential interest in provision for this group. Further evidence is being gathered to formulate a policy view on this, but subject to this the development of CNF could help to support any local priorities which may emerge.

No attachments

Local Support

How will this scheme demonstrate effective joint working? E.g. with neighbouring local authorities and other local partners, Private sector organisations, Local Enterprise Partnerships etc.

Cambridge City Council is leading this bid on behalf of the core site landowners proposed joint venture (Cambridge City Council and Anglian Water) and with the priority support and engagement of key partners.

We work closely together with partners to address the multi-dimensional challenges we face. These are members of our overarching CNFE programme review group and the CNFE vision supports their objectives

-The Cambridgeshire and Peterborough Combined Authority (CPCA). Key ambitions for the CPCA include improving transport and digital infrastructure, doubling the size of the economy, and accelerating house building rates to meet the area's requirements.

-The Greater Cambridge Partnership (GCP). A partnership between Cambridge City Council, South Cambridgeshire District Council, Cambridgeshire County Council, the University of Cambridge and the CPCA. Their role is to deliver infrastructure, housing and skills to support the CPCA's strategy and ambitious growth plans for the area.

-Partnerships that represent the growth corridors Cambridge sits at the heart of. They include London-Stansted-Cambridge, Oxford-Milton Keynes-Cambridge, Norwich-Cambridge.

-We share services with neighbouring Councils including the Greater Cambridge Shared Planning Service with South Cambridgeshire DC, who are leading the development of the CNF Area Action Plan, underpinning the economic development strategic aims of the Local Authorities. We are also engaged closely with the County Council on proposals for the appropriate planning route.

The HIF business case is prioritised by the CPCA as the only HIF Forward Funding proposal in the area. Letters of support for the application were submitted by the Mayor of the CPCA, Chair of GCP and other key stakeholders, including Cambridge MP Daniel Zeichner.

We will work with partners to deliver the scheme

Delivery of the scheme will be overseen on a partnership basis:

-Cambridge City Council and Anglian Water are working as partners to enable the development of the core site through the relocation of the CWRC. They have previously worked via an MOU, but have now agreed Heads of Terms for a Joint Venture agreement via a Limited Liability Partnership.

-A master developer for the core site, U+I, has been procured through an OJEU tender process. U+I will work as partners to promote the site, obtain planning permission, fund and deliver infrastructure, and procure the delivery of the housing.

-Anglian Water and Cambridge City Council are working closely with the CPCA and GCP to ensure that the project is supported through, aligns with, and helps to provide solutions to key wider issues including housing and transport.

-Community and business engagement is a critical element and we are working with CNFE area local stakeholder partners and Councillors on the evolving development of the project at this early stage, although this will increase if we are successful in the bid. The Planning Framework

-The Area Action Plan (AAP) for the CNF area, including the CNFE core site, is being developed independently by Greater Cambridge Planning Service to ensure timely delivery. The AAP is proposed to extend from the core site (which is within the City Council's boundaries) to include the Cambridge Science Park and other key employment sites in South Cambridgeshire.

-We are engaging closely with the County Council as the Waste Planning Authority

Please demonstrate local support for your scheme (for example in Local Plans and policies)

Regenerating the CNFE has been part of our local plan for over 10 years

Since 2006 it has been an objective of Cambridge City Council and South Cambridgeshire District Council to secure the regeneration of the CNF area to make better use of this important location within the city.

The CNF Area of Major Change designation was included in the new Local Plans for both Local authorities. Recognising the challenges in relocating the CWRC, the policies promote the area primarily for employment use. There were no challenges made to the allocation of the CNF area in the local plans.

The area, extent, and the quantum and phasing of development, is proposed to be established through the production of a new joint Area Action Plan.

A scheme with similar parameters got significant support during consultation

Work on preparing a joint Area Action Plan (AAP) began early 2014. An Issues and Options draft was published for consultation in December 2014. This considered the potential of expanding the AAP boundary beyond the Local Plan site allocation to include the Cambridge Science Park. It also set out the strategic objectives for the area and four broad options for the areas regeneration – the 4 options are below.

No representations were received objecting to the proposal to bring the area forward for redevelopment. The vast majority of respondents supported the vision to maximise the development potential.

The consultation results indicated a clear preference for spatial development Option 4, maximum level of development (see below). But the cost of relocating the CWRC made that option unfeasible. Therefore, proposals were drafted to take forward Option 2, which the majority of consultees considered was a deliverable, if not ambitious, option.

The four development options were issued for consultation in 2014:

1: Lower Level of Redevelopment-This focused on development of the vacant easily available land parcels, with all existing business areas and CWRC retained on site. Offices/R&D 7.7ha (162,000sqm=13,600 jobs)+0.2ha B2/B8, 1.2ha Open Space, and no residential.

2: Medium Level of Redevelopment: Focused on areas of more easily available land, introducing residential development near the new station and the redevelopment of some of the existing employment sites to provide a buffer between the retained CWRC and the residential development to the south. Offices/R&D+7.8ha (180,000sqm=15,100 jobs), Industrial (B2/B8)-7.1ha, Open Space+4.3ha, and Residential +4.4ha (440 dwellings).

3: Higher Level of Development: This proposed upgrading the existing CWRC facility, would mean rationalisation of the facility reducing the overall size of the facility. This would free up further land and increase the development capacity of the area. Offices/R&D+14.7ha (307,000sqm = 25,800 jobs), Industrial (B2/B8)+0.5ha, Open Space + 5.0ha, and Residential +6.7ha (630 dwellings).

4: Maximum Level of Development. This option proposed to relocate the CWRC offsite, enabling comprehensive redevelopment

across the entire area for employment-led mixed use. Offices/R&D+16.0ha (328,000sqm= 27,600 jobs), Industrial (B2/B8)+5.8ha, Open Space+5.0ha, and Residential+6.7ha (630 dwellings).

The joint CNF AAP will be developed in tandem with implementation of the HIF. In accordance with the Local Development Schemes of both authorities, a further Issues & Options consultation is to be undertaken before or upon announcement of the HIF being approved. This would be predicated on the WRC being relocated off the site. As the consenting process for the relocation of the WRC is advanced, so too the joint AAP will be developed to a pre-submission stage to ensure it can demonstrate the regeneration benefits to be realised through the HIF. The weight and status of the AAP will increase with the certainty of the WRC relocating and be sufficiently advanced to guide and enable pre-application engagement and consultation on an outline planning permission for the core site.

Can you provide evidence of support for your proposal from the following:

	Support	Further Details
Local MP(s)	Yes	The Leader and CEO of the Council meet regularly with Daniel Zeichner in planning strategic development of the city and a letter of support from him is attached below.
Filename	Description	
D Zeichner MP - Letter of Support[2].pdf	MP Letter of Support	
	Support	Further Details
Local community	Yes	As part of the development of the Cambridge Northern Fringe AAP, the Greater Cambridge Planning Service have established three forum groups to engage with key stakeholders and community. These are for landowners / developers; businesses and communities; and local ward members across the wider Northern Fringe area. In addition Officers from other departments within Cambridge City Council regularly attend a Northern Area Committee to brief and receive feedback from ward members and local community on proposed development in their area.
Filename	Description	
Statement on Partnership with the Local Community 1.12.18.docx	Local Support	
	Support	Further Details
Local Enterprise Partnership(s)	Yes	We have worked closely with the LEP and they provided a letter of support at EOI stage. Since that time the LEP has been subsumed into the Combined Authority and at the business case stage, the combined letter of support comes from the Mayor. We are engaging with the Combined Authority's Business board and growth team in developing meanwhile and longer term plans for the site.
Filename	Description	
GCGCP support for CNFE v180917[4].pdf	LEP Support Letter	

	Support	Further Details
Supporting upper tier local authorities	Yes	We work closely together with key partners including the Cambridgeshire and Peterborough Combined Authority (CPCA), of which Cambridge City is a core member, to address the multi-dimensional challenges we face. Partners are members of our overarching CNFE programme review group and the CNFE vision supports their objectives. Key ambitions for the CPCA include improving transport and digital infrastructure, doubling the size of the economy, and accelerating house building rates to meet the area's requirements. The HIF business case is prioritised by the CPCA as the only HIF Forward Funding proposal in the area.
Filename CNFE-CPCA Letter of Support 27.11.18.pdf		Description Combined Authority letter of support
	Support	Further Details
Supporting lower tier local authorities	Yes	The Greater Cambridge Partnership (GCP). A partnership between Cambridge City Council, South Cambridgeshire District Council, Cambridgeshire County Council, the University of Cambridge and the CPCA. It uses the City Deal to deliver infrastructure, housing and skills to support the CPCA's strategy and ambitious growth plans for the area.
Filename CNFE Letter of Support LH 1218.pdf Letter of Support CNFE - 03 12 18.pdf CFNE - GCP Letter of Support.pdf		Description City Council Letter of Support South Cambridgeshire Letter of Support GCP Letter of Support
	Support	Further Details
Any other key stakeholders	No	N/A
No attachments		

Meeting housing policy objectives

How will your scheme support the Government's ambitions for housing, as set out in the Housing White Paper?

The CNFE scheme – which the HIF funding will enable – directly addresses following themes in the Housing White Paper (HWP).
“Planning for the right homes in the right places”

The HWP emphasises delivering homes where demand is greatest. Cambridge is one of the fastest-growing and most productive cities in the country, with a world-renowned knowledge economy. And the Cam-MK-Ox Arc and will increase the need for development in and around the city.

The Cambridgeshire & Peterborough Combined Authority (CA) has set a goal of doubling GVA which includes reinforcing Greater Cambridge's position as a global centre of excellence for research, development and business growth. This will drive substantial need for new homes across Greater Cambridge.

The new homes in CNFE will make a significant contribution to Greater Cambridge housing needs, and help address affordability pressures.

“Making more land available for homes in the right places by maximising the contribution from brownfield and surplus public land”

The HWP states an ambition to make the most of publicly owned surplus land with the aim of releasing public land for 160,000 homes during this Parliament.

The CNFE core site is on land owned by Cambridge City Council, a public authority, and Anglian Water, a regulated utility company. Cambridge is surrounded by the Green Belt. NPPF2 expects all reasonable options to be assessed before land is released from the Green Belt. This includes the reuse of previously developed land and increasing densities at locations well-served by public transport. The CNFE site meets these criteria.

“Making better use of land for housing by encouraging higher densities”

Development within CNFE will be of high-density, low-to-medium-rise, at scale. The core site could deliver 5,600 homes across 47 hectares – an unprecedented level of density for Cambridge.

“Building homes faster”

The CNFE site is identified for redevelopment through the recently adopted Cambridge Local Plan 2018 and the South Cambridgeshire Local Plan 2018. Relocation of the CWRC will make this site suitable for residential development.

The Housing White Paper and NPPF2 both seek to increase the rate of housing delivery.

Our plan is to build the CNFE core site out in a central case of [reg. 12\(5\)\(e\)](#) – an average delivery rate of [reg. 12\(5\)](#) dwellings per annum. This is far quicker than would normally be achieved on a single strategic site.

We will manage make this fast-track delivery happen by:

- engaging with the Greater Cambridge Planning Services preparing the joint CNF Area Action Plan (AAP)
- submitting a hybrid planning application so that early phases of the proposed development can be delivered quicker
- preparing a design code for the first phases of the proposed development alongside the hybrid application
- using a Planning Performance Agreement process that will reduce the number of pre-commencement conditions
- planning for delivery from the outset by having a master developer on board
- diversifying the market so that there is not undue reliance on too few types, tenures and delivery routes
- overcoming capacity constraints and meeting high construction standards by using modern construction methods
- phasing development to deliver site infrastructure smoothly, optimising the amount and range of development lots available in each phase

“Diversifying the market”

The HWP encourages operators to diversify the housing market and embrace innovative and efficient methods (like modular and factory-built homes), and encourages institutional investment in the private rented sector.

We support this approach and have identified three ways to put these ideas into action at CNFE:

Cater to a wide array of markets including first-time buyers, young professionals, families, students and older people. Offer a variety of dwelling types, sizes and price points across the site. This will give the scheme broad appeal and market resilience. And we expect 40% of housing to be affordable.

- Capture some of the pent up institutional build-to-rent demand by offering a substantial number of private rented units in a desirable build-to-rent (BTR) location. Initial analysis suggests BTR could account for [reg. 12\(5\)](#) of delivery.

- Explore alternative housing models. U+I, the master developer of the core, and TOWN, U+I’s partner, have investigated or delivered custom build, shared living, cohousing and micro housing. These may not be a large proportion of the overall housing mix but they will diversify the housing offer, aid affordability and catalyse a new community.

“Boosting productivity and innovation by encouraging modern methods of construction (MMC)”

Increased use of MMC on Strategic Sites is an aspiration of the Combined Authority and we will investigate how to realise the potential MMC benefits of less construction time on site, better and more consistent quality, more efficient materials sourcing and use, and improved energy efficiency.

We have commissioned a study to examine:

- how MMC could help deliver the scheme
- how MMC could speed up our build-out rate
- the potential for MMC to improve environmental performance
- the MMC approaches that might be deployed across the scheme and whether the master developer should mandate or encourage them
- the potential for dedicated on-site MMC facilities.

“Building good quality homes”

Quality, innovation and sustainability will be at the core of the development. Development proposals will be assessed against a stringent design code.

This project will deliver a sustainable city quarter with low operational energy consumption, at or close to the Passivhaus standard for residential development; commercial spaces will achieve BREEAM Excellent.

Nature will form an important part of the development. A green corridor will connect to Milton Country Park, providing a focus for ecology, planting and biodiversity. Green walls and roofs will soften the urban form, provide habitat and help cool buildings.

Scheme Objectives

What are the overarching objectives of the scheme? Objectives should be SMART - specific, measurable, achievable, relevant and time constrained

- Objective 1: Relocate the CWRC to a suitable new site. S – Relates to existing and new CWRC facilities and continuity of Anglian Water services while releasing development land. M – Objective is met when the new CWRC is completed and fully operational. A – Relocation achievable subject to S35 and DCO processes and HIF funding approval. R – Relocation directly facilitates the creation of residential development land. T – Programme for relocation established and deliverable subject to HIF funding.
- Objective 2. Unlock 47 hectares of fully serviced brownfield land for residential-led mixed use development within the core site. S – Relates directly to the remediation and reuse of the core site (CWRC plus City Council land) once HIF-funded relocation has taken place. M – Objective is met when CWRC is relocated, planning permission obtained and site infrastructure installed such that development land can be brought to market. A – Partners unified behind HIF bid to facilitate residential-led reuse of core site, with planning framework to be established through new Area Action Plan (AAP). R – Directly enables delivery of additional housing. T – Programme established to unlock the land following existing CWRC decommissioning and planning permission being obtained.
- Objective 3. Deliver 5,600 homes and 4,000 jobs within the core site S – Relates specifically to the development potential of the core site once HIF-funded relocation has taken place. M – Clear targets set for level and rate of housing and commercial delivery. A – Strong partner support, planning framework in process through AAP and master developer already procured through OJEU process. R – Relates directly to the delivery of homes and job outputs. T – Delivery timeframe established and strategies to meet it in development.
- Objective 4. Deliver a further 3,000 homes and 20,000 jobs across the wider CNF area over the Area Action Plan Period. S – Relates to specific sites identified within wider CNF area where constraints to development are lifted by HIF-funded CWRC relocation. M – Understanding of landowner aspiration including indicative masterplans. A – Targets are based on an assessment of development capacity and assessment of how rational landowners will act when land is allocated for relevant uses. CPO will be considered if obstacles to the realisation of additional development are encountered. R – Relates to the delivery of homes and jobs on land currently constrained by the location of the CWRC. T – Prioritise sites developable within the plan period covered by the forthcoming AAP.
- Objective 5. Deliver transport-neutral growth across the CNF area. S – Relates to the decoupling of development from the growth of harmful impacts on the transport network, thereby making the proposed scale of development following HIF-funded relocation of the CWRC achievable. M – Targets, likely to be expressed in terms of peak-time movement volumes, will be set and monitored by the AAP. A – Based on expectation of AAP policies setting standards for mixed-use development, modal share, parking restraint and improvements in public transport, walking and cycling infrastructure. R – Transport capacity and impacts directly affect the level of development that can be accommodated under the AAP. T – To be achieved through monitoring on occupation of each development phase.
- Objective 6. Deliver a new city quarter achieving exemplary standards of design and sustainability. S – Relates to the design quality and environmental performance of development enabled by HIF-funded CWRC relocation. M – Standards and policies will be set and monitored: i) strategically for CNFE as a whole through policies in the AAP; ii) for the core site by a design code. These will include fabric energy efficiency, renewable energy supply, water conservation and reuse, operational and embodied carbon emissions, sustainable drainage, green infrastructure, biodiversity and (related to transport neutrality) modal share. A – Standards will be related to and/or improve upon existing recognised benchmarks and levels of performance in development in Cambridge. R – Relates directly to the quality and sustainability of the housing and other development enabled by CWRC relocation. T – Relates to development taking place during the AAP plan period.
- Objective 7. Create a mixed community with good homes for all. S – Relates to the design, amenity and mix of types and tenures

of the 8,625 homes to be delivered within CNFE following the HIF-funded relocation of the CWRC. For example, the achievement of 40% affordable housing on the core site. M – Policies will be set by the AAP by reference to the Housing Market Assessment and identified housing need in Cambridge and South Cambridgeshire, and for the core site will be carried through into the planning permission and design code. Policies and standards will relate to inter alia the level and mix of housing types (eg, family houses, apartments, specialist housing) and tenures (eg, social and affordable rent, shared ownership, private rented, owner-occupied, community-led), space and external amenity standards, accessibility, thermal performance and daylighting. A – Standards will be related to national and local policies and needs. R – Relates directly to the mix and quality of housing enabled by CWRC relocation. T – Relates to development taking place during the AAP plan period.

Please list the criteria (critical success factors - CSFs) against which you will assess the successful delivery of the project and the evaluation of options

- Strategic fit and business needs (“Strategic Case”) -Recycling brownfield land for housing development – target at least 47 hectares of urban brownfield land released within site 1A and 1B and for housing-led development. -Enabling rapid additional large-scale housing delivery – target at least 5,600 new homes on Sites 1A and 1B by ^{reg. 12(5)(e)}
- Value for money (“Economic case”) -Maximising social, economic and environmental benefits relative to costs – target a benefit-to-cost ratio of at least 2. -Maximising the number of dwellings delivered for the level of public investment – target a HIF cost per dwelling of ^{reg. 12(5)(e)} or less.
- Capacity and capability (“Commercial case”) -Facilitating operational continuity of water recycling for Greater Cambridge – target delivery of water recycling facilities with capacity to serve up to 250,000 people (including Waterbeach option) for waste water treatment and 548,000 people for sludge treatment (rising to over 1 million before 2025), across around 100 places. -Releasing a development opportunity that the private sector is able to deliver – target ^{reg. 12(5)(e)} of private-sector-led investment once the CWRC is relocated.
- Affordability (“Financial case”) -Public funding requirement is focused specifically on the relocation/remediation of the CWRC – target 100% private-sector-led or commercially-based funding for all non-CWRC-related development costs. -Public funding is affordable from available sources of finance – target a HIF funding requirement of less than ^{reg. 12(5)(e)} or if greater than ^{reg. 12(5)(e)} other sources of funding are available.
- Achievability (“Project management case”) -Deliverable by the partners involved - target capability within Cambridge City Council and Anglian Water to manage and deliver the chosen CWRC relocation option. -Private sector delivery capacity for housing – target demonstrable private sector appetite to fund and manage delivery of infrastructure and development associated with release of CWRC land.

Rationale for intervention

What is the market failure being addressed? Please provide a detailed account of why the existing arrangements, both financial and delivery, are not sufficient to deliver the scheme and the rationale for government intervention (HIF funding)

The market failure being addressed

The Cambridge Water Recycling Centre (CWRC) has occupied its 39 hectare site since the 19th century when it was some distance from the urban edge of Cambridge. It now lies south of (or inside) the A14, which currently forms the northern urban boundary of the city.

Over the years, the city has grown up to and around the CWRC. Much adjacent land within the Northern Fringe is now home to a critical mass of highly productive science-led industries. Infrastructure improvements include the Cambridgeshire Busway and the recently-opened Cambridge North railway station, and make the site well connected – locally and globally. Demand for housing in Cambridge is extremely high, as evidenced by one of the most stretched income-to-house-price ratios in the country, and has significantly outweighed supply for housing in Cambridge over the last 20 years resulting in a growing affordability issue and developers bringing forward the majority of other viable brownfield development opportunities in the city.

The city's growth is limited by many factors, including the Green Belt and the importance of conserving the historic environment. This increases pressure for development further outside the city and imposes additional costs on workers and businesses in the form of increased travel times and distances, rising congestion and lost productivity.

Consequently, the CWRC represents a completely sub-optimal land use for its location. The opportunity cost of using a prime

mixed-use site for a water recycling and sewage treatment plant has never been higher.

And these costs are not limited to the CWRC site itself. Some 42 additional hectares of potentially suitable land around the site cannot be developed for housing uses because of the odour constraints. Residential development is not suitable within the immediate area, and the enhancement of existing land uses (eg, employment) that is acceptable is of limited commercial viability.

The market failure, therefore, lies in the inability of the market to deliver relocation of the CWRC and release of the site for land despite the strong and longstanding signals that the site should be released for housing-led development. These failures owe to combination of the regulatory environment under which Anglian Water operates, the size and nature of the transitional costs and risks associated with relocation, and the difficulty of internalising the wider benefits of relocation to third-party land. Specifically:

-Regulation. The CWRC currently satisfies Anglian Water's operational requirements and allows it to meet its statutory obligations, so there is no operational need to relocate the CWRC. Ofwat's regulatory framework, which is supported by the Water Industry Act 1991 and other legislation, does not allow Anglian Water to raise finance, or charge its customers, to pay the costs of building a replacement facility.

-Viability and commerciality. The scale and concentration of costs and risks associated with relocating the CWRC are such that no private investor or developer would perceive sufficient profit to be available from a redevelopment scheme to make those costs/risks worth taking on speculatively. Even if a land value uplift well in excess of the costs could be generated, the discount a rational investor would apply to future returns for the compound time and cost risks would make it unacceptable as an investment.

-Coordination externalities. It follows from the extensive negative externalities attributable to the CWRC's current location that relocating it would have positive external impacts on other land (ie, currently within the odour zone). Internalising these impacts (eg, by assembling land in advance, or coordinating among landowners) could, in theory, improve the viability of a market-led solution but in practice there is no effective and reliable mechanism for achieving this.

Why existing arrangements are not sufficient to deliver the scheme

The absence of commercial appetite to finance relocation and the inability of Anglian Water to raise funding itself mean that the only feasible solution is public funding. However, no other suitable source of public funding is available:

-Similar concerns about the scale and nature of cost and risk that apply to commercial funding routes apply equally to existing public sources. The project is simply too large, and the time horizon for returns too long, for example for local authorities to prudently deploy reserves, or use their borrowing powers, for such an undertaking.

-Even if such investment could be justified on prudential grounds, the opportunity cost of deploying capital funds, reserves and/or borrowing capacity to the project would be so great as to crowd out other investments which may be seen as safer, more immediately necessary and more directly linked to the statutory functions that must be local authorities' first priority.

The rationale for government intervention

The rationale for government intervention is to overcome the market failures described and limits of existing arrangements in order to unlock CWRC relocation and enable the market to deliver circa 8,600 homes in Cambridge Northern Fringe East.

Provision of HIF funding would create or enable efficiencies and positive externalities:

-A new Area Action Plan (AAP) will be able to be prepared on the basis that housing-led development is a feasible and beneficial land use, and land-use planning undertaken across the CNF area so that different ownerships are coordinated to maximise delivery across the area and level land-value uplift to pay for key housing-related infrastructure;

-A better jobs-housing balance will be created in the CNF area which will reduce pressure on existing (particularly transport) infrastructure, and existing high-value land-uses such as science parks will be able to be 'upzoned' to provide for additional density of

jobs;

-Pressure to identify land outside the urban area for an equivalent number of additional homes over a similar timeframe, with substantial and probably less well-coordinated infrastructure requirements of their own and higher external costs in journey times and lost productivity, will be alleviated.

No attachments

Additional Information

If you have any further information to support your strategic case, which has not already been captured in the above, please include this here

Whilst no specific appendices are referenced in our responses to Section 2 above we would draw your attention to the full list of appendices that should be read in conjunction with our submission The full list of all appendices are included after Section 8.

reg. 12(5)(e)	[REDACTED]
[REDACTED]	[REDACTED]

Options Appraisal

Outline of options

Please provide a summary of all options considered during co-development related to the extent of HIF funding required. Please set out the rationale for why these options were discounted in favour of the preferred option

Relocating the Cambridge WRC (CWRC) in order to bring forward transformational development in Cambridge Northern Fringe (CNF) has been an ambition for several decades, during that time, many options have been considered.

The last attempt to relocate the CWRC culminated in 2006-07 with identification of potential relocations sites by Cambridgeshire County Council. Ultimately, there was no confidence that the cost of the relocation could be paid for out of the land receipts (with the subsequent global financial crisis further weakening this), and the initiative was halted.

The work undertaken during that process was the starting point for the preparation of the options developed during the co-development period.

-Several technical options for relocating the CWRC to an alternative site were explored by consultants MWH and costed by Arcadis. These included different sites and solutions for tunneling, discharge points and retention of some facilities on the existing site. This helped in understanding the impact of a complete relocation on odour contours and the creation of new developable areas within the Northern Fringe.

-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 potential of the City Council's land along Cowley Road (8 hectares), assuming the CWRC remains on site in a do-nothing scenario, was explored. The limited business, storage and industrial uses which could come forward on that land would not generate sufficient value to fund even the partial relocation of the CWRC. It would also not achieve the intended regeneration objectives.

The option of a complete relocation was chosen for its ability to minimise odour risk and maximise residential development.

The process of identify and assessing potential locations for the new WRC has been further developed during the co-development period. This has including asking Cambridgeshire County Council for pre-application advice relating to the methodology for the site selection.

The relocation of the CWRC requires three elements of construction, as follows.

Connecting tunnels (for waste water flows) from the existing CWRC to the new one, and from the new WRC to the receiving watercourse for the effluent (treated water).

The water recycling centre itself, to separate the waste water from the sludge and to treat the former.

The sludge treatment centre to treat the resultant sludge and use it to produce gas from the anaerobic digestion process, which is then used to generate electricity via a Combined Heat and Power engine.

The options for these elements have been explored by Anglian Water's @one Alliance team to produce a design for these elements to allow the cost of them to be determined. These costs have formed the basis of the quantum of HIF funding requested by the submission of this Business Case.

The cost of items 2 and 3 above are approximately the same, wherever the new plant is relocated. The location of them does affect the length of the tunnels and therefore the cost of them. The combination of the site identification process undertaken so far, and the design work of the new WRC has allowed Anglian Water to identify a likely range of cost for the relocated WRC, and hence the amount needed from HIF. The range is ^{Reg. 12(6)(e)} to £227m, depending on the distance of the relocated WRC from the existing site.

As Anglian Water's customers cannot fund the relocation of CWRC, they have taken the top of the cost range as the quantum of funding needed from HIF. During the co-development phase of the Business Case, we were advised to use the higher end of the range as the amount to request. In our answer to the question in Section 6 (Do you aim to recover any of the HIF funding (to be retained locally?)) we have explained that our draw down from the Fund will be in line with actual spend, which will be based on the location of the new CWRC determined by the DCO or PA/CPO consenting process.

Please summarise shortlisted options considered and how these meet the required objectives of the scheme detailed earlier in the business case.

	With requested HIF funding	With a reduced amount of HIF funding	Do nothing (no HIF funding)
HIF Funding Required	£227,000,000	£227,000,000	£0
Total scheme cost	reg. 12(5)(e)	reg. 12(5)(e)	
Housing units delivered	8625	0	0
Estimated % affordable	40 %	0 %	0 %
reg. 12(5)(e)			
Amount of LA funding (inc. LGF)	£0	£0	£0
Amount of other Central Govt. funding	£0	£0	£0
Amount of private sector funding	reg. 12(5)(e)		
Amount of other public sector funding	£0	£0	£0

1. With requested HIF funding

Through the relocation of the WRC, Option 1 unlocks a significant brownfield site for development with potential for 5,600 new homes and could enable the development of a further 3,025 homes on other sites constrained by odour. In doing so, it meets the operational, financial and risk management requirements of Anglian Water and the City Council. Option 1 shows that a viable and deliverable scheme can be brought forward and the joint ventures, development agreements and procedures to do this are largely in place.

What strategic risks do the shortlisted options carry?

Description	Likelihood	Impact
<p>Planning risk – A new joint Area Action Plan is required for the site to realise the development potential and set the development parameters. Following which a hybrid application will be submitted and subsequently reserved matters. The political risk of meeting all the sustainability, housing, and transport aspirations of the stakeholders will be a key part of this.</p>	Low	MediumLow
<p>DCO or LPA route and relocation delivery risk – A DCO process is the preferred planning route to acquire the land and secure planning permission for the new water recycling centre. Should the LPA route be required, or delivery of the replacement facilities be delayed, it may impact on the housing delivery programme.</p>	Low	High
<p>Market risk – There will be market cycles in the delivery of housing where certain tenures and mixes will be in greater demand than others – which may impact speed of delivery. The wider sites outside of our ownership will require the assistance of third parties to be delivered – all have been progressing residential redevelopment plans in isolation</p>	MediumLow	Low

Please note that a more detailed programme risk register for Option 1 is included in Appendix AC.

What are the constraints related to this shortlisted option?

- Land ownership – While we control the majority of the land released for housing from the relocation of the water recycling centre there are other land owners who need to cooperate to enable the comprehensive and coordinated development to deliver the housing numbers stated. Site 2A – has a masterplan and a development partner on board to bring forward housing already. The owners of Site 2C have plans to redevelop for housing in the medium term. However site 2B is in disjointed ownership. We are therefore looking at the potential to acquire via private treaty or CPO powers.

Please refer to the report on Land Assembly Strategy prepared by GVA included in Appendix K

- Contamination/remediation - While initial desktop analysis and test pits suggest the contamination that will remain following the relocation of the water recycling centre will be manageable – there will inevitably be hot spots of contamination and remaining constraints from the subterranean Victorian water treatment infrastructure.
- Pylons – There are 132MW electricity pylons running diagonally across the site. These will need to be buried and rerouted to enable development. While this is a fairly common practice in development the exact treatment, buffer zones, timing, and costs will have to be evolved with the masterplan.
- Transport neutrality – Part of the brief for the site, and a likely requirement of the emerging Area Action Plan, will be that the housing and commercial development across the entire CNF area has a net neutral effect on the transport network. A very carefully thought out transport strategy will therefore be agreed with a strong focus on links to the station, and pedestrian/cycle links to the surrounding area.

Please provide details of any inter-dependencies related to this shortlisted option

- For the full HIF funding scenario the key interdependencies are all preplanning: A S35 application to the Secretary of State unlocks the DCO process in Q1 2019, along with a positive result to our HIF business case, after which the Area Action Plan can be progressed in 2019, once the SoS decision on the DCO is received in Q1 2021 (and the Judicial Review period has expired), the Area Action Plan can then be submitted for Examination in Public and both the housing site planning application and relocated water recycling centre construction can commence following receipt of the inspector's report on the AAP. If the DCO route is not possible, the Local Planning Application (LPA) route could potentially delay relocation, as additional consenting would be necessary and potentially a CPO. Work is being undertaken to mitigate the potential time impacts of an LPA route.

Please provide details of the exit strategy for the shortlisted options

- Cambridge City Council (via their joint venture with Anglian Water) will offer building licenses and/or long leasehold interests to plot developers (institutions, house builders, commercial developers, or others) - who will pay a land price for the plot and potentially further overage and estate charges. Quality will be monitored, maintained and policed under the build license, the design code, and contractually by the master developer U+I under the Master Development Agreement. Following completion of construction, the Council will have an ongoing passive head leaseholder interest in the site.
- In terms of the green, grey, social and public infrastructure the master developer (U+I) will deliver these elements under a build license and pass ownership to the relevant public authority, management company, charity or other to operate on an ongoing basis.

2. With a reduced amount of HIF funding

Three variations of Option 2 have been considered over a number of years.

Option 2a: Anglian Water part-subsidising the WRC relocation.

Anglian Water would finance in whole or in part the relocation of the CWRC. As referred to in other sections, Anglian Water has no operational requirement to relocate the CWRC. The regulatory and funders' restrictions prevent the part-subsidisation of the relocation.

Option 2b: Cross-funding relocation from future development value

Under this option, the cost of relocating and the CWRC would be partly met as a development cost within the context of developing the Core Site for housing, with the effect being that the land value would be discounted by a corresponding sum.

The development already has a heavy burden of on and off-site infrastructure costs, a target of 40% affordable housing, and significant transport contributions and direct costs which means it cannot support additional costs without reducing the land value to a level that would be considered unviable given the scale and nature of the costs and risks associated with the relocation.

Option 2c: A third party part-subsidising the works via a loan

Under this option, the cost of relocating and remediating the WRC would be met in whole or in part by a loan. It is likely this would be a substantial amount, so having an impact on viability. This would be the same as under option 2b, as the loan and associated costs would still be met by the land value. Even if only a small percentage of the CWRC relocation cost were to be funded via a loan, there would be significant risks and delays, as follows:

- Option requires HIF funding to be secured
- Time constraints on arranging such a loan arrangement would result in uneconomic premiums
- Anglian Water would not be able to commit to the planning works required to enable the relocation until 100% of the required funding was guaranteed.

What strategic risks do the shortlisted options carry?

Description	Likelihood	Impact
No significant risks – as only low density industrial/commercial uses are feasible	Low	Low

What are the constraints related to this shortlisted option?

- The remaining odour zone prevents any housing development in the area.

Please provide details of any inter-dependencies related to this shortlisted option

- There is no housing development in these options and therefore no interdependencies.

Please provide details of the exit strategy for the shortlisted options

- There is no housing development in these options and therefore no exit strategies.

Please summarise any economic appraisal conducted for this shortlisted option, relative to the do nothing (no HIF funding) option

- As confirmed with Cambridge City Council's planning department, there is only one option under consideration at the moment, based on the relocation of the Cambridge Water Recycling Centre (CWRC). No housing delivery is possible without the

relocation of the CWRC. While it is possible for the CWRC to release circa 55 hectares for development, this is limited to light industrial uses due to planning constraints associated with the CWRC odour zone. The potential for light industrial development has been considered within the reference case (no HIF funding) and the associated land value uplift is discounted from the figures presented below.

The headline outputs are set out below:

Net homes delivered: ^{reg. 12(5)(e)} (accounting for 20% displacement)

Land Value Uplift (residential development): ^{reg. 12(5)(e)}

Land Value Uplift (commercial development): ^{reg. 12(5)(e)}

External benefits of affordable housing: ^{reg. 12(5)(e)}

Transport external costs: ^{reg. 12(5)(e)}

Combined impacts of the option ^{reg. 12(5)(e)} (NB: This excludes the positive impact of the transport user benefits of the A10 mitigation programme which could be apportioned to CNFE. These would increase the total benefit of this option to ^{reg. 12(5)(e)}).

HIF funding request (including OB): ^{reg. 12(5)(e)} (present value, including Optimism Bias)

Benefit Cost Ratio (BCR) for housing component (Housing Benefits / HIF Funding): ^{reg. 12}

BCR for public sector (Total benefits / public sector costs): ^{reg. 12(5)} (potential to increase to ^{reg. 12(5)} with the apportioned transport user benefits of the A10 mitigations programme)

BCR for total scheme (Total Benefits / Total Costs): ^{reg. 12(5)} (potential to increase to ^{reg. 12(5)} with the apportioned transport user benefits of the A10 mitigations programme)

As identified above, this is the only option under consideration.

3. Do nothing (no HIF funding)

Without HIF funding, the CWRC cannot be relocated because of market failure. Anglian Water has no operational reason to relocate the CWRC. Therefore, the relocation cannot be funded by customers' bills using the regulatory processes.

The relocation of the WRC has been explored over 20 years, and it has been deemed unviable due to the large upfront costs:

Savills Strategic Investment Advisory Team were asked to comment on the ability of Anglian Water to raise funding for the relocation of the CWRC. Their report can be found in Appendix J.

The report gives the following reasons why the total funding required could not be raised.

Anglian Water's inability to use the CWRC site as security or collateral for lending purposes due to restrictions from the regulatory regime and/or its funders.

Even if it were possible to raise funds, the funding horizon is too long because of the length of time, ^{reg. 1} to ^{reg. 1} years, before the funds could be repaid to the funder from the proceeds of land sales.

The interest payable on the funding could not be paid until proceeds from land receipts were received. This would mean that interest, which is normally paid from the start of the funding arrangement, could not be paid. This would also dramatically increase the cost of the fund, even if a funder could be found.

For Anglian Water, the operational imperative of having the new WRC operational before the CWRC can be decommissioned means that 100% of the funding needs to be in place from the start of the project. The time needed to raise these funds, even if they could be raised, would result in a significant delay in the start of the project.

The planning risks involved with the project, both the Core Site and the relocation site, are significant and impact the value of the land even if it could be used as collateral (see above). Market risk and cost risk also add to this problem.

For these reasons, funding could not be raised to cover the cost of relocating the CWRC

What strategic risks do the shortlisted options carry?

Description	Likelihood	Impact
No significant risks – as only low density industrial/commercial uses are feasible	Low	Low

What are the constraints related to this shortlisted option?

- The remaining odour zone prevents any housing development in the area.

Please provide details of any inter-dependencies related to this shortlisted option

- There is no housing development in these options and therefore no interdependencies.

Please provide details of the exit strategy for the shortlisted options

- There is no housing development in these options and therefore no exit strategies.

Please summarise any economic appraisal conducted for this shortlisted option, relative to the do nothing (no HIF funding) option

- There is no housing development in these options and therefore no economic appraisal

Options Summary

Please summarise why the preferred option, with the requested HIF funding, has been chosen and why the other shortlisted options have been discounted - this should make reference to advantages and disadvantages of the options in relation to scheme objectives and CSFs

Option 1 is selected as the preferred option because it is the only option that (i) enables all of the strategic objectives to be met and (ii) delivers against all of the critical success factors.

In simple terms, relocation of the CWRC is a binary outcome: either it occurs, and all of the strategic objectives and critical success factors are brought into play; or it doesn't, and none of the strategic objectives and few of the CSFs are meaningfully achievable. And the CWRC is only able to be relocated with provision of the full level of HIF funding being sought.

Please refer to the table in Appendix L for a full cross-reference of the options against the strategic objectives and CSFs.

In summary:

- Option 1 achieves, or enables the achievement of, all of the objectives and CSFs. It is the best performing option.
- Option 2 is the worst-performing option in that it could incur HIF funding but without much likelihood of delivering housing outputs. As such it specifically fails on CSFs concerned with value for money in housing delivery and in maximising social, economic and environmental benefits relative to costs.
- Option 3 achieves none of the strategic objectives but is a better performing option than Option 2 because it is effectively the status quo. Therefore, no additional benefits are achieved but no additional costs incurred either.

Please provide a summary of the impact should funding not be received

If funding is not received then the Do Nothing (Option 3) will become the single option available.

The impact of this considered below.

Impact on housing deliver

- 8,625 fewer homes will be delivered within the CNF / Area Action Plan (AAP) area.
- Housing prices in Cambridge are likely to continue to grow rapidly as a key opportunity to increase supply within the city is lost.
- The delivery of substantive additional housing above that already planned for under the local plan is unlikely to materialise.
- Meeting the growth needs of Greater Cambridgeshire beyond 2031 would become even more challenging and require the consideration of significantly less suitable and sustainable locations.
- The current spatial strategy is reliant on a relatively small number of very large development sites, which are in private ownership,

and over which the Local Authorities have little influence over build-out rates, giving rise to the risk of market fluctuations impacting overall delivery.

-Being more distributed and less supported by infrastructure and mixed uses, new housing development is likely to be on the whole more car-dependent, increasing the overall impact on the highway network or requiring greater investment in public transport initiatives to mitigate.

-Pressure for new growth within the city itself will lead to increased development pressure on less suitable and more sensitive areas adjacent to the city's edges, with a focus on greenfield sites and including the greenbelt.

Impact on the AAP area

-The CNFE area will continue to be constrained by the odour levels, with all future housing development being considered unsuitable. Future development will be restricted to general industrial uses that are suitable to be located within the odour zones. This area of Cambridge will continue to have an unsustainable mix of land uses, dominated by commercial and light industrial, and with no supporting residential or amenity uses.?

-The current land use pattern would continue, with many of the current and future land-hungry uses remaining and with little incentive on owners to achieve more land-efficient uses

-Cambridge North railway station will continue to be located next to a series of primarily light-industrial uses in the short to medium term and will fall short of its potential in terms of capacity and strategic rationale.

-The nearby Science Parks will lose the potential to have a large quantity of new housing within close proximity. This will compound their existing car-dominated travel patterns, preventing them from growing sustainably in future years.

Economic impact

-There is a significant risk that the lack of additional housing will curtail the potential of Cambridge's local economy to continue to grow. In particular, it is unlikely that the Mayor of the Combined Authority will achieve his ambition of doubling GVA

-Slow growth in the Cambridge economy is likely to have knock on effects for the economic prospects of the surrounding districts

-The high house prices will impact on the ability of the service industry to retain and attract new staff

-The attractiveness of Cambridge as a place for work and enterprise will be affected by the requirement to build further strategic roads to manage congestion to enable workers to access the Cambridge market.

-Ultimately, the above could influence global business decisions on where to locate, resulting in a loss of investment not only in Cambridgeshire but potentially in the UK

If you have any further information to support your options appraisal, which has not already been captured in the above, please include these here

reg. 12(5)(e)	

Economic Case

Net Present Value (NPV) of housing benefits

Please provide the estimated NPV (in 2018/19 prices) of the additional housing benefits (as monetised using land value uplift) of the preferred option relative to the do-nothing option

reg. 12(5)(e)

Please provide the estimated NPV (in 2018/19 prices) of the current use land value for the scheme overall (before additionality adjustments)

reg. 12(5)(e)

Please provide the estimated NPV (in 2018/19 prices) of the site specific residential land value for the scheme overall (before additionality adjustments)

reg. 12(5)(e)

Please provide the undiscounted values used to estimate the residential land value calculation across all sites

GDV (compliant with the Economic Case guidance)	reg. 12(5)(e)
Build costs	reg. 12(5)(e)
Externals	reg. 12(5)(e)
Professional fees	reg. 12(5)(e)
Sales costs	reg. 12(5)(e)
Finance costs	reg. 12(5)(e)
Contingencies	reg. 12(5)(e)
Developer profit	reg. 12(5)(e)

Please provide the additionality % assumed for the scheme (deadweight and displacement) 75 %

Please provide a detailed explanation of the method and assumptions used to derive the deadweight and displacement estimates. As part of this, an estimate of deadweight for each site individually must be provided, by illustrating how the homes/each site are linked to the infrastructure

Please refer to the Economic Impact Assessment included in Appendix M for all tables and charts referred to or referenced in our response to this section.

Deadweight

Without HIF funding for the relocation of Cambridge Water Recycling Centre, opportunities for residential development are extremely limited:

- No residential development could come forward on site 1A (the Cambridge Water Recycling Centre) as the site will remain in active use.

- The remaining sites fall within a Waste Water Treatment Safeguarding Area, or odour zone, which prevents any residential development within 600 metres of the site and restricts employment land-use to light industrial. It has been confirmed with the Cambridge City Council planning department that light industrial uses are the only acceptable alternative land use across the wider sites in any scenario where the CWRC remains operational.
- However, Anglian Water does not utilise its entire site and it is possible that the unused elements could be made available to industrial uses. Therefore, in the absence of HIF funding, we assume that 55 acres (22.5 ha) of the existing Anglian Water site will be made available to light industrial uses. Based on the assumptions set out above, this would increase the land value of the Anglian Water by **reg. 12(5)(e)** (before displacement).

Based on the assumptions set out above, we have assumed deadweight of zero homes, but have assumed that the land values in the odour zone will increase by **reg. 12(5)(e)** at current prices (before displacement), reflecting the alternative uses that can be brought forward on the Anglian Water site. While this is a non-residential impact, we have incorporated it into this section of the analysis to more clearly set out the land value uplift that would be achieved in the preferred option compared to the alternative uses that could be achieved without HIF. We have applied a displacement factor of 35% to this land use, in line with the other non-residential land uses considered in Q4.3.1.

All other sites are expected to be retained for their existing uses and so there will be no uplift in land values for these sites.

reg. 12(5)(e)

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House Prices

As identified, the strength of the housing market can have a notable impact on the level of displacement generated from a development. To this end Cambridge is one of the least affordable cities in the UK with an average house price of £500,700, well above the average for the East of England (£315,400) and almost double the price seen nationally (£256,000). House prices of this order reflect the high levels of demand for property in the area suggesting that the likelihood for displacement will be low.

Figure 4.1 Cambridge House Price in Context 1998-2018



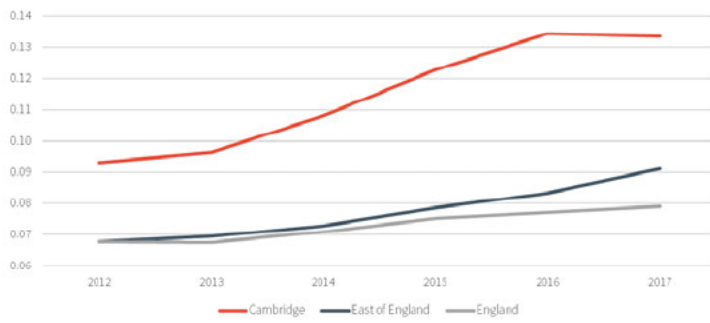
Source: Land Registry, 2018. Note historical prices have been deflated to current prices.

Figure 4.1: Cambridge House Price in Context 1998-2018

Local house prices relative to incomes also indicate high levels of demand in the market and indicate that house prices relative house prices cannot be explained simply by relative differences in local house prices. The median house price in Cambridge was almost thirteen times median gross earnings in 2017. This is an exceptionally high ratio – directly comparable to the London housing market and markedly above the national average where house prices are 8 times median earnings.

Trend analysis presented in Figures 4.1 and 4.2 both indicate that house prices and the house price to income ratio have both increased significantly. The latter demonstrates that the growth of house prices has significantly outpaced earnings in Cambridge.

Figure 4.2 Median House Price to Median Earnings



Source: Shelter, 2017

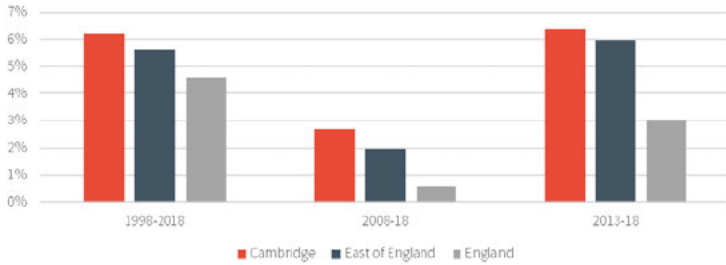
Figure 4.2 Median House Price to Median Earnings

Historically the housing market in Cambridge has been resilient, with compound annual growth rates (over 20, 10 and 5 years) showing consistent and sustained house price growth, that outstrips the rate seen nationally (Figure 4.2). House prices in Cambridge have increased by 72% since 2008, compared to growth of 47% in the East of England and 34% across England. This sustained growth rate again further highlights the high demand in Cambridge's housing market, linked in part to the globally mobile workforce that is attracted to employers and research institutions in the area.

Housing Supply

Between 2012 and 2017, Cambridge delivered around 4,600 homes (DCLG Live Table 122, 2017) – almost 1,000 homes per annum – and despite this level of delivery, house prices have continued to grow, demonstrating that an increase in supply has had a limited effect on local house prices.

Figure 4.3 Compound Annual House Price Growth Rate



Source: Land Registry, 2018. Note historical prices have been deflated to current prices.

Figure 4.3 Compound Annual House Price Growth Rate

Affordable Housing

Overall, 40% of the housing unlocked by HIF will be affordable. This will also help to limit displacement, as affordable housing would be expected to supplement the delivery of market homes, rather than compete directly with them. In addition, the provision of affordable housing in North Cambridge, will not preclude the development of additional affordable homes either elsewhere in Cambridge or across the wider housing market area (such as Cambridgeshire), given the high demand for them.

Additionality Summary

Of the 8,625 gross homes identified on dependent sites, none are expected to be delivered without HIF funding – only a modest addition to the stock of industrial land will be possible, with a net value increase of reg. 12(5)(e). However, reg. 12(5)(e)

This results in 6,900 net homes delivered, with additionality of 80%. This is in line with the MHCLG Appraisal Guide benchmark for a low level of additionality which would apply to supply focused developments, including developments where there is a high 'clean-up cost' that mean that the site is unviable and would not go ahead in the counterfactual / reference case.

The figures presented above are for the number of housing units, however the effect on land value uplift will be affected by the profile of development and the deadweight associated with the additional uses that would be permitted on the CWRC in a do-nothing scenario. The corresponding values and proportions associated with deadweight and displacement (in Present Values) are estimated to be:

- reg. 12(5)(e)
- reg. 12(5)(e)

These give a combined additionality factor of 75%.

These figures are set out in Table 4.1.9.

Please provide a detailed explanation of the method and assumptions underlying the estimates of NPV of residential land value, NPV of current use value, and NPV of additional housing benefits above, as outlined in the Economic Case guidance

The economic impacts of the direct housing benefits associated with the CNFE development set out in the above have been assessed through Land Value Uplift in line with the MHCLG Appraisal Guide and Green Book. The main assumptions underpinning our approach are considered in turn below.

Overarching assumptions

Discounting

In line with the HIF Business Case Guidance, housing benefits have been estimated over a 60-year appraisal period, with future values discounted by 3.5% a year for years 1-30 and 3% a year for years 31-60

Real land value growth:

We have assumed that property prices will increase at 2% per annum in real terms. This is consistent with the assumptions underpinning the Development Appraisal for the growth of property sales values and is significantly below the 5% benchmark assumption provided in the Forward Funding Business Case Guidance for sites where no local market assessment is available.

For context, in the last 20 years (since 1998) real terms average property prices in Cambridge have increased at 6% a year (Constant Average Growth Rate). In the most recent ten years (2008-18), real average property prices have increased by 3% a year (CAGR) and in the most recent five years for which data is available, average property price growth has been 6% a year – a return to the long-term growth rate. Therefore, we consider the land value growth assumption to be a conservative assumption, which is significantly below long-term trends for the local market and is considered to be achievable by U+I, our development partners.

The impact of alternative land value growth scenarios has been set out in the Sensitivity Tests.

Assessment sites

The Economic Case is based on the level of housing that is expected to come forward across the Cambridge North area. Overall five sites have been identified which can accommodate 8,625 homes. Details of these sites are set out in Appendix A.

The sites include:

- the CWRC, which will only become available for residential development once the water treatment works has been relocated
- wider sites that are located in the odour zone of the water treatment works and on which significant residential development can only occur once the treatment works has been relocated.

In addition to these two residential sites, we have also considered the new site for the CWRC. The new facility will be located at a greenfield location and its current economic land value will reflect agricultural uses. Consequently, there is the potential to capture a modest additional uplift associated with the land's conversion to Anglian Water's uses.

Gross residential land values

The gross residential land values associated with the development unlocked by HIF funding have been estimated by deducting the total development costs (excluding site abnormalities and infrastructure costs) from the estimated Gross Development Value of the residential units. This has been estimated on an annual basis for each housing site. The headline figures are set out below and the detailed assumptions are available from the Economic Impact Assessment model (provided as an appendix M).

The assessment of GDV has considered three factors:

1. Gross development trajectories associated with each site

These are taken from the masterplan developed for the core and wider sites, which provides the total number of housing units accommodated at each site and the development trajectories for each site.

2. Unit size mix

The site level masterplans also provide information on the expected unit size mix for each of the sites. We have applied this to the gross development trajectory on a site by site basis to forecast the profile of housing completions, by unit size over the assessment period.

(NB: due to the format in which sales values and build costs have been provided, we have disaggregated houses by their number of bedrooms. However, apartments are presented as a single unit type).

3. Average Sales values

Average sales values have been taken from the development appraisal for each site.

For the core site, we have based our assessment on the average sales values of a house and the average sales value of an apartments (as this is the only level of disaggregation that that can be extracted from the development appraisals). These are weighted averages based on the mix of housing proposed for the core site and reflect the 2018/19 sales values provided in development appraisal. Over the whole of the core site, each home will have an average estimated NIA of 101 sqm and each apartment is expected to be 61 sqm.

For the wider sites, we are able to use the average sales values for each type of house (2-bed, 3-bed and 4-bed). These are based on consistent assumptions concerning the sales values psm and reflect the level of disaggregation that is available for housing units on these sites. For apartments, we only have cost information on the density mix of each site, rather than the unit size mix and have presented the sales values on a consistent basis. Taking relevant information from the cost plan and development appraisal, we have estimated the average sales price of an apartment on each of the wider sites. The variation in sales prices across sites reflects the relative density of development (i.e. the average NIA of an apartment) for each site. They are based on the same sales price assumptions as for the core site.

The average sales values take account of the two market tenures that will be accommodated on site – market sale and market rent. In line with MHCLG Guidance, the sales value is not reduced for affordable properties (i.e. all properties are assumed to sell at these market rates). The wider benefits associated with affordable housing are set out in Q4.2.1.

Overall, the average sales value in 2018/19 prices for a house is based on £550 psf for a market house and £475 psf for a PRS house (providing an average sales value of £525 across both tenures). The average sales price of an apartment is based on £600 psf for a market apartment and £475 for a PRS apartment (providing an average sales price of £558 psf across both tenures). As set out above, these values are expected to increase at 2% per annum, in line with the development appraisal.

These assumptions have informed our assessment of scheme GDV as set out in in Tables 4.1.1, 4.1.2, 4.1.3, and 4.1.4. (The calculations underpinning the assessment of sales values for the core and wider sites is available from the supporting spreadsheet 'Cost Input Calculations' appended alongside the LVU model.)

Table 4.1.1: Gross Development Overview

reg. 12(5)(e)

reg. 12(5)(e)

reg. 12(5)(e)

Table 4.1.3: Average Sales Values, by Site

reg. 12(5)(e)

(In table 4.1.4, the profile of GDV is:

- uprated by 2% a year for future sales, in line with the development trajectory
- discounted by 3.5% per annum for any benefits accruing in future years. The Present Value GDV is the value quoted in the Business Case template form.)

reg. 12(5)(e)

Assumptions for Build Costs

Build costs have been estimated on the following basis:

Basic build costs have been provided by Faithful+Gould

- They have provided a build costs which align to the development schedule provided above. These costs are exclusive of external works and all infrastructure works, however an allowance has been included for incorporating Passivhaus construction (@10% of basic build costs) and contingency (@ 3% of basic build costs).

The additional site development costs

These have been estimated on the following basis for the core site:

- **Externals.** These are estimated to be ^{reg. 12(5)} of the basic build costs, in line with the assumptions set out in the Cost Plan. These costs include: residential enhancements (such as blue roofs, green roofs and photovoltaics), on-plot infrastructure (eg tertiary roads), on-plot public realm, on-plot blue and green infrastructure, plus on-site roads (primary and secondary roads within the red-line boundary) and site-wide blue green infrastructure (within the red-line boundary). (Please refer to the spreadsheet 'cost input calculations' for further information).
- **Professional fees.** Assumed to be ^{reg. 12(5)} of basic build costs in line with the development appraisal assumptions
- **Marketing costs / sales costs.** Assumed to be ^{reg. 12} of the sales price, in line with the development appraisal
- **Developer profit.** Assumed to be ^{reg. 12} in line with the development appraisal.

- Finance costs. Assumed to be **reg. 12** based on the proportionate costs of finance set out in the development appraisal.

(NB: For marketing costs and development profit, the sales price is assumed to be the 'achieved' sales price, rather than the price at market values, to avoid overstating these costs. Based on the development appraisal, affordable sale properties are expected to achieve **reg. 12** and affordable rent is expected to achieve **reg. 12** of the market price.

Build costs are assumed to remain constant over the assessment period, in line with the assumptions set out in the development appraisal, except for developer profit and sales costs which increase in line with the sales price – as they are estimated as a proportion of total sales.

For the wider sites, in the absence of site specific information, we have continued to estimate the additional development costs on a consistent basis. The only exception is External Costs – were we have assumed 15% of basic build costs as, in the absence of site specific costs, this is closer in line to the MHCLG standard assumption.

The calculations underpinning the build cost assumptions are set out in the table below. The variation in costs for apartments on the core and wider sites reflects the varying development densities of development set out in the Masterplan. Below we have provided a single average figure for the Wider sites for conciseness, however the average build cost per unit (with contingency and Passivhaus) ranges from £170,000 per unit on site 2C to £189,000 on site 2B.

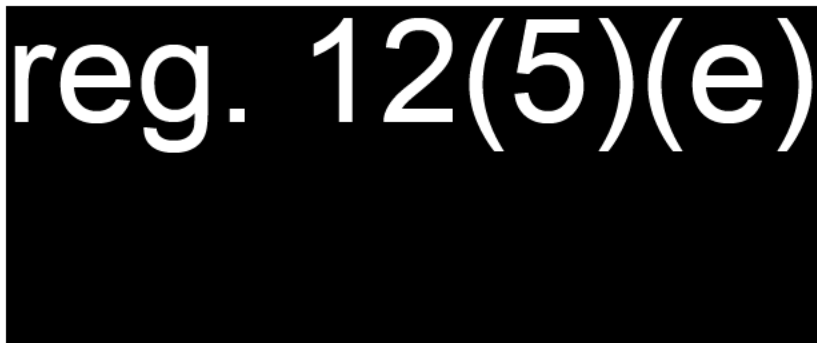


Table 4.1.5: Basic Build Cost Assumptions

An overview of the additional development costs (for all sites) is set out in Table 4.1.6. A more detailed breakdown is available from the Economic Model.



Table 4.1.6: Development Costs

It is important to note that the high-quality proposals for this development may not be fully reflected in the achievable sales price and may therefore result in a lower direct economic benefit. Proposals such as Passivhaus will also lead to a broad range of external environmental and financial benefits not quantified in this assessment.

Residential Land Values are therefore estimated to be £877 million (PV), calculated by deducting the costs of construction from the sites' GDV, as set out in Table 4.1.7. (Note: this is the economic assessment of land values and will differ from the price paid for the site and/or the assessment set out in the Financial Case, as it is based on a different set of assumptions).

reg. 12(5)(e)

Table 4.1.7: Residential Land Value Estimate

??????Existing land values

The housing sites are predominantly located on brownfield land, with the exception of the golf course, where part of the site can be considered to be greenfield.

For the Anglian Water site, it has been possible to use the VOA land value estimate on which the Rateable Value for the site has been estimated. This has been provided by Anglian Water and is considered to be a robust assessment of the existing land use value.

For the remainder of the core site and for the wider sites, in the absence of detailed market information, we have taken the MHCLG Benchmark figures for industrial land values in Cambridge. This is considered to be an appropriate baseline figure, given that light industrial is the predominant land use in the wider sites. The only exception is the Golf Course, which is classified as greenfield land and is subject to significant development constraints. It is therefore likely to have a value below that for light industrial uses (for example agricultural uses in Cambridgeshire are as low as £21,420 per ha) and therefore this approach is considered to provide a conservative estimate.

All figures (from the VOA and MHCLG) are for 2017 and the figures presented below have been updated at 2% a year for 1 years to estimate the existing land values.

Based on these assumptions, the total value of the sites unlocked for development, in their current use, is estimated to be £55 million.

reg. 12(5)(e)

Table 4.1.8: Existing Land Values

Additionality

Additionality has been applied on the following basis:

- reg. 12(5)(e)
- Deadweight is assumed to be 0%. ???????

The basis for these estimates is set out in previous question concerning additionality.

Net Present Value of Housing Benefits

Drawing on the assumptions set out above, we have estimated the NPV of the private economic benefits of new housing (based on land value uplift) to be £617 million after accounting for existing land values, deadweight and displacement.

reg. 12(5)(e)

reg. 12(5)(e)

NPV of external impacts of additional housing

Please provide the estimated NPV (in 2018/19 prices) of external impacts of additional housing from the preferred option relative to the do-nothing option

Type	Summary of impact	NPV of impact
Affordable Housing	Health benefits of affordable rented properties	reg. 12(5)(e)
Transport User Costs	Cost to existing transport users of the new development	reg. 12(5)(e)

Please provide a detailed explanation of the method and assumptions underlying these estimates, as outlined in the Economic Case guidance

The external impacts of the development also include affordable housing and transport external costs. These are considered in turn below.

Affordable Housing

The assessment of affordable housing is based on the guidance from the DCLG Appraisal Guide which states that the health impacts of improved affordable housing amount to £2,400 per affordable rented dwelling.

The associated external impact has been estimated as follows:

- 40% of housing completions on the dependent sites is assumed to be affordable, in line with the Masterplan proposals. This level of affordable housing is compliant with the affordable housing policy in the Local Plan.
- Of the total affordable homes, reg. 12(5)(e) will be 'affordable sale' properties and the remaining reg. 12(5)(e) will be 'affordable rent'. It is these 'affordable rent' properties that MHCLG indicate can be considered as generating additional health impacts which can be assessed here.
- Affordable rent provision has been discounted by reg. 12(5)(e) to reflect the assumed programme wide level of displacement.
- reg. 12(5)(e)
- Deadweight has not been considered as no homes are expected to come forward on the core or wider sites in the reference case.

The headline figures are set out in Table 4.2.1)

reg. 12(5)(e)

Table 4.2.1: Net External Impacts of Affordable Housing

Transport External Costs

Available transport models:

A package of pre-existing models developed by and for Cambridge City Council was used to assess transport impacts as part of the Ely to Cambridge Transport Study including Strand 3 CNFE/CSP Transport Report (February 2018), and the Ely to Cambridge Transport Study, Preliminary Strategic Outline Business Case (January 2018). The study utilised the Cambridgeshire County Council Cambridge Sub-Regional Model (CSRM2). The CNFE site was a core part of the assessment and the model has been used by Cambridgeshire County Council to consider the impacts of development on this, and other sites, across Greater Cambridge's and the wider model study area.

CSRM2 is a WebTAG compliant strategic transport model which uses base data from 2015, including:

- Validation against traffic and transportation counts
- All networks (highway, PT, walk, cycle)
- Representation of parking and Park and Ride
- Base transport movement data
- Base land use data
- Matrices with up-to-date mobile phone data

Modelling Transport External Costs:

For the purposes of the assessment of Transport User Costs, Cambridgeshire County Council's transport consultants (Mott MacDonald) used a Reference Case 2031 version of the highway component of the CSR2 model. This incorporates all committed transport schemes up to 2031 and all underlying growth and committed Local Plan development, excluding the CNFE site.

Cambridgeshire County Council agreed that the model was fit for purpose for use in the Strand 3 work and preparation of the Preliminary Strategic Outline Business Case and Highways England has been engaged throughout the A10 study.

The Reference Case also includes a number of committed strategic highways measure that are programmed for delivery delivered across the study area including Highways England's A14 Cambridge to Huntingdon Improvement and associated junction works. The committed transport improvements provide a large localised increase in capacity. These will be complemented by other measures identified in the Ely to Cambridge Transport Study which the local authorities are exploring. There are no transport schemes directly associated with the CNFE site (other than alterations to the access junctions) and therefore the development will be required to make a per development unit transport contribution to the funding pool for the package of schemes in the A10 corridor.

A second 2031 model run has also been developed that incorporates the additional trips associated with the CNFE development.

The CNFE development trips have been determined through a stand-alone multi-modal trip generation and trip distribution assessment, utilising people trip rates, Office for National Statistics (ONS) Census data and an aspirational mode share that reflects the exemplar nature of the proposals in terms of creating a high level of sustainability and public transport accessibility and achieving a low vehicular mode share. These trips have been distributed to origins and destinations using the same trip distribution as forecast by the CSR2 model for the Northern Fringe.

Importantly, the low vehicular mode share is in line for the proposed CNFE housing-led development is in line with the trip budget assessed in the Ely to Cambridge A10 Transport Study. Cambridgeshire County Council are also supportive of this strategy.

The outputs from these two model runs scenarios have been input into TUBA to provide an assessment of the Transport External Costs associated with the additional highway trips.

No future year modelling scenarios are available beyond 2031 and so the outputs from the 2031 model were extrapolated to represent all future years. The County Council have indicated that they consider this approach to be reasonable.

The outputs of the modelling described above indicate that the Transport User Costs of the proposed development at CNFE is [redacted] over 60 years using a base year of 2010 and an assumption of a two-hour peak period. This reflects the additional costs or disbenefits borne by existing/background users of the transport network as a result of the additional trips generated by the CNFE.

To ensure that the figures are consistent with the wider present values included in this business case, it has been necessary to re-base the TUBA outputs to a 2018/19 base year. To do this we have:

- Accounted for the discounting (at 3.5% a year) from 2018 to 2010 by adjusting the figure upwards by 32% (1.035^8).
- Accounted for inflation by adjusting the 2010 figure upwards by 14% in line with the GDP inflator (WebTAG Databook, May 2018).

The combined impact of these two adjustments is to increase the transport user costs by [redacted] to [redacted].

The outputs of the TUBA modelling and the adjustment for discounting and inflation are provided as an appendix M to the Business Case.

While this is a large number, it is important to note that, as we cannot isolate the impacts of the A10 Corridor that directly relate to the contributions to be made by CNFE. However, an analysis of the transport user benefits of this scheme showed a significant positive benefit of [redacted] (at 2018 prices – adopting the same adjustment from a 2010 assessment base year as set out above) to the transport network as a result of the [redacted] (also 2018 prices) of mitigation measures proposed by this study. The CNFE site provides a contribution of [redacted] towards these mitigation measures, these contributions equate to [redacted] of the overall scheme cost and therefore the same proportion of benefit could reasonably be attributed to CNFE. This equates to a transport user benefit of [redacted] associated with the CNFE site which broadly matches the estimated transport external costs of the development and highlights that the scheme will ultimately have a minimal net impact on the local transport network.

We therefore consider the true impact of the proposed development on the transport network is only [redacted]. However, in accordance with guidance we have modelled the more substantial impact through our economic case.

We have not undertaken any additional sensitivity testing relating to trip generation for the following reasons:

- The A10 study has specified a trip budget that the development must work within to be acceptable in highway capacity terms;

- The transport strategy will include a package of infrastructure improvements and behavioural change initiatives to achieve the mode split;
- The trip generation of the development will be monitored on a phase by phase basis to ensure the trip budget is on track.
- The location of the development (close to employment, public transport (bus, guided bus, and rail), and cycle networks) supports a low car trip generation development
- The car parking standards, which constrain maximum parking numbers then enforce the vehicle trip generation.
- The cycle mode share is consistent with what is observed across Cambridge
- The development has to achieve the target mode shares to allow the full scheme to be constructed (and therefore viable)
- The development is being supported through the local planning process, so is a scheme that has political backing for both the development and the approach to sustainable transport.

No attachments

NPV of infrastructure impacts

Please provide the estimated NPV (in 2018/19 prices) of infrastructure impacts, and any other monetised impacts not captured above, from the preferred option relative to the do-nothing option

Type	Summary of impact	NPV of impact
Non-Residential Development	Additional land value generated by non-resi uses, such as commercial.	reg. 12(5)(e)

Please provide a detailed explanation of the method and assumptions underlying these estimates, as outlined in the Economic Case guidance (incl annex A)

Commercial property impacts

In addition to the residential uses, the developments are also expected to provide a range of commercial uses, as set out in the table below. These uses will further increase the value of the land on which the development will occur, and this impact has been estimated below. Overall, around 88,000 sqm of commercial floorspace is expected to come forward in the preferred option. This information has been taken from the site masterplan developed by Passivhaus, which includes a detailed assessment of requirements on the core

site and a higher-level assessment of potential commercial provision on the wider sites.

In the reference case (no HIF funding) it is assumed that 55 acres (22.5 ha) of the site currently occupied by Anglian Water would be converted to industrial uses, which would also deliver an uplift in land values. However, that uplift was considered in the central housing analysis and deducted from the total residential land value delivered in the preferred option. Consequently, we have not included it here to avoid double counting. Beyond this, all other sites are expected to retain their existing use in the reference case (no HIF funding): a golf driving range and the CWRC. As no land uses have changed, there will be no increase in values associated with them.

	Retail (sqm)	Commercial (sqm)	Hotel (sqm)	Community Facilities (sqm)	Total Floorspace
(1A) Cambridge Water Recycling Centre	865	3,336	0	3,194	7,395
(1B) Cambridge Golf Driving Range, etc.	6,444	24,857	10,013	13,862	55,196
(2A) CB4 (Chesterton Partnership)	212	4,533	0	558	5,303
(2B) Cowley Road Industrial Estate	3,643	14,052	0	2,082	19,777
(2C) Nuffield Road Industrial Estate	0	0	0	0	0
Total	11,164	46,778	10,013	19,717	87,672

Source: URBED Masterplans

Table 4.3.1: Commercial Uses (sqm)

To estimate the land value of these uses, we have estimated their expected land value and deducted the estimated build costs. These are considered in turn below.

In addition to the land values set out above, the development will provide 'car barns' as alternative to street or off-street parking. The primary purpose of the car barns is to mitigate the traffic impacts of the development. However, these barns will be let to residents of the development and generate additional commercial yield. As they will add to the overall value of the development, we believe that it is appropriate to include them in the assessment of commercial land values. Over the whole development, 2,180 car parking spaces will be provided in car barns. The values associated with these spaces has not been captured by the sales values of properties, which will be sold on the basis of zero on-site parking.

	Car Barn Spaces
(1A) Cambridge Water Recycling Centre	303
(1B) Cambridge Golf Driving Range, etc.	919
(2A) CB4 (Chesterton Partnership)	317
(2B) Cowley Road Industrial Estate	466
(2C) Nuffield Road Industrial Estate	175
Total	2,180

Source: URBED Masterplans

Table 4.3.2: Car Barn Spaces

Commercial property values

Commercial property values for the uses outlined above have been taken from the development appraisal developed by U+I for the core site. We have assumed that values for the core site will also apply to the wider sites.

The commercial values are estimated as follows:

- Retail uses achieve reg. 12(5)(e) per sqm (or reg. 12(5)(e) per sqf – based on rents of reg. 12(5) psf and a yield of reg. 12(5)(e))
- Commercial uses achieve reg. 12(5)(e) per sqm (or reg. 12(5)(e) per sqf – based on rents of reg. 12(5) psf and a yield of reg. 12(5)(e))
- Hotels achieve reg. 12(5)(e) , based on an assumption that the hotel will provide 167 rooms with a rent of reg. 12(5)(e) per room and a yield of reg. 12(5)(e)
- Parking spaces in the car barns are assumed to achieve a sales value of reg. 12(5)(e) per space.
- We have not estimated the value of community uses as these are not typically traded and market level data is unavailable for them. However, they will be expected to deliver an additional community benefit to the area in addition to the figures presented here.

In line with residential values, all sales values are expected to grow at 2% per annum in real terms in line with the development appraisal.

Commercial development costs

The costs of commercial development have been sourced from the Cost Plan provided by Faithful+Gould. The build costs set out below are psm for all uses except the car barns, where costs are per space.

These costs are for basic build costs and the additional cost of development (external costs, developer profit, marketing costs, professional fees) have been assumed in line with the assumptions for residential housing, with the exception of external costs as this is captured in the costs of the residential development.

Commercial Displacement

It is estimated that displacement would be higher than for residential uses and we have assumed displacement of [redacted] across all commercial uses to reflect this. This is consistent with a medium level of additionality, set out in the MHCLG Appraisal Guide.

Relocation of the CWRC

In addition to the non-residential accommodation on the site, the investment involves the relocation of the CWRC to a new location. All options under consideration are greenfield locations and are assumed to have an existing land value consistent with agricultural uses (of £21,000 per ha in the Greater Cambridge and Greater Peterborough area (MHCLG benchmarks for 2017). This value has been updated to 2018 prices in line with the other land values used in this assessment.

The new CWRC is expected to require [redacted] in line with the existing facility and the new land value associated with the site is expected to be consistent with the land value of the current site (of [redacted] million).

Summary of Commercial Impacts

The commercial impacts are estimated to have a combined net impact of [redacted] (present value), based on the assumptions set out above.

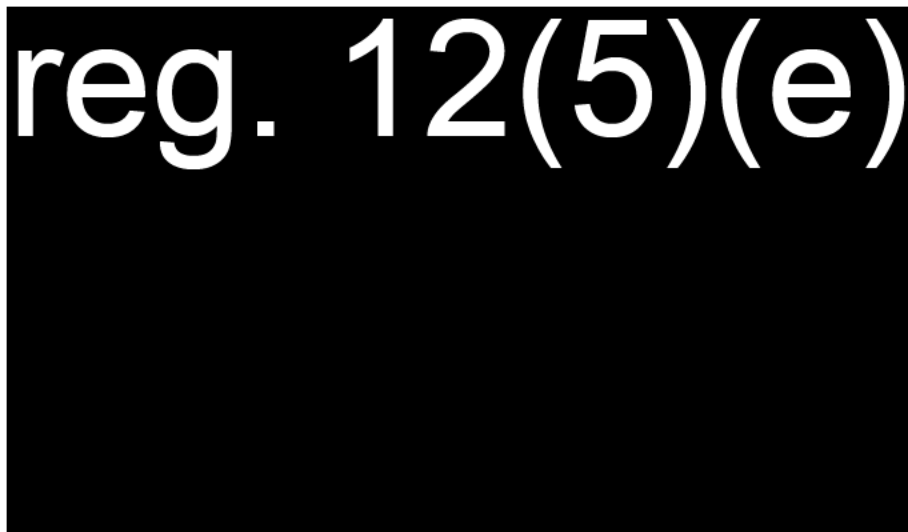


Table 4.3.2: Commercial Uses (sqm)

Transport User Benefits

Potential scale of transport impacts:

The strategic modelling work undertaken by Cambridgeshire County Council for the 'Ely to Cambridge A10 Transport Study' produced a series of recommendations on the transport schemes needed to accommodate development across a range of sites, including CNFE, Cambridge Science Park, and a new town north of Waterbeach. The study makes a number of recommendations relating to the development of the CNFE site, notably the need to deliver measures that significantly reduce the car mode share for trips to and from the area, through a combination of demand-side mechanisms such as parking restraint, investment in measures to support non-car transport, and the concept of a highway 'trip budget' to manage vehicular traffic generation by the site.

The transport strategy that is being developed as part of the CNFE HIF bid submission aligns with the recommendations as set out within the Ely to Cambridge Transport Study, with reliance on private car trips being very low and in line with the trip budgets modelled. As such, the modelling and outcomes from the strategic Ely to Cambridge Transport Study have been accepted as a representative outcome for CNFE. Furthermore, an agreement is in place with officers from Cambridgeshire County Council and Highways England that additional site-specific modelling work is not a requirement as part of the development of CNFE as long as the trip budgets are maintained.

Whilst the CNFE HIF bid does not include any request for funding of transport interventions, as identified, the delivery of the CNFE scheme will be accompanied by a comprehensive package of transport mitigation measures. Some of these measures are already programmed/underway and include Highways England's A14 Cambridge to Huntingdon Improvement. Others will be implemented part of a wider strategic package of growth-related interventions across the wider corridor and these will be complemented by local access measures. The strategic transport measures (covering highways and public transport) proposed for delivery across the corridor are linked to a range of planned development growth and so isolating specific measures to individual development sites, such as CNFE, is challenging. However, it is clear that existing committed schemes, including the A14 improvement, together with those being developed by the local transport and highway authorities following the Ely to Cambridge Study, will deliver significant additional transport capacity.

While it has not been possible to model the transport user benefits associated with CNFE's contribution to the proposed transport mitigation package, as identified in our response to Q4.3.2, an analysis of the transport user benefits of this scheme showed a significant positive benefit of reg. 12(5)(e) to the transport network as a result of the reg. 12(5)(e) of mitigation measures proposed by this study. The CNFE site provides a contribution of £116m towards these mitigation measures, these contributions equate to reg. 12(5) of the overall scheme cost and therefore the same proportion of benefit could reasonably be attributed to CNFE. This equates to a transport user benefit of reg. 12(5)(e) associated with the CNFE site which broadly matches the estimated transport external costs of the development and highlights that the scheme will ultimately have a minimal net impact on the local transport network.

We therefore consider the true impact of the proposed development on the transport network is only reg. 12(5)(e). However, in accordance with guidance we have modelled the more substantial impact through our economic case. It is unfortunate that it is not possible to capture these benefits in our assessment, however the implications of doing so are considered in the sensitivity tests.

At the next stage of the business case appraisal of the environmental and social impacts will be undertaken. A qualitative review of the impacts has been undertaken for the HIF submission and this is considered proportional.

The transport mitigation package and the masterplan will lead to significant improvements to travel options. The site will have a competitive advantage because of its accessibility and be a catalyst for **improvements in air quality and noise**

The AAP transport modelling and strategic outline business case shows a mitigation package that can deliver the CNF and wider development. These schemes will evolve through the latter stages of the business case when accident appraisal will be undertaken. Given the CNF development is seeking to reduce severance and remove pedestrian/ cyclist/ vehicle conflict when crossing the Milton Road, it is considered that there will be a positive impact in terms of accidents on Milton Road.

The impact of walking and cycling improvements on physical activity has been considered qualitatively at this stage. The masterplan will reduce severance and increase opportunity for walking & cycling. This will have a positive impact on physical activity through improved health and greater productivity through reduced absenteeism.

The masterplan will include a mix of uses active at different times of the day fronting streets that will be designed with people in mind. Routes to and from public transport will be legible, lit and landscaped with quality waiting facilities. A qualitative assessment of the security and journey quality impacts is that these will be a positive.

The site currently creates severe severance caused by the road network, railway and the CWRC. The CNF development will improve connectivity, reduce severance and improve permeability to destinations including Cambridge North Station and the Science Park via a permeable site masterplan, a new link over the A14 and across Milton Road creating a safe, direct route for pedestrians and cyclists between Cambridge North Station and the Science Park. The severance and accessibility impacts will be largely positive.

Given the findings of this qualitative assessment, this reinforces the point made above that the overall transport assessment for CNF will potentially underplay the monetized benefits that are likely to be associated with the development.

No attachments

NPV of scheme costs

Please provide the estimated NPV (in 2018/19 prices) of infrastructure scheme costs (and revenues) as incurred by the following groups under the preferred option relative to the do-nothing option, ensuring no double counting of any costs included in prior answers – NPV of housing benefits, NPV of external impacts of additional housing, and NPV of infrastructure impacts

Type		Total Nominal Amount	NPV (18/19 constant prices)
HIF funding	Cost	£227,000,000	reg. 12(5)(e)
	Revenue	£0	£0
Central Government	Cost	£0	£0
	Revenue	£0	£0
Local Authority	Cost	£0	£0
	Revenue	£0	£0
Other public sector	Cost	£0	£0
	Revenue	£0	£0
Private sector (not developer contribution)	Cost	reg. 12(5)(e)	reg. 12(5)(e)
	Revenue	£0	£0
Private sector (developer contribution)	Cost	reg. 12(5)(e)	reg. 12(5)(e)
	Revenue	£0	£0
Optimism Bias applied to <i>Total Public Sector Costs</i>	Cost	reg. 12(5)(e)	reg. 12(5)(e)
Optimism Bias applied to <i>Total Private Sector Costs</i>	Cost	£0	£0
Real Net Present Public Sector Cost		reg. 12(5)(e)	
Real Net Present Private Sector Cost		reg. 12(5)(e)	

Please provide a detailed explanation of the method and assumptions underlying all estimated costs, as outlined in the Economic Case guidance

A cost plan has been developed by Faithful+Gould to support the masterplan and this has formed the basis of the development cost assumptions presented in 4.4.1. From this cost plan we have extracted the full costs of infrastructure provision required to unlock the site and make it suitable for the proposed development. The figures exclude any costs specifically relating to the housing which have already been factored into the land value uplift assessment (e.g. basic build costs, external costs, and associated fees and developer profit).

The figures also exclude the S106 transport contributions as it has not been possible to capture the benefits associated with this financial contribution and including them here would therefore adversely impact on the assessment. As identified in section 4.3.2, the economic impacts of the transport contributions are expected to significantly exceed their financial contribution and effectively fully mitigate the transport external costs associated with the additional housing.

Therefore, the costs are based on the known infrastructure costs required to unlock the core site, which is the element of the proposal that is being directly delivered by Cambridge City Council. The remaining costs for the wider sites are unknown at this stage and would be provided by the private sector developers – however our initial

assessment of the wider sites indicate that such development would be viable.

Minor additional adjustments have been made to the costs plan to reflect recent feedback that a secondary school is not likely to be provided on site (with contributions applying instead) and reflecting the most recent assessment of site mitigation and preparation costs.

The total costs of the scheme (expressed as current day prices) provided in Table 4.4.1.

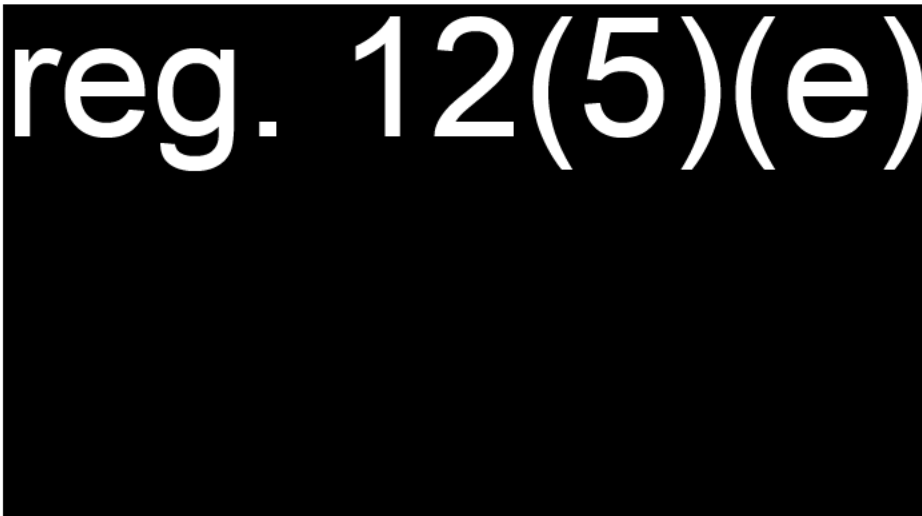


Table 4.4.1: Total Scheme Costs (Expressed Current Day Prices)

The total infrastructure costs incorporate a contingency of 10% which is considered sufficient for a scheme of this nature.

The detailed assumptions underpinning this assessment are set out in the supporting cost plan.

CWRC infrastructure costs

Anglian Water have also provided detailed costings for the CWRC relocation. The total costs in current day prices are £227 million, however these represent the worst-case scenario based on the highest cost potential site. If a site located closer to the current facility can be confirmed, the total cost of this investment may fall to reg. 12(5)(e)

These costs include a 10% contingency.

Optimism bias

The costs presented above for the WRC include Optimism Bias at 26%, the method of which is set out below.

Following guidance from Steer and Homes England, no optimism bias (OB) has been applied to the housing development related infrastructure (ie the element not funded by HIF). There are no private sector contributions to the relation costs associated with CWRC so it has not been necessary to apply optimism bias here.

No attachments

Non-monetised impacts

Are there any impacts it is not feasible or proportionate to monetise?

Yes

Details, including an indicative scale of impact and why these have not been monetised

The land-value based approach to monetising the economic value of the scheme captures the effects of the Cambridge Northern Fringe East scheme in terms of housing delivery, higher quality environment and area attractiveness through the uplift in real estate values in the area.

However, the economic impact assessment does not fully capture the long-term impacts of the scheme on the areas surrounding the development and across the rest of Cambridge. The following categories of impacts have not been monetised but are central to the case for Cambridge Northern Fringe East scheme as they contribute to some of Cambridge's priority objectives with regards to economic growth and social inclusion:

- transport user benefits
- employment impacts
- wider housing development
- agglomeration economies
- labour market benefits
- social and equity impacts.

These effects are presented below, along with the reasons why they have not been monetised.

1. Transport User Benefits

As identified in Q4.3.2, it has not been possible to model the transport user benefits associated with CNFE's contribution to the proposed transport mitigation package. However, an analysis of the transport user benefits of this scheme indicate that the CNFE contribution to these mitigation measures would equate to a transport user benefit of £307m. These figures have not been incorporated into the monetised assessment, however it is important to recognise their potential scale of benefits associated with the transport mitigation measures funded by CNFE.

2. Employment impacts

Research by Cambridge City Council indicates that the infrastructure investment has the potential to unlock significant employment in the wider area.

Without HIF funding employment onsite and in the neighbouring Science Parks is expected to increase by 20,000 between now and 2041. Employment in the wider area is therefore expected to increase to 24,000 with the HIF investment.

Turning to the level of employment that can be accommodated on the core and wider sites specifically, the development schedule set out in Q4.3 provides a breakdown of the non-residential uses expected to come forward. These are repeated in Table 4.5.1.

Overall, more around 63,000 sqm of non-residential floorspace is expected to come forward, covering retail, office, hotel, and

community uses.

Table 4.5.1: Commercial Uses (sqm)

By applying a standard Gross Internal Area to Net Internal Area (GIA-NIA) discount (of 15% for all uses and applying standard employment densities to these uses (Source: HCA Employment Densities Guide, 3rd Edition), it is possible to estimate the level of employment that would be accommodated at these sites.

(NB. As employment densities are unavailable for community facilities we have assumed a low employment density of 70 sqm per worker). Overall the uses are expected to support employment for 2,400 people – primarily in office accommodation, but also in retail and commercial uses

Table 4.5.2: Employment Accommodated in the Proposed Development

In line with the MHCLG Appraisal Guidance we have not sought to monetise these impacts or incorporate in the central assessment of the scheme benefit cost ratio.

However, despite not being monetised, the employment accommodated in these uses will help create employment opportunities for the new local residents, reducing the requirement for commuting and support employment growth across Cambridge.

Wider housing development impacts

There will also be a wider range of local amenity benefits associated with the proposed developments, including:

- The provision of blue and green infrastructure throughout the development
- Enhanced environmental performance and sustainability – through the provision of Passivhaus and photovoltaics onsite.
- The improved amenity benefit of relocating the WRC away from developed areas and enhancing and maximising the development potential of currently underutilized industrial space.

These impacts have not been monetised as there is no agreed approach for doing so in a proportionate way, as specified in the MHCLG Appraisal Guide, however the amenity and environmental benefits of this assessment could be significant.

4. Enhancing Cambridge's agglomeration economies and continued economic competitiveness

Agglomeration economies are the benefits that come when firms and people locate near one another in cities and industrial clusters.

They include:

- easier access to labour, resources, suppliers and customers
- a large and diverse provision of inputs and greater certainty of those inputs
- knowledge spill overs providing a source of information and innovation. All of these cumulatively have a positive effect on productivity.

Agglomeration economies are at the core of the Cambridge's knowledge-based economy, with a strong pull around the centre of Cambridge, alongside business/science parks located on the periphery of the town centre (eg Cambridge Science Park). Combined this has transformed Cambridge from a market town with a world-class university to one of the leading technology hotspots in the world supporting spin-outs from the university and attracting investment and talent into the area.

Typically, these agglomeration economies are driven by improvements to transport (or more housing available near to transport hubs) and an available supply of housing. To intensify Cambridge and further build its agglomeration impact, there is a need to provide housing closer to the city centre and/or connect this with existing transport infrastructure. This will help increase the effective density of a city / cluster by broadening its catchment area as well as the population within this area, therefore helping to boost the potential workforce and skills available. The location of the Cambridge Northern Fringe East scheme close to Cambridge North station and areas of employment (eg Cambridge Science Park and Business Park) will help boost the agglomeration effect within Cambridge.

However, the full effects of agglomeration economies result from complex, correlated and long-term interactions which are difficult to quantify, let alone monetise. Recent guidance has been produced by the Department for Transport which recommends further research in this area and highlights the complexities involved in developing the econometric models required to estimate agglomeration benefits. This level of effort is not appropriate or available for this bid.

5. Labour market and productivity impacts

As mentioned above, there is an accepted link between agglomeration economies and higher productivity. However, this supposes a fluid, unconstrained labour market. This is increasingly not the case in Cambridge, largely as a result of housing issues, with some of the most unaffordable homes in the city relative to local wages. Without continued and ambitious investment in housing, the constraints will worsen and threaten the growth of Cambridge's economy.

Over the last eight years, Cambridge has had the greatest increase in house prices of all cities nationally, with a 76% increase. This is creating growing challenges for firms in attracting the workers they need, as they cannot afford to live locally.

Despite Cambridge having the second highest level of housing growth of all UK cities, it is only behind London and Oxford regarding affordability (Source: Centre for Cities UK Outlook). Research by the Greater Cambridge Partnership (GCP) found that almost three-quarters of local people were unhappy with their current housing situation - with most people recognising that a key problem for the area was a lack of affordable housing. Of concern for Cambridge's economic future is the impact this is having on Cambridge's ability to attract workers at all levels.

A survey undertaken by the GCP found that one of their biggest problems was recruiting and staff turnover, especially due to the high cost of housing. Some also talked about a 'wages gap' for different professions, with high-earning jobs pushing up the cost of renting and buying houses, making it harder to find staff to fill service or administrative positions. Without a strong and stable workforce, Cambridge will struggle to attract workers on a long-term basis.

Cambridge Northern Fringe East can contribute to tackling these challenges and ensure that Cambridge continues to attract and retain the skills it needs across all sectors of its economy. The site's close proximity to Cambridge Science Park and Cambridge Business Park means it will provide an enhanced housing supply close to some of Cambridge's core locations for businesses.

In addition, the housing capacity unlocked by the scheme will play a central role in ensuring that the city can continue to attract and accommodate the workforce it needs for its high value, knowledge-based services as well as for public sector services and for sectors which rely on lower paid workers but are equally vital to Cambridge's economy (eg tourism, hospitality, catering, light manufacturing etc). Rough sleeping in Cambridge has nearly doubled over the last two years (Source: MHCLG) and those in lower-paid jobs currently struggle to find affordable housing for them.

In the absence of interventions to address housing shortages, labour market constraints will lead to wage inflation or displacement, as workers either seek higher wages or choose to move to places with more affordable housing. The implication for employers is to either increase wages or operate within a reduced labour market, which will constrain their growth potential, leading to skill gaps, dis-investment and knock-on effects on productivity and long-term prospects for Cambridge.

However, while the growing constraints on Cambridge's labour market are undeniable, the impacts from the Cambridge Northern Fringe East scheme are difficult to isolate and monetise as a range of other investments will influence the performance of Cambridge's labour market (including other housing investments but also policies and programmes relating to skills, education or employment law). In addition, labour market impacts relate to a large extent to the cost of doing nothing ie what would happen if housing shortages and transport capacity issues continue to worsen, which is too complex to quantify.

6. Living conditions and equality benefits

By increasing the supply of housing (both market and affordable) in Cambridge, the Cambridge Northern Fringe East scheme can contribute to improving access to housing across a range of groups in Cambridge and help address some of the impacts of housing shortages on living conditions and inequality.

At the moment housing affordability issues most affect young people's prospects for independent life, the eldest and the most deprived. Housing is becoming increasingly unaffordable for young people, and this has had an impact on graduate retention within Cambridge, with only 15% of the city's students staying in the city after graduating (compared to 24% nationally; Source: Centre for Cities). The average first time buyer would need a (combined) salary of £79,000 to be able to afford a flat in Cambridge – the third highest level in the country behind London and Oxford. The ratio of the average price of homes to average earnings is at a value of 13.5 in Cambridge (compared to 7.9 nationally). This puts Cambridge as the 16th most unaffordable local authority outside of London (out of 315 local authorities). With high (and generally unaffordable) house prices, private rents have also risen very quickly in real terms and rental affordability has worsened as earnings have failed to keep up.

Rising housing costs lead to falling disposable income and reduced standards of living, which exposes the most vulnerable groups to the risk of homelessness. In recent years, the level of homelessness in Cambridge has nearly doubled (Source: MHCLG). This in turn places additional costs on local authorities, as restrictions on the housing and labour market gradually push people out of the housing market as a result of limited income and rising prices.

By providing a supply injection of 8,625 new homes, the Cambridge Northern Fringe East scheme helps to mitigate the pressures of a restricted housing market, and to prevent the displacement of low- and middle-income earners out of Cambridge. It also contributes to addressing social mobility and inequality issues in Cambridge by preventing the growing gap between low and high earners, and between generations.

While these are important benefits of the Cambridge Northern Fringe East scheme, they are challenging to monetise in any meaningful way. These issues are complex, requiring a large-scale provision of new housing across Cambridge as a whole in order to affect house prices and affordability. While the Cambridge Northern Fringe East scheme can contribute to addressing these issues, its individual impact cannot be isolated and quantified.

Please refer to appendix M for the Economic Impact Assessment

Sensitivity Analysis

Please describe sensitivity analysis conducted (if not covered above)

Sensitivity tests have been undertaken to consider the most significant risks and uncertainties surrounding the economic assessment of the proposed housing delivery.

We also consider the potential effects of capturing the transport user benefits that could be attributed to the CNFE development by apportioning the economic benefits of the A10 mitigations package based on the expected financial contribution of the development. As identified, apportioning the benefits to CNFE on this basis would generate a transport user benefit of £307 million and, while this value cannot be modelled precisely, it is important that the potential scale of benefit is considered to give a rounded assessment of the development proposals.

In total we have considered the following six tests. The supporting method note also includes tables which summarise the main results.

Sensitivity Test 1: Inclusion of apportioned A10 transport user benefits

The transport user benefits of the A10 mitigations package, apportioned to the CNFE development on the basis of their proportionate contribution, are incorporated into the NPV of infrastructure impacts. The apportioned benefit is estimated to be **reg. 12(5)(e)** present value, which increases the overall economic contribution of CNFE to **reg. 12(5)(e)**.

This has the following impacts:

- The central BCR (housing impacts / HIF) is unchanged.
- The return on public sector investment (total impacts / public investment) increases from 1.6 to 2.9
- The return on total investment (total impacts / total costs) increases to 2.0.

Therefore, by including the transport user benefits estimated to be attributable to CNFE, the scheme is expected to deliver good value for money under all metrics.

Sensitivity Test 2: Displacement

reg. 12(5)(e)

This has the following impacts:

- The central BCR (housing impacts / HIF) reduces to 2.2.
- The return on public sector investment (total impacts / public investment) reduces to 1.3
- The return on total investment (total impacts / total costs) reduces to 0.9. However, if the apportioned transport user costs are considered this rises to 1.8 which can be considered acceptable value for money. Transport user benefits as low as reg. 12(5)(e) would be sufficient for this BCR to remain above 1.

Sensitivity Test 2 Results	Central Assessment	Sensitivity Test	
		Central Case	With TUB
Housing Impacts / HIF	2.5	2.2	2.2
Total Impacts / Public Sector Costs	1.6	1.3	2.5
Total Impacts / Total Costs	1.2	0.9	1.8

Based on the assessment above and the likely value of the transport user benefits, we consider that the CNFE proposals will deliver a return on total investment in excess of 1:1 and a return on public investment in excess of 2:1.

Sensitivity Test 3: Real Terms Land Value Growth

We have assumed that land values increase at an average rate of 2% per annum, which is significantly below historic trends for Cambridge. We have therefore undertaken 2 sensitivity tests in relation to this:

ST3a: Lower property price growth (of 1%)

This has the following impacts:

- The central BCR (housing impacts / HIF) reduces to 1.8, which represents an acceptable return on investment.
- The return on public sector investment (total impacts / public investment) reduces to 0.8
- The return on total investment (total impacts / total costs) reduces to 0.6.

However, while two of the metrics fall below 1:1, all metrics will deliver a minimum of acceptable vfm if the apportioned transport user benefits are included. The total return on public investment is 'good' in this scenario.

Under this test, all metrics will achieve an acceptable return on investment if the transport user benefits exceed £150 million – which is likely given the results from the A10 study.

Sensitivity Test 3a Results	Central Assessment	Sensitivity Test	
		Central Case	With TUB
Housing Impacts / HIF	2.5	1.8	1.8
Total Impacts / Public Sector Costs	1.6	0.8	2.1
Total Impacts / Total Costs	1.2	0.6	1.4

Based on the assessment above and the likely value of the transport user benefits, we consider that the CNFE proposals will deliver a return on total investment in excess of 1:1 in a scenario with lower house price growth.

ST3b: property price growth of 5% per annum – closer to the long-term average for Cambridge.

This has the following impacts:

- The central BCR (housing impacts / HIF) increases to 5.4.
- The return on public sector investment (total impacts / public investment) increases to 4.8

- The return on total investment (total impacts / total costs) increases to 3.3.

Sensitivity Test 3b Results	Central Assessment	Sensitivity Test	
		Central Case	With TUB
Housing Impacts / HIF	2.5	5.4	5.4
Total Impacts / Public Sector Costs	1.6	4.8	6.0
Total Impacts / Total Costs	1.2	3.3	4.2

Under this test all metrics deliver high vfm and very high is achieved for the HIF metric. If transport user benefits are included, the achieved value for money would be very high for all metrics.

Sensitivity Test 4: Wider Development Sites

Cambridgeshire City Council and its development partners have less control over the pace of delivery on the wider sites. We therefore model a where the building out of the wider sites if 10% lower than proposed over the assessment period.

This has the following impacts:

- The central BCR (housing impacts / HIF) reduces to 2.4, which still represents high level of value for money.
- The return on public sector investment (total impacts / public investment) reduces to 1.5
- The return on total investment (total impacts / total costs) falls to 1.1.

Sensitivity Test 4 Results	Central Assessment	Sensitivity Test	
		Central Case	With TUB
Housing Impacts / HIF	2.5	2.4	2.4
Total Impacts / Public Sector Costs	1.6	1.5	2.8
Total Impacts / Total Costs	1.2	1.1	1.9

Sensitivity Test 5: Stalled Development

Development across the whole site is 10% lower than proposed over the assessment period.

This has the following impacts:

- *The central BCR (housing impacts / HIF) reduces to 2.4, which remains in the good vfm category.*
- *The return on public sector investment (total impacts / public investment) reduces to 1.5*
- *The return on total investment (total impacts / total costs) reduces to 1.1.*

Under this test, all cost metrics continue to deliver an acceptable value for money.

Sensitivity Test 5 Results	Central Assessment	Sensitivity Test	
		Central Case	With TUB
Housing Impacts / HIF	2.5	2.4	2.4
Total Impacts / Public Sector Costs	1.6	1.5	2.8
Total Impacts / Total Costs	1.2	1.1	1.9

Sensitivity Test 6: Cost Increases

In this test we consider the impact of a 25% increase in costs – both total public-sector costs and the level of HIF requested.

This has the following impacts:

- *The central BCR (housing impacts / HIF) reduces to 2.0, on the threshold for the good vfm category.*
- *The return on public sector investment (total impacts / public investment) reduces to 1.3*
- *The return on total investment (total impacts / total costs) reduces to 0.9.*

However, while the total cost metric falls below 1:1, all metrics will deliver a minimum of acceptable vfm if the apportioned transport user benefits are included.

Under this test, all metrics will achieve an acceptable return on investment if the transport user benefits exceed £34 million – which is considered to be likely given the results from the A10 study.

Sensitivity Test 6 Results	Central Assessment	Sensitivity Test	
		Central Case	With TUB
Housing Impacts / HIF	2.5	2.0	2.0
Total Impacts / Public Sector Costs	1.6	1.3	2.3
Total Impacts / Total Costs	1.2	0.9	1.6

Based on the assessment above and the likely value of the transport user benefits, we consider that the CNFE proposals will deliver a return on total investment in excess of 1:1 in a scenario where all costs of the development were 25% higher than the level expected.

Sensitivity Test 7: Housing Price Cost Reduction

As indicated in our method section, the proposals for CNFE are relative high cost due to the high quality environmental standards associated with the design – such as the inclusion of photovoltaics and Passivhaus standards. To some extent this will be reflected in the sales prices, but there are a range of wider benefits that are unlikely to be fully costed in the achievable sales price.

This scenario considers the impact on land values of a lower cost development (assuming that similar sales prices can be achieved) of 10% of basic build costs (the uplift applied for Passivhaus).

This has the following impacts:

- The central BCR (housing impacts / HIF) increases from 2.5 to 3.0.
- The return on public sector investment (total impacts / public investment) increases to 2.1 – into the high vfm category
- The return on total investment (total impacts / total costs) increases to 1.5.

Sensitivity Test 7 Results	Central Assessment	Sensitivity Test	
		Central Case	With TUB
Housing Impacts / HIF	2.5	3.0	3.0
Total Impacts / Public Sector Costs	1.6	2.1	3.4
Total Impacts / Total Costs	1.2	1.5	2.3

All schemes will deliver good vfm if the apportioned transport user benefits are considered.

Sensitivity Test 8: Optimism Bias

Our approach has involved us adjusting the potential level of optimism bias from its upper bound. This test considers the impact of OB at its upper bound range of 66%.

This has the following impacts:

- *The central BCR (housing impacts / HIF) reduces to 1.9, near the threshold for the good vfm category.*
- *The return on public sector investment (total impacts / public investment) reduces to 1.3*
- *The return on total investment (total impacts / total costs) reduces to 0.9.*

However, while the total cost metric falls below 1:1, all metrics will deliver a minimum of acceptable vfm if the apportioned transport user benefits are included.

Under this test, all metrics will achieve an acceptable return on investment if the transport user benefits exceed £25 million – which is considered to be highly likely given the results from the A10 study.

Sensitivity Test 8 Results	Central Assessment	Sensitivity Test	
		Central Case	With TUB
Housing Impacts / HIF	2.5	1.9	1.9
Total Impacts / Public Sector Costs	1.6	1.3	2.2
Total Impacts / Total Costs	1.2	0.9	1.7

Based on the assessment above and the likely value of the transport user benefits, we consider that the CNFE proposals will deliver a return on total investment in excess of 1:1 in a scenario where all a full level of optimism bias is applied.

Sensitivity Test Results

For all of the sensitivity tests, the core metric of housing impacts divided by HIF costs delivers high or acceptable value for money.

In some of the tests, the metric for the wider impacts falls below 1, however in each case it is considered that the likely scale of transport user benefits which have not been monetised in the central assessment would be sufficient to ensure that as a minimum the CNFE scheme will deliver an acceptable return on investment.

If it is possible to capture the full apportioned transport user benefits relating to the A10 mitigations package, then the proposals achieve high or very high value for money under a range of scenarios.

Optimism bias

Please describe how optimum bias has been applied in line with the Green Book guidance (and where relevant DfT WebTAG guidance (if not covered above))

The relocation of the Water Recycling Centre would be classified as a non-standard civil engineering project and the Green Book that Optimism Bias of between ^{reg. 11} and ^{reg. 12} should be applied to the scheme costs. We have reviewed the costs provided by Anglian Water and adjusted the BCR down to 26% reflecting the nature of the proposals the level of their development. Tables 4.7.1 and 4.7.2 provide an overview of the Optimism Bias assessment and further explanation is provided below.

The adjustment has been undertaken in line with the guidance set out in the Green Book Supplementary Guidance.

reg. 12(5)(e)

Table 4.7.1: Optimism Bias Summary (All Values in £m)

reg. 12(5)(e)

Table 4.7.2: Optimism Bias Adjustment

Procurement:

Relocation of the WRC to be internally managed and delivered. No procurement required for the overall project. However, procurement of specific technical services will be required, so risk is not fully mitigated.

Design Complexity:

The new facility costs are based on a conceptual design building on past experience of delivering similar schemes (over the past 14 years). Limited risks due to scheme complexity identified.

Degree of Innovation:

The facility is based on demonstrated solutions and does not include significant innovation in design.

Environmental Impact:

Scheme costs are based on an identified location and site-specific characteristics have been taken into consideration, however the nature of the investment requires significant attention to environmental considerations and consultation with local authorities and communities. It is also important to note that this project has the political backing of Cambridge City Council, South Cambridgeshire Council, Cambridgeshire County Council and the Cambridgeshire and Peterborough Combined Authority so at a local authority level (local and sub-regional) there is political support for these proposals.

Inadequacy of the Business Case

The costs have been developed in-house by Anglian Water and the proposals will meet their requirements over the next 40 years. The requirements are agreed with OfWat and are confirmed as satisfying the requirements of all relevant stakeholders. The project costs are based on the worst-case scenario (with costs ranging from **reg. 12(5)(e)** to £228 million) and the financial risks associated with the investment are fully costed in the proposals. While it could be argued that this risk is fully mitigated, we have allowed for some OB against this category to reflect that the standard of a Full Business Case will be achieved once funding is confirmed and relevant contracts are agreed in principle.

Funding Availability

Project will be fully funded by HIF, no other funding is sought. Project risks are fully costed in the proposals.

Project Management Team

Project will be delivered in-house by Anglian Water, which has over 14 years' experience of delivering similar schemes. We have not categorised the risk as fully mitigated as the specific project team will be confirmed once funding is in place.

Poor Project Intelligence

Project costs are based on specific site options identified by Anglian Water. Costs also reflect the worst-case option. However, more detailed site investigation will be required as part of a site shortlisting and selection process.

Site Characteristics

As above, detailed site level investigations will be confirmed as part of a site shortlisting and selection process.

Economic

Demand for water treatment will increase due to commercial, population and housing growth in the area. The project forms part of Anglian Water's existing five-year Business Plan and proposals are confirmed with OfWat. No significant risks are identified against this criteria.

Legislation/Regulations

Proposals are made in the context of a regulated market in agreement with OfWat. Business Plans are agreed with the regulator and no short-medium term changes to legislation are envisaged within this context. Risk allowance is therefore considered to be small.

Technology

Project technologies are tried and tested and satisfy the requirements of Anglian Water. All approaches are developed in agreement with OfWat. There is limited opportunity for technological disruption.

Other (specify)

None specified, therefore OB factor is retained.

Risk Analysis

Please describe how risk has been assessed and appraised in line with HMT Green Book guidance (if not covered above). The risk analysis should focus both on the risks to the delivery of the infrastructure and the delivery of housing

CWRC

The costs of relocating the Water Recycling Centre have been subject to detailed cost review and, in addition to the optimism bias discussed in the previous section have fully considered the key financial risks to the scheme.

Anglian Water's approach to considering risk been to apply an Impact and Probability score (of 1 to 5), multiply these scores to get a combined risk score out of 25 and to also assign a risk category (based on the Red, Amber, Green approach). Finally, a risk allowance is applied to each risk line. In total risks amounting to [reg. 12\(5\)\(e\)](#) have been identified (at current, non-discounted prices), which amounts to [169.12%](#) of the total project costs. This figure has been included in the baseline costs and is subject to the uplift for optimism bias outlined above. The Risk Register is appended to the financial case and is included in Appendix AC, which sets out the main risk categories and proposed mitigations, and below we have highlighted the main risk categories.

This approach is compliant with the Green Book requirements.

Red Risks (high likelihood and high impact):

- **Commissioning - Flow and Load**

Mitigation: Detailed commissioning plan to be determined during optioneering and detail design

Risk Value: reg. 12(5)(e)

- **Poor Ground Conditions at Cambridge WRC**

Ground investigation to take place local to Sewer intercept

Risk Value: reg. 12(5)(e)

- **Route Modifications required to accommodate AW Tankers off the A10**

Work with RES to anticipate problems during optioneering

Risk Value: reg. 12(5)(e)

- **Outcome from Enabling Risk Assessment**

Mitigation: Complete GEOPLM and desktop Enabling Assessment

Risk Value: reg. 12(5)(e)

- **Construction Challenges with new shaft and tunnel route**

Mitigation: Undertake ground investigations

Risk Value: **reg. 12(5)(e)**

- **Wider Power Network Upgrade Required**

Mitigation: Establish Power requirement and liaise with DNO

Risk Value: **reg. 12(5)(e)**

Green Risks (low likelihood and/or low impact)

- **Office Welfare and Stores Charges.** **reg. 12(5)(e)** per week **reg. 12(5)(e)** allowed for currently.

Mitigation: Optimise programme and procure for best value site requirements.

Risk Value **reg. 12(5)(e)**

- **AW @One OH's - assumed a 1% increase**

Mitigation: Determine contract strategy and delivery route

Risk Value: reg. 12(5)(e)

- **Material off site - assumed all spoil remaining on site**

Mitigation: SWMP

Risk Value: reg. 12(5)(e)

- **Additional Storm Storage Required**

Mitigation: Confirm storm discharge requirements

Risk Value: reg. 12(5)(e)

Total Risk Value: reg. 12(5)(e)

Housing Development

The housing development incorporates contingency at 5%, which is considered to be a reasonable level given the stage of development of the proposals. The housing scheme for the core site is supported by a detailed risk register which is included in Appendix AC.

The risk register assesses risks against a RAG rating system and considered likelihood, impact, and proximity. These risks have not been monetised, however the level of

contingency is deemed sufficient to manage the amber and red risks specified in the risk register.

The sensitivity test have considered an increase in development costs of 25% which is significantly in excess of the required level of mitigation and demonstrates that the scheme will continue to deliver value for money with only a modest contribution from transport user benefits. Given this, we consider this to be a reasonable approach for considering the housing risks.

Supporting material and additional economic considerations

Please provide any other information not covered above to support the economic case

reg. 12(5)(e) [Redacted]

reg. 12(5)(e) [Redacted]

[Redacted]	reg. 12(5)(e)
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]

Please attach all economic modelling done as part of the economic case (other than that provided in specific questions)

Filename	Description
reg. 12(5)(e) [Redacted]	[Redacted]

Schemes with Transport Impacts

For any transport modelling conducted, please refer to Annex B of the guidance and attach

reg. 12(5)(e)	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

Commercial Case

Market analysis

Please provide details of how the proposed scheme fits with the local housing market and with local demand. Please provide supporting evidence of relevant value assumptions in the area

Trends and patterns in the local housing market

Greater Cambridge has huge housing demand. With a unique strong global brand, it offers an exceptionally high quality of life and was recently voted the third best city to live and work in the UK (Glassdoor 2018).

Cambridge's universities are a vital part of its success, home to 29,000 students and expanding. There is a higher proportion of students in Cambridge (at 27%) and in CB4 (at 12%) than in the East of England and nationally.

Cambridge's economy has emerged as a key driver of growth. The city is home to over 4,300 knowledge and research-based companies and this is expected to grow significantly over the coming years. Oxford Economics forecasts that in the next 5 years employment could reach 76,600 in South Cambridgeshire and Cambridge, a 6% increase on the current level which will drive continuing demand for office space.

These factors place pressure on Cambridge to expand, and is reflected in the size of the city's population, which is expected to grow from 123,900 in 2011 (Census 2011) to 150,000 by 2031, an increase of 21%.

Although Cambridge has seen substantial new housing in recent years, an average of 602 homes pa have been delivered since 2001 (Cambridge Annual Monitoring Report 2017), housing has become increasingly unaffordable. Current house prices are nearly twice the national average (approximately £425,000 in Q2 2018) and with FTE wages averaging £31,668 pa, homes in Cambridge are currently 13.5 times more expensive than earnings, one of the highest affordability ratios in the country.

Cambridge has limited opportunities to densify or expand to address the pressure on its housing market. Its historic city centre is dominated by University of Cambridge and Colleges' buildings, and so offers little scope for development. Much of the city's recent growth has been on the edges, particularly to the south (Great Kneighton) and north west (Eddington). The Cambridge greenbelt surrounds the city and limits further growth out from the city's edges, meaning that much new demand will be met further afield, including at Northstowe and Waterbeach.

As the last substantial brownfield site in Cambridge, CNFE is a unique opportunity to deliver new housing at a scale that will have a meaningful impact on housing availability in the city, contributing 8,625 homes to future growth and helping ensure economic prosperity is not hindered by employees in all sectors being priced out of the city's housing market.

Moreover, CNFE is located in a uniquely accessible location, within easy reach of the city centre and close to major employment centres. Unlocking land at CNFE will provide a sustainable mix of employment, housing, amenities and transport, all in close proximity to one another.

Local Demographics

Cambridge's projected growth is underpinned by a series of key drivers which will change and shape the demographic profile of the city.

Ageing population

There are just under 8 million households aged 65+ in the UK. International benchmarks suggest we should be providing specialist housing for 15% (1.2 million) of these households. At present, only 726,000 are available. More than half that stock (52%) was built or last refurbished more than 30 years ago. In line with the UK, Cambridge's population is growing older. As a result, there is an increasing sector of downsizers who are looking to release equity held in housing. The requirement here is for reduced spatial requirements while staying in the local area and continuing to be able to access and enjoy the amenities offered by the city.

Students

The number of students in Cambridge will grow 0.5% per year for the next ten years, and postgraduate numbers by 2% per year. CNFE will provide an opportunity to house students in an affordable, convenient location, close to places of study. It will provide for students across a range of formats focused on smaller, apartment-type accommodation, including halls of residents, and build-to-rent apartments.

Young professionals

With two universities, a high quality of life and strong science and tech sectors, it is not surprising that Cambridge retains 17% of its graduates. This demographic will require both proximity and convenient access to employment centres, city centre, and higher-density living in smaller homes with shared amenities.

Knowledge-based workers

According to Cambridge Ahead, the number of businesses based in the city has increased by 31% since 2011. Employees in the professional, scientific and tech sector make up 16% of total employment market yet contribute more than 20% of the city's total

GVA. Science and tech jobs are predicted to grow twice as fast as other occupations. Knowledge-based workers require easy access to their place of work, without reliance on car travel.

Affordable – Social delivery

The demand for affordable housing is high in the UK and is no different in Cambridge. The City has seen rapid house price growth of 55% over the last five years. Current sales of new build stock in Cambridge are concentrated at the top end of the market, and the majority above the Help to Buy cap of £600,000.

PRS – Change in Tenure

The rented market is developing fast, with a switch in focus to stock built specifically for those who want to rent. The UK's private rented sector is now worth £1.5 trillion, an increase of 111% on 10 years ago, with the sector housing 20.3% of households, up from 10.1% in 2001. Since Build to Rent has emerged, the total pipeline has grown 478% since 2013. In Cambridge, the number of PRS households has grown by 33% in the ten years between censuses. The outlook is positive for rental growth in strong employment markets such as Cambridge, and PRS is a key tenure.

CNFE Housing Scheme

The CNFE masterplan will meet this demand in the following ways.

- A strong focus (reg. 12(5)(c) of the CNFE core site) on apartments at a range of densities, supported by shared green spaces and excellent shared facilities.
- A range of apartment sizes and formats, from micro-living to larger family apartments, suited to a mix of students, young professionals and families.
-

A smaller proportion ^{reg. 12(5)(e)} of the CNFE core site) of townhouses, recognising that families seeking suburban housing with large gardens will prefer to live further afield.

- Through a major BTR component ^{reg. 12(5)(e)} of the CNFE core site), a strong focus on professionally-managed rented homes.

Market absorption and sales rates

The Local Plan 2018 envisages housing delivery at an average of 700 dwellings per annum over the period 2011 to 2031, an increase on an average delivery rate of 457 dwellings per annum achieved for the period 2001 to 2011.

While this delivery is currently focused at large-scale housing developments, including Trumpington Meadows, Clay Farm, Glebe Farm, the National Institute of Agricultural Botany (NIAB), and Eddington, these will not meet all future housing needs to 2031 or beyond.

CNFE is expected to deliver a significant proportion of the required new housing completions in Cambridge over the course of the project.

- Limited land supply across the city. From 2026, CNFE will become the main focus of new housing delivery in Cambridge. This is particularly important given that annual delivery from 2027 is due to drop to 352 units, with 224 units the following year. Without CNFE, this will leave Cambridge with a deeper housing crisis.
- A strong focus on BTR and 40% affordable housing
- Development across several neighborhoods in parallel, allowing multiple sales outlets

Average prices

Our analysis is based on the following prices and comparables (explored in detail in Q6.3.3).

Private sale residential: £570 to 620 psf (2018 values). Private rented sector: £500psf capital value (based on £20 psf at a 3.5% to 4% yield). Affordable housing (shared ownership) at 65% of OMV, affordable housing (for rent) at 35% of OMV.

Please refer to appendix N for further Market Analysis information.

reg. 12(5)(e)

Delivery strategy

Please provide details of who will be delivering the infrastructure

Note on CNFE infrastructure

The infrastructure for CNFE is split into two key elements:

- The relocation of the CWRC.
- Delivery of the new infrastructure for the core site masterplan.

The relocation of the CWRC

Anglian Water is the appointed waste water undertaker for the region which includes the Cambridge area. It will enter into a tripartite contract with Cambridge City Council and the @one Alliance to deliver the relocation of the Cambridge WRC (CWRC).

The @one Alliance is Anglian Water's established framework of contractors. It is a collaborative organisation of the consultants and contractors: reg. 12(5)(e)

The organisation works together to deliver more than half of Anglian Water's capital investment programme. The @one Alliance was established in 2005 and, between 2015 and 2020 will have designed and built around 800 capital investment schemes worth approximately £1.2bn.

Each of the partners within the @one Alliance brings different expertise, as follows.

- reg. 12(5)(e) specialise in the construction of infrastructure (underground assets).
-

reg. 12(5)(e) lead on design, construction and maintenance services.

-

reg. 12(5)(e) lead on project development.

-

reg. 12(5)(e) provide feasibility, design, construction and commissioning services.

-

reg. 12(5)(e) provide treatment design.

-

reg. 12(5)(e) lead and advise on sustainability and efficiency initiatives in infrastructure.

The @one Alliance works closely with Anglian Water operational teams and other key stakeholders. They design and construct water and water recycling (waste water) treatment centres that serve more than six million people in the east of England (and Hartlepool Water) and maintain and improve the water mains and the sewerage network in the region.

The @one Alliance has carried out the initial design and costing work for the relocation of CWRC. This has looked at the following main elements.

-

A new tunnel, intercepting and transferring existing waste water flows

-

A new water recycling centre

- A new sludge treatment centre

- A treated waste water effluent pipe to the discharge point in the River Cam

The initial design work has shown these elements will occupy an approximate land area of 39hectares (this does not include any additional land required for landscaping or other mitigation requirements).

The @one Alliance has a proven track record of delivering capital projects efficiently in close collaboration with Anglian Water and the rest of its supply chain.

Examples of scheme delivered by the @one Alliance are set out below.

Tunnelling

Cambridge, Madingley Road – 1200mm tunnelling

Lowestoft DG5 Flooding – 1500mm adjacent to a railway and sinking shafts in Network Rail's Yards

Gt Yarmouth DG5 Flooding – 1500mm Tunnel down Northgate Street into Tar Works

Norwich Resilience (Water) – Tunnelling under the River Yare to accommodate Water Main

Cambridge, Glebe Farm – Installation of Rising Main under the East Coast Main Line for the Development around Addenbrookes

Milton Keynes – 600mm Tunnelling for Housing Development to connect into existing Sewer Network

Kettering, North West Sewer (Ise Valley Sewer Scheme) – Tunnelling through Asda land and Housing/Industrial Estates

Market Harborough – 1800mm Tunnel in Housing Area

Sludge Treatment Centres:

Milton Keynes STC

King's Lynn STC

Water Recycling Centres:

Chalton WRC

Great Dunmow WRC

Dereham WRC

Ingoldisthorpe WRC

Water Treatment Works:

Dalton Piercy WTW

Postwick WTW

Heigham WTW (Norwich)

Page Break

Delivery of the new infrastructure for the core site masterplan

Cambridge City Council working together with the majority landowner, Anglian Water, has appointed U+I as the master developer to manage and implement the masterplan infrastructure required for the new housing scheme for the core site. **reg. 12(5)(e)**

The supply chain delivering the masterplan infrastructure under the overall management of the master developer, U+I, can be summarised into on-site infrastructure and off-site infrastructure.

All infrastructure, whether delivered directly by the master developer's supply chain or via statutory third parties, will be scoped, scheduled and coordinated by U+I as part of delivering the overall housing scheme. U+I is a specialist regeneration and property developer with a proven track record and a £9.5bn portfolio of complex, mixed-use, community focused regeneration projects. A case study is included at Appendix AD evidencing the master developer's track record.

1. On-site infrastructure

The on-site infrastructure will be delivered in four ways.

A. On-site infrastructure by U+I as master developer.

B. On-site infrastructure by the plot developers.

C. On-site infrastructure by Cambridge County Council

D. On-site infrastructure by statutory undertakers.

1A. On-site infrastructure by U+I as master developer

U+I has been selected and appointed as the master developer by the landowners. The scope of the infrastructure to be delivered by U+I includes the following.

- Demolition of the existing waterworks and any necessary remediation and site preparation

- Primary roads and cycleways to serve the development plots together with strategic highways links to neighbouring sites

- Provision of facilities to extend the local bus route on the primary road network

- Strategic utilities to serve to the development plots (to include electricity, water, sewerage, surface water drainage, telecoms)

- Key attenuation in ponds and storm cells
- Green infrastructure (hard and soft landscaping) to form the main park, perimeter boundaries, natural corridors and strategic green zones
- Social infrastructure buildings including community and health centre

The aspiration to reclaim heat energy from the existing sewer tunnel (Sewerage Heat Recovery – SHARC) to contribute to energy needs of the new schools and community buildings

1B. On-site Infrastructure by the plot developers

As the master developer, U+I will procure individual developers/housebuilders to deliver the non-strategic infrastructure within the development plots. The delivery of this infrastructure will be controlled under the guardianship of U+I using explicit contractual arrangements. The scope of the infrastructure to be delivered by the on-plot developers includes the following.

- Secondary roads within the development plots
- Neighbourhood squares and green links within the development plots

- Car and cycle parking in multi-storey car barns
- Utilities distribution within the development plots
- Local attenuation through blue roof and storm cell technology
- Waste management through underground bins
- 'Secure by design' obligations.

1C. On site Infrastructure by Cambridgeshire County Council

The masterplan will require the delivery of new schools for the new urban quarter of Cambridge. The schools will be funded through a Section 106 contribution with the delivery supply chain procured by Cambridgeshire County Council coordinated with the wider development under the control of U+I. The scope of the school infrastructure includes two primary schools and one secondary school.

1D. On site Infrastructure by statutory undertakers

The only on-site utility-related infrastructure expected to be delivered outside of U+I's own supply chain is the diversion of the overhead HV power cables currently crossing the site on pylons. These will be buried and routed along the northern boundary with

the A14 and below Cowley Road on the western boundary of the site. This work will be delivered by National Grid and their contractors but coordinated with the master developer, which includes the following.

- Removing overhead power cables and pylons on the site

- Diverting the power cables underground

- Creating two locations on site where the cables enter the ground

2. Off-site infrastructure

The off-site infrastructure will be delivered in two ways.

A. Off-site infrastructure by U+I, as master developer.

B. Off-site infrastructure by statutory undertakers.

2A Off-site infrastructure by U+I as master developer

The scope of the infrastructure to be delivered by U+I includes highway works consisting of four junction improvements, together with a new underpass under Cowley Road to improve pedestrian and cycle links westwards to the Science Park.

2B. Off-site infrastructure by statutory undertakers

The following works relate to the off-site highway structures and utility reinforcement requiring delivery by the relevant statutory undertaker but coordinated by the master developer. The scope of the off-site infrastructure delivered by statutory undertakers includes the following.

- A new pedestrian and cycle link over the A14 trunk road delivered by Highways England

- A new pedestrian and cycle link over the railway delivered by Network Rail

- The reinforcement of the power supply to serve the wider development site by UK Power Networks

- The reinforcement (if necessary) of other utility supplies.

Procurement strategy

Please provide details of engagement with contractors to date and the procurement strategy for delivery of the infrastructure scheme

Note on CNFE infrastructure

The infrastructure for CNFE is split into two key elements:

- The relocation of the CWRC.
- Delivery of the new infrastructure for the core site masterplan.

The relocation of the CWRC

A collaborative commercial model for working with design and delivery partners

Anglian Water's decision to form strategic alliance of partners for the design and delivery of capital schemes emerged in Asset Management Period 3 (2000 to 2005). The previous delivery approach had inefficiencies inherent in its approach. Whereas lowest cost suggested efficiency, in practical terms, the relationships with the supply chain tended toward adversarial and were less efficient. Anglian Water has successfully led its industry in applying a collaborative commercial model with its design and delivery alliance partners, co-located and working with our own engineering people as one team.

The model has been refined over the last 15 years

The basis of this approach is the belief, demonstrated by performance, that proper use of a top down incentivised target cost approach, in collaboration with partners, is a more sustainable and efficient way to achieve Anglian Water's business outcomes and to drive innovation. This approach led to the formation of the @one Alliance, which is now approaching 15 years of outperformance. The associated commercial model is widely respected and identified as best practice across the utilities sector.

The companies within the @one Alliance are: **reg. 12(5)(e)**. They benefit from being able to enhance capacity and expertise through parent companies to support a major scheme such as the relocation of the CWRC. The @one Alliance operates as a collaborative virtual joint venture entity to deliver a large proportion of Anglian Water's capital programme.

Resources used so far

To date the @one Alliance has worked with Anglian Water's internal Steering Group to design and cost all activities to relocate the CWRC. This input includes planning and other enabling activities and well as the detailed design and related costing of major assets such as tunnel transfers and treatment processes. Where necessary, the @one Alliance has worked with others in their supply chain for expert opinion on matters such as tunnelling.

Input from the various parties to date is quantified as follows.

Anglian Water staff – reg. 12(5)(e)

Appointed consultants – reg. 12(5)(e)

@one Alliance – reg. 12(5)(e)

Preliminary project planning activities relating to the relocation of the CWRC have been governed through an Anglian Water internal steering group, with representation at executive director, director and technical/planning specialist levels. Input at specialist level extended to legal, flood risk, environmental permitting and decommissioning. In addition, reg. 12(5)(e) have provided advice in relation to planning, the Nationally Significant Infrastructure Project processes, compulsory purchase and strategy.

Consultants engaged under current framework partnerships with Anglian Water were used to support various activities. More specifically, reg. 12(5)(e) has been engaged and report on contaminated land, ground remediation strategies and decommissioning.

Ground conditions and decommissioning

With reference to ground and groundwater contamination, the appointed consultants have worked with Anglian Water technical specialists to review existing baseline data to understand the hydrogeological setting, potential contaminant pathways, contaminant sources and receptors. A conceptual model of the site has been developed and a draft remediation strategy has been developed. This follows the adoption of the approach described in Model Procedures for the Management of Contaminated Land (CLR 11). This initial phase of activity identified data gaps and these have been addressed through further intrusive investigations. An Anglian Water framework partner, reg. 12(5)(e) was engaged to undertake related site based geotechnical drilling and sampling activities.

reg. 12(5)(e) has also been engaged to report on other aspects of decommissioning. A full cost build up for site demolition and clearance has been delivered using industry wide cost databases. This complements a report prepared an experienced site decommissioning contractor. To inform discussions on decommissioning reg. 12(5)(e) has developed a 3D visualisation tool to indicate the extent of below ground assets to inform the scope for site decommissioning to allow for future development.

Permitting

In addition to the joint activities with consultants, Anglian Water has, for a period of 12 months, discussed environmental permitting matters with the Environment Agency. This has been focussed on impact assessments if consideration needs to be given to relocating the effluent outfall to another point on the River Cam or an adjacent catchment. Consultants were engaged to develop hydrological models to assess the impact of losses to the river system through a relocation of the outfall.

Senior level in involvement from the start and into the future

The decision was taken at an early stage to invite a senior level project management and scheme delivery expertise to the project. In this case, the expertise was sourced from the @one Alliance.

Anglian Water has, through the governance described above and with consultant support, carefully considered the best value delivery approach to ensure timely delivery of the related and relocated CWRC, with full adherence planning requirements and to the necessary quality and budgetary ceilings.

Following the above, and focussed discussions with Anglian Water's Director of Alliances and Integrated Supply Chain, the decision was taken to follow a procurement strategy under which, the @one Alliance is appointed to deliver the relocation of the CWRC, including the strategic infrastructure links in the form of tunnel transfers.

If the Business Case is successful, further director level discussions with the @one Alliance will focus on the development of an Integrated Programme Team (IPT) for the planning, detailed design and delivery of the relocation. The IPT will be formed from members of Anglian Water, the @one Alliance and appointed consultants. The strategic delivery plan will assume that Anglian Water leads matters relating to the planning permits needed for development and other related planning activities.

Delivery of the new infrastructure for the core site masterplan

As the landowners of the CNFE core site, Cambridge City Council and Anglian Water have appointed U+I as the master developer to procure the masterplan infrastructure required for the new housing scheme for the core site (sites 1A and 1B).

U+I will fund the infrastructure for the core site masterplan and will engage and procure the following parties to deliver the overall infrastructure.

- The master developer's supply chain contractors

- Plot developers / housebuilders
- Cambridge City Council's framework partners
- Statutory providers for the utilities and highways
- Network Rail for the link bridge over the railway
- Highways England for the link bridge over the A14 trunk road.

Procurement of the U+I's supply chain contractors

The masterplan developer has been appointed by U+I, along with a team of other professional consultants to progress the masterplan strategy and design. Much of the strategic infrastructure for the masterplan will be delivered by U+I through the procurement of specialist designers and works contractors.

Pre-construction surveys and investigations

Prior to securing planning consent to undertake the infrastructure works, U+I and their professional team will scope and procure a range of detailed surveys and site investigations to inform the scope of the site preparation works, to assess and mitigate risk and the environmental impact and inform the infrastructure design.

Key infrastructure packages

A table showing the proposed principal work packages to be procured to deliver the CNFE core site infrastructure is included in Appendix O1.

The strategically important infrastructure to be delivered outside of the housebuilding development plots will be procured through six disciplines of infrastructure works. This package approach complies with stakeholder interests and provides the optimum efficiency and flexibility to sequence the infrastructure works in accordance with the target delivery programme:

- **Package 1 - Site preparation** This will include the demolition, site remediation and site preparation to provide a formation suitable for both primary infrastructure contractors and then the subsequent developers/housebuilders to build out the housing plots. The package will be split into 2 phases to reflect the phased release of land by Cambridge City Council and Anglian Water. This package will also include the creation of an acoustic berm along the northern boundary with the A14 to help facilitate the early diversion of the overhead HV power cables.
- **Package 2 - Primary roads and utilities.** This will include multi-utility provision following the network of primary roads together with junction improvements and connections to the existing road network. This package will be split into 6 phases to reflect neighbourhood delivery.
- **Package 3 - Green infrastructure.** This will include hard and soft landscaping and by specialist contractor procured by the Master Developer
- **Package 4 – Network Rail link bridge.** This will include the link bridge works over the existing railway undertaken by Network Rail.
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Package 5 – A14 link bridge. This will include the link bridge works over the A14 trunk road undertaken by Highways England.

- **Package 6 – Power cable diversions.** This will include the removal of overhead cables and pylons and the diversion of the power cables underground by National Grid.

Procurement Process

Package 1 - Site preparation – split into 2 phases to reflect site acquisition

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reg. 12(5)(e) [Redacted]

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5.3.3 Please attach any supporting evidence from contractors / developers which support your proposal.

CWRC Relocation

Anglian Water Services Limited, the @One Alliance and parts of its supply chain have all been heavily involved with the preparation of this Business Case and the preparation of the supporting material and needed. Therefore the relevant people for the delivery of the

relocation of the CWRC have supported this proposal and are able to continue to support if the grant is awarded.

Delivery of the new infrastructure for the core site masterplan

A period of detailed market engagement with infrastructure providers, housebuilders and register providers (affordable housing) will be undertaken in Q1 2019. To date, there has been limited engagement with both a demolition & ground remediation contractor and a utilities network system provider to support our proposed programme, phasing and cost estimates in this regard.

A land remediation methodology and programme has been provided by **reg. 12(5)(e)** (a multi-disciplined specialist contractor delivering decontamination, asbestos removal, demolition, civil engineering, construction and recycling services) developed in support of the approach to preparation of the CNFE core site. This information is included in Appendix P.

Please attach any supporting evidence from contractors / developers which support your proposal

reg. 12(5)(e)	
reg. 12(5)(e)	

Implementation timescales

Please provide an overview of the implementation timescales for your procurement strategy

The relocation of the CWRC

The timescales for procurement depend on the route taken to secure the consents necessary for the relocation of the CWRC. There are two potential routes, via Development Consent Order (DCO) or Planning Application/Compulsory Purchase Order (PA/CPO). Both of these routes will be taken forward in parallel with the submission of this Business Case, and appropriate action will be taken to keep them both available.

DCO

The DCO process is described in Q7.4.5. Our use of this process is reliant upon the relocation of CWRC automatically qualifying as a

National Significant Infrastructure Project (NSIP), or to be deemed to be under s35 of the Planning Act 2008. These are described in the following paragraphs.

Automatic NSIP process

If the relocation of the CWRC automatically falls within the definition of an NSIP, as defined in the Planning Act 2008, Anglian Water will prepare an application for a DCO. This will be submitted to the Planning Inspectorate in **reg. 12(5)(e)**, for determination **reg. 12(5)(e)**

Section 35 process

If the relocation of the CWRC requires the project to be deemed to be an NSIP, Cambridge City Council and South Cambridgeshire District Council will jointly submit an application to the Secretary of State for the Environment, Farming and Rural Affairs (SoS) under Section 35 of the Planning Act 2008. This will ask the SoS to deem relocation of the water recycling element to be an associated project to the relocation of the sludge treatment centre (because the relocation of the sludge treatment centre it is automatically an NSIP). If this is successful, a DCO will be prepared and submitted to the Planning Inspectorate in **reg. 12(5)(e)** for determination **reg. 12(5)(e)**

*The Planning Inspectorate will then follow due process through examination and determination phases over the subsequent 12 months resulting in an anticipated confirmation by the Secretary of State for Housing, Communities and Local Government to confirm the DCO in **reg. 12(5)(e)**, which would then be subject to a 6-week period of potential judicial review.

Concurrent with the above DCO process, Anglian Water will procure the relocation of the CWRC using their existing framework arrangements (see Q5.2.1) with supply chain contractors ready to allow the work to commence, once the necessary consents are secured.

reg. 12(5)(e) following a successful DCO process set out above, Anglian Water, Cambridge City Council and delivery contractor will enter into a contract for the delivery of the relocation project. The construction of the relocated CWRC will take around **reg. 12(5)(e)** with completion and commissioning finishing in **reg. 12(5)(e)**. This will be followed by a decommissioning process which will see part of the CNFE core site (1A) being available for development in **reg. 12(5)(e)** and the rest **reg. 12(5)(e)**.

Planning Application/Compulsory Purchase (PA/CPO)

If the use of the DCO route is not possible, the PA/CPO route will be taken. This requires a planning application to be submitted for the new WRC and, once received, a compulsory purchase order confirmed for the acquisition of the land and rights in land for the

connecting tunnels. The details of this process are described in Q7.4.5.

The timescales for this process are different from the DCO. In summary, the key dates are the submission of the planning application in **reg. 12(5)(e)**, planning permission in **reg. 12(5)(e)**, CPO confirmation in **reg. 12(5)(e)**. Preparations for the award of the contract to relocate the CWRC would take place in parallel.

The new infrastructure to support the housing masterplan on the core site

A successful application for a HIF grant in **reg. 12(5)(e)** will trigger a **reg. 12(5)(e)** for the development of the CNFE core site masterplan, leading to the submission of a compliant hybrid planning application in **reg. 12(5)(e)**. In this period the masterplan team will undertake all necessary pre-planning activities for the core site masterplan. This will include development of the design in cognisance of the wider-area Area Action Plan (AAP) and applicable design codes. Intrusive site investigations and an environmental impact assessment to support a compliant planning application will be undertaken in agreement with Cambridge City Council planning team and the partnership landowners. Pre-planning public and stakeholder consultations will also be undertaken during this period.

The planning strategy is to develop and submit a hybrid planning application. This will be detailed in respect of the strategic infrastructure works to activate the development plots but will be outline in respect of the new building development including housing. The hybrid application is planned to be submitted to the local planning authority in **reg. 12(5)(e)**.

Concurrent with the above development of the masterplan design for planning, the AAP will also be evolving during this period. The programme anticipates that the AAP will be finally adopted by Cambridge City Council in **reg. 12(5)(e)** such that the hybrid planning application for the masterplan can be determined with planning consent granted by **reg. 12(5)(e)** in full appreciation of the adopted AAP.

Following procurement of a specialist demolition and groundwork contractor, site preparation (demolition, ground remediation and site profiling) is planned to take place in two phases to reflect the following vacant possession dates.

- Phase 1 - Vacant possession of 100% of the Cambridge City Council owned land and approximately 10% of the Anglian Water owned land will take place in **reg. 12(5)(e)** following obtaining the planning consent. This phase delivers suitable ground formation levels required for the subsequent infrastructure and development of neighbourhoods 1 and 2. This phase involves less demolition and anticipates lower levels of ground remediation. This 1st phase of site preparation will complete in **reg. 12(5)(e)**.
-

Phase 2 – Vacant possession of the 90% balance of the Anglian Water owned land will take place following the decommissioning of the existing CWRC in **reg. 12(5)(e)**. This phase delivers suitable ground formation levels required for the subsequent infrastructure and development of neighbourhoods 3 to 6. This phase involves more demolition and anticipates higher levels of ground remediation.

- This 2nd phase of site preparation will complete in **reg. 12(5)(e)**

Please refer to the site preparation phasing drawing in Appendix O2.

During the above site preparation works a framework contract will be set up with preferred specialist civil engineering contractors to deliver the subsequent strategic infrastructure (roads, utilities, SuDs, green zones) to create and activate the development plots within each housing neighbourhood. This strategic civil engineering will be undertaken in 6 phases.

- Phase 1 – Infrastructure to activate the plots within neighbourhood 1 will commence following phase 1 of the site preparation in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**
- Phase 2 – Infrastructure to activate the plots within neighbourhood 2 will commence following phase 1 of the site preparation in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**
- Phase 3 – Infrastructure to activate the plots within neighbourhood 3 will commence following phase 2 of the site preparation in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**
- Phase 4 – Infrastructure to activate the plots within neighbourhood 4 will commence in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**

- Phase 5 – Infrastructure to activate the plots within neighbourhood 5 will commence in reg. 12(5)(e) and will complete in reg. 12(5)(e)

- Phase 6 – Infrastructure to activate the plots within neighbourhood 6 will commence in reg. 12(5)(e) and will complete in reg. 12(5)(e)

Please refer to the strategic infrastructure phasing drawing in Appendix O3

Please also refer to the Strategic Programme for the CNFE core site included in Appendix Z1 along with the Timetable in Appendix AA

Please provide an overview of your phasing and implementation strategy for the wider scheme

In responding to this question we have assumed that this primarily relates to the implementation timescales for the procurement of the wider housing development as the relocation of the CWRC and the new infrastructure to support the housing masterplan on the core site have been explained in the above response to Q5.4.1.

Please also refer to the overall strategic programme together with activity durations and milestone dates as provided in response to Q7.4.3.

Core site housing development

A successful application and approval of the HIF grant by Homes England in reg. 12(5)(e) will trigger a three year period for the development of the CNFE core site masterplan leading to the submission of a compliant hybrid planning application in reg. 12(5)(e)

In this period the masterplan team will undertake all necessary pre-planning activities for the core site masterplan. This will include development of the design in cognisance of the wider-area Area Action Plan (AAP) and applicable design codes. Intrusive site investigations and an environmental impact assessment to support a compliant planning application will be undertaken in agreement with Cambridge City Council planning team and the JV landowners. Pre-planning public and stakeholder consultations will also be undertaken during this period.

The planning strategy is to develop and submit a hybrid planning application. This will be detailed in respect of the strategic infrastructure works to activate the development plots but will be outline in respect of the new building development including housing. The hybrid application is planned to be submitted to the Cambridge Planning Services in **reg. 12(5)(e)**

Concurrent with the above development of the masterplan design for planning, the AAP will also be evolving during this period. The programme anticipates that the AAP will be finally adopted by Cambridge City Council in **reg. 12(5)(e)** such that the hybrid planning application for the masterplan can be determined with planning consent granted by **reg. 12(5)(e)** in full appreciation of the adopted AAP.

Following the preparation of the core site and the delivery of the strategic infrastructure (roads, utilities, SuDs, green zones) to create and activate development plots, neighbourhoods will be delivered in the 6 phases across the core site.

Plot developers will be procured to deliver the housing plots in line with the overarching sales strategy planned around market absorption rates. The Master Developer and the Programme Management Office will oversee the procurement of plot developers on behalf of the JV Programme Board.

The procurement of the plot developers will take place to allow sufficient time for the plot developers to develop their designs in alignment with both the outline planning consent and the design standards, in order to then obtain detailed planning permission and procure their construction supply chains. The procurement of developers for neighbourhood 1 plots will take an estimated **reg. 12(5)(e)** commencing in **reg. 12(5)(e)** and completing in **reg. 12(5)(e)**. This will allow plot developers a little **reg. 12(5)(e)** to secure their detailed planning consents and be ready to commence on site.

During this period the master developer's PMO will act as custodians of the masterplan and ensure that the plot scheme complies with the requirements of the outline planning consent and the design standards.

The development plots will be built out by the plot developers and the release of the plots and the subsequent development will be phased in line with the 6 neighbourhoods:

- Phase 1 – Housing development on plots within neighbourhood 1 will commence following significant completion of phase 1 strategic infrastructure in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**

- Phase 2 – Housing development on plots within neighbourhood 2 will commence following significant completion of phase 2

strategic infrastructure in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**

- Phase 3 – Housing development on plots within neighbourhood 3 will commence following significant completion of phase 3 strategic infrastructure in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**
- Phase 4 – Housing development on plots within neighbourhood 4 will commence following significant completion of phase 4 strategic infrastructure in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**
- Phase 5 – Housing development on plots within neighbourhood 5 will commence following significant completion of phase 5 strategic infrastructure in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**
- Phase 6 – Housing development on plots within neighbourhood 6 will commence following significant completion of phase 6 strategic infrastructure in **reg. 12(5)(e)** and will complete in **reg. 12(5)(e)**.

Contract management approach

Please provide details of your approach to contract management and any details of any arrangements already in place - this should include charging mechanisms

Note on CNFE infrastructure

The infrastructure for CNFE is split into two key elements:

- The relocation of the CWRC.

- Delivery of the new infrastructure for the core site masterplan.

Approach to contract management for the relocation of the CWRC

Anglian Water has established a rigorous governance process in respect of its delivery of programmes of works. At each stage or Delivery Milestone, Anglian Water acts as an informed client, and as an integrator within the @one Alliance, to ensure that designs are completed prior to site entry, that relevant commissioning plans are developed alongside the design, and that the relevant outputs at each stage of the delivery process are delivered.

The delivery process for the standalone solutions is a six-stage, six milestone process, as shown in the Anglian Water Governance Structure included in Appendix Q. Each stage is followed by a milestone which is a stop/go point in the process where certain criteria need to be met in order to pass that milestone, as described below.

DM0 Decision Milestone 0

Stage 0: Asset-related risks are identified, validated and prioritised using robust and consistent data.

DM1 Decision Milestone 1

Stage 1: Anglian Water, as the client, leads the Blue Box stage where the root cause of the problem is confirmed and an appropriate Totex (total expenditure) strategy is identified.

DM2 Decision Milestone 2

Stage 2: The Delivery Contractor is now driving the project and stage 2 is to optioneer a single solution which will meet the identified need and affordability.

DM3 Decision Milestone 3

Stage 3: This is where the detail design is undertaken and the supply chain is fully engaged and the integration of standard products considered.

DM4 Decision Milestone 4

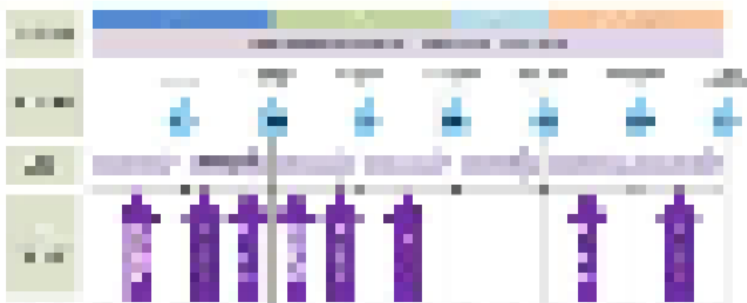
Stage 4: During Stage 4, the project is now on site in construction, commissioning, performance testing and hand-over of the new assets to the asset operator also takes place.

DM5 Decision Milestone 5

Stage 5: This stage is about completing the financial and administration aspects of the project, settling accounts and submitting corporate data relating to the project.

DM6 Decision Milestone 6

Stage 6: Stage 6 actually starts at the same time as stage 5 (on completion of DM4) and comprises a **reg. 12(5)(e)** warranty period where delivery will respond to any warranty issues that occurs after DM4 Handover.



As well as relying on a degree of self-assurance of costs by the @one Alliance (which includes Anglian Water staff), Anglian Water also has a dedicated contract management team whose focus is the administration of the construction contracts, ensuring that the relevant documents are signed on time, and any notices under the contracts are issued and responded to appropriately.

Costs are paid via our own enterprise system (SAP). All of our alliance partners are on the Anglian Water systems to ensure there is a single version of costs information, and ensure visibility of cost. Anglian also has a commercial assurance team who ensure that the correct payments are made based on actual cost, and that the commercial mechanisms such as gainshare programme pools are properly administered.

Approach to contract management for the delivery of the new infrastructure for the core site masterplan

U+I will set up a Programme Management Office (PMO) to act as the guardian for the masterplan. Part of the PMO team role will be to manage and administer all contracts put in place to deliver the master plan.

The requirements for contract management will be defined as part of the Project Execution Plan (PEP). The PEP will contain a Contract Administration Manual which will include:

- Organisation, Governance and Structure

- Commercial Management Practices and Tools

- Contract Hand-over and Start-up

- Contract Administration

- Contract Completion.

In addition, the proposed Contract Administration tools include:

- Web-based Administration for NEC Contracts ie, CEMAR

- Project Risk Register ie, EZ Risk

- Cost Management System ie, Oracle Unifier

- Scheduling Tool ie, Microsoft Project or Primavera P6

Contract administration system

The Contract Administration System, eg, CEMAR, is a digital web-based system that supports contract administration procedures and ways of working. It includes document, administration and communication templates. Its workflow approach ensures that the project team members, including Contractors, are notified promptly of actions required of them. The tool will provide an accurate and up-to-date record of the status and progress of each contract.

Contract handover and start-up

This is the point at which a newly-signed contract is handed over from the procurement process to the contract administration phase. Central to handover is a commercial information pack prepared during tendering and contract award. At handover the contract administration team is appointed and briefed, and meetings held with the contractors to make sure that all parties have a common

understanding of how the contract will be managed.

Accepted programme

The accepted programme describes what will happen during the course of the works under the contract and when the work will be done by. The contractor is required to submit a programme when the contract is initiated and provide updates as the programme changes. Each time the programme changes the contractor submits a new programme for our acceptance.

Deliverables

Contract deliverables are defined as the contractual obligations and requirements to be provided by both the contractor and client team. A schedule of contract deliverables is established at the earliest opportunity but by no later than the commencement of the contract and acts as a control tool to manage and record the status of each of the deliverables. It is compiled by the project team, led and managed by the Commercial Manager.

Cost management and reporting

Information supplied by contractors during the monthly payment cycle is extracted and consolidated to provide the source for progress reporting and financial control.

Communications

There are very specific arrangements for managing the communication flow between the Project Manager and the contractor. The correct type of communication must be used at all times and recorded properly.

Management of early warnings

Whenever the client team or the contractor becomes aware of an actual or potential event that may affect the project there is an obligation to raise an early warning so that it can be managed efficiently and minimise impact. Early warnings are managed within the contract administration system and reviewed frequently to ensure that risks are managed in a timely way.

Contract change management

Changes to the works programme are managed through compensation events (in NEC terminology). These occur where changes to the programme result in contractor's entitlement to compensation for additional cost incurred. This may come about, for example, as a result of our failing to provide resources or equipment or changing the works specification. Compensation Event will usually follow the raising of an Early Warning.

Contractor payments

Contractor submit payment applications according to a contract-specific payment schedule. Each application is validated by the Commercial team before an amount is agreed and a payment certificate is issued. The company verifies that the detailed breakdown in the payment application accurately reflects progress and costs. Payment follows the submission of an invoice by the contractor.

Subcontracting

The Project Manager must be satisfied that a contractor's programme of works is realistic in terms of the work packages that are to be subcontracted and the capabilities of the proposed Subcontractors. It helps to ensure that we maintain adequate control over the programme and is achieved through the active participation of the Commercial team in the Subcontractor selection process.

Administration and record keeping

The keeping of comprehensive, well-managed records is vitally important. Among other things it supports decision-making, enables control of costs, removes ambiguity and confusion and assists with dispute resolution if needed. Document management policies, procedures and guidance documents define the requirements for record keeping and compliance with these requirements is mandatory.

Cost verification and temporary asset disposal

Anglian Water makes sure that contractor's systems for managing costs are fit for purpose and that costs submitted are properly verified. This ensures that all records required are prepared by the contractor and that costs are not over-recovered. Cost verification minimises the incidence of fraud and corruption in the supply chain and establishes an environment that avoids abuse in the recording and application of defined cost. It provides audit and evidence data to support audits carried out on behalf of stakeholders.

Insurance

The sums involved in the project are substantial and insurance is a vital part of contract administration. Insurance cover is in place for loss and damage of project property and any injury caused to third parties. These insurances extend to contractor's, Subcontractors, Suppliers, Manufacturers and Consultants, although these other parties must put in place their own arrangements covering safety and wellbeing of their employees, professional liabilities, loss of or damage to their own equipment and vehicle use.

Avoidance of contract dispute

The company are anxious to avoid disputes. Nevertheless, they may arise, usually as a disagreement over the interpretation of the contract or other facts or opinion, or a breakdown of commercial negotiations. All parties involved in a dispute are expected to make best efforts to resolve their differences, conducting themselves in a spirit of collaboration based on mutual trust and cooperation. A dispute avoidance procedure will set out the dispute escalation/ resolution process required, and each contract will also set out the principles for dispute resolution.

Contractual and commercial completion

The mechanism for closing a contract covers the physical completion of work as well as commercial close; the settlement of the outstanding account. Commercial close takes place at the end of the defects liability period; the time during which the contractor must address any defects found. This will typically be 12 months following completion of works.

Please provide details of the proposed key contractual clauses

CWRC relocation

There will be a number of key clauses in the various contracts and agreements required to enable the relocation of CWRC. The exact drafting of these clauses will take place at various stages to ensure the HIF grant is used to deliver the relocation of the CWRC and so allow the regeneration of CNFE.

Joint venture agreement

This will be an overarching agreement between Cambridge City Council and Anglian Water as landowners governing the relationship between the parties to enable relocation of the CWRC. Key clauses in this agreement will cover the mechanism for making land available on the Core site and the distribution of receipts.

Construction Agreement

An overarching framework agreement between Anglian Water, its alliance partners and Cambridge City Council governing the design and construction works, pursuant to which Professional Services Contract for the design of the works from feasibility to design completion ready for construction, and New Engineering Contract NEC3 (as amended by AWS) for the construction and commissioning phases of the relocation of the CWRC, are issued. The key terms will include the following.

Contract terms for liability, indemnity, termination provisions.

Financial instruments including guarantees and bonds.

Contractor responsibilities including design standards, and the responsibilities and obligations of any subcontractors.

Programme delivery including start and completion dates, and associated remedies for low performance.

Testing requirements, and defects management.

Payment provisions.

Change control management.

Risks management.

Insurance provisions

CNFE masterplan

Master Development Agreement

The relationship between Cambridge City Council and Anglian Water as landowners of the CNFE core site (sites 1A and 1B) and U+I as the master developer will be governed by a Master Development Agreement (MDA). Key clauses in the MDA include the following.

- Objectives and Milestones – overarching outcomes and timescales

- Developer's Warranties providing assurances to the landowners about the developer's standing and authority to carry out the MDA

- License for Access granted by the landowners to the master developer and its agents to carry out surveys, investigations and other works in accordance with its responsibilities

- Conditions Precedent including obtaining HIF funding, approval of a Business Plan comprising a range of strategies for the pursuit of the development, landowner approval of a masterplan, obtaining satisfactory planning permission and satisfying development viability criteria

- Plot Conditions applicable to each development plot relating to vacant possession, detailed planning, a plot delivery strategy and plot viability criteria

- Provision for Plot Licenses to allow the master developer to carry out infrastructure and enabling works

- Obligation on both parties regarding the Marketing and Disposal of serviced plots of land for building

- Provision for a Project Board made up of the landowners and the master developer to oversee the project
- Provisions limiting the developer's liability and indemnifying the owner's against matters arising in the carrying out of works
- Provisions for third-party arbitration in the event of disputes

Core site plot disposal agreements

The key contractual clauses to be included in the Plot Licences between the landowners and master developer and plot developers for the build-out of the development plots will obligate the plot developers and their supply chain in respect of their performance against, and compliance with each of the following.

- Overarching objectives of the CNFE scheme agreed by the Project Board and defined by the strategies contained within the approved Business Plan
- Planning requirements set out the CNFE Area Action Plan (AAP) and the satisfactory planning permission for the overall development
- Delivery of the Approved Scheme on the basis of which the Plot Developer has been selected

- Design and specification standards set out in the Design Code and the Employers Requirements developed by the master developer

- Delivering at least the minimum number of residential units and providing the landowners with at least the minimum return as consideration for the disposal of each plot

- Provision of local employment opportunities, the employment of local labour and use of the local supply chain

- Compliance with the Site-wide Infrastructure Strategy and Site wide Maintenance Strategy

- Measures to protect the environment set out in the masterplan EIA and the Construction Management Plan

- Sustainability requirements set out in the CNFE Sustainability Strategy (Part of the Business Plan)

- Completion and release of homes into the market in accordance with the Marketing and Disposal Strategy

- Compliance with health and safety requirements set out in the site wide Health and Safety Plan

-

Financial Case

What are the total scheme costs?

reg. 12(5)(e)

Will the infrastructure costs be 100% funded through HIF?

Yes

Please provide a summary of the total infrastructure costs of the project

Description	Type	HIF Funding
Construction - WRC, STC, tunnels	Infrastructure	reg. 12(5)(e)
Other - fees, OH, land	Infrastructure	reg. 12(5)(e)

Please provide a summary evidencing how you have assumed these costs

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.

No attachments

Can you provide detailed costing for the housing element of the wider project that forms part of your total scheme costs?

Yes

Description	Type	Cost
Site preparation - 1A, 1b	Abnormals	reg. 12(5)(e)
Major Service Diversions - 1A, 1B	Abnormals	
Reinforcement to off-site Utilities - 1A, 1B	Infrastructure	
On-site primary Roads and Utilities - 1A, 1B	Infrastructure	
Section 278 Road Improvement - 1A, 1B	Infrastructure	
Green and Blue Infrastructure - 1A, 1B	Infrastructure	
Off-site Linkages and Interventions - 1A, 1B	Infrastructure	
S106 Community Built Provision - 1A, 1B	Construction	
S106 Transport Contribution - 1A, 1B	Construction	
Neighbourhood on-plot development - 1A, 1B	Construction	
Demolition and Remediation Works - 1A, 1B	Construction	
Design and Cost Contingency - 1A, 1B	Contingency	
Adjacent Sites 2A, 2B, 2C - Total Scheme costs (incl Contingency)	Construction	
Residual Land Value - 1A, 1B, 2A, 2B, 2C	Land (exc. sunk costs)	
Master Developer Land Receipt - 1A, 1B	Land (exc. sunk costs)	
SDLT and Fees	Land (exc. sunk costs)	
1A, 1B, 2A, 2B, 2C	Professional fees	
1A, 1B, 2A, 2B, 2C	Finance costs	
1A, 1B, 2A, 2B, 2C - Funding Type = Letting, Sales and Marketing	Other	

Please provide a summary evidencing how you have assumed these costs

The housing costs including the associated infrastructure costs applicable to a residential development (i.e. roads, strategic landscaping landscape, etc.) referred to under 6.1.5 to 6.1.7 are supported by the **reg. 12(5)(e)** order of cost estimate which has been provided under 6.1.9.

This estimate is based on the design information currently available and forms a working document that has been reviewed by the design team and will be under constant review going forward. The estimate will be expanded and updated as and when the detail and design develops. In turn the developing design will be challenged at every point, regarding the cost effectiveness and programme efficiency of the proposed solution.

This estimate provides a detailed assessment of the overall extent of built development and ancillary buildings as well as a detailed estimation of the overall scope of associated infrastructure works under key workstreams.

The measurement of the built development has been based on the indicative Gross Internal floor areas (GIA) as provided by the URBED area schedules. The areas have been imported into the relevant sections of the ^{reg. 12(5)(k)} estimate and priced accordingly, in order to provide indicative costs of the housing elements as identified within the preceding Question 6.1.7. The associated infrastructure works (roads, strategic landscaping, etc.) have been quantified where possible and priced with high level indicative costs.

The building costs and rates applied within the estimate are established from ^{reg. 12(5)(k)}'s extensive database along with their knowledge & experience within the residential market for the various residential unit types and ancillary / section 106 related buildings. The indicative blended rates have been assessed based on other projects / developments, recent tenders, benchmarked information, market tests for similar building types, of comparable quality and specification, assuming an array of contractors (from volume house builders to developer led residential builders).

The measurement of the infrastructure works has been based on the current design concept with the pricing / rates used being informed by the extensive knowledge and experience within ^{reg. 12(5)(k)} based on similar comparable schemes, recent tenders, market tests, and where necessary from limited engagement with contractors / specialists to ensure that allowances are reflective of the work envisaged. Certain areas will need extensive design input going forward to establish the final solution and therefore at this stage provisional allowances have been included which will be reviewed and updated in time.

The estimate identifies the residential housing under the density headings identified within the URBED schedules which in turn identifies the building height in ranges. The detail within this high level estimate will be expanded when the detailed design information becomes available. This document will enable costs and design to be monitored and managed within cost constraints for the identified scope.

The detail of the built form at the present time has not been designed, however as a general rule it has been assumed that any building under 4-storeys high will be of loadbearing wall construction built off reinforced concrete strip footings / raft slab. Whereas any building of 5-storeys or more will be built of a simple frame construction off reinforced concrete pads (only being piled if necessary). There are no basements to any of the buildings.

The base build residential construction cost has been enhanced for various client's aspirations for the development, namely a degree of passivhaus low energy / low carbon design construction, sustainability, SUDs, etc. in order to make this an exemplary development on the outskirts of the of Cambridge.

All other ancillary and associated building (namely commercial, retail, car parking barns and schools, social buildings) have been likewise priced based on current design concepts and experienced knowledge on similar schemes.

Once the design code has been established, detailed cost plans for the key building designs will be carried out to inform the rates used. These working documents will be constantly under review as the design progresses, allowing the measures to be expanded in line with the detail provided. Costs can be refined for individual plot specific designs and specifications as they become available, and provide a base for value engineering exercises as and when necessary.

Pricing of the associated infrastructure has been checked and benchmarked against relevant work carried out on other projects within the office where possible. Where such comparisons are not possible, engagement and advice from appropriate contractors has been sort. This process is in the early stages of what will be an ongoing process throughout the design stage and until such time as a contractor has been appointed. This is to ensure that not only costs are appropriate but also that the proposed construction type and methods adopted are relevant to provide the most efficient and economical design solution.

Contractor and specialist sub-contractor engagement regarding methods, programme and cost will become more involved as the design progresses and becomes more detailed, being refined as necessary. Due to time constraints only, limited contact has been made with the key utility providers in the Cambridge area and their feedback is currently awaited, which will be checked against the current allowances. In the absence of such information allowances are based on experienced assessment of loadings and costs in

conjunction with **reg. 12(5)(e)**.

At the present time the following key risk areas have been identified, which will be reviewed and cost checked in the future with the necessary specialists and design input to mitigate risks and unknown cost exposure.

Detailed design implications on the residential building costs for passivhaus aspirations

Implications on the design & methods of working for foundations and external elevations adjacent to:

An operating railway; and,

the A14 Highway.

Removal of the overhead cables and pylons by burying the cables underground.

Relocation of the mobile phone mast.

Implications on the design & methods of working for bridging over adjacent:

a network rail line; and,

the A14 Highway.

Provisional allowances for statutory authority work relating to:

incoming service provision; and,

reinforcement to the local off-site infrastructure.

An overall contingency of **reg. 12** is included in the order of cost estimate and the development appraisal which is considered appropriate based on our understanding of the specific site issues and based on our experience with other development masterplans.

The basis of the scope of the CNFE masterplan scheme is included in the Scheme Key Assumptions Document included in Appendix B.

reg. 12(5)(e)	

Please provide a detailed cost plan for the scheme proposed to be fully or part funded by HIF.

reg. 12(5)(e)	reg. 12(5)(e)
reg. 12(5)(e)	

Please provide detail on how the land cost included in your scheme costs has been arrived at and the basis of this assumption (if you have included these costs in either your infrastructure or housing costs)

Land costs for the relocation of the CWRC

For the relocation of the CWRC, a Development Consent Order (DCO) (see Q5.4.1) will be required to provide the necessary land acquisition powers, planning permission and other consents necessary for the construction and operation of the relocated CWRC.

For the purposes of the acquisition of land and rights, we have assumed the DCO will allow the use of the compulsory purchase powers which are contained in the Water Industry Act 1991 (as amended) and therefore. This combination of powers are available to Anglian Water for the purpose of its role as a statutory waste water undertaker. If the Planning Application/CPO consenting route is used, the same powers would be available and so the compensation payable would be the same.

The estimates for land compensation have been arrived at by applying the provisions of the various compulsory purchase statutes, relevant regulations and case law. There are two broad elements to the compensation/scheme costs. First, the acquisition of rights for the tunnel from the existing CWRC to the site of the relocated CWRC. These costs are based on a standard rate per meter of

tunnel. Secondly, the cost of acquiring land for the relocated CWRC. These costs are based on a rate per acre/hectare for the existing use of the land in the “no scheme world” (ignoring the end user of the land or the reason for its acquisition). In addition, disturbance costs incurred by the claimant would be payable but are unlikely to be material and so have not been included.

Land costs for delivery of the new housing scheme

The land costs for the new housing scheme have been calculated on a residual basis in the appraisal, which is included in Appendix T. The appraisal calculates the gross development value and then subtracts from this the costs of the development (including finance and developers profit), to give the residual land value. Further detail on the individual elements are included below.

Gross Development Value

Detailed commentary on the GDV is included in section 6.3.3. Capital values have been applied to the residential on a per sq ft capital value basis, to give a total value for this element. For the commercial, a rent and yield have been applied to each element and the gross value discounted to allow for purchaser's costs. The sum of all the capital values for the individual elements produces the gross development value.

Development Costs

The development costs are formed of the sum of the following items.

Construction costs – these have been taken from the **reg. 12(5)(e)** order of cost estimate for the CNFE development that is included in Appendix S. Contingency of **reg. 12** has been added.

Professional fees – these are the consultants fees incurred during the life of the project. Within the appraisal, these have been calculated in two ways. Professional fees associated with the on-plot development have been calculated at **reg. 12(5)** of total construction cost (excluding contingency, site wide costs and S106 Transport Contribution), a level that is in line with the market norm for a house builder. Professional fees associated with the infrastructure provision have been calculated at **reg. 12(5)(e)** of the site wide costs.

Letting and Sales Costs – these have been included in line with the market rate.

Finance Costs – interest has been applied to the development costs at a rate of **reg. 12** in line with the current market.

Developers Profit

Developer profit of **reg. 12(5)** of GDV has been allowed. This is at the lower end of the **reg. 12(5)(e)** profit on GDV for a market normal profit margin on a development of this size and risk.

The residual land value for the total site is then created by subtracting the development costs and development profit from the gross development value.

These land values are forecasted residual land values based on the information inputted into the appraisal. If values were to rise and costs remained the same then the land value would also rise, and vice versa

Please attach any evidence to support how the land cost has been assumed

reg. 12(5)(e)	

The private sector, via developers, is expected to fund the vast majority of the direct housing delivery. The MDA caters for plot/parcel sales on the open market to third parties. Parcel developers will likely be Housing Associations, Regional Housebuilders, National Housebuilders, Regeneration companies, Institutional investors, Build to Rent specialists, REITs, and potentially Cambridge colleges.

Initial market testing has been undertaken and due to the supply constraints, demographics, growth potential, enquiries/demand, and strong fundamentals seen in Cambridge (as discussed in the market commentary) demand is expected to be strong for all tenures. Build to rent, affordable housing and homes for employees of the adjacent science and business parks is anticipated as being very strong.

Early discussions with Addenbrookes Hospital about key-worker housing are also ongoing but we have not factored this into the above table, as it is too early for this to be confirmed.

No attachments

Gross Development Value

How much is the assumed Gross Development Value (GDV) for the scheme?

reg. 12(5)(e)

Please provide a breakdown of the assumed GDV of the scheme in relation to the below:

Private sale	reg. 12(5)(e)
Rent income	reg. 12(5)(e)
Affordable sales income	reg. 12(5)(e)
Commercial income	reg. 12(5)(e)
Other	reg. 12(5)(e)

Please provide a summary evidencing how you have assumed the GDV subject to this bid

Our focus is on producing a scheme which successfully delivers a series of new neighbourhoods and houses in northern Cambridge. Our financial assumptions are robust and deliverable and have been coordinated in partnership with a full professional team, both on the commercial and technical/ construction side. We have a full construction cost plan, provided by our cost consultants Faithful+Gould, which is discussed in detail elsewhere with this HIF submission. We also have a full series of scheme drawings, including those depicting density, massing and mix, which are included in Section 1 within the submission.

In assessing the Gross Development Value, we have taken significant and detailed advice from our commercial consultants, Savills, from both their London HQ and regional Cambridge office to ensure the accuracy of inputs. We have also reviewed various market commentary from other commercial consultants in order to ensure the advice provided is in line with market expectations.

The total GDV for the entire housing scheme (sites 1A, 1B, 2A, 2B, 2C) is reg. 12(5)(e). The total GDV for site 1 in isolation (the core site) is reg. 12(5)(e)

Private residential

In terms of value per sq ft, the advice we have received is that Cambridge behaves much more like London than the rest of the East of England and has seen the same levels of rapid growth since the credit crunch. Private residential values are the equivalent of London Zone 2 locations at £600-650 psf. House price averages in Cambridge are about £425,000.

Current sales of new build stock in Cambridge are concentrated at the top end of the market in terms of quality. Given the quality of accommodation that will be provided at CNFE, the appraisal is assuming an initial rate (before growth is applied) of between £570-620 psf for the private residential accommodation, which gives an average blended unit sale price (after growth) for the private residential of £550,000.

Athena, the first phase of open market housing in North West Cambridge, is of the best comparable schemes for CNFE. This scheme is the same distance from Cambridge City Centre (albeit with worse transport links given a lack of railway station). Sold prices here are averaging £703 psf. The CNFE Market Analysis included in Appendix N contains details of the sold and reserved prices at Athena. Darwin Green is another large development of 1,780 homes located in North West Cambridge. Apartments at Darwin Green are on the market at over £600 psf. Appendix N contains details of the prices.

We estimate that CNFE should achieve values in the region of both Athena and Darwin Green, as CNFE will have much better transport links, attractive local amenity provision, and direct infrastructure investment. As such, initial sales rates of £570-620 psf have been applied to give a total GDV for the private residential of reg. 12(5)(e) on the core sites (1A, 1B) and reg. 12(5)(e) 1 across the entire housing scheme (1A, 1B, 2A, 2B, 2C).

Private rented sector

A significant amount of the housing at CNFE will be in the private rented sector. Savills have advised that the average rental for a two bed is approximately £1,250 per month in the city. Taking a yield of 3.5% and capitalising this gives a gross capital value of £571 psf, assuming a 750 sq ft two bed apartment.

Within the CNFE GDV calculations, we have assumed a prudent initial capital value of £495 psf for the PRS accommodation. This is for accommodation provided on an institutional basis and that is professionally and holistically managed.

Affordable housing

Given the level of affordable housing being provided at CNFE, we have been advised by Savills that a rate for affordable (for sale)

housing should be applied at 65% of the open market value of the private accommodation. For the affordable (for rent) housing, advice was given that this rate should be applied at 35% of the open market value of the private residential. These have been taken as being in line with those values achieved at Great Kneighton, an urban extension to the south of Cambridge which provided 40% affordable housing, in line with what is being proposed at CNFE.

Commercial – offices and retail

Comparable evidence has been taken from recent lettings undertaken on the Maurice Wilkes building (total 67,207 sq ft) on the St John's Innovation Park – north east of Cambridge city centre and within close proximity of CNFE. These comparables are included in Appendix N and show a rent of £33 psf.

CNFE will be a superior product than anything previously provided in the immediate surrounds, and as such we have adopted a rent of £36 psf on the office lettings, which has been capitalised at a yield of 5.75% with an incentive period of 9 months, in line with commercial advice.

Additionally, we understand that Bidwells are marketing Plots 22 – 25 at the Cambridge Science Park (opposite the St Johns Innovation Park) and are guiding £36.50 psf, which demonstrates the market for quality new build office accommodation.

Savills has advised on the retail front that this should be appraised at an initial rate of £18 psf, capitalising at the same rate of 5.75% and including an incentive period of 9 months.

Commercial – hotel

The appraisal of the hotel has been based off recent Cambridge assessments of a 130-bedroom budget hotel (a standard similar to that of Premier Inn, Ibis, Travelodge). When assessing these options, an initial market rent of £6,000 per bed (£780,000 per annum) is achievable, which would be capitalised in the current market at 4.75%.

A 167-bed hotel is included in Neighbourhood 4 in line with this rate at £6,000 per bed (assuming a 4* hotel) capitalised at a yield of 4.75%.

Car parking

We have been advised to include car parking at an initial capital value of £20,000 per space. This would be charged on top of the residential prices and the car parking spaces would be provided in one of the various car barns that are being provided on site.

Purchaser's costs

Purchaser's costs have been included on the commercial element of the scheme at 6.8% as is standard within the market.

Growth

Savills undertake assessments of capital value growth within the market and use market knowledge and analysis to forecast growth assumptions within the South East property market. The findings of this work are published in the "Annual Forecasts Publication" which is published by the London based research team.

This year's publication demonstrates an expected growth rate between 2.0% and 2.5% from 2019 to 2023 in both the East of England and South East. Compound growth over this five-year period is forecast to be 9.3%. Taking this advice, a growth rate at the lower end of this prediction has been adopted, at 2.0%, and applied to all of the initial capital values inputted into the appraisal. This has been applied from day 1 within the cashflow and produces varied sales rates for the various elements depending on when the different elements come to the market.

reg. 12(5)(e)	

Please provide a cashflow for both the infrastructure and the overall development or housing scheme (if available). Please provide details on any growth and inflation assumptions made

reg. 12(5)(e)	

Recovery

Do you aim to recover any of the funding (to be retained locally)?

Yes

Please provide assumed profile of recovery

reg. 12(5)(e)

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

How will the funding be recovered?

We share the aspirations of Homes England to establish a Local Recycling Fund (LRF) to promote and accelerate housing delivery across the CPCA area, leveraging the value created across the CNF AAP area, by the relocation of the CWRC, as a springboard and seed capital.

At this early stage we are exploring two possible models:

To use the normal CIL/Section106 mechanism, that conventionally apportions infrastructure costs between all landowners/developers across an AAP area. Our intention would be to include a proportion of the relocation costs, avoiding any disincentive to bring forward the desired overarching outcomes. We estimate a figure of reg. 12(5)(e) could be raised in this manner to be spread over the life of the CNF AAP area, payable on occupation of future residential and commercial development. This model will need to be developed and tested during the emerging AAP process.

To use a proportion of any real uplift in net proceeds from the ultimate plot sales on the CNFE core site. An increase of 5% in land values, over the current base residual viability appraisal of reg. 12(5)(e), could produce a similar amount.

At this stage it is too early to profile any estimated amounts to any degree of accuracy so identifying possible sites for receipt of the funds is difficult, but following discussion with CPCA colleagues, we would suggest that possible beneficiaries might include new garden communities e.g. Wisbech or the proposed CAMM (Cambridge Metro) project.

How do you intend to use recycling to support future housing delivery in your area?

At this stage it is too early to profile any estimated amounts to any degree of accuracy so identifying possible sites for receipt of the funds is difficult, but following discussion with CPCA colleagues, we would suggest that possible beneficiaries might include new garden communities e.g. Wisbech or the proposed CAMM (Cambridge Metro) project.

Additional Information

If you have any further information to support the Financial Case for your project, which has not already been captured in the above, please include this here

The list below clarifies the additional information that is referenced in our responses to Section 6 above:

reg. 12(5)(e)

[Redacted]

reg. 12(5)(e) [REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

Management Case

Project Dependencies

Description	Critical	Outside of direct control
Supply chain engagement Outline Plan: To use their framework partner @One Alliance and its supply chain to deliver the project within overarching programme governance.	Yes	Yes
Secure HIF grant. Outline Plan: Submit a compelling business case	Yes	Yes
Confirm automatic status of CWRC relocation as an NSIP. Outline Plan: Submit a compelling case to PINS.	Yes	Yes
Secure NSIP status for the project through Section 35 should the need arise. Outline Plan: Submit a credible application to the Secretary of State	Yes	Yes
DCO confirmation. Outline Plan: Submit a high quality DCO application.	Yes	Yes
Planning permission/CPO route (if automatic NSIP status is not confirmed or Section 35 not approved). Outline Plan: Submit a robust planning application and justification for the CPO.	Yes	Yes
Vacant Possession. Outline Plan: The Council and Anglian Water will provide access to U+I to undertake intrusive site investigations to inform the remediation strategy and the development of the Environmental Impact Assessment. Early access for intrusive investigations will be agreed in advance of vacant possession. The vacant possession dates are as follows: The core site will be released for re-development in 3 parts: -Phased vacant possession of Cambridge City Council land will commence from reg. 12(5)(e) -10% of Anglian Water land can be released 18 months ahead of completion of decommissioning period in reg. 12(5)(e) -90% balance of Anglian Water in reg. 12(5)(e)	Yes	No
Environmental Impact Assessment. Outline Plan: The Council will work with U+I to screen the requirements for an EIA with the local planning authority, Cambridge City Council. U+I will make an EIA screening request at an early stage in the project to inform project strategy and programme. It is expected that the local planning authority will confirm a positive screening opinion and that an EIA will be required. The scope of the EIA will be agreed early and all project timeline implications including required geotechnical investigations, ecological surveys, technical studies, Environmental Statement (ES) preparation, and the planning determination period, are currently allowed for in the target programme. The EIA activities across the CNFE core site are currently scheduled to take place between EIA scoping in reg. 12(5)(e) through to planning application with EIA in reg. 12(5)(e) .	Yes	No
Decommissioning of the Anglian Water's existing water recycling centre. Outline Plan: Major land owner Anglian Water will commence the decommissioning of their existing water recycling centre in reg. 12(5)(e) following completion of their relocation to a new site. The decommissioning period will take 12 months during which the Master Developer will have access to undertake elements of site preparation. Vacant possession of the remainder of Anglian Water's site will take place in reg. 12(5)(e) .	Yes	No
Delivery of strategic infrastructure. Outline Plan: All strategic infrastructure outside of the development plots (site preparation and remediation, primary roads, utility distribution, highway junction improvements, green infrastructure and public realm) will be delivered in phases reflecting the site vacant possession dates. The completion of this strategic infrastructure will be aligned with the subsequent development of the housing plots.	Yes	No

Procurement of neighbourhood plot developers. Outline Plan: A delivery and marketing strategy will be agreed so that each land parcel is brought to market at the optimum time with an emphasis on placemaking and speed of delivery. This will be aligned with planning obligations, infrastructure delivery, and market conditions at the time.	Yes	No
Alignment with the evolving Area Action Plan (AAP) for the wider CNFE area. Outline Plan: The Greater Cambridge Planning Services team are working closely with U+I and keeping them informed of AAP development. The hybrid planning application will (within reason) reflect the evolving AAP but the direction of the AAP is outside the control of the Council (and JV) as landowners.	Yes	Yes
Hybrid planning consent. Outline Plan: U+I are appointed to prepare a hybrid planning application for the CNFE core site (sites 1A and 1B). The hybrid application will seek consent for outline planning on the housing and mixed-use development plots while seeking detailed planning consent for all strategic infrastructure to enable the development plots. The hybrid application is planned for submission in reg. 12(5)(e) with determination including allowance for the risk of a judicial review in reg. 12(5)(e) . This period and decision is subject to Greater Cambridge Planning Services and other planning stakeholder and outside the control of the land owners.	Yes	Yes
Diversion of the overhead HV power cables. Outline Plan: We will aim to procure UK Power Networks to divert the existing overhead 132KV power cables as soon as possible in the site preparation stage. The earliest this work can commence will be during the decommission period of the existing CWRC by Anglian Water which is planned for reg. 12(5)(e) . This is subject to negotiations with UKPN and Anglian Water and is outside the control of the land owners.	Yes	Yes

Project governance, organisation structure and roles

Please outline the authority's approach to governance and oversight of the delivery of the proposal. This should include how you will work with any other key delivery partners (such as other landowners)

Programme Governance and Management for such a complex programme needs to be robust but agile, and is being developed in line with good practice models such as Managing Successful Programmes (MSP)

Managing a programme successfully is based on three core concepts:

- Principles. They are the common factors that underpin the success of any transformational change.
- Governance Themes. These define an organisation's approach to programme management. They allow an organisation to put in place the right leadership, delivery team, organisation structures and controls, giving the best chance for success.
- Transformational Flow. This provides a route through the lifecycle of a programme from its conception through to the delivery of the new capability, outcomes and benefits.

An example model is provided below. An example model is provided in Appendix W1.

The overarching programme governance and management for this programme is set within a good practice framework related to the programme. The governance structure can be found below. The governance structure can be found in Appendix W2.

Programme Management

A programme management office will act as the vehicle for overarching management of the programme in line with the diagram above.

The programme will be overseen by a Programme Board, comprising representatives from Anglian Water and Cambridge City Council (the core site landowners) and U+I (the master developer). The board will lead delivery of the two core projects relating i) to the relocation of the CWRC and ii) the master development of the core site.

The programme has an appointed Senior Owner (SRO), **reg. 13**, Cambridge City Council Strategic Director. **reg. 13**, Group Director at Anglian Water is the Anglian Water lead for the programme.

It will have advisory membership from **reg. 13**, Director of Planning and Economic Development for the Greater Cambridge Planning Service, who is the Senior Owner (SRO) for the independent Area Action plan process and through this will help inform the timescales for the delivery of the AAP by the Local Planning Authority and ensure that these are coordinated with the timescale of the programme.

The Programme Board will report as required to the Anglian Water Board and to Cambridge City Council's constitutional decision-making processes for corporate strategy, major decisions and internal reporting relating to the land ownership of the core site. A Special Purpose Joint Venture Vehicle (SPV) will form the contractual body for both projects (the CWRC relocation project and the core site development project). The SPV will be established as an LLP, in line with legal guidance on best models. It is proposed that Cambridge City Council will act as the Accountable Body for the receipt of HIF and other external funding for the programme. The appointed programme manager is **reg. 13** of Optimum Consulting and will be dedicated to the operational and strategic running of the programme, reporting to the Programme Board.

The programme will establish two key stakeholder review groups comprising Members and Senior officers from the key partner local authorities, including the CPCA, GCP and County Council, for example, to keep them closely informed and engaged on the programme and to obtain relevant input from an early stage and throughout the project. Other relevant stakeholder forums will also be formed where it is not possible or appropriate to share forum meetings with the LPA, as well as wider stakeholder and community engagement at the appropriate time.

Project Management

As set out above, the programme will deliver two key projects. It will also feed into the Area Action plan to be independently developed by the Local Planning Authority.

The two key projects are:

1. The Relocation Project – relocation of the CWRC

Anglian Water will lead the project. Project management and delivery will be provided through Anglian Water's framework agreement.

2. The Development Project – master development of the core site post relocation of the CWRC

The landowners have appointed U+I as the master developer for the core site through an OJEU tender process. The appointed project managers are **reg. 12(5)(e)**. The project team will be working with Anglian Water, City Council teams, the Local Planning Authority and key stakeholders and partners to develop the project.

The appointed project team is as follows:

-U+I with TOWN – development management and overall delivery responsibility under the MDA;

reg. 12(5)(e) – masterplan designer responsible for ensuring the overall masterplan design reflects the objectives and aligns with the evolving AAP;

reg. 12(5)(e) – town planning advisor responsible for ensuring the planning strategy is delivered in accordance with national and local planning;

reg. 12(5)(e) – project manager and cost manager responsible for administering the project, programme and costs in line with the project execution plan;

reg. 12(5)(e) responsible for the transport planning, civil engineering and utilities strategy, design and masterplan;

Max Fordham – responsible for the energy and sustainability strategy, design and masterplan.

The workstreams will cover a comprehensive set of themes required to bring forward a project of this scale, including planning, delivery, design, transport, community development, etc. It will link in with the relevant service teams in the City Council, partner authorities and other partners and stakeholders to ensure that the project is embedded in and informed by relevant plans.

Planning Frameworks

The Local Planning Authority and joint Cambridge City and South Cambridgeshire shared planning service (Greater Cambridge Planning Service) will lead the development of the Area Action Plan spanning the whole CNF area. The LPA's statutory role requires it

to maintain an independent role in preparing the AAP, working with all landowners, businesses and community stakeholders across the AAP area. The programme teams will feed into this process.

Monitoring and Reporting and Assurance

The programme (and within it both of the projects) will be monitored by the Programme Board, with respective project teams reporting to the Programme Board via the Programme Manager using the City Council's Enterprise System tool and templates. Highlight/exception reporting will also be circulated to the City Council's Corporate Programme Office to ensure wider dependencies and quality assurance requirements remain aligned.

The authority will utilise the City Council's Corporate Programme Office to provide an overarching stewardship of the scheme to ensure the successful delivery of the project strategy and core objectives.

The authority's approach to governance and oversight is illustrated through the following organogram structures:

HIF Delivery Governance and Oversight Structure

The organogram below shows the governance for the HIF funding. The organogram can be found in Appendix W3.

Governance and oversight of the HIF funding for the relocation project

A Funding Agreement will be entered into, between Homes England and Cambridge City Council (as applicant).

Heads of Terms for a Joint Venture have been agreed between Cambridge City Council and Anglian Water (as joint venture landowners). This will be established as an LLP as described above.

A tripartite agreement with associated contract will be entered into between Cambridge City Council, Anglian Water and their framework contractor to deliver the new water recycling plant. This will be on the basis of an agreed programme and fixed price to ensure the plant is delivered on time and on budget and with appropriate risk transfer to the end contractor.

The SPV will have oversight of the relocation project and will monitor the delivery of the project by the contractor. As defined milestones are met and signed off by the SPV in its oversight role, with appropriate assurance, funding will be drawn down by Cambridge City Council from Homes England and paid to the contractor in accordance with a pre-agreed schedule.

Contractual framework for the development project

A Master Development Agreement has been agreed and will be entered into between the SPV and the Master Developer (U+I).

The Master Developer will appoint the professional and consultant team responsible for bringing forward the development project on the basis of deeds of appointment.

The Master Development will enter into construction contracts with contractors for the infrastructure packages to enable servicing of the site.

The SPV will enter into Build Licences and Sales Agreements between the landowning JV and the individual plot developers.

Planning obligation Agreements will be entered into between the Master Developer and Cambridge City Council planning / other government bodies for the delivery of Section 106 social or Section 278 transport infrastructure.

Agreements will be entered into between the Master Developer and Statutory Undertakers for the diversion and delivery of utility supplies.

Agreements will be entered into between the Master Developer and government bodies (Highways England and Network Rail) for the delivery of improved connectivity links across the A14 trunk road and railway respectively.

Please provide details of the authority's resourcing for the proposal

Resourcing will be structured based on the overarching programme, CWRC relocation and the masterplan development scheme.

The programme will be overseen by a Programme Board, comprising representatives from Anglian Water and Cambridge City Council (the core site landowners) and U+I (the master developer). The board will lead delivery of the two core projects relating i) to the relocation of the CWRC and ii) the CNFE development of the core site.

Overarching Programme

-Cambridge City Council – HIF grant applicant and Joint Venture Partner

-Anglian Water – HIF grant applicant and Joint Venture Partner

-Optimum Consulting – Project Manager

-Eversheds Suthlands & Freeths - Legal Advisor

CWRC Relocation

- Anglian Water – DCO applicant, Joint Venture Partner
- Savills – Advisor to Anglian Water on strategy, planning and DCO
- @One Alliance – design and construction delivery partner
- @One Alliance delivery supply chain – designers and contractors
- Other advisers will be appointed on the confirmation of the HIF grant
- Eversheds Suthlands & Freeths - Legal Advisor

CNFE core site development

- Cambridge City Council – HIF grant applicant, JV Partner and landowner
- Anglian Water – Joint Venture Partner and landowner
- U+I – the JV partnership’s Master Developer

reg. 12(5)(e)
 [Redacted text block]

Please note that the team will be expanded with the appointment of further design consultants, specialist contractors and plot developers to reflect the developing CNFE masterplan. Appendix X demonstrates the current extent of resourcing that Cambridge City Council and Anglian Water has already engaged to support the relocation of Anglian Water’s CWRC and the new housing masterplan.

Please attach an organogram depicting the governance structure and/or roles and responsibilities within the authority

Filename	Description
W4 - Cambridge Council City governance structure.pdf	Cambridge City Council Governance Structure

Project management arrangements and project plan

Please provide details of the overall project management delivery arrangements for the project, including any challenges or constraints to delivery of the project

- Project management delivery arrangements will flow from the governance and oversight arrangements described in section 7.2.
- The Corporate Programme Management Office (CPMO) will be responsible to the Programme Board for both the core projects: relocation of the CWRC relocation and the master development of the core site. The CPMO is described in section 7.2.1.
- There will be an overarching Project Execution Plan (PEP) covering both projects, acting as the principal framework through which the PMO establishes, monitors and manages delivery arrangements for projects.
- There will be bespoke project management delivery arrangements through a Project Office (PO) for each of the relocation and development projects.

Project Execution Plan (PEP)

A PEP will be prepared by the CPMO to define and document how the projects will be set up, managed and successfully delivered. It will govern the strategy, organisational structure, roles and responsibilities, control procedures, communication protocols for the projects. It will serve as a primary reference document and roadmap for all parties involved in the projects, with the information provided in a concise and, where appropriate, diagrammatic way. It will define the key interfaces and critical dependencies between the relocation and development projects and how they are managed.

The PEP will be approved by the Programme Board taking on board the requirements of Homes England, Anglian Water and other key partners, will be maintained as a 'live' document to reflect evolving requirements, and will be subject to change management (changes to the controlled document will only be undertaken once approved by the Programme Board). Distribution of the PEP will be tightly controlled.

Subject to agreement by the Programme Board, the PEP will cover:

- Project vision, mission statement, objectives, critical success factors and project history)
- Team (team structure and organogram, directory and contact details, roles and responsibilities, RACI, project stakeholders)
- Controls and governance (project gateways, submissions procedures, approvals process, change control process)
- Communications plan (Management information reporting requirements and timings, meeting schedules, information sharing)
- Programme management (key milestones, strategic programme, detailed workstream programmes)
- Quality management (Project Quality Plan, benchmarks, inspections, audits)
- Design management (Design benchmarks, design responsibilities matrix, submissions procedures, approvals process, gateway approvals, inspections)
- Procurement management (procurement strategy, best value, key performance indicators, local employment opportunities, workstreams, contract work packages, contract administration)
- Financial management (budget approvals, cost reporting requirements)
- Risk management (identification, assessment, mitigation and reporting of risk)
- Sustainability management (standards, certification, inspections, approvals)
- Health, safety and environment (health and safety plan, environmental protection measures, ecological and biodiversity enhancement)

Project management delivery arrangements

The relocation and development projects will each have a Project Office (PO). The PO's role is to act as stewards ensuring that the project is carried out in accordance with PEP.

The PO has four key outputs:

- PEP – The PO will develop with the CPMO and operate the Project Execution Plan (PEP).
- Controls and governance – The PO will detail the process to be followed through the delivery of the scheme – team role and responsibilities, quality management, strategic schedule, communications plan – to execute the PEP.
- Project reporting – the PO provides performance reporting to the CPMO to reflect progress to date and performance look-ahead against the critical success factors and the set project requirements (quality, schedule, financial, sustainability, health and safety, environmental).
- Contract management – the PO administers procurement, contract administration and performance management of all supply chain contracts for all workstreams and works packages (consultants, contractors, suppliers, plot developers).

Relocation project

For the relocation project, the PO will be established by Anglian Water and its retained team in the @One Alliance. They will select a dedicated project team on the basis of past experience, proven track record and the skill sets needed to deliver a project of this type and scale. The project team will be underpinned by a supply chain who have specialist skills to deliver the relocation of CWRC. The project team will deliver the project in accordance with the capital delivery process and internal @One Alliance processes and procedures.

Core site development project

Cambridge City Council and Anglian Water have established a partnership and selected their developer partner, U+I, to progress delivery under a Master Development Agreement (MDA), details of which are set out in sections 5.3.2 and 5.5.2. The MDA provides for the Master Developer to establish an expert team to provide the Project Office for the core site redevelopment project.

The following organisations will form the Project Office (PO) whose function will be to provide the process and governance for scheme delivery:

- U+I's in-house development management and project delivery team;
- TOWN (U+I's delivery partner)

-Core design group (the appointed masterplan design custodians – **reg. 12(5)(e)**); and **reg. 12(5)(e)** (U+I's appointed team of project managers, cost managers, risk managers and health and safety advisors).

Challenges and constraints

For a more detailed list of the key project dependencies, please see the response to question 7.1.1 and for a more detailed list of the current risks, question 7.7.1.

The key challenges and constraints to the project management delivery arrangements are as follows:

- Integration of the relocation and development projects at PEP level. The CPMO will play an important early role in bringing together the two POs and identifying synergies and efficiencies in the programme and project management of the two projects.
- Technical interface between relocation and development projects – for example to obtain a full understanding of all existing ground conditions for the development site. The CPMO will need to establish a strategy for early access onto the site in order to undertake intrusive site investigations and progress the Environmental Impact Assessment for the development project.
- Sequencing the redevelopment project with the key milestones in (i) the relocation project and (ii) the AAP. The CPMO will need to maintain a dynamic programme and critical path analysis across both projects and the plan-making process to optimise the sequencing of milestones in each project.
- Supply chain capacity and capability – ensuring supply chain partners (consultants, contractors, suppliers and plot developers) have the expertise and capacity to deliver the standards and objectives set by the Programme Board. A key aspect of the POs' role will be to optimise the procurement strategy to deliver performance, including by the prequalification and close management of supply chain partners throughout the delivery process.

Please summarise your project delivery plan to deliver the infrastructure, this should include your anticipated land ownership / control strategy

The two projects – relocation of the CWRC and development of the core site – will have separate but aligned project delivery plans as follows.

Project delivery plan for relocation of the CWRC

Once HIF funding has been confirmed, Cambridge City Council will enter into a tripartite contract with Anglian Water and its delivery contractor which will require the delivery contractor to build the relocated CWRC on land acquired through the DCO or CPO processes (see section 5.4.1 for further detail on the strategy to acquire land for the new CWRC).

Anglian Water will specify the requirements for the new CWRC, for approval through the Programme Board, and will oversee the delivery of it on behalf of Cambridge City Council. The tripartite contract will procure design and delivery of the relocated CWRC in accordance with the PEP. The design of the relocated CWRC will follow Anglian Water's design process described in section 5.5.1. The delivery team will be led by Cambridge City Council and Anglian Water. @One Alliance will be appointed to manage delivery of the relocated CWRC, supported by a team of professional advisers including lawyers, surveyors and other property advisers, town and country planners, consulting engineers and stakeholder engagement specialists.

The main areas of work for the relocation of the CWRC are

- the tunnels acting as conduits for waste water to the relocated CWRC and effluent from it to the receiving water course;
- the water recycling centre; and
- the sludge treatment centre

The construction of the relocated CWRC will be phased for the most efficient delivery of the project, taking into account matters such as logistics, ecological constraints and operational requirements. The management of the construction phase will be undertaken by the @One Alliance to ensure health and safety compliance and the most efficient delivery of the project.

The land ownership/control strategy will depend on whether a DCO or a planning permission/ CPO approach is used to obtain the required land and rights in land for the relocated CWRC and its connecting media (see section 7.4.5).

-If the DCO route is used, the land and rights in land will be acquired by using the compulsory purchase powers contained within the DCO. This will provide Anglian Water with the necessary interests in land to enter onto/into land to construct and operate the

relocated CWRC.

-If the planning permission/CPO approach is used, the land and rights in land will be acquired by using the compulsory purchase powers contained within the compulsory purchase order which will be applied for once the planning permission has been received. Conformation of that CPO will then provide Anglian Water with the powers necessary to acquire the land and rights in land to construct and operate the relocated CWRC.

Project delivery plan for development of the core site

The new infrastructure for the housing masterplan on the CNFE core site will be delivered under the stewardship of the CPMO, in accordance with the PEP.

Delivery will be led by the Master Developer and its professional team through the Project Office as described in section 7.3.1, in accordance with the Master Developer Agreement and approved Business Plan. This will involve obtaining planning permission and implementing infrastructure. The planning strategy is to develop and submit a hybrid planning application. This will be detailed in respect of the strategic infrastructure works to activate the development plots but will be outlined in respect of the new building development including housing.

The planned infrastructure works can be summarised under 5 broad headings:

-Site Preparation (Infrastructure Packages 1 and 2) – these are the works needed from the exit of Anglian Water and Cambridge City Council’s tenants to create the formation levels of the development plots. The works in this category include any decommission and demolition of existing structures, removal of redundant services, diversion of overhead electricity cables, remediation of the site, site re-profiling and creation of an acoustic berm to the boundary with the A14 trunk road.

-Highways and Utilities (Infrastructure Packages 3 and 4) – these are the works needed to form the primary roads, improvements to existing junctions, off-site utility reinforcements, underground multi-service utilities and attenuated drainage. These will be taken up to the edge of new development plots ready for connection by future plot developers.

-Green infrastructure (Infrastructure Package 5) – these are the hard and soft landscaping and public realm works outside of the development plots to promote well-being, sustainability and biodiversity.

-Linkages and Interventions (Infrastructure Package 6) – this is the formation of improved connections with adjacent sites including link bridges over the railway, over the A14 trunk road and an underpass to Cowley Road. These works will likely be delivered through the relevant Statutory Authority (Highways England, Network Rail and Cambridge City Council respectively).

-Social infrastructure (Infrastructure Package 7) – this is the delivery of 2 new primary schools and a secondary school through planning contribution and Section 106 agreement as part of the planning approvals process. These works will likely be delivered directly by Cambridge City Council.

The design of infrastructure will follow a robust design stage gateway process to provide the design assurance, capture the standards and requirements of all relevant stakeholders, prepare the design information in a timely manner and seek all approvals necessary to achieve best value through the procurement process. The majority of the infrastructure will be design-led by the client’s engineering design team with the opportunity for alternative contractor-led solutions being encouraged via the procurement process. Alternative design solutions will be subject to change control and approvals by Programme Board. All technical submissions and detailed design production information from the delivery supply chain will be reviewed for approval prior to proceeding with the works.

The PO will procure and deliver the infrastructure works through the seven infrastructure work packages summarised above. Some may be further split into sub-packages to separate work types. The supply chain will be selected through early prequalification to establish expectations around quality standards, capacity and deliverability. Packages will either be awarded to a single contractor or frameworks will be set up with more than one contractor for packages which will be phased to avoid single source supply chain and ensure capacity and commercial risks are mitigated. A framework strategy will apply to roads, utility distribution and green infrastructure packages.

The New Engineering Contract (NEC) contract suite will form the basis of contractor engagement with lump sum pricing being the preferred approach. Designs will be completed and fully coordinated prior to commencement of works to mitigate the risk of cost and schedule overruns. A summary of the infrastructure packages is in the table below. A summary of the infrastructure packages is in Appendix O1.

Infrastructure work packages will need to be phased to reflect the vacant possession allowed by the land owners and earliest access onto the land. While the whole of the CNFE core site is fully within the ownership and control of Cambridge City Council and Anglian Water, the land is proposed to be released to the Master Developer in two parts, as below, and included in Appendix O3.

Construction management will operate from combined office and welfare facilities under the management of the site-based Project Office. The PO will have representatives based on site to act as guardians of the masterplan and oversee the performance of the infrastructure contractors. This site based PO team will include representative of the engineering design team and the contracts management team. The PO's contracts management team will make off-site inspections to validate progress during manufacture and off-site assembly in relevant packages.

Please provide details of your project delivery plan to deliver the homes unlocked by the infrastructure. Please detail any expected controls or levers you will put in place to ensure the delivery of housing comes forward on the sites

Project delivery plan to deliver the homes unlocked by the infrastructure

The new housing masterplan on the CNFE core site will be delivered under the stewardship of the PMO to ensure compliance and delivery in accordance with the requirements and critical success factors set by the Programme Board.

Overarching delivery plan

The overall plan is defined in the PEP which sets the vision, objectives, critical success factors, standards and governance within which the infrastructure is delivered. The PEP is being developed as part of the Business Plan by U+I, and their masterplan delivery team, for approval by Cambridge City Council and Anglian Water.

Housing delivery team

The Delivery Partner (U+I) appointed by the JV Partners has appointed a team to act as masterplan guardians who will develop the masterplan for approval and oversee the delivery of the new housing:

-U+I with TOWN – development management and overall delivery responsibility under the MDA.

reg. 12(5)(e) masterplan designer responsible for ensuring the overall masterplan design reflects the objectives and aligns with the evolving Area Action Plan (AAP).

reg. 12(5)(e) – town planning advisor responsible for ensuring the planning strategy is delivered in accordance with national and local planning.

reg. 12(5)(e) – project manager and cost manager responsible for administering the project, programme and costs in line with the project execution plan.

reg. 12(5)(e) – responsible for the transport planning, civil engineering, structural engineering and utilities strategy, design and masterplan.

reg. 12(5)(e) responsible for the energy and sustainability strategy, MEP design and masterplan.

Further specialists will be appointed by the Programme Management Office as required to progress the masterplan.

Plot development

The masterplan team will enable the development housing plots by delivering the strategic infrastructure and will procure and dispose of the development plots to the plot developers, who will deliver the housing under the stewardship of U+I and the PMO.

Housing neighbourhoods

On the core site, the planned housing will be delivered through 6 neighbourhoods as attached in Appendix Y.

Housing design process

The master developer, U+I, together with their appointed design team will develop the Design Code to be adopted by the plot developers and will develop the masterplan sufficient for securing outline planning permission. The housing masterplan design and management team will follow a robust design stage gateway process to provide the design assurance, capture the standards and requirements of all relevant stakeholders, prepare the design information in a timely manner and seek all approvals necessary to achieve best value through the procurement process.

All necessary standards to comply with the Design Code, with planning requirements and with the Master Development Agreement will be captured in the Plot Disposal Procurement Documents.

Development plot procurement strategy

The PMO propose to procure plot developers for each of the development plots under the 6 main neighbourhoods to reflect the phased vacant possession of the site. Each of the 6 main neighbourhoods will be split into a number of optimised development plots. Input into the final plot disposal strategy and the associated tender and contract documents will be provided by the PMO's Development Management and Contracts Management team.

Plot developers will be selected through early prequalification to ensure alignment with the agreed objectives around quality standards, capacity and deliverability. Plots will be awarded to the developer providing the most commercially advantageous proposal while ensuring that the quality requirements of the masterplan are maintained intact. Please refer to Appendix Y.

Phased access and sequence of infrastructure works

A further consideration is how the housing development will need to be phased to reflect the vacant possession allowed by the landowners and earliest access onto the land. While the whole of the CNFE core site is fully within the ownership and control of Cambridge City Council and Anglian Water, the land is proposed to be released to the Developer Partner in 2 parts as follows. Please refer to Appendix Y.

Following the phased release and possession of the site areas from the landowners, the site preparation will be undertaken in two phases, the subsequent strategic infrastructure will be delivered in 6 phases to activate the neighbourhood plots. The housing will also be undertaken in 6 phases split into development plots.

Construction phase management

All site activities will operate from combined office and welfare facilities under the management of the site based Programme Management Office. The PMO will have representatives based on site to act as guardians of the masterplan and oversee the performance of the plot developers. This site based PMO team will include representatives of the masterplanning team.

The PMO's masterplanning team will make off-site inspections to validate progress during plot development.

Following the procurement process and during works on site, the PMO contracts management team will undertake the following as part of their administration of the housing plot development:

- oversee the mobilisation of contractors including final security, logistic and methodology checks
- administer design information approvals
- administer change control
- provide the necessary quality inspections and approvals
- undertake health, safety and environmental inspection audits
- oversee all required testing, commissioning of systems (eg drainage attenuation systems, underground community domestic waste storage)
- check all completion documentation is in place
- validate the ownership of all development

Please summarise your maintenance strategy for ongoing costs for the scheme

The infrastructure for CNFE is split into two key elements:

- The relocation of the CWRC.
- Delivery of the new infrastructure for the core site masterplan.

Maintenance strategy for the relocated CWRC

The maintenance of the relocated CWRC will be in accordance with the asset maintenance regime used by Anglian Water across all its operational sites but tailored to the specific requirements of the operational assets. This places obligations on Anglian Water as part of the regulated funding model overseen by the Office of the Water Regulator (Ofwat). These same obligations would apply to the existing CWRC.

Maintenance strategy for the core site masterplan

The maintenance and management regime for the new estate will be attuned to the developing strategy for infrastructure delivery, plot development and long-term ownership, to deliver resident and visitor enjoyment of the new urban neighbourhood.

The strategy is to ensure all infrastructure and buildings are delivered to the required standards to allow them to be adopted by statutory authorities, managed by appointed management bodies or, in the case of freehold buildings, maintained by their owners.

The new scheme assets and their associated maintenance fall into four categories:

Adoptable public infrastructure

This is the infrastructure which will be constructed to adoptable standards and maintained by the statutory authorities. This includes highways, drainage and non-contestable utilities infrastructure and may include major green infrastructure and other public realm. All highways including primary and secondary roads will adopted and maintained by Cambridge City Council highways. All surface water and foul sewers will be adopted by Anglian Water. Non-contestable utilities infrastructure will be maintained by the relevant network statutory undertakers including UKPN (power supply), Cambridge Water (water supply), Anglian Water (sewers), and BT Openreach (telecoms).

Other public infrastructure

This will include any infrastructure assets which are to be managed by bodies such as 'inset' utilities providers (IDNOs), specialist management entities (e.g. trusts) or a site-wide management company. These assets may include contestable utilities networks, green infrastructure such as trees, neighbourhood parks and habitat areas, and facilities such as car barns and cycle stores and any other non-adoptable assets not specifically demised to individual freehold or leasehold properties. Management activities will be coordinated through an estate management office, operated either by Cambridge City Council or by a private management company. This office will assume responsibility for the long-term maintenance of the public realm and those communal amenities.

Administration of the maintenance delivery will follow good estate management practice and RICS/ ARMA-Q Codes of Practice and Accounting Regulations.

Schools and other community infrastructure

The two primary schools and one secondary school will be delivered through Section 106 Agreements between the JV owners and Cambridge City Council. Schools will be delivered by Cambridgeshire County Council or an academy. Thereafter Cambridge City Council will arrange the maintenance of the schools either directly or through a management company.

Private built assets

These are the buildings and spaces delivered and/or held by developers/investors who will have set up management companies to maintain their freehold assets.

All assets and public realm within the development plots will be subject to maintenance by the landlord developers or the estate management company appointed by the individual plot landlord developers. The development companies retaining the freehold will be obligated to maintain the freehold assets within their plots. Alternatively U+I as master developer will set up the estate management company and obligate the plot developments to be maintained through the central estate management company

Project milestones

Please provide actual or estimated dates for the following infrastructure delivery milestones:

- First infrastructure planning permission granted** reg. 12(5)(e)
- Last infrastructure planning permission granted** reg. 12(5)(e)
- All land assembly completed (if required)** reg. 12(5)(e)
- Project infrastructure works started** reg. 12(5)(e)
- Project infrastructure works completed** reg. 12(5)(e)

Please provide actual or estimated dates for the following housing delivery milestones:

- First residential units commenced** reg. 12(5)(e)
- Last residential units commenced** reg. 12(5)(e)
- First residential completion** reg. 12(5)(e)
- First residential completion** reg. 12(5)(e)

Please attach an outline delivery programme for your proposal and the key milestones required to achieve it

reg. 12(5)(e)	

Please list planning references for the infrastructure works

Anglian Water has received a response to a Pre-Application request to Cambridgeshire County Council, as waste planning authority, in relation to the methodology for the selection of a site for the relocation of CWRC. This is part of the key stakeholder engagement process described in 7.5.1. The County Council would be one of the stakeholders in the Development Consent Order (DCO) or planning application/Compulsory Purchase Order delivery route, and so receiving its comments on the site selection methodology is an important part of the engagement process at this early stage.

The response to the Pre-Application request has been received by Anglian Water, confirming its application of a site area for the relocation site is correct. In addition, a number of comments and suggestions were part of the response. These will be incorporated, where possible and needed, in the final version of the site selection methodology.

The response has been shared with Members of both Cambridge City Council and South Cambridgeshire District Council. In addition, the response has also been shared with Officers of the Joint Planning Service of the two local planning authorities.

Please list all statutory powers or consents required and already obtained to deliver the HIF works

The statutory powers or consents required to deliver the relocation of the Cambridge WRC will include planning permission, compulsory purchase, environmental permits and other consents. The following sets out all of the statutory powers or consents required in relation to the use of the Development Consent Order (DCO) process (automatic and discretionary), and then the use of the Planning Application/Compulsory Purchase Order (PA/CPO) route.

As at the date of submission of this Business Case, Cambridge City Council and Anglian Water believe the relocation of CWRC is automatically a Nationally Significant Infrastructure Project (NSIP), as defined by the Planning Act 2008. This has been communicated to the Planning Inspectorate and we are awaiting a response.

DCO process (automatic qualification)

If the relocation of the CWRC is deemed to automatically qualify as an NSIP, and so a DCO can be used, the process to apply for, and receive an order will be followed. This is a statutory process and is out in the Planning Act 2008 and administered by the Planning Inspectorate. Once granted, the order will contain all the powers and consents necessary to facilitate the relocation of the CWRC, as listed see below.

DCO process (discretionary qualification)

If the relocation of CWRC is not an automatic NSIP, then Cambridge City Council and South Cambridgeshire District Council, with the support of Anglian Water, will apply to the Secretary of State for Environment, Food and Rural Affairs to ask for the use of the discretion contained in Section 35 of the Planning Act 2008 to be used. This would deem the project to be an NSIP for the purposes of the DCO process, as described above.

Powers and consents conveyed by a DCO

- Compulsory purchase powers for the acquisition of land and rights in land needed for the relocation of CWRC.
- A deemed planning permission for the structures required for the new CWRC, including any works to highways.
- A consent to discharge effluent into the receiving watercourse.
- Permits under the Environmental Protection Regulations.
- Any other consents that might become necessary as the design process progresses prior to the submission of the application for a DCO.

Planning permission/ CPO process

This process begins with Cambridge City Council and South Cambridgeshire District Council, as the local authorities, applying for, and receiving, a compulsory purchase order to acquire the land currently being used for the CWRC. The two councils could also, as the local planning authorities, subject to the statutory requirements, include other land in the Area Action Plan (AAP) area. This CPO would be granted under the Town and Country Planning Act 1990 (as amended) to facilitate the delivery of the CNF AAP.

The confirmation of this CPO would require Anglian Water to seek its own compulsory purchase order to acquire land for the relocation of the CWRC itself, and rights to build the connecting tunnels from the interception of the sewerage currently serving CWRC and the conduit(s) to allow effluent to be discharged into the receiving water course. This would be done using the powers contained within the Water Industry Act 1991 (as amended), as there would be an operational need to relocate the CWRC as a result of the local planning authority's ability to acquire the current site compulsorily.

Before Anglian Water could apply for a CPO as described in the paragraph above, it would be required to apply for, and receive, a planning permission for the relocation of the CWRC. The planning application would be to Cambridgeshire County Council in its capacity as Waste Planning Authority, and would be determined under the Town and Country Planning Act 1990 (as amended).

The planning application, and resultant planning permission, would include any works required to highways, and an agreement under Section 278 and/or Section 38 of the Highways Act would be entered into with Cambridgeshire County Council in its capacity as the Highways Authority. Any third party land required for any highway works would be included in the CPO granted to Anglian Water (see above).

Consents for other utilities connections would be provided by the respective services providers using their powers as statutory undertakers.

A consent to discharge effluent from the relocated CWRC into the receiving watercourse would be required from the Environment Agency. Preliminary discussions with the Environment Agency have begun about this requirement, and these can be progressed once funding has been secured.

Permits under the Environmental Protection Regulations would also be required from the Environment Agency for the relocated CWRC, including its sludge treatment centre.

Stakeholder management

Please summarise how the key delivery partners will work together effectively

Workstreams for the relocation of the CWRC

The key project delivery partners are as follows.

Cambridge City Council as joint applicant (with South Cambridgeshire District Council) of the Section 35 submission to the Secretary of State (if required (see Q7.4.5)).

Anglian Water as the applicant for the DCO (see Q7.4.5), having responsibility to deliver the relocation of the CWRC.

Anglian Water's supply chain to deliver the relocation of the CWRC

PINS in its role of overseeing the DCO process

Cambridgeshire County Council and South Cambridgeshire District Council in their role to submit Adequacy of Consultation Statements to the Planning Inspectorate as part of the DCO process or Waste Planning Authority for the planning application/CPO process (see Q7.4.5)

These key delivery partners will work together by ensuring their objectives are aligned and that alignment is reviewed on a regular basis to ensure it continues. Each partner will have its own advisers, who will be tasked with working together closely with the advisers to the other delivery partners.

Please refer to the organogram information provided in Appendix W3 which shows how the authority and the partnership will operate.

Please also refer to Appendix AB which shows stakeholder mapping.

Workstreams for the delivery of the new infrastructure for the core site masterplan

-Cambridge City Council (as landowner).

-Cambridge City Council (as planning authority).

-Anglian Water (as landowner).

-U+I (with TOWN) as master developer.

-U+I (as Infrastructure delivery partner).

-Third party developers (as neighbourhood plot developers).

There is a complicated web of relationships between the above key delivery partners, and the key to effective relationships is a well thought through and robust governance and oversight structure (detailed in the governance section).

Formal legal agreements between each of the parties including JVs, MDAs, Licences, MOA, cooperation agreements, etc will set out the parameters and expectations for the parties working together and ensure objectives are aligned.

A rigorous sign-off, reporting, and monitoring structure will be included in these documents and policed by the project board.

A Programme Management Office will be set up to assist with the day-to-day issues.

The business plan adopted by the landowners and the master developer under the MDA will set out the requirements for regular board, design, progress, and monitoring meetings. There will also be specific gateway presentations and sign-offs built in through-out the programme.

Wherever possible, the partners will look to deal openly and cooperatively with other partners – and the selection of third-party developers will be decided with this in mind.

As an example of how some of the above have already been put into practice:

-A site study tour has been undertaken by the landowners already to help with vision setting

-A meanwhile-use project is being planned for 2019 where Anglian Water, Cambridge City Council, U+I, the planning authority, neighbouring owners and the community will work together and strengthen working relationships prior to the delivery of the long-term project.

-A local landowners forum and political stakeholder's forum has already been established to identify issues and ensure cooperation and coordination.

-In progressing the Area Action Plan, U+I and the wider design team will be available to assist with technical work to ensure quick progress that keeps to programme.

-Disposal structures, design guides, and selection processes to introduce third party parcel developers will be structured to ensure all parties are aligned with the long-term goals and vision of the project.

Please summarise how you will work with the other key stakeholders to ensure project success (i.e. local residents / businesses)

The relocation of the CWRC

Anglian Water recognises that effective and meaningful stakeholder engagement is an integral part of successful project delivery and we are committed to ensuring that we maintain a transparent approach to engagement.

Stakeholders will be identified, analysed and engaged with effectively whether in relation to the delivery of the core site master plan, or the relocation of the CWRC. The delivery of the relocation of the CRWC will be centred on the Development Consent Order (DCO) or planning application/Compulsory Purchase Order (CPO) route.

Whichever process is used for the delivery of the relocation, Anglian Water will work with stakeholders to ensure the success of the project and to ensure compliance with all the necessary environmental, statutory and non-statutory consultation processes.

Steps will be taken to work collaboratively with other parties involved in the delivery of the project to identify those most affected and engage with them over their concerns and possible mitigations through a variety of channels.

Anglian Water will design a program of consultation and engagement with local community stakeholders (residents, businesses and landowners) providing opportunities for them to comment on the proposals and identify any specific issues that need to be addressed by the project.

If the DCO process is utilised, Anglian Water will embrace the clear and concise obligation to consult the local authorities and local community on the consultation process that will be adopted, the “pre-application consultation stage”. This may include information leaflets, dedicated web pages, social media, group meetings with community bodies, and face-to-face meetings.

If the consultation process is approved, the statutory, (section 42 Planning Act 2008) consultation stages will encourage the dialogue between all local authorities affected by the project, along with representations from all interested parties within the local community.

Within the Environmental Impact Assessment process, stakeholders will have the opportunity to comment on the Preliminary

Environmental Information (PEI) report at the pre-application consultation stage and Anglian Water will seek to obtain comments and address any issues prior to the submission of the actual DCO application.

If the Planning Application/CPO process is used then a similar consultation process will be used, but tailored to its, slightly different, requirements compared with the DCO process.

As winner of the Responsible Business of the Year 2017, Anglian Water, although a closely regulated business, looks beyond current regulation, going further than what is expected through innovation and collaboration to deliver transformational projects.

Wherever appropriate Anglian Water utilises engagement opportunities as a way in to talk to communities and businesses more broadly about the role of water in society, for business and for the environment, so they can better contextualise the work we are proposing.

Anglian Water recognises that stakeholder engagement is an ongoing process that will be conducted, evaluated and adapted, as desirable, throughout the life of the project.

Delivery of the core site masterplan

Within the Project Execution Plan, U+I will include a specific section on stakeholder management. This section will map out all the key stakeholders, rank their influence and importance, and set a holistic process for engagement with each.

Key stakeholders in respect of the CNFE project will be varied and extensive and our engagement process will be based on a number of stages:

- Stakeholder mapping – CNFE will matter to everyone in and around Cambridge. Some will live, work and play at CNFE, others already live nearby, and all will know the site. Engaging effectively with such a wide stakeholder group requires a detailed knowledge of who we are to engage. We have already started a comprehensive mapping exercise to identify the stakeholders and have included this within the Appendix AB.

- Developing and delivering effective engagement methods – different stakeholders have varying needs and appetites for consultation and we will ensure we engage with people through approaches and at levels that reflect these.

- Capturing what we learn – we'll capture engagement findings accurately and in a format that can be taken on board by the project team and also fed back to the stakeholder group to share what has been said, both at key stages of the project and then in a Statement of Community Involvement.

- Ensuring that proposals respond – engagement without the intention to adapt plans and proposals in response to what is heard is worse than no engagement at all. We will make clear the possibilities and the fixes when engaging, ensuring that there aren't unrealistic expectations, and will establish a culture and set of procedures within the professional team that ensure that proposals take findings into account and respond accordingly

Stakeholder and community engagement

Cambridge City Council selected U+I as master developer partly because they are the market leader in engagement and consultation. U+I's approach at CNFE will be underpinned by commitment to early, open and honest engagement with all stakeholders. We want to be 'good neighbours' from the very outset of the scheme to its final delivery and throughout the estate management.

As a team, we will engage extensively with stakeholders and members of the public from the outset, throughout the planning process and the entire life of the project with the aim of:

- building an understanding of the project and support for the vision

- embedding CNFE in policy and in local thinking

- listening and responding to local residents, businesses, landowners and the public's concerns and aspirations

- ensuring that the plans meet the needs of people and businesses who will work, live and play here

- establishing advocates for the project at all levels.

To ensure project success, the CNFE project team will request each stakeholder identify representatives to meet face to face with the development team on a regular basis. The project team will also prepare a regular newsletter that will be distributed to the stakeholders, with key statistics and commentary on progress. This will help ensure everyone stays up to date with the progress made at CNFE.

Soft market testing with a select group of housing associations, institutional investors, local tenants/residents, contractors, neighbouring landowners, and others is planned for 2019.

Connecting with the community is key

U+I will put a significant amount of effort into connecting with local communities – from residents and residents' associations to local businesses and aspiring entrepreneurs. This will form part of our work on both local stakeholder management and worthwhile (meanwhile) use.

As master developer, they will take the CNFE story – from the approach to development, to the details of planning applications, to their passionate desire to involve people – out to the community. Cambridge City Council will encourage U+I to engage with communities and get people to say exactly what they think.

Examples of U+I's approach to date

U+I have met with the owners of Cambridge Business Park to discuss visions and ways to provide better connections and permeability public realm upgrades.

U+I have already been approached by potential tenants for the office accommodation and buyers for the Build to Rent elements of the scheme and have agreed to keep in regular contact as the project progresses.

U+I have started discussions with the combined authority, Cambridge City Council and an operator about a Sci-Tech Container Village – as a meanwhile project prior to the delivery of the long term scheme. As master developer, U+I will use this project to start conversations with business tenants and customers, and test out concepts and ideas for the long term scheme.

Project assurance

What are your project assurance processes, such as gateways reviews, to ensure project delivery against the business case?

The relocation of the CWRC

Anglian Water's delivery partner, the @One Alliance, is a proven and effective delivery entity. This method of delivery will ensure continuity between on-going pre-planning activities and the detailed design and construction that will follow.

Delivery of the relocation project will be managed through governance and assurance processes defined by Anglian Water's established capital delivery process. These processes apply to total capital investment of **reg. 12(5)(e)**. Important assurance measures put in place through this process are as follows.

The @One Alliance will formally receive the project from Anglian Water and Cambridge City Council and form the next stage of an Integrated Project Team, with the emphasis switching from pre-planning and outline designed activities to detailed design and construction. The project will be delivered in accordance with the Anglian Water's established and effective capital delivery process, which involves passing through a number of governance delivery milestones. Throughout the life cycle of the project, the project team will apply planning, monitoring and control procedures on a monthly basis to ensure the project is being delivered in accordance with the project plan and in line with the project's objectives. Key steps in the assurance process are as follows.

1.

Technical Assurance: the @One Alliance will apply Anglian Water's Risk and Value process to ensure that the optimum technical solution progresses from concept through to detail design. In addition to this, the @One Alliance will review design, technical assurance, constructability and operability.

2.

Operational Assurance: Anglian Water Operations will support the delivery of the project from concept through to operational handover. Operations will crucially support the transition of flows, commissioning of the new works and ensure the Environment Agency consents are adhered to.

3.

Delivery Assurance: A Principal Contractor will be appointed on to the project. The Principal Contractor will adhere to their own Safety, Health, Environmental and Quality procedures. In addition to this, the @One Alliance will also supplement this with delivery assurance procedures.

The Anglian Water capital delivery process comprises six stages. A stage is followed by a Decision Milestone (DM0 & DM1) or Delivery Milestone (DM2 – DM6) which is a stop / go point in the process where certain criteria need to be met in order to pass that milestone. Without DM approval, the project can't enter the next stage of delivery.

Anglian Water's Risk Opportunity and Value specialists provide the tools and process to help make best value asset investment decisions on a collaborative basis. The process consists of eight facilitated Challenge stages that involve key stakeholders at strategic points, and is fully integrated with the Totex Delivery and Governance processes.

Standalone solutions, such as the relocation of the Cambridge Water Recycling Plant, are projects where the governance operates on a single project basis. There are six stages which are detailed below. Please refer to Appendix Q for further detail.

- Stage 0 – Identifying the Risk - This stage comprises risk identification, validation and prioritisation and is client-led.
- Stage 1 – Identifying the Totex Strategy - For standalone projects, the Anglian Water Totex Solution Development Team lead a process to determine the root cause(s), identify the delivery vehicle and strategy (Capital / Operational / Blended), and determine efficiency opportunities. A single preferred strategy is presented at Decision Milestone 1 (DM1) for the next stage of evaluating solution options.
- Stage 2 – Evaluating Options - Stage 2 is all about the receipt of the need and exploring possible ways of resolve the need. The Risk, Opportunity and Value (ROV) process provides the decision-making framework but it is the responsibility of the integrated

project delivery team to explore alternatives and present a single option at Delivery Milestone 2 (DM2) for detailed integration / design in Stage 3 and subsequent assembly in Stage 4.

- Stage 3 – Developing the Solution - Stage 3 is about progressing the single option solution developed in Stage 2 through the design phase, taking opportunities to incorporate Standard Products into the designed solution. It is intended that by DM3, the design of the solution is largely complete and the supply chain fully integrated into the design of the proposed solution. The Asset Operator is also fully immersed in the solution during this stage and a Delivery Execution Plan (DEP) collaboratively produced and agreed.
- Stage 4 – Delivering the Solution - During stage 4, the Construction and Commissioning of the new or refurbished assets is carried out, including assembly of standard products. The stage also includes all required performance tests and handover of the complete asset(s) to the asset operator. The establishment of SAP asset information and maintenance schedules for the new assets is also a fundamental component in this stage so that the business is set up to commence all required maintenance upon take-over of the new asset(s)
- Stage 5 – Admin Close Out - Stage 5 comprises the financial and administrative closure of the project, settling financial accounts, confirming commercial position and submitting relevant project data such as cost capture, efficiencies and output confirmations.
- Stage 6 – Warranty Period - Stage 6 starts at the same time as stage 5 (on completion of DM4) and comprises a 52-week warranty period where delivery will respond to any warranty issues that occur after DM4 Handover.

The delivery process described above is expanded in the schematic below to indicate further detail on deliverables and outputs at each stage. This outline governance framework will be retained for the project to relocate Cambridge Water Recycling Plant but modifications for the early part of the process are planned to reflect the fact that need analyses, risk analyses and root cause analyses as applied to conventional asset maintenance and replacement projects will not be required for the project under consideration.

New housing masterplan

The team will use three strategies to ensure project assurance:

- Definition – The Business Plan, the Project Execution Plan and associated management documents will define assurance.

- Structure – The team will be structured to review, implement and report assurance.
- Gateways – The agreed specific gateway control points relevant to either the strategic infrastructure and the plot development.

Concurrent with the development and agreement of the CNFE Business Plan, the project team will establish the Project Execution Plan (PEP). The PEP will be a core document for the management of the project, capturing key elements of the business plan, the plan for all communications and stakeholder engagement, together with all policies, control procedures and gateways.

The PEP will detail the project assurance process:

- Project Governance – detail lines of decision making.
- Critical Success Factors – established from the project's objectives, continual review and management of the CSF's will be essential when keeping the project delivery on track.
- Key Performance Indicators – established against key elements of the project, provide a tool for managing and monitoring performance as the project progresses.
- Design Quality Indicators – for strategic infrastructure and on-plot development.
- Gateway Review Strategy – established to provide points in the project, where a holistic review of the project at that point in time

can take place.

Further the project team will be structured to establish and empower management groups to ensure project assurance and review is being met against the business plan:

- Senior Responsible Officer – Cambridge City Council have appointed a Senior Responsible Officer (SRO) for the project. The SRO will provide an objective oversight of the overall project and its execution reviewing technical and strategic decision making. Independent assurance reviews will be a valuable tool for ensuring successful project and programme delivery. They provide an independent perspective on issues, external challenge to plans and support the project's success.
- Programme Board – The JV landowners will establish a Programme Board that will be established by several key stakeholders in the overall project. The purpose of the Project Board is to provide key decision making for the project.
- Programme Management Office – The Master Developer, U+I, will implement a PMO to report to the Programme Board and act as guardians of the masterplan business plan. The PMO will use appropriate project controls and process to undertake design, procurement and delivery in compliance with the business plan. The PMO will provide day to day guidance for the scheme.
- Steering Groups – establishing various steering groups for aspects of the project. The purpose of the steering groups is to provide informed guidance prior to presentation to the programme board.

The specific project gateways will be finally agreed by the Programme Board as part of the Business Plan. Management of the project against these gateways, progress reporting and production of gateway reports will be delivered by the Programme Management Office. The proposed gateways are set out below.

Proposed Gateways for disposal of the Development Plots:

- Gateway 0 – Strategic Disposal Assessment

- Gateway 1 – Business Case Justification

- Gateway 2 – Proposal Assessment [Sales Pack]

- Gateway 3 – Dynamic Procurement (Commercial and Design dialogue)

- Gateway 4 – Investment Decision

- Gateway 5 – Estate Management

- Gateway 6 – Benefits Realisation and Operational Review

We propose to adopt the above gateways to provide detailed assurance around each of the following:

- project objectives – ensure these are being met

- financial – actual and projected cost updates align with target returns

- programme – actual progress aligns with planned activities

- qualitative – design and delivery quality aligns with quality standards and disposal structures/methods

- risk - focus on reducing risk and driving up certainty of outcome and value

- health, safety and environment

- SRO engagement – ensure the SRO and Programme Board are fully engaged to provide guidance and provide, planned interventions,

- stakeholder engagement - ensure wider stakeholders are brought together through open lines of communications.

Please provide details of your proposed internal monitoring approach for the scheme

Programme and project management arrangements are detailed in the sections above.

Effective monitoring a programme/project is critical for a number of reasons in providing assurance to both the programme and project management teams, and to the clients, that the programme/project is meeting the following objectives:

Business – the project/programme continues to perform in line with corporate strategic objectives, is viable in cost, scope, timescales and benefits

Users – to ensure that the client and customer requirements are met

Quality – ensuring standards and procedures are adhered to

Technical - that the solution is fit for purpose

Appropriate evaluation will gauge the efficiency, effectiveness, and appropriateness in relation to the programme processes, outputs and outcomes, impact and reach

The monitoring and evaluation framework will be formally drawn up, in line with national programme and project management models once the outcome of the HIF bid is announced and the programme formally “launched”.

Risk Management

Please outline key risks to delivery and mitigations including known delivery constraints and blockages

Number	1	Likelihood	Medium low	Impact	Low
Description	Complexity associated with maintaining performance at Cambridge WRC and the new WRC/STC				
Mitigation	Detailed commissioning plan to be determined during optioneering and detail design				
Number	2	Likelihood	Medium low	Impact	Medium low
Description	Unknown ground conditions established prior to commencing work on the new Shaft				
Mitigation	Ground investigation to take place local to Sewer intercept				
Number	3	Likelihood	Medium high	Impact	Medium high
Description	Road layout to the new works prevents tankers from accessing the site from the A10 sufficiently				
Mitigation	Work with Road Environment Services (Tanker Services) to anticipate problems during optioneering. Route modifications may be required.				
Number	4	Likelihood	Medium high	Impact	Medium high
Description	Design-related issues that arise from the Enabling Risk Assessment				
Mitigation	Complete GEOPLM and desktop Enabling Assessment				
Number	5	Likelihood	Medium high	Impact	Medium high
Description	Uncertainty over route and obstructions with construction of new shaft and tunnel route				
Mitigation	Undertake ground investigations at the earliest opportunity				
Number	6	Likelihood	Medium high	Impact	Medium high
Description	Wider Power Network Upgrade Required				
Mitigation	Establish Power requirement and liaise with DNO				
Number	7	Likelihood	Medium low	Impact	High
Description	HIF Outcome - HIF application is unsuccessful				
Mitigation	Applicant is preparing a considered and thorough HIF application				
Number	8	Likelihood	Medium low	Impact	High
Description	DCO Outcome - Development Consent Order application for the relocation of the CWRC is unsuccessful				
Mitigation	The Anglian Water relocation team are taking legal advice and engaging with all necessary stakeholders				

Number	9	Likelihood	Medium low	Impact	High
Description	Area Action Plan Progress - The Cambridge Northern Fringe East Area Action Plan is not sufficiently advanced at the time of the submission of the DCO application				
Mitigation	The Applicant is liaising with Cambridge City Council planning to help ensure the Area Action Plan (AAP) programme is maintained and aligned with the DCO submission				
Number	10	Likelihood	High	Impact	Medium low
Description	Concurrent Development - Conflict with other major development in and around Cambridge which puts pressure or conflicting demands on local resources eg, competition for off-site power reinforcement				
Mitigation	Engagement with local critical utilities has commenced to understand pipeline demand and supply issues. Continue to develop close engagement with local resource providers eg, UKPN				
Number	11	Likelihood	Medium high	Impact	Medium high
Description	Ground conditions – The extent of the ground conditions associated with the current land owned by Anglian Water and Cambridge City Council is unknown. Of particular interest is the extent of contamination levels to inform the most appropriate remediation strategy				
Mitigation	The Applicant will be undertaking detailed and intrusive surveys and investigations to fully understand all site conditions in support of the Environmental Impact Assessment including archaeology, ordnance, ecology and particularly ground conditions. Early access to be agreed to set up soil hospital to remediate as soon as possible.				
Number	12	Likelihood	Medium low	Impact	Medium high
Description	Alignment with the AAP - The Area Action Plan for the wider Cambridge Northern Fringe East is under development. The risk is that it does not develop to reflect the specific needs of the new core site masterplan eg, capacity land use				
Mitigation	The Applicant and Master Developer team will maintain engagement with Greater Cambridge Planning Service to help influence and align the requirements of the core site into the wider AAP				
Number	13	Likelihood	Medium low	Impact	Medium high
Description	Adjacent conflicting uses – There are potentially some adjacent uses which may take land from the core site masterplan. For example the rail head in the Chesterton Sidings				
Mitigation	The Applicant's development team are liaising with Cambridge City Council planning and with the other adjacent land owners and stakeholders to ensure the evolving masterplan reflects adjacent uses				

Number	14	Likelihood	Medium low	Impact	Medium high
Description	Transport strategy – A lack of coordination between the evolving transport strategy for the core site and the wider Area Action Plan transport strategy and capacity				
Mitigation	The Applicant has already engaged with the Cambridgeshire County Council Highways Team. The Applicant is also developing the site transport strategy to align with the need to mitigate any further impact on traffic onto the A14 trunk road from the south				
Number	15	Likelihood	Medium low	Impact	Medium high
Description	Viability and deliverability - Stakeholder aspirations are not aligned with the commercial viability of the masterplan eg, sustainability				
Mitigation	The governance established for the project will ensure early reviews and approvals with all stakeholders. The detailed strategies for the business case eg, sustainability strategy, will be further developed in line with commercial viability while protecting quality				
Number	16	Likelihood	Medium low	Impact	Medium low
Description	Supply chain capacity and expertise - Challenges around the capacity and expertise availability in the regional and local supply chain to deliver the masterplan to the achieve the objectives and critical success factors				
Mitigation	The Applicant is developing a detailed procurement strategy for each element of the scheme and all works packages. There will be an early market engagement process in place for all workstreams and contracts together with the use of proven technologies. Suppliers and contractors will need to demonstrate and evidence available capacity, track record and workload, experience, insurances, qualifications, compliance with contract conditions, etc. Emphasis will be given to local employment opportunities wherever possible. Flexibility to reflect the phased nature of the development of the core site.				
Number	17	Likelihood	Medium low	Impact	Medium high
Description	CWRC relocation delayed – Any delays in the relocation and decommissioning of the existing CWRC will impact the subsequent delivery of the core site masterplan				
Mitigation	Anglian Water is using the experience of its framework engineers and contractors to deliver the relocation and decommissioning. Anglian Water is taking all appropriate legal advice. A programme will be developed to mitigate the impact of delay on the core site through phased handover of the Anglian Water site.				
Number	18	Likelihood	Medium high	Impact	Low
Description	Changing market demands – Given the overall scale and timeline for the new development there is risk associated with market changes and the impact to the viability of the masterplan				
Mitigation	The masterplan will be developed in phases and development plots to allow flexibility to align with changing demands. The Applicant team is proposing to future-proof elements of the infrastructure and homes to reflect changing demands and conditions. The team will engage with all stakeholders to ensure the masterplan evolves to reflect market demands				

Please outline your approach to managing risk

Risk strategy

Cambridge City Council is using their strong risk management culture to identify, control and minimise the risks associated with the redevelopment of the site. As part of this approach and to reflect the importance of ongoing risk management, we have engaged, in U+I, a Master Development Partner who shares their vision and knows how to work with public-sector partners. The Master Development Agreement (MDA) and comprehensive business plan for the redevelopment aligns the goals of the principal partners – the applicant (Cambridge City Council), the major landowner (Anglian Water) and the Master Developer (U+I).

The MDA and the comprehensive business plan will enable a clear framework within which the partners can take their respective roles forward leaving the project board to manage the project at the strategic level.

Combining the development experience of U+I's team with the strategic perspective, land ownership, statutory enabling powers and experience of Cambridge City Council and Anglian Water has created a powerful body equipped to deliver an exemplar regeneration of the site and create a significant number of new homes and communities.

Risk specialists

U+I is an expert at working in partnership with the public sector in delivering high quality, sustainable, creative and innovative development and the management of risk is one of the key skills being used to ensure success. As an expert in managing the successful delivery of masterplans such as Cambridge Northern Fringe East, U+I's has engaged a masterplan team of specialists who are collaborating to identify, control and minimise risk throughout the life cycle of the masterplan. They also have their own risk committee that monitors all projects and reports directly to the Plc main board.

U+I has appointed Faithful+Gould to provide the necessary focus and resource to champion and drive the risk management culture within the masterplan team. The risk manager is an essential part of the Programme Management Office (PMO) providing the controls, governance and reporting around the delivery of the masterplan. As Risk Manager **reg. 12(5)(e)** has set up the risk management tools and is promoting a culture where risks and challenges are being raised together with appropriate mitigation plans to ensure parties are informed, risks are measured and controlled and to help protect and drive improved value into the project.

The masterplan PMO will work closely with the Anglian Water @One Alliance to manage risks across the CWRC relocation and the CNFE core site masterplan in a seamless manner.

The overarching objective is for the masterplan team to work collaboratively within a supportive environment and culture where risks are identified, implications assessed and a clear plan with an owner is put in place to control the risks to minimise their impact.

Risk management

As the Cambridge Northern Fringe East masterplan is at an early stage, the team has the opportunity to influence the majority of decisions which will have a major impact on the project's success and deal effectively with risks from the outset to deliver optimum results.

As risk manager, **reg. 12(5)(e)** is coordinating the risk management approach. Risk management is an effective tool that encourages all parties to consider the full range of possibilities that may occur and to seek ways of managing and minimising them. The CNFE team is encouraged to collaborate to identify project risks, allocate risk ownership, identify a mitigation plan for each risk and allocate the most appropriate owner for the risk mitigation action plan.

Throughout the lifetime of the scheme, the masterplan team under the stewardship of the Corporate Programme Management Office (CPMO) will regularly review risks

Fortnightly progress meetings – risk is an agenda heading at every team progress meeting and facilitates the opportunity for team members to raise and discuss risks.

Each project stage - Formal risk workshops at all key project governance stages.

Quarterly Report - The Programme Management Office (PMO) issues their Risk Management Report to the CNFE Programme Board on a quarterly basis as part of the CPMO reporting cycle. This updates the project board on the risks and the mitigation actions being taken.

Monthly Report – The CPMO issues a summary of the key risks, challenges and opportunities to the CNFE Programme Board monthly.

Please refer to Appendix W6.

There are very clearly defined channels for communicating risks through to the PMO Risk Manager and also an escalation process for the reporting of risks to the Programme Board.

Risk register

reg. 12(5)(e) working with Anglian Water's @One Alliance has established the Programme Risk Register for both the CWRC relocation and the CNFE Core Site masterplan which is used to provide a regular update on project risks, in accordance with our established and proven risk management processes. The Risk Register has been adopted as a key risk management tool involving the Master Developer U+I, working with Anglian Water @One Alliance to manage risks through the relocation of CWRC through to the delivery of the masterplan and beyond to estate management.

The risk register captures the details of each risk:

Identification of the risk (a brief description together with the unique reference nr and date raised).

Classification of the risk (risks are sub-divided into pre-planning/planning/pre-construction/construction/post-construction).

Assessment of the risk (all risks are assessed by considering their likelihood of occurrence, their impact should they occur and the time proximity until the risk impact).

Response to the risk (a clear action plan to eliminate risk, mitigate risk or manage any residual risk).

Owner for the risk (a clear allocation of who is best placed and qualified to manage the risk).

Risk classification

All risks are organised and classified into broadly chronological stages:

Pre-planning – the period from appointment of U+I as Master Developer up to preparation of the outline planning application.

Planning - specifically related to the preparation and determination of the masterplan outline planning application.

Pre-Construction – the period from planning consent to start of construction work. This will cover the period to close out detailed design, the procurement of infrastructure and plot developers.

Construction – the period from commencement to completion of site works for all infrastructure and building assets.

Post-Construction – the period of estate management following completion of the masterplan development.

Risk assessment criteria and RAG status

As demonstrated in the following table, risks will be assessed and captured in the risk register according to:
their probability of their occurring
their impact across 7 aspects including programme, financial, reputational and safety
their proximity (time before risk event occurs).

Pre-active and Pre-emptive Planning

The objective is to anticipate potential problems in order to mitigate risks before they occur in the first instance. Throughout the project, risks are continually identified, managed and tracked to their close out. Regular risk reviews are undertaken within the project team led by the Programme Management Office and delivery supply chain partners will be challenged to ensure risks are identified, assessed, managed, and where appropriate, escalated.

Please attach a copy of your current risk register for the scheme

reg. 12(5)(e)	

Additional information

If you have any further information to support the Management Case for your project, which has not already been captured in the above, please include this here

The list below clarifies the additional information that is referenced in our responses to Section 7 above:

reg. 12(5)(e)

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

reg. 12(5)(e)

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

reg. 12(5)(e) [REDACTED]

[REDACTED]

Project Sign Off

Please set out how you have considered your duties under the Equalities Act 2010 (Public Sector Equality Duty) and State Aid risks

Equalities Act

An Equality Impact Assessment (EqIA) tool, which Cambridge City Council uses to ensure it fulfils its legal obligations of the Public Sector Equality Duty, has been completed. The tool considers equality impacts related to the nine protected characteristics and concerning impacts on residents and visitors to Cambridge. It also considers impacts related to “other factors that may lead to inequality”, especially changes on low income groups. There have been no adverse impacts identified at this stage of planning for the CNFE project.

State Aid Risks

For State aid to arise, State resources must be applied in a manner providing “selective benefit” to an undertaking (here the water treatment facility owner, Anglian Water). We have considered this in two discrete parts.

Relocation of CWRC

State aid will not occur if, through a transparent process, Anglian Water is merely compensated through the HIF Funding for loss of its water treatment works and operational land by payment of its reasonable “equivalent reinstatement” costs of the plant at an alternative location (in accordance with the principles of Section 5 of the Land Compensation Act 1961). This is considered to be consistent with the European Commission’s State aid approval (as no aid) in the Netherland in respect of “SA.32225 Expropriation compensation of Nedalco in Bergen op Zoom NL”.

Development of the combined property

To achieve “best value” for both parties, Cambridge City Council and Anglian Water will enter into a joint venture to develop the resulting combined development site (Anglian Water operational land, Anglian Water non-operational land, and Cambridge City Council land), their respective returns determined by an arm’s length market negotiation (the values of their respective ownerships supported by valuation advice) and in a manner that will demonstrate that the Council’s investment is fully compliant with the requirements of the Market Economy Operator Test.

Please attach your Section 151 officer sign off for your proposal

Filename	Description
S151 Officer Sign Off.pdf	Section 151 Officer Sign Off

