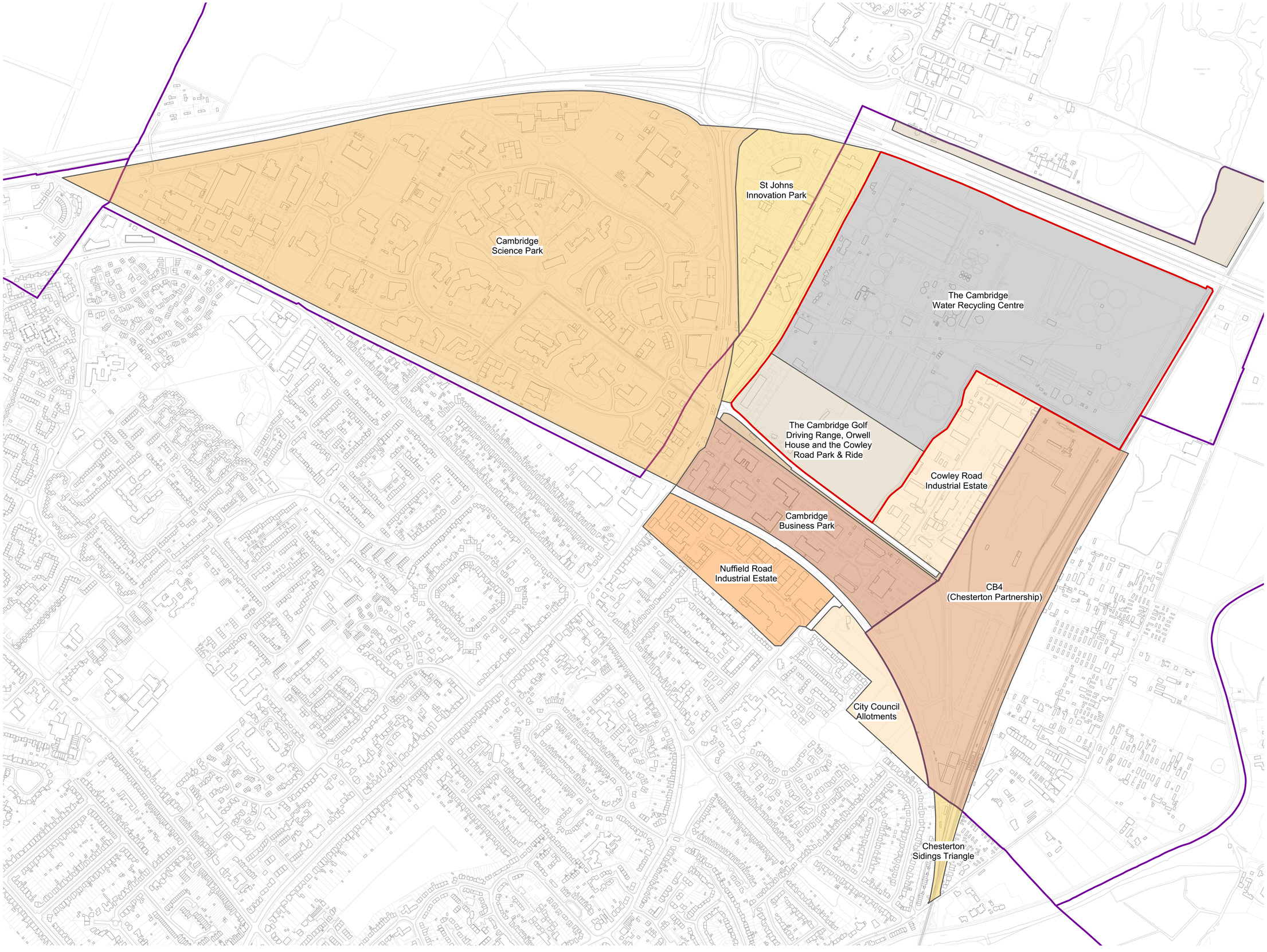

Key

- Core Site Boundary
- Area Boundaries
- Administrative Boundary

Original By:	Date:	Ap by
JH	25-09-2018	DR

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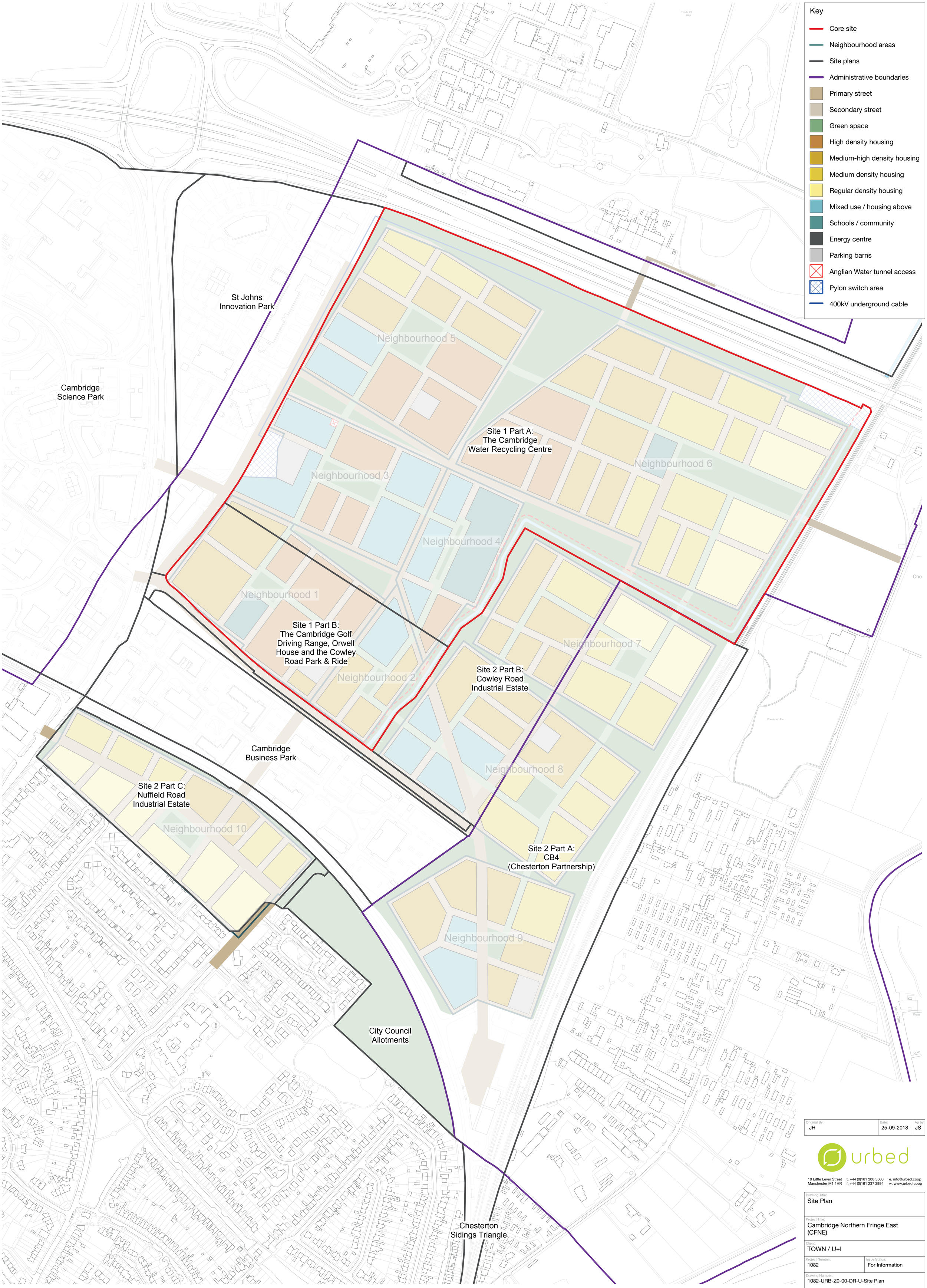
Drawing Title:	Explanatory Plan
Project Title:	Cambridge Northern Fringe East (CFNE)
Client:	TOWN / U+I
Project Number:	1082
Issue Status:	For Information
Drawing Number:	1082-URB-Z1-00-DR-U-Explanatory Plan
Scale:	1:4000@A1/1:8000@A3
Date:	25-09-2018
Revision:	-



Original By:	Date:	Ap by
JH	25-09-2018	JS

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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

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
- Anglian Water tunnel access exact entry point to be confirmed
- Pylon switch area
- 400kV underground cable

N1
N2
N3
N4
N5
N6
N7
N8
N9
N10

Original By:	Date:	Ap by
JH	04-10-2018	JS

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Drawing Title: Illustrative Masterplan Density		
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-Illustrative Masterplan D.		
Scale: 1:2500@A1/1:5000@A3	Date: 17-10-2018	Revision: 7

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:	Date:	Ap by
VP	15-11-2018	JH

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Drawing Title:
Movement Infrastructure

Project Title:
Cambridge Northern Fringe East (CFNE)

Client:
TOWN / U+I

Project Number:	Issue Status:
1082	For Information

Drawing Number:
1082-URB-Z0-00-DR-U-Movement Infrastructure

Scale:	Date:	Revision:
1:2500@A1/1:5000@A3	15-11-2018	

Key

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

Original By:	Date:	Ap by
VP	16-11-2018	JH

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Drawing Title: 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

Contents

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].

Faithful+Gould Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

Document history

Revision	Purpose description	Originated	Checked	Authorised	Issue Date
Draft	Draft for comment	[redacted]	[redacted]		27th Sept 2018
Rev 01	Revised following comments	[redacted]	[redacted]		15th Oct 2018
Rev 02	Revised following team updates	[redacted]	[redacted]		29th Oct 2018
Rev 03	Revised following final comments and incorporation of Section 2 (adjacent sites)	[redacted]	[redacted]		6th Nov 2018
Rev 04	General definitions section added and improved structure	[redacted]	[redacted]		29th Nov 2018
Rev 05	Minor amendments to definitions	[redacted]	[redacted]		30th 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: • site 1A (39.1 hectares under Anglian Water ownership); • site 1B (7.6 hectares under Cambridge City Council ownership). The CNFE Core Site to be redeveloped into 6 neighbourhoods following relocation of the CWRC.	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: • site 2A (known as Brookgate/CB4); • site 2B (known as Cowley Road Industrial Estate); • site 2C (known as Nuffield Road Industrial Estate). The CNFE area is where residential development is unlocked by the relocation of the CWRC. 	Site 1A and 1B combined = 46.7 hectares / 115 acres Sites 2A, 2B and 2C combined = 28.5 hectares / 70 acres Total CNFE (sites 1 and 2 combined) = 75.2 hectares / 186 acres
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 (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
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 (m2)	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						
		1	2	3	4	5	6	Total
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 (m2) Housing Only		Core Site Neighbourhoods						
		1	2	3	4	5	6	Total GIA
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 m2)		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 m2)		-	-	-	-	4,361	31,468	**35,829**
Overall Housing GIA (m2)		**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. junctions 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 [redacted]% per annum
- Development contingency of [redacted]% of cost plan excluding Section 106 contributions
- Interest on total development costs of [redacted]% per annum based on a circa [redacted]% LTC ratio
- Developer's return of [redacted]% of GDV
- Cashflow as per the masterplan programme
- Professional fees for plot development is [redacted]% of neighbourhood development costs
- Professional fees for side-wide infrastructure is [redacted]% 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 @ £[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.
- 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 £[redacted]is included for the CNFE Core Site. This equates to £[redacted]per home based on 5,600 dwellings. The total £[redacted]comprises:
  - £[redacted]for on-site schools and community buildings
  - £[redacted]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 £[redacted]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 £[redacted]per DUE has been assumed, giving the allowance for S106 transport contribution of £[redacted]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 (m2)	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.
- [redacted]% of housing to be affordable ([redacted]% sale / [redacted]% rent)
- [redacted]% of housing to be market ([redacted]% sale / [redacted]% 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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Faithful+Gould Limited
Euston Tower
286 Euston Road
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Table 1 - Breakdown of Overall Gross Internal Floor Area by Use/Type

Gross Internal Floor Areas (m2)	Core Site Neighbourhoods						
	1	2	3	4	5	6	Total
Housing	77069	24721	59735	21601	99172	150367	432665
Commercial	0	3336	13963	6719	4174	0	28193
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						
		1	2	3	4	5	6	Total
Apartments	1 bed	477	132	378	135	583	689	2394
	2 bed	426	144	341	124	533	676	2244
	3 bed	119	43	80	29	141	193	605
Total Apartments (Nr)		1022	319	799	288	1257	1558	**5243**
Houses	2 bed	0	0	0	0	7	59	66
	3 bed	0	0	0	0	22	137	159
	4 bed	0	0	0	0	15	117	132
Total Houses (Nr)		0	0	0	0	44	313	**357**
Overall Units (Nr)		**1022**	**319**	**799**	**288**	**1301**	**1871**	**5600**
Split		**18%**	**6%**	**14%**	**5%**	**23%**	**33%**	**100%**

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

Gross Internal Floor Areas (m2) Housing Only		Core Site Neighbourhoods						
		1	2	3	4	5	6	Total GIA
Apartments	1 bed	26539	7361	21013	7502	32418	38320	133153
	2 bed	37262	12561	29833	10891	46651	59113	196311
	3 bed	13268	4799	8889	3208	15742	21466	67372
Total Apartments (GIA m2)		77069	24721	59735	21601	94811	118899	**396836**
Houses	2 bed	0	0	0	0	541	4383	4924
	3 bed	0	0	0	0	2127	13376	15503
	4 bed	0	0	0	0	1693	13709	15402
Total Houses (GIA m2)		0	0	0	0	4361	31468	**35829**
Overall Housing GIA (m2)		**77069**	**24721**	**59735**	**21601**	**99172**	**150367**	**432665**
Split		**18%**	**6%**	**14%**	**5%**	**23%**	**35%**	**100%**

Table 4 - Breakdown of Housing Accommodation by nr of storeys

Accommodation Mix (units)		Core Site Neighbourhoods						
		1	2	3	4	5	6	Total
High density housing	7 storey	682	0	368	104	610	388	2152
Medium-high density housing	4-5 storey	340	224	0	0	372	898	1834
Medium density housing	2-5 storey	0	0	0	0	145	388	533
Regular density housing	2-3 storey	0	0	0	0	0	197	197
Mix	4-7 storey	0	95	431	184	174	0	884
Overall Units (Nr)		**1022**	**319**	**799**	**288**	**1301**	**1871**	**5600**
Split		**18%**	**6%**	**14%**	**5%**	**23%**	**33%**	**100%**

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

Gross Internal Floor Areas (m2) Housing Only		Core Site Neighbourhoods						
		1	2	3	4	5	6	Total GIA
High density housing	7 storey	50466	0	27223	7690	45083	28665	159127
Medium-high density housing	4-5 storey	26603	17566	0	0	29126	70307	143602
Medium density housing	2-5 storey	0	0	0	0	11813	31587	43400
Regular density housing	2-3 storey	0	0	0	0	0	19808	19808
Mix	4-7 storey	0	7155	32512	13911	13150	0	66728
Overall Housing GIA (m2)		**77069**	**24721**	**59735**	**21601**	**99172**	**150367**	**432665**
Split		**18%**	**6%**	**14%**	**5%**	**23%**	**35%**	**100%**

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
Housing	19939	14150	34088	5571	2667	8239	6108	3814	9922	1881	695	2576	24448	17356	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	0	1662	648	2310	10928	4929	15856
Parking Barns	1694	0	1694	0	0	0	1737	0	1737	0	0	0	1700	0	1700	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	0	963	0	963
Pylon Infrastructure	0	0	0	0	0	0	2595	0	2595	0	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			5770			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**	**466771**

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					
		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			
		1 bed	2 bed	3 bed	2 bed	3 bed	4 bed	Total
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					
		High	Med/High	Med	Reg	Mix	Total GIA
		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 m		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		Apartments			Houses			
		1 bed	2 bed	3 bed	2 bed	3 bed	4 bed	Total GIA
High density	7 storey	59853	75320	23954	0	0	0	159127
Medium-hig	4-5 storey	40794	72194	30614	0	0	0	143602
Medium den	2-5 storey	10394	14015	2970	1988	7813	6220	43400
Regular den	2-3 storey	0	0	0	2936	7690	9182	19808
Mix	4-7 storey	22112	34782	9834	0	0	0	66728
Total Houses (GIA m2)		133153	196311	67372	4924	15503	15402	**432665**
Split		**31%**	**45%**	**16%**	**1%**	**4%**	**4%**	**100%**

Table 9 - Breakdown of Housing Accommodation per neighbourhood and storeys

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

Table 10 - Breakdown of Housing Gross Internal Floor Area per neighbourhood and storeys

Gross Internal Floor Areas (m2) Housing		Apartments			Houses			
Only		1 bed	2 bed	3 bed	2 bed	3 bed	4 bed	Total GIA
Neighbourhood 1								
High density housing	7 storey	18970	23893	7603	0	0	0	50466
Medium-high density housing	4-5 storey	7569	13369	5665	0	0	0	26603
Medium density housing	2-5 storey	0	0	0	0	0	0	0
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	0	0	0	0	0	0	0
Total Houses (m2)		26539	37262	13268	0	0	0	**77069**
Split		**34%**	**48%**	**17%**	**0%**	**0%**	**0%**	**100%**
Neighbourhood 2								
High density housing	7 storey	0	0	0	0	0	0	0
Medium-high density housing	4-5 storey	4960	8820	3786	0	0	0	17566
Medium density housing	2-5 storey	0	0	0	0	0	0	0
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	2401	3741	1013	0	0	0	7155
Total Houses (m2)		7361	12561	4799	0	0	0	**24721**

Split		41%	45%	13%	0%	0%	0%	100%
Neighbourhood 3								
High density housing	7 storey	184	147	37	0	0	0	368
Medium-high density housing	4-5 storey	0	0	0	0	0	0	0
Medium density housing	2-5 storey	0	0	0	0	0	0	0
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	194	194	43	0	0	0	431
Total Houses (Nr)		378	341	80	0	0	0	**799**
Split		**47%**	**43%**	**10%**	**0%**	**0%**	**0%**	**100%**
Neighbourhood 4								
High density housing	7 storey	52	42	10	0	0	0	104
Medium-high density housing	4-5 storey	0	0	0	0	0	0	0
Medium density housing	2-5 storey	0	0	0	0	0	0	0
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	83	82	19	0	0	0	184
Total Houses (Nr)		135	124	29	0	0	0	**288**
Split		**47%**	**43%**	**10%**	**0%**	**0%**	**0%**	**100%**
Neighbourhood 5								
High density housing	7 storey	305	244	61	0	0	0	610
Medium-high density housing	4-5 storey	150	167	55	0	0	0	372
Medium density housing	2-5 storey	50	43	8	7	22	15	145
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	78	79	17	0	0	0	174
Total Houses (Nr)		583	533	141	7	22	15	**1301**
Split		**45%**	**41%**	**11%**	**1%**	**2%**	**1%**	**100%**
Neighbourhood 6								
High density housing	7 storey	194	155	39	0	0	0	388
Medium-high density housing	4-5 storey	359	404	135	0	0	0	898
Medium density housing	2-5 storey	136	117	19	20	58	38	388
Regular density housing	2-3 storey	0	0	0	39	79	79	197
Mix	4-7 storey	0	0	0	0	0	0	0
Total Houses (Nr)		689	676	193	59	137	117	**1871**
Split		**37%**	**36%**	**10%**	**3%**	**7%**	**6%**	**100%**
Site Total								
Total Houses (Nr)		**2394**	**2244**	**605**	**66**	**159**	**132**	**5600**
Split		**43%**	**40%**	**11%**	**1%**	**3%**	**2%**	**100%**

Split		30%	51%	19%	0%	0%	0%	100%
Neighbourhood 3								
High density housing	7 storey	10234	12870	4119	0	0	0	27223
Medium-high density housing	4-5 storey	0	0	0	0	0	0	0
Medium density housing	2-5 storey	0	0	0	0	0	0	0
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	10779	16963	4770	0	0	0	32512
Total Houses (m2)		21013	29833	8889	0	0	0	**59735**
Split		**35%**	**50%**	**15%**	**0%**	**0%**	**0%**	**100%**
Neighbourhood 4								
High density housing	7 storey	2892	3691	1107	0	0	0	7690
Medium-high density housing	4-5 storey	0	0	0	0	0	0	0
Medium density housing	2-5 storey	0	0	0	0	0	0	0
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	4610	7200	2101	0	0	0	13911
Total Houses (m2)		7502	10891	3208	0	0	0	**21601**
Split		**35%**	**50%**	**15%**	**0%**	**0%**	**0%**	**100%**
Neighbourhood 5								
High density housing	7 storey	16965	21300	6818	0	0	0	45083
Medium-high density housing	4-5 storey	8312	14673	6141	0	0	0	29126
Medium density housing	2-5 storey	2819	3800	833	541	2127	1693	11813
Regular density housing	2-3 storey	0	0	0	0	0	0	0
Mix	4-7 storey	4322	6878	1950	0	0	0	13150
Total Houses (m2)		32418	46651	15742	541	2127	1693	**99172**
Split		**33%**	**47%**	**16%**	**1%**	**2%**	**2%**	**100%**
Neighbourhood 6								
High density housing	7 storey	10792	13566	4307	0	0	0	28665
Medium-high density housing	4-5 storey	19953	35332	15022	0	0	0	70307
Medium density housing	2-5 storey	7575	10215	2137	1447	5686	4527	31587
Regular density housing	2-3 storey	0	0	0	2936	7690	9182	19808
Mix	4-7 storey	0	0	0	0	0	0	0
Total Houses (m2)		38320	59113	21466	4383	13376	13709	**150367**
Split		**25%**	**39%**	**14%**	**3%**	**9%**	**9%**	**100%**
Site Total								
Total Houses (m2)		**133153**	**196311**	**67372**	**4924**	**15503**	**15402**	**432665**
Split		**31%**	**45%**	**16%**	**1%**	**4%**	**4%**	**100%**

Table 11 - GIA and NIA for Housing and Commercial by tenure

Site 1 A-B		N1			N2			N3			N4			N5			N6		
		Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)
Residential Sale	Houses	0	0	0	0	0	0	0	0	0	0	0	0	18	1794	1435	123	12359	9887
	Apartments	409	30824	30824	128	9914	9914	320	23940	23940	115	8608	8608	503	37955	37955	622	47450	47450
Residential Rent	Houses	0	0	0	0	0	0	0	0	0	0	0	0	8	794	635	64	6440	5152
	Apartments	204	15396	15396	64	4983	4983	160	11950	11950	58	4361	4361	252	18994	18994	312	23819	23819
Affordable Sale	Houses	0	0	0	0	0	0	0	0	0	0	0	0	5	492	394	32	3228	2582
	Apartments	102	7684	7684	31	2392	2392	80	5970	5970	28	2111	2111	125	9435	9435	156	11920	11920
Affordable Rent	Houses	0	0	0	0	0	0	0	0	0	0	0	0	13	1281	1025	94	9441	7553
	Apartments	307	23165	23165	96	7432	7432	239	17875	17875	87	6521	6521	377	28427	28427	468	35710	35710
Residential Total		**1022**	**77069**	**77069**	**319**	**24721**	**24721**	**799**	**59735**	**59735**	**288**	**21601**	**21601**	**1301**	**99172**	**98300**	**1871**	**150367**	**144073**
Commercial	Office		0	0		3336	3169		13963	13265		6719	6383		4174	3965		0	0
	Retail		0	0		865	692		3620	2896		1742	1394		1082	866		0	0
Commercial Total			**0**	**0**		**4201**	**3861**		**17583**	**16161**		**8461**	**7777**		**5256**	**4831**		**0**	**0**

Site 2 A-C		N7a			N8a			N9			N7b			N8b			N10		
		Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)	Units	GIA (m2)	NIA (m2)
Residential Sale	Houses	64	6422	5138	36	3601	2881	10	986	789	10	986	789	3	289	231	104	10443	8354
	Apartments	55	4047	4047	137	10281	10281	280	21620	21620	163	12675	12675	234	18034	18034	116	8802	8802
Residential Rent	Houses	32	3211	2569	18	1801	1440	6	600	480	5	503	402	0	0	0	52	5221	4177
	Apartments	28	2051	2051	69	5184	5184	138	10655	10655	80	6210	6210	117	8977	8977	59	4445	4445
Affordable Sale	Houses	16	1605	1284	9	889	711	2	214	171	2	214	171	0	0	0	26	2611	2089
	Apartments	14	1026	1026	34	2592	2592	70	5415	5415	40	3077	3077	59	4556	4556	29	2195	2195
Affordable Rent	Houses	47	4719	3775	26	2615	2092	8	814	651	7	698	558	1	98	78	78	7832	6266
	Apartments	42	3077	3077	102	7665	7665	211	16324	16324	121	9399	9399	175	13422	13422	89	6751	6751
Residential Total		**298**	**26158**	**22967**	**431**	**34627**	**32846**	**725**	**56629**	**56106**	**428**	**33761**	**33281**	**589**	**45375**	**45298**	**553**	**48299**	**43077**
Commercial	Office		0	0		14052	13349		4533	4306		0	0		0	0		0	0
	Retail		0	0		3643	2914		212	170		0	0		0	0		0	0
Commercial Total			**0**	**0**		**17695**	**16264**		**4745**	**4476**		**0**	**0**		**0**	**0**		**0**	**0**

Table 11 - Conversion Ratio

Conversion (%)	
Type	**GIA to NIA**
House	80%
Apartment	100%
Comercial Offices	95%
Commercial Retail	80%

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

Gross Internal Floor Areas (m2)	Neighbourhoods										
	1	2	3	4	5	6	7	8	9	10	Total
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										
		1	2	3	4	5	6	7	8	9	10	Total
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-hig	4-5 storey	13,684	24,238	10,240	0	0	0	48,162
Medium der	2-5 storey	11,292	15,312	3,228	2,160	8,390	6,874	47,256
Regular den	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-hig	4-5 storey	14,462	25,638	10,797	0	0	0	50,897
Medium der	2-5 storey	1,835	2,450	557	373	1,366	1,048	7,629
Regular den	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-hig	4-5 storey	3,282	5,775	2,449	0	0	0	11,506
Medium der	2-5 storey	4,061	5,513	1,113	745	3,024	2,330	16,786
Regular den	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%**

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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		[redacted]	[redacted]
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CONTENTS

CAMBRIDGE NORTH FRINGE EAST – CIVILS STRATEGY

1. INTRODUCTION

1.1 OVERVIEW

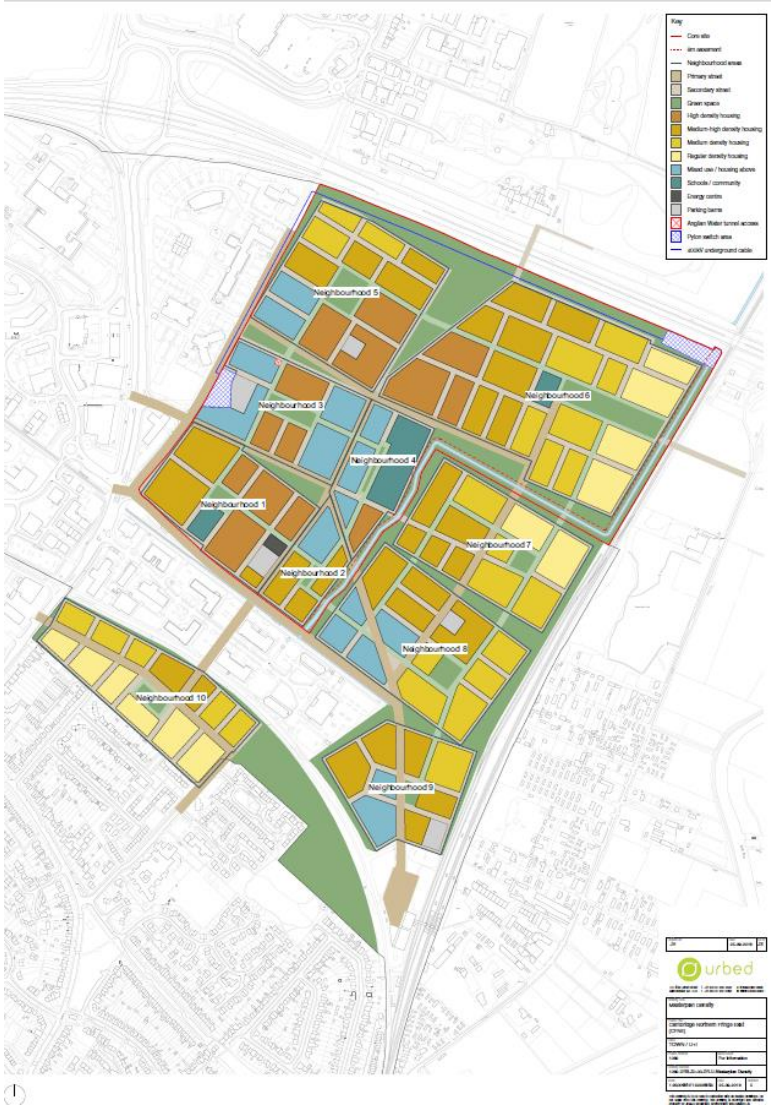
1.1.1 This 'live' document provides a statement on the ongoing strategy in delivering the Cambridge North Fringe East development.

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 primarliy 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 contraints 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 theA14 (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 will 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 Anglican 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 (strikes)
Made ground	0.40 to 2.50	0.40 to 2.50	
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.

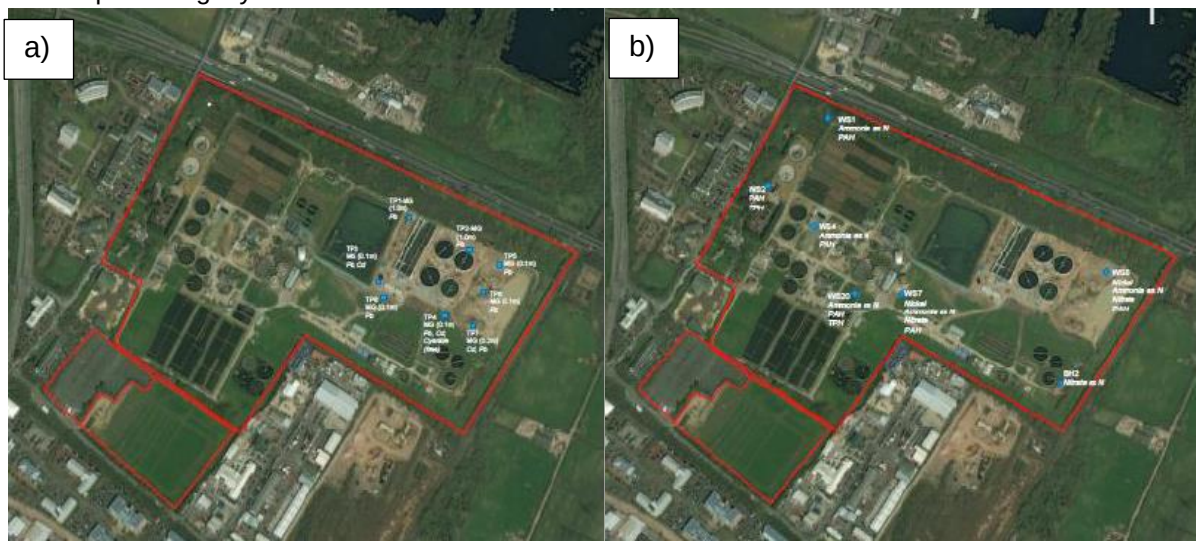


Figure 1a) Exceedances in soil and leachate contamination and b) groundwater contamination.

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:

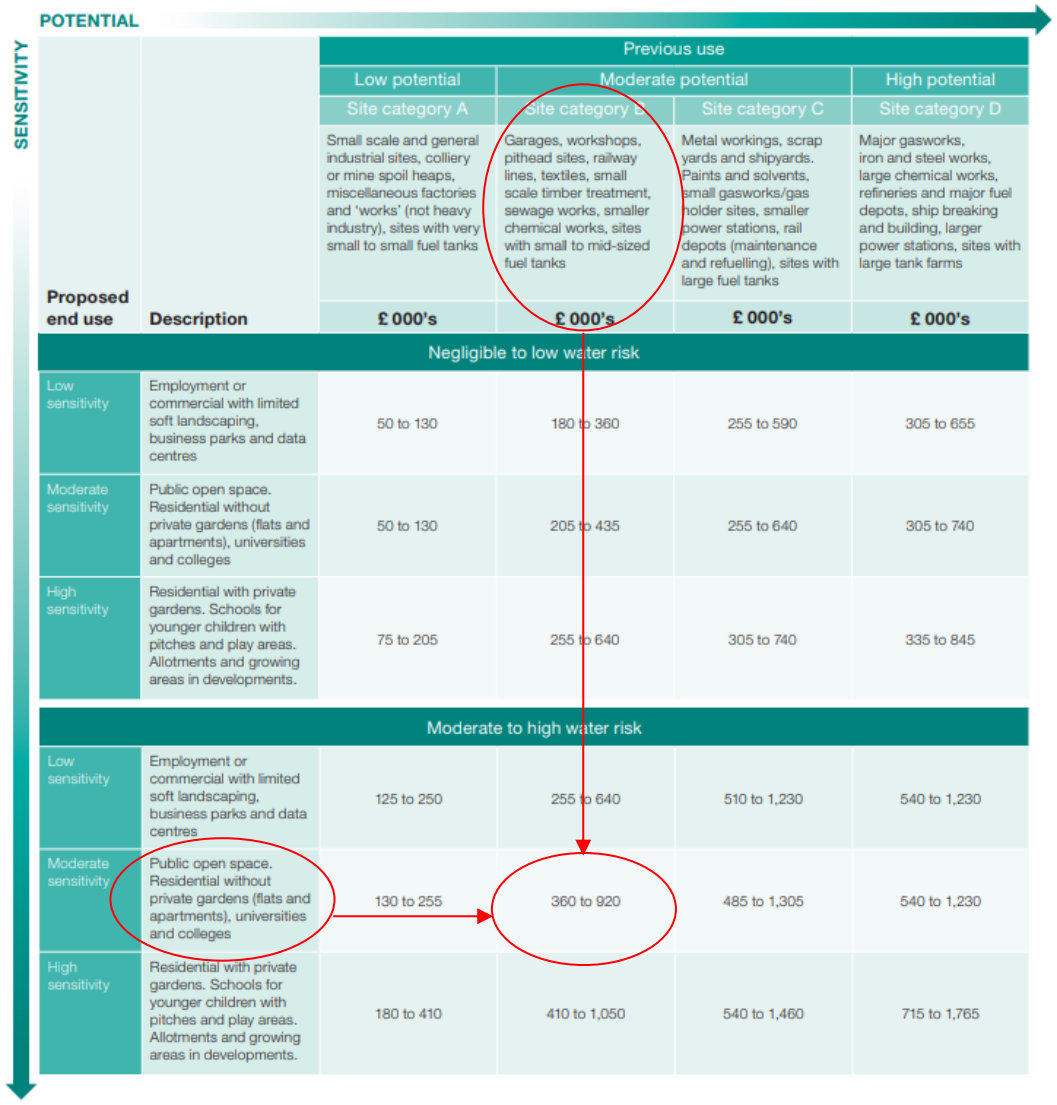
- Removal or treatment of hotspots encountered in the made ground/ underling natural strata. If the majority of the hotspots relate to organic contamination (as would be expected at the WRC) it is possible that on-site biodegradation may be a potential treatment option;
- Design of appropriate gas protection 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).



POTENTIAL

SENSITIVITY

Proposed end use	Description	Previous use – Low potential – Site category A	Previous use – Moderate potential – Site category B	Previous use – Moderate potential – Site category C	Previous use – High potential – Site category D
		Small scale and general industrial sites, colliery or mine spoil heaps, miscellaneous factories and 'works' (not heavy industry), sites with very small to small fuel tanks	Garages, workshops, pithead sites, railway lines, textiles, small scale timber treatment, sewage works, smaller chemical works, sites with small to mid-sized fuel tanks	Metal workings, scrap yards and shipyards. Paints and solvents, small gasworks/gas holder sites, smaller power stations, rail depots (maintenance and refuelling), sites with large fuel tanks	Major gasworks, iron and steel works, large chemical works, refineries and major fuel depots, ship breaking and building, larger power stations, sites with large tank farms
		£ 000's	£ 000's	£ 000's	£ 000's
Negligible to low water risk					
Low sensitivity	Employment or commercial with limited soft landscaping, business parks and data centres	50 to 130	180 to 360	255 to 590	305 to 655
Moderate sensitivity	Public open space. Residential without private gardens (flats and apartments), universities and colleges	50 to 130	205 to 435	255 to 640	305 to 740
High sensitivity	Residential with private gardens. Schools for younger children with pitches and play areas. Allotments and growing areas in developments.	75 to 205	255 to 640	305 to 740	335 to 845
Moderate to high water risk					
Low sensitivity	Employment or commercial with limited soft landscaping, business parks and data centres	125 to 250	255 to 640	510 to 1,230	540 to 1,230
Moderate sensitivity	Public open space. Residential without private gardens (flats and apartments), universities and colleges	130 to 255	360 to 920	485 to 1,305	540 to 1,230
High sensitivity	Residential with private gardens. Schools for younger children with pitches and play areas. Allotments and growing areas in developments.	180 to 410	410 to 1,050	540 to 1,460	715 to 1,765

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 [redacted]% 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 £[redacted] per hectare be considered. The golf driving range is approximately 6.65ha, therefore a total cost of £[redacted] 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 ([redacted]%) 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 [redacted]% 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	[redacted]	[redacted]
Window Samples	[redacted]	[redacted]

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.

4.3.7 Below is an outline volume area calculation indicating the provision of various measures to formulate the surface water strategy

Pell Frischmann

Project/Calc No. 10199/SWDS01
Sheet No. 1 of 1
Date 05/11/2018
By SCS Chkd

CALCULATIONS | Project CNFE

Subject: Surface water attenuation - indicative strategy

Ref.

Output

Total site area (ha) [redacted]

Attenuation per hectare (m³) [to match Greenfield runoff rates]

Areas	% of site	Area (ha)	Indicative volumes (m³)
Blue roofs	15%	6.71	10067.10
Impermeable areas (roads / roofs et	44%	20.24	n/a
open space and excluded areas	15%	6.90	excluded from these calcs
courtyards & Green Streets	27%	12.31	11078.97
		Sum	[redacted]

Total attenuation required based upon developed surfaces (m³): [redacted]

Attenuation assumptions

Blue roofs — Peak water depth **0.15** m

Porous sub-base — Depth **0.3** m and void porosity of **30%**

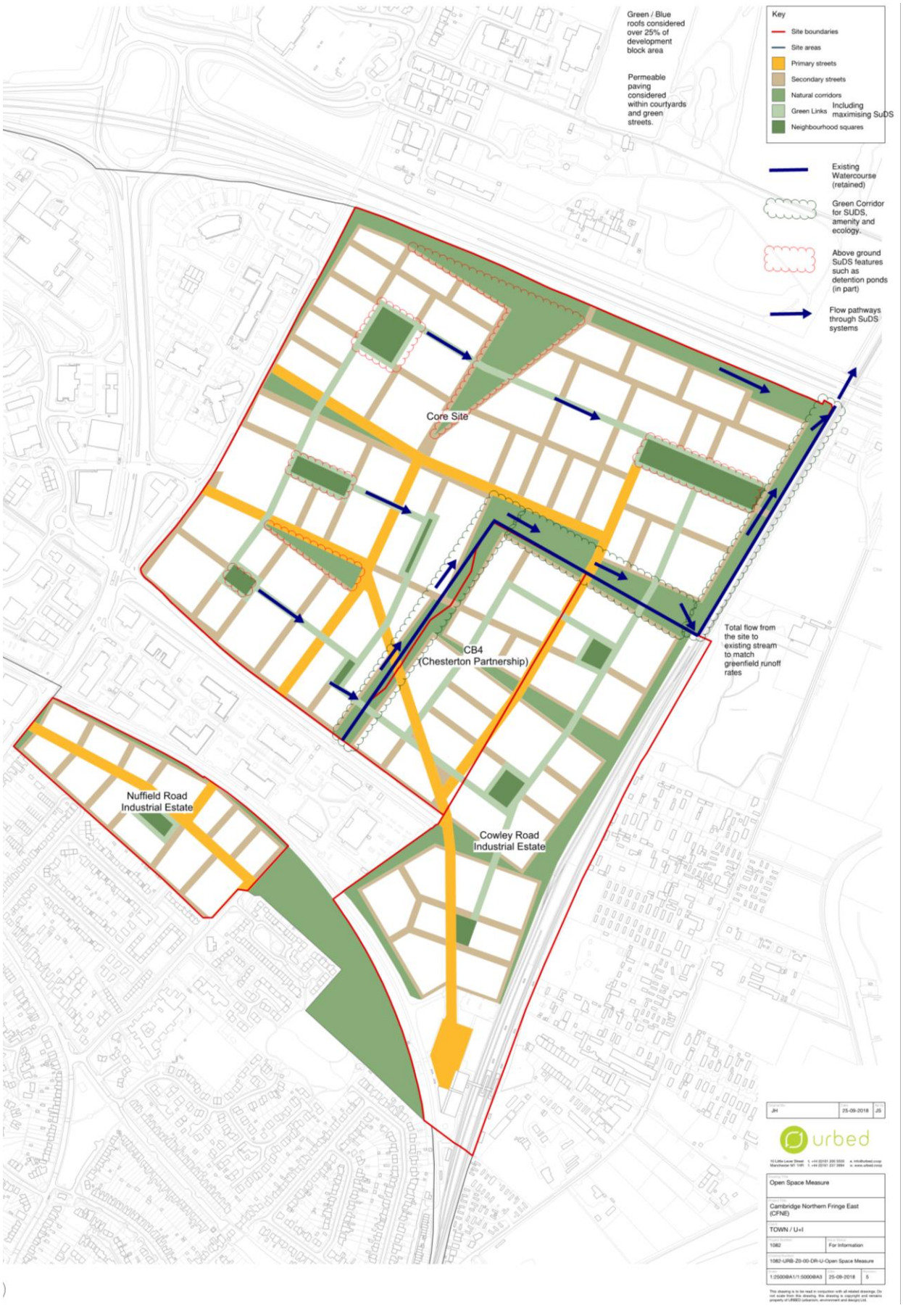
The area and volume indicated for the 'courtyards and green streets has been equally spit between 'courtyards', 'green streets', and 'other permeable surfaces'

Indicative attenuation volume summary

	Attenuation volume potential (m³)	Plan area (ha)	Plan area (m²)
Blue roofs	10067	6.71	67114
Courtyards	3693	4.103	41033
Green Streets	3693	4.103	41033
Other permeable roads	3693	4.103	41033
Ponds	10263		
Total	***31409***	*12.310*	*123100*

Note: Required attenuation volumes are based upon 'quick storage estimates' within MicroDrainage. Volumes are indicative and will vary depending on surfacing, SuDS components and how they are linked

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 5.5	Normal width Edge of neighbourhoods	Underground attenuation	
iv	Green (Street) Links	11.0 8	Normal width Around neighbourhood squares	Drainage Swales	

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 on 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.

ODOURNET
sensory experts since 1980

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)

title:	Odour impact assessment for Cambridge Water Recycling Centre
report number:	CACC17A_08_final
project code:	CACC17A
key words:	
client:	Cambridge City Council Mandela House Cambridge phone fax
contact:	[redacted], [redacted]
contractor:	Odournet UK Ltd Unit 6 & 7 Anglo Office Park Bristol BS15 1NT 01225 868869 phone Companies House Cardiff 2900894 uk@odournet.com
authors:	[redacted]
approved:	on behalf of Odournet UK Ltd by [redacted], [redacted]
date:	23 October 2018
copyright:	©2017, Odournet UK Ltd

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 ou_E/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.

Table of Contents

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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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 out performing 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: 2003[1]. 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 conditions[2].

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.

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[1] BS 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:

- **F**requency of exposure.
- **I**ntensity or strength of exposure.
- **D**uration of exposure.
- **O**ffensiveness.
- **L**ocation 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 ($C_{98,\ 1\text{-hour}} > 5\ ou_E/m^3$). 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 Agency[3] 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 98th percentile (hourly average)	Processes involving decaying animals or fish remains; septic effluent or sludge; biological landfill odours
Moderately offensive	3 ou_E/m^3 98th 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 98th percentile (hourly average)	Brewery; coffee roasting; confectionary; bakery

Odour guidance published by DEFRA in March 2010[4] 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 ou_E/m^3 to $C_{98,\ 1\text{-hour}}$ = 5 ou_E/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 ou_E/m^3 and $C_{98,\ 1\text{-hour}}$ = 10 ou_E/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 ou_E/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 likely[6] to develop at exposure levels between $C_{98,\ 1\text{-hour}}$ = 3 ou_E/m^3 and $C_{98,\ 1\text{-hour}}$ = 5 ou_E/m^3. However the occurrence of adverse impact and complaints from areas of predicted odour exposure levels below $C_{98,\ 1\text{-hour}}$ = 3 ou_E/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 ou_E/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 ou_E/m^3, and that $C_{98,\ 1\text{-hour}}$ = 3 - 5 ou_E/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 ou_E/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 ou_E/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 ou_E/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 ou_E/m^3 but as the odour concentration rises to $C_{98,\ 1\text{-hour}}$ = 5 ou_E/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 ou_E/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 Linslade. The inspector noted that the water company used a standard of $C_{98,\ 1\text{-hour}}$ > 5 ou_E/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 ou_E/m^3 - complaints are highly likely and odour exposure at these levels represents an actionable nuisance;

  - $C_{98,\ 1\text{-hour}}$ >5 ou_E/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 ou_E/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 ou_E/m^3 and 5 ou_E/m^3 criteria. The $C_{98,\ 1\text{-hour}}$ = 6 and 10 ou_E/m^3 isopleths are also presented for reference.

3 Overview of sewage treatment operations

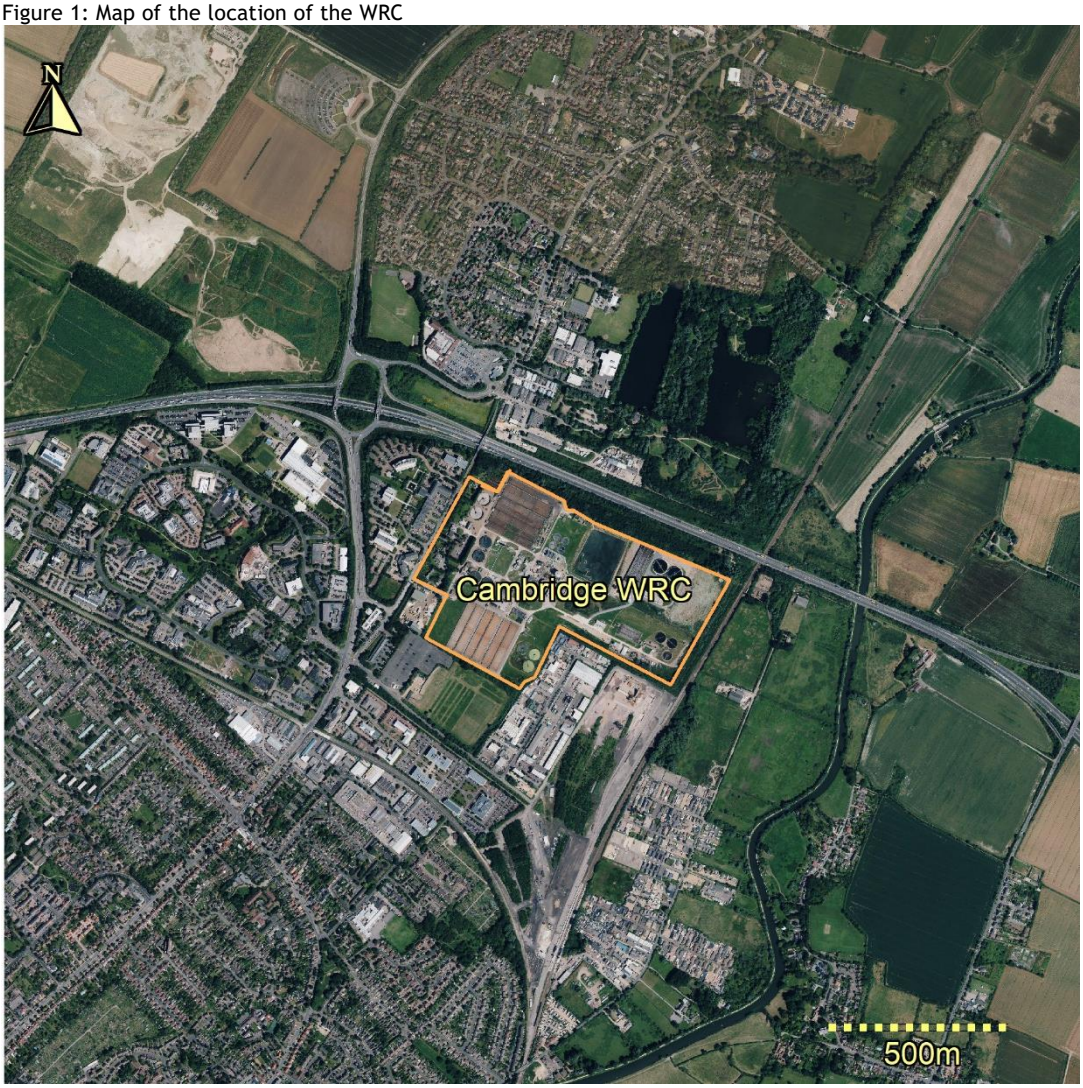
3.1 Location of works

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 £[redacted] 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 degritted 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.

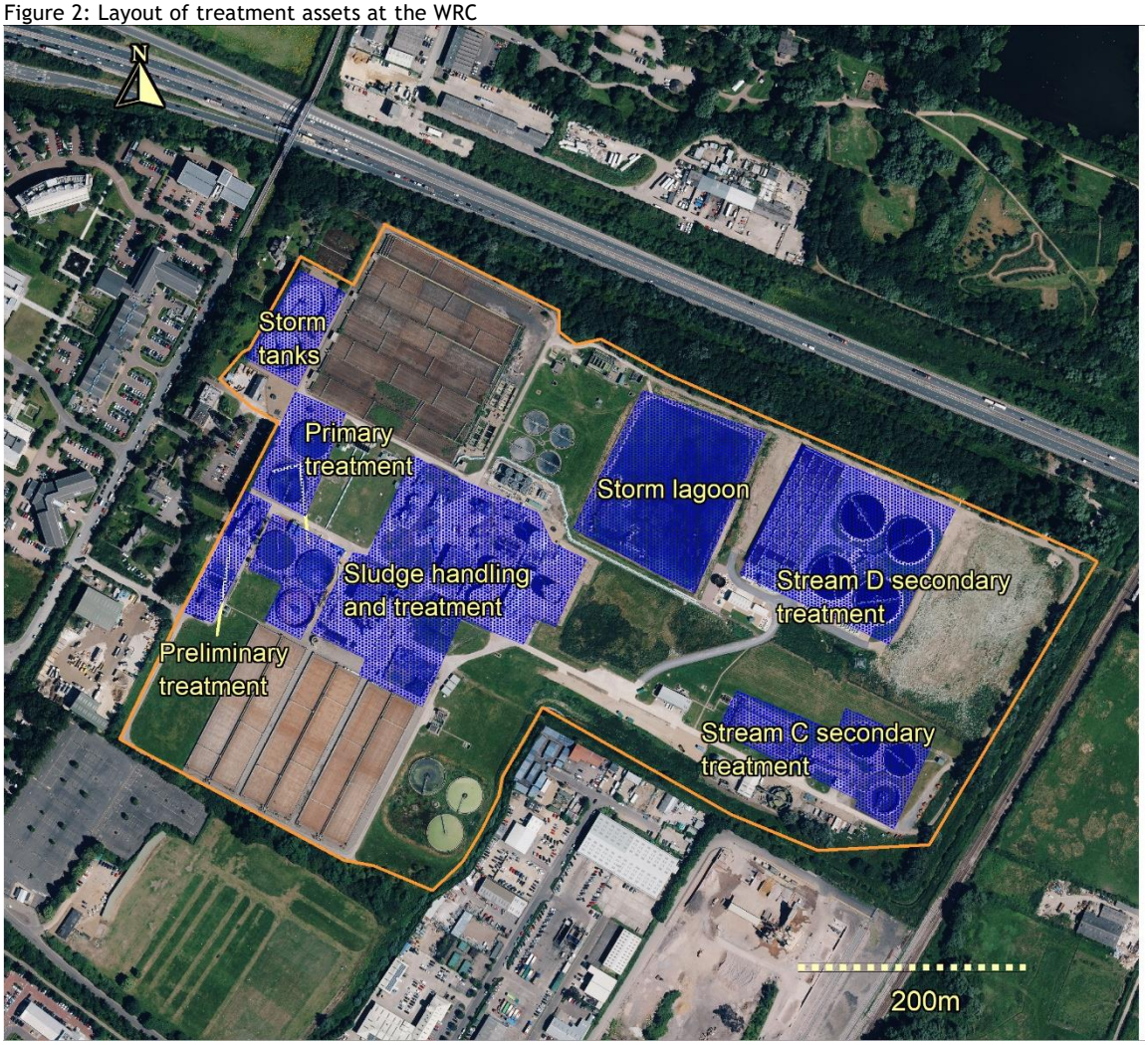
Imported SAS and indigenous SAS from the Stream C secondary treatment plant is stored in a circular covered SAS buffer tank which is served by an odour control unit. The SAS is thickened in a SAS drum thickener prior to delivery into a circular covered above ground sludge blend tank where it is mixed 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 H_2S measurements from open sources

Source	Date of Sampling	Geomean emission rate [$ou_E/m^2/s$]	H_2S 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 H_2S measurements from volume sources

Source	Date of sampling	Geomean odour concentration [ou_E/m^3]	H_2S conc. [ppm]	Flow rate (m^2/s)	Odour emission rate (ou_E/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' [ou_E/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 ($ou_E/m^2/s$)	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 [redacted]% are generated by the preliminary treatment stage, [redacted]% from storm water handling, [redacted]% by the primary treatment stage, [redacted]% by the secondary treatment stage and [redacted]% 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.

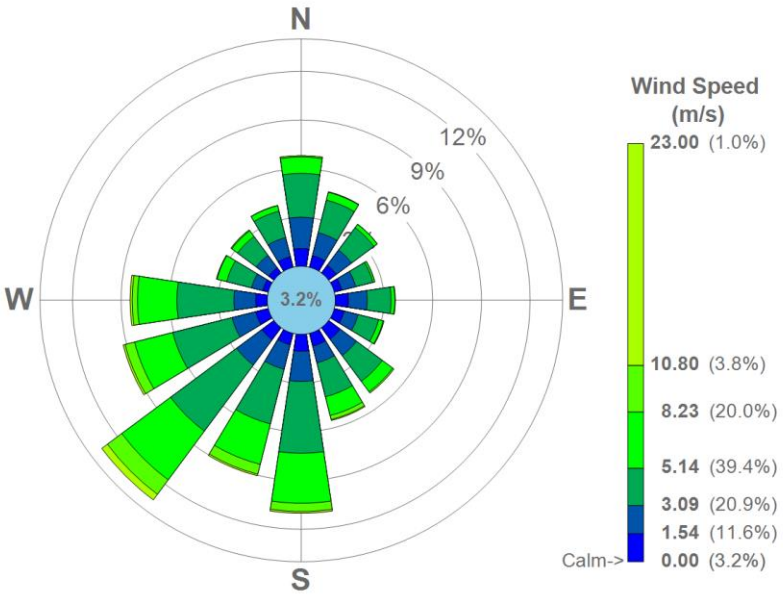
7 Odour impact assessment

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 Guide[7], 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

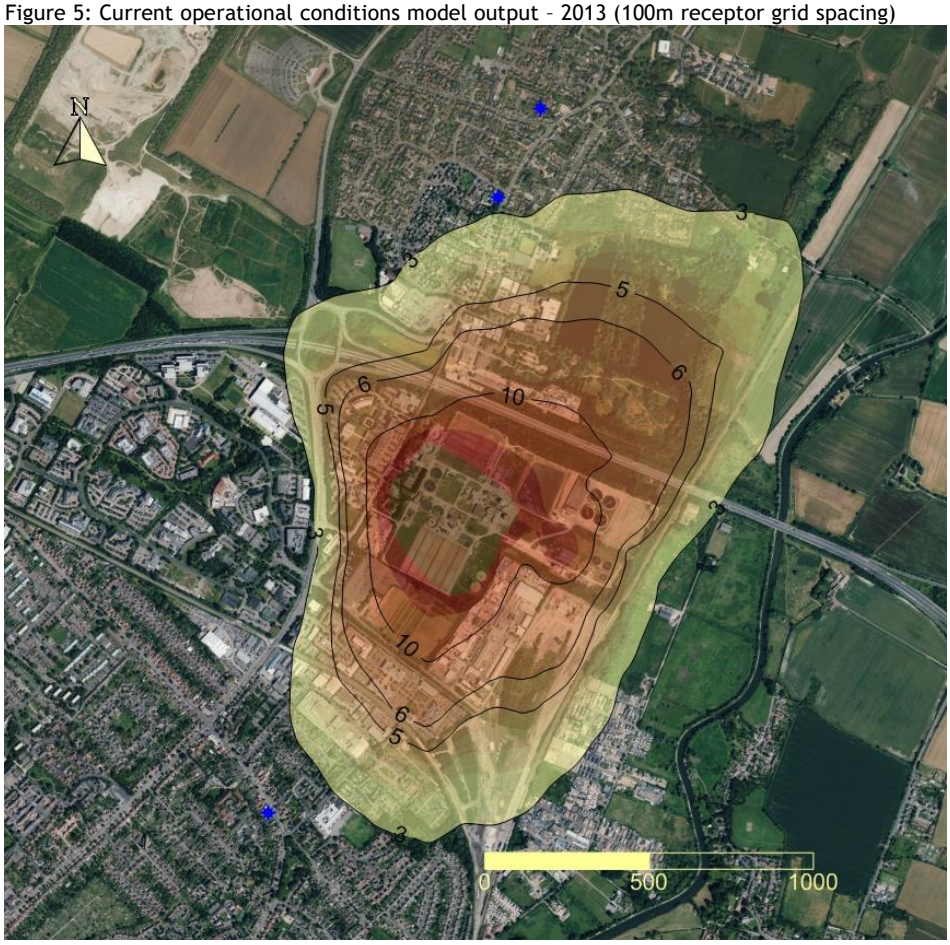
year was also rerun using a spacing of 40 m, and this is presented in Annex C. Receptor heights of 1.5m were assumed.

- 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 ou_E/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 ou_E/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 ou_E/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 forseeable 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 [redacted]% are generated by the preliminary treatment stage, 1% from storm water handling, [redacted]% by the primary treatment stage, [redacted]% by the secondary treatment stage and [redacted]% 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 ou_E/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} ($ou_E/m^2/s$) = C_{hood} x L x 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 H_2S measurement results

B.1 Odour and H_2S 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)

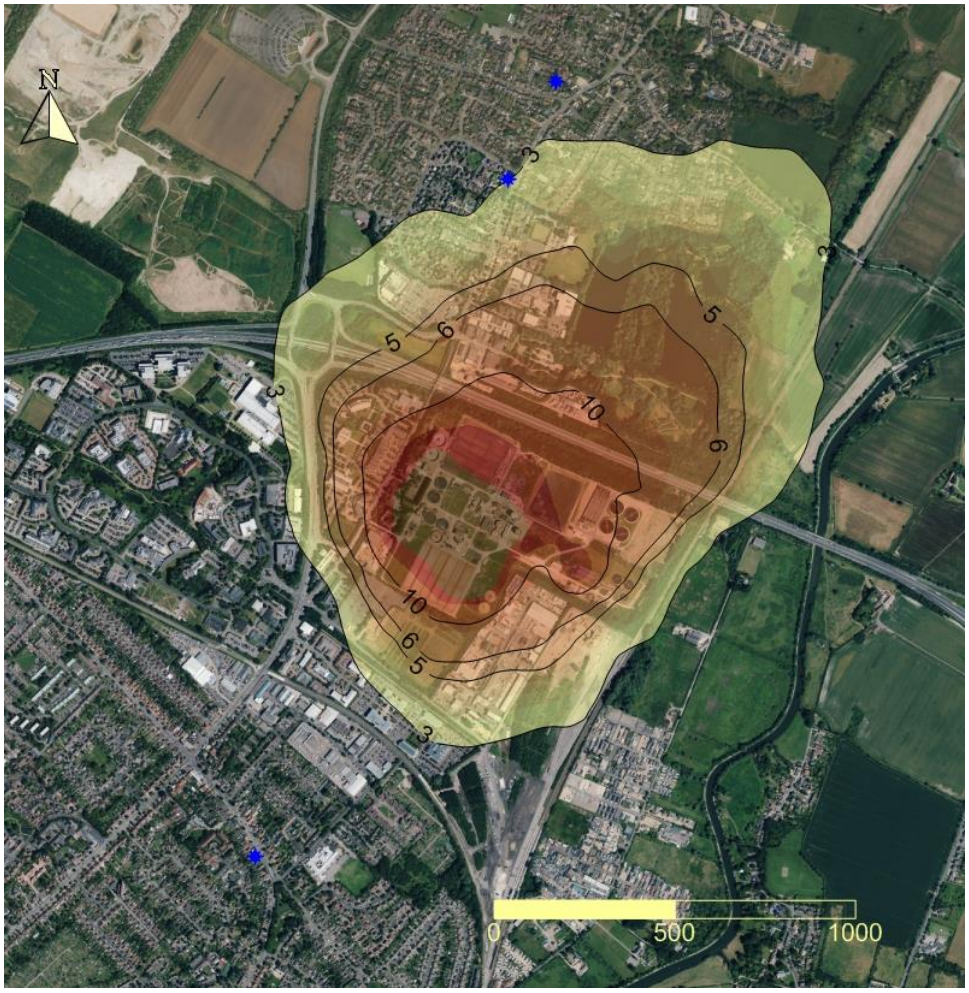


Figure 7: Current operational conditions model output – 2013 Met data (40m receptor grid spacing)

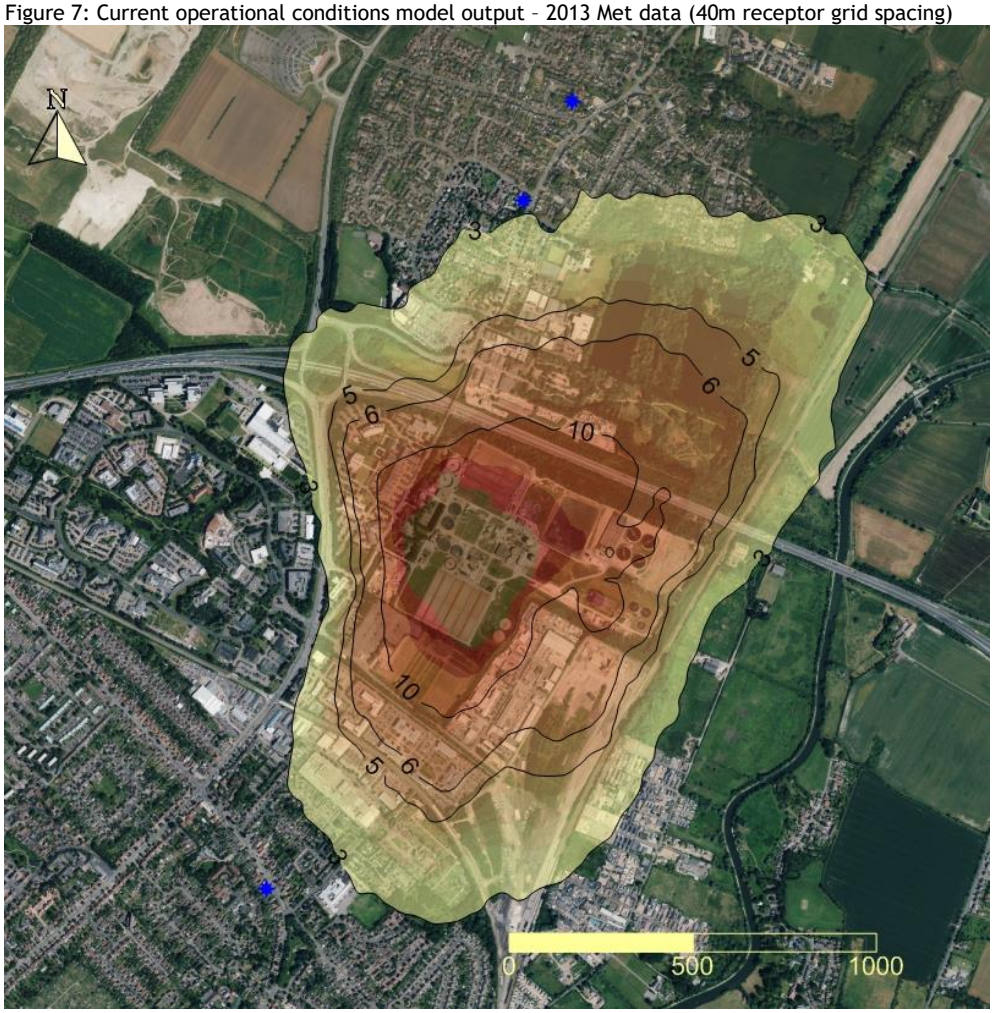


Figure 8: Current operational conditions model output – 2014 Met data (100m receptor grid spacing)

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

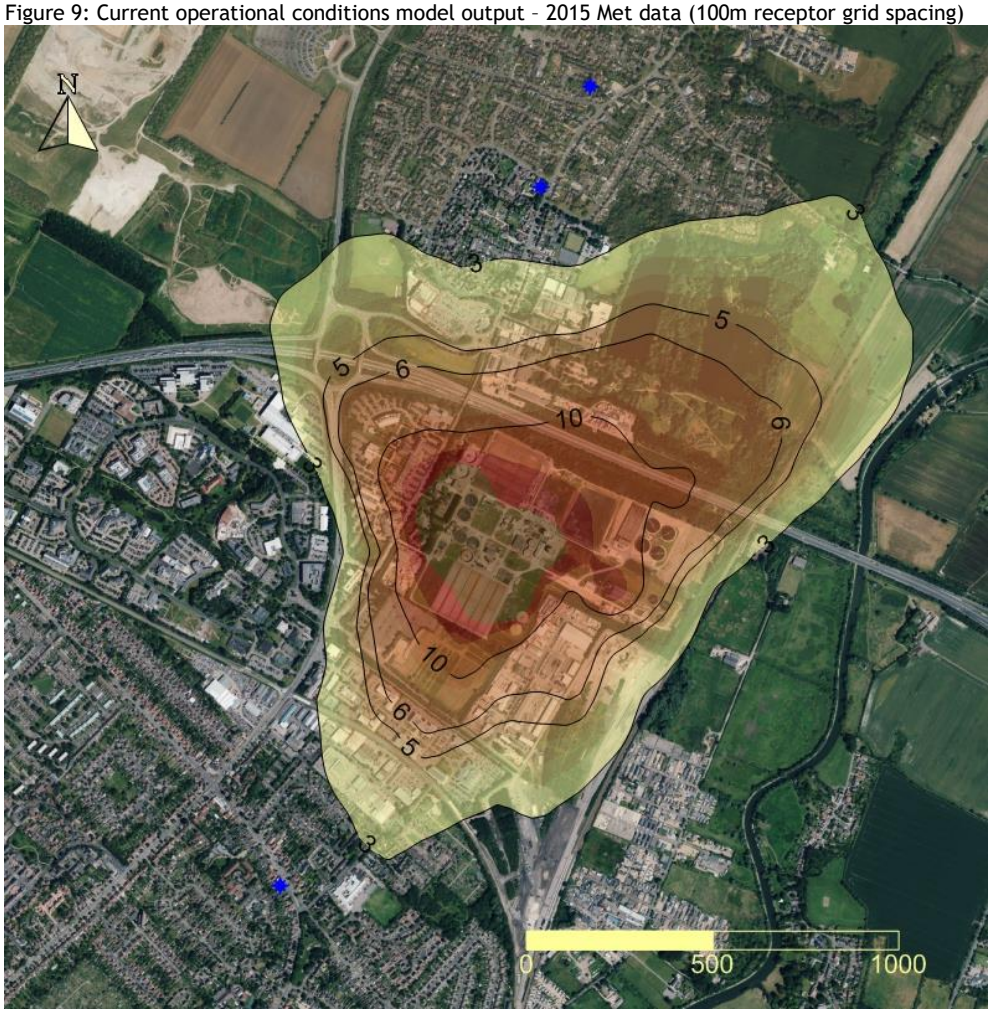


Figure 10: Current operational conditions model output – 2016 Met data (100m receptor grid spacing)

Pell Frischmann

excellence through innovation

U + I and Town

Cambridge Northern Fringe East (CNFE)

Transport Strategy

Volume I - Report
Final Report
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Pell Frischmann

REVISION RECORD					
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F1	Final.	23 November 2018	PF London	SME	PDS
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Contents

Figures and Tables

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 determining 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 CSRM2, 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 [redacted]% of the overall mitigation costs. Therefore, the same proportion of benefit should be attributed to CNFE, a transport user benefit of £[redacted]

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.

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 (Catthorpe 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.

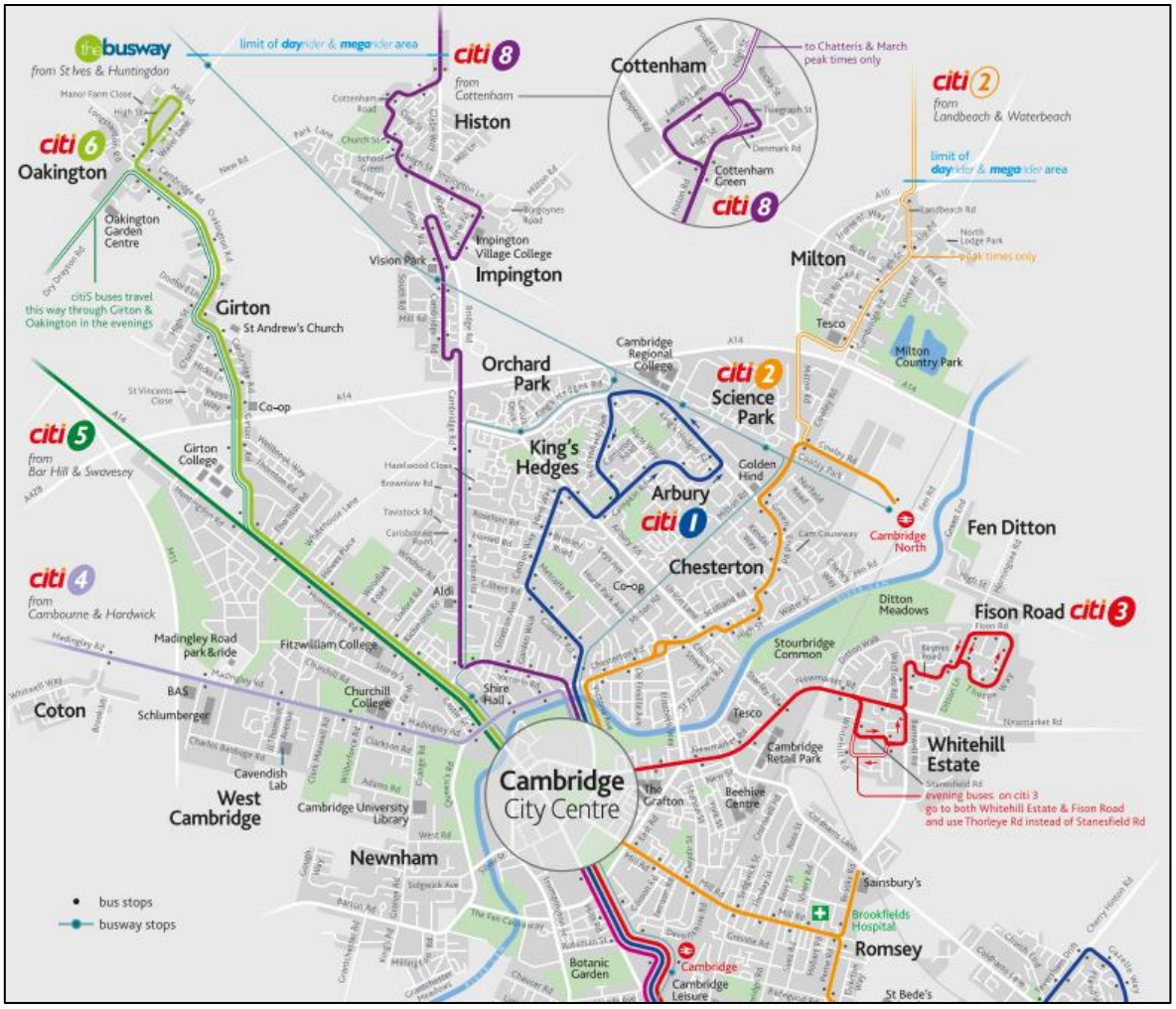
Table 2-3 Summary of Bus Services

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.

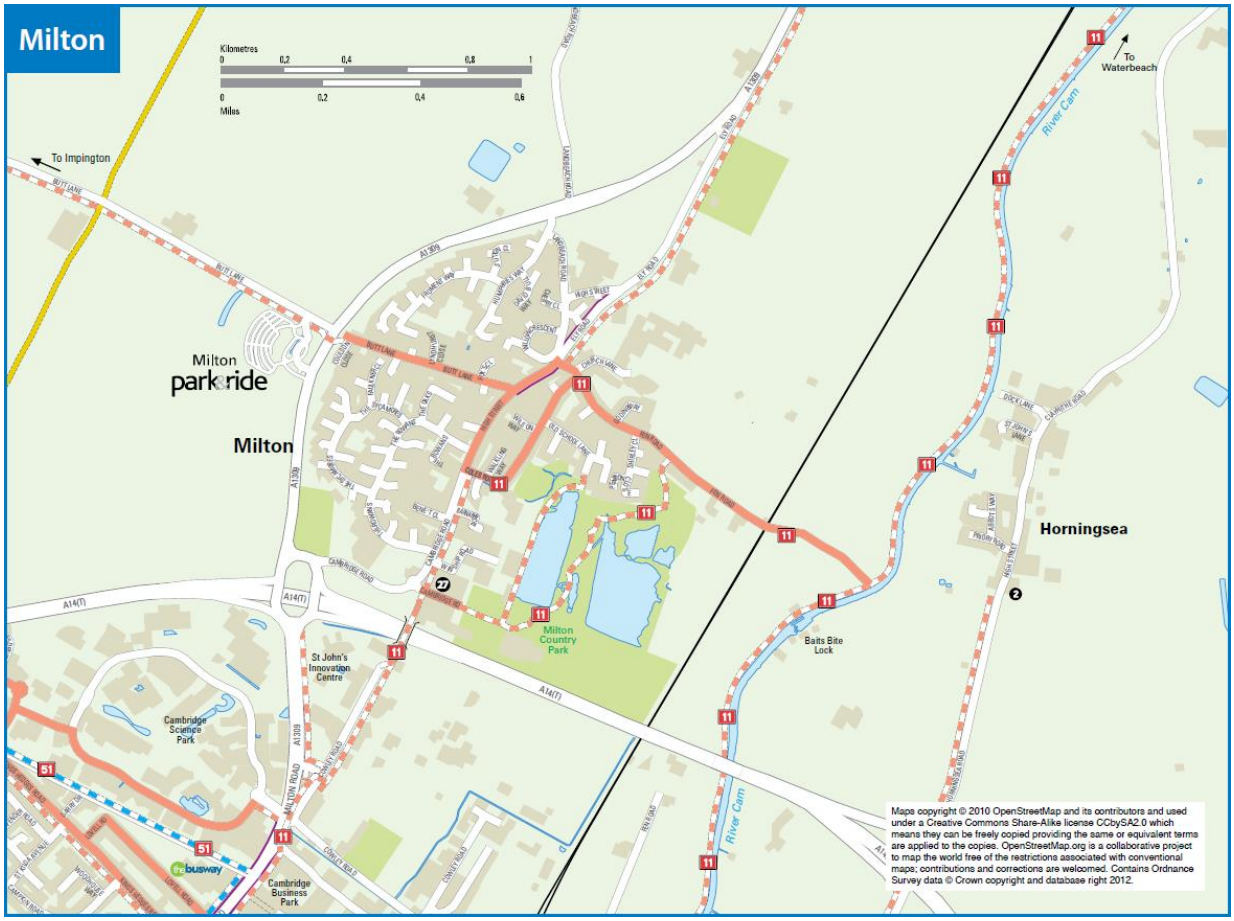
Cycle Environment

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.

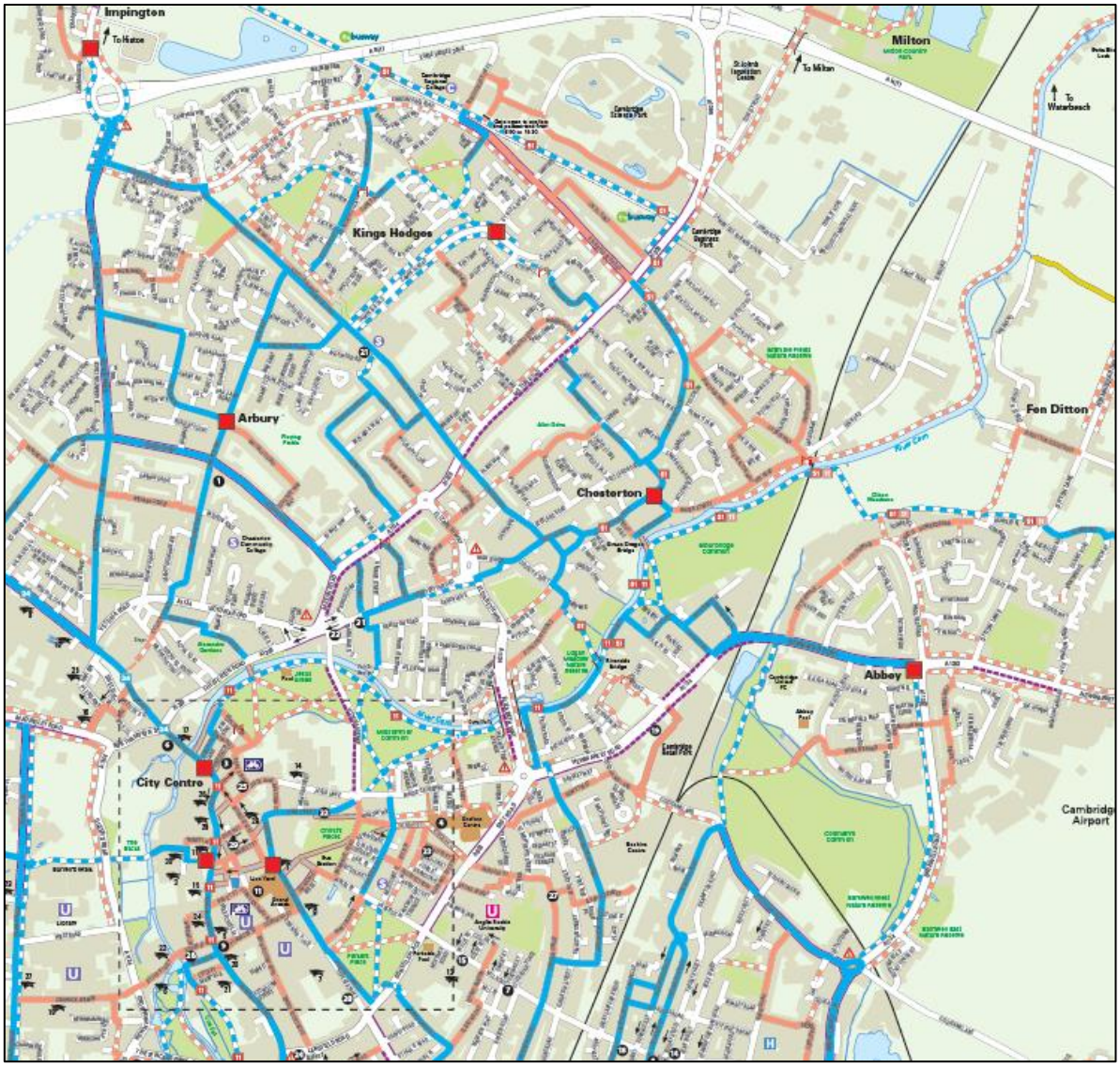
2.36 The primary route of NCN 11 runs to the east of the development site with the nearest connection provided from Fen Road approximately 1.5m south east of the site. Access is via the connection introduced from Cambridge North Station onto Moss Bank. However, secondary routes are also signed running 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.

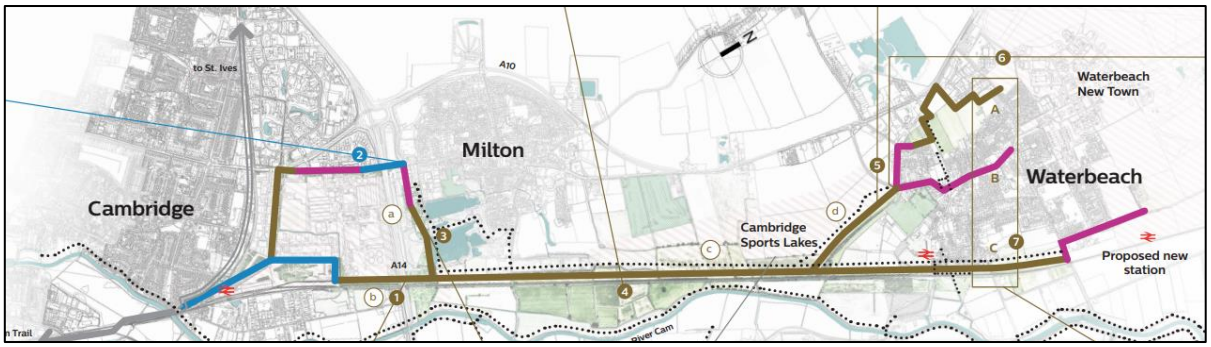
3.3 An existing Greenway provides connection to / from Waterbeach running primarily alongside the River Cam from Fen Road in Cambridge however with the route susceptible to pooling of water and being indirect the review has focused on providing a new more direct route.

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 Greenway[1]



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**.

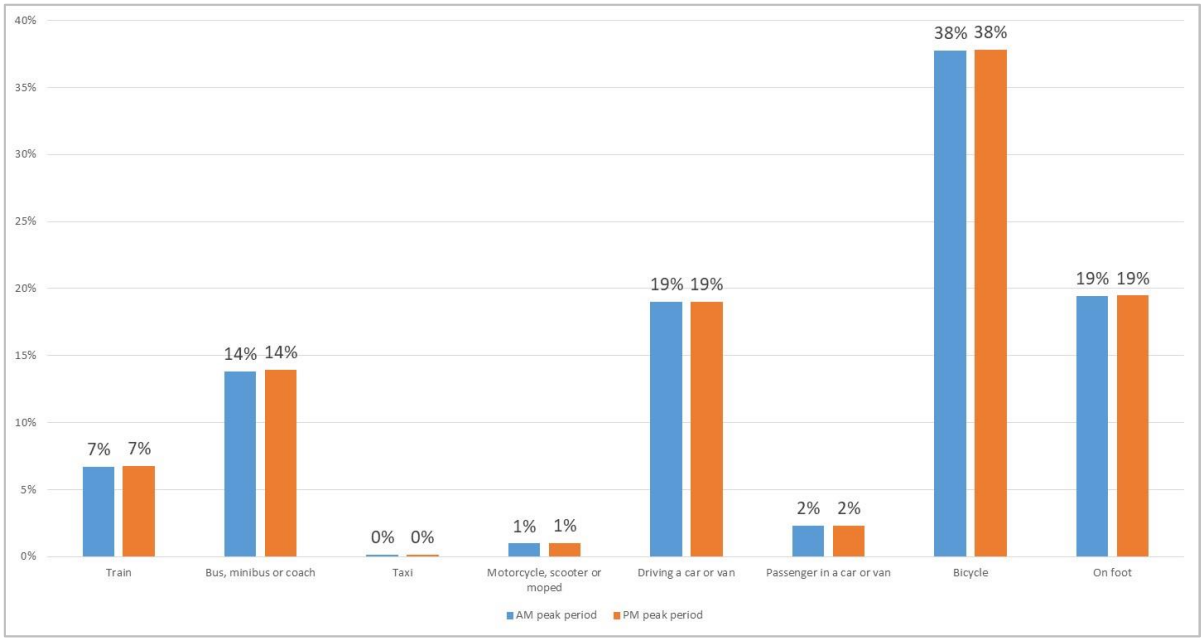
Table 6-3 Forecast External Residential Mode Split

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

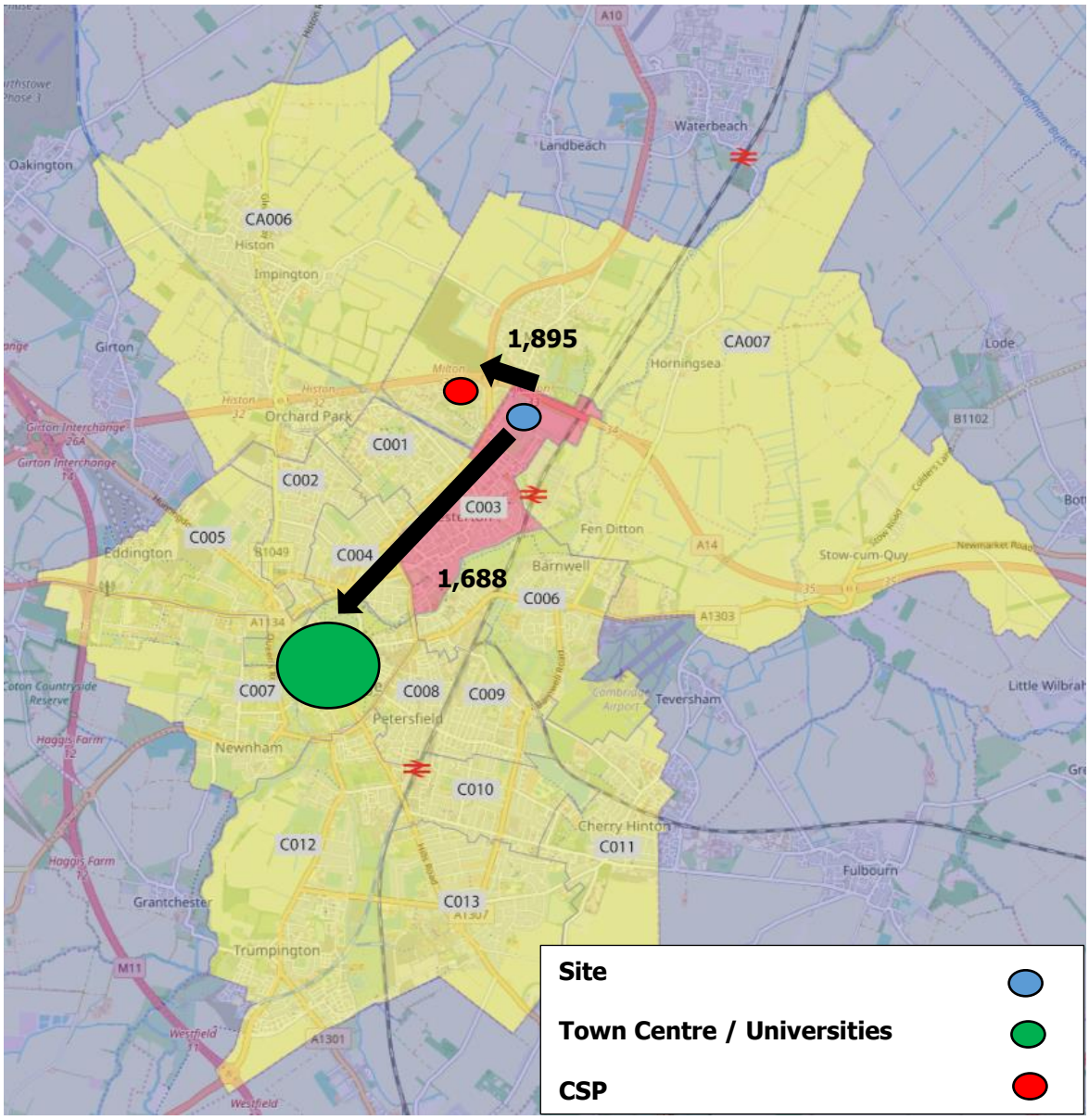
6.14 The impact on the local road network has been quantified through the economic assessment and the vast majority of the vehicles originating from the site are likely to be travelling to the wider area outside of the city centre. As a result, the vehicles largely impact upon the accesses into the site 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 ([redacted]) 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 (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, 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

Pell Frischmann		Project No. 102027
		Version No. Draft 1
MEETING MINUTES	Project CNFE - Transport	Date 29/10/2018
Subject Cambridge Northern Fringe East (CNFE) – Housing Infrastructure Fund (HIF) Transport Discussions		By [redacted] Chkd [redacted]

Location	Cambridgeshire County Council, Shire Hall, Castle Street, Cambridge, CB3 0AJ
Date and Time	Tuesday 9 October 2018 10:00-11:30
Attendees	[redacted]
Apologies	None
Circulation	As above plus: [redacted]

ITEM	DESCRIPTION	ACTION
1 2.	[redacted] and [redacted] opened the meeting by setting out their client's aspirations to bring forward the redevelopment of the existing Anglian Water Cambridge Water Recycling Centre at Cowley Road, Milton. They explained the purpose of the HIF bid submission, which is to fund a scheme for the relocation of the existing Water Recycling Centre to a new site and for the remediation of the existing site to facilitate a new Cambridge Northern Fringe East (CNFE) housing-led development.	
2 4.	[redacted] and [redacted] confirmed that the CNFE 'Core Site' was likely to accommodate around [redacted] dwellings plus commercial and retail space. However, they also identified that by relocating the Water Recycling Centre to another location, this would extinguish the existing 'odour zone', potentially allowing additional housing development to be built-out within the wider CNFE area.	
3	LMW discussed the outcomes of transport modelling work undertaken as part of the Cambridgeshire County Council (CCC) 'Ely to Cambridge A10 Transport Study'. LMW confirmed that, within the transport modelling, an allowance in terms of a total number of trips, or trip budget, had been allowed for the CNFE site. LMW stated that it was not the role of the Study to identify how many dwellings could be accommodated on the site, provided that the total traffic generated by the proposed development remained within the trip	

	budget allowed for within the Study. [redacted] 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	[redacted] confirmed that she did not expect any further transport modelling work as part of the Study at this stage.	
5	[redacted] 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. [redacted] confirmed that this would be acceptable.	
6	[redacted]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. [redacted] 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	[redacted]noted that the existing vehicular access into CSP via Milton Road is due to be removed in approximately one years' time.	
9	[redacted] 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	[redacted] 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	Date 24.10.2018
Subject Cambridge Northern Fringe East (CNFE) – Stagecoach Cambridge Transport Discussions		By [redacted] Chkd

Location	Stagecoach Cambridge, 100 Cowley Rd, Cambridge CB4 0DN
Date and Time	Monday 1st October 2018 14:00-15:00
Attendees	[redacted]
Apologies	None
Circulation	As above plus: [redacted]

ITEM		DESCRIPTION	ACTION
1	2.	[redacted] opened the meeting by setting out the client's aspirations to develop Cambridge Northern Fringe East (CNFE) area. [redacted] explained that the core site was likely provide [redacted] 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.	[redacted] enquired as to the impact of the CNFE development of the existing Stagecoach operation.	
	5.	[redacted] 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.	[redacted] 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.	[redacted] 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. [redacted] 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.	[redacted] then showed the indictive 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.	

	[redacted] 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. 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.	
5	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. [redacted] 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.	
6	[redacted] thanked both [redacted] and [redacted] for their assistance and would be in touch as the scheme progressed.	

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 indictors 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 is might identified 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 progress 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 Land Assembly Strategy

Cambridge Commerical Park, Cambridge Northern Fringe East

Strictly confidential and commercially sensitive

November 2018

Contents

Prepared By: [redacted]
Status: Final draft
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For and on behalf of GVA Grimley Limited

1. Executive Summary

1.1 Cambridge City Council ("the Council") is seeking large scale redevelopment of a [redacted] 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 [redacted] 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 Crichel 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;

- *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.

- *Strategic objectives*. Key relevant objectives include;

    - 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.

    - 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.

    - 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.

    - Creation of inclusive, environmental sustainable communities

    - 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 conductive to economic success.

- *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:

    - 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.

    - 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:

- 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.
- 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.
- 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.

- *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.
- *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.
  - 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).
  - 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.
  - 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.
- *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;

- Developments on these sites aim to grow the Cambridge Cluster, by ensuring that there is sufficient employment land available in the right locations.

- 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.

- 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.

- *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.

- *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.

- *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;

- *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.

- *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.

- *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;

  - 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 are 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;

- 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.
- A clear reference to the Council working with its partners to deliver the redevelopment.
- 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.
- 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 Commerical 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 is it 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 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 Commerical 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 Site 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 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

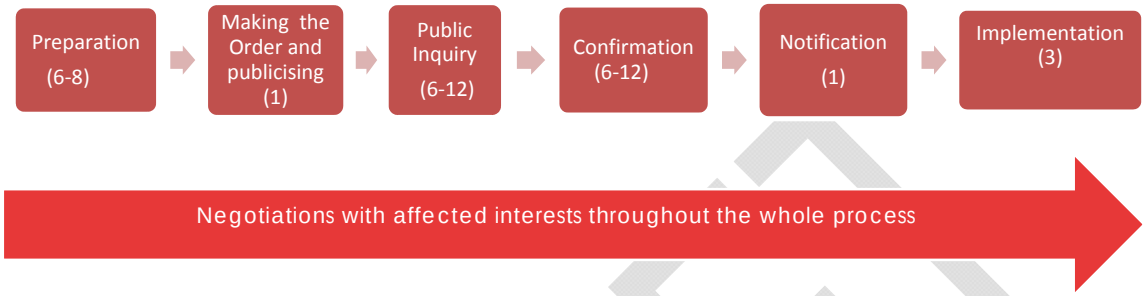
Before Commencing the Process/Efforts to acquire by agreement

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.

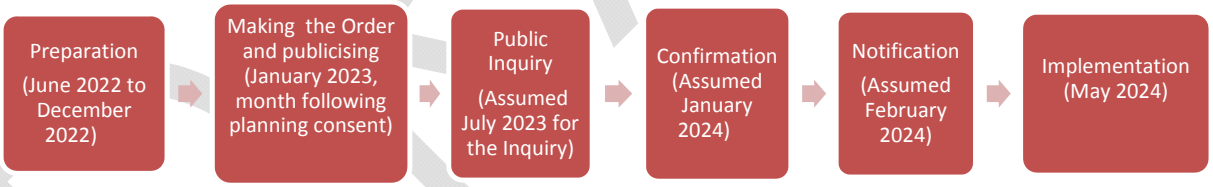
5. Timescale and Programme

5.1 For the purposes of preparing your project programme, we would suggest allowing [redacted] 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.

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 at 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 it 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:

- the costs of acquiring relocation premises – agents fees, legal fees, survey, SDLT;
- loss on unwritten down value of existing fit out, fixtures and fittings;
- physical removal costs;
- temporary loss of profits;
- 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:

- the value of the business goodwill – assessed by capitalising the net adjusted profits of the business by the appropriate multiplier
- loss on forced sale of stock, vehicles and plant and machinery
- redundancy costs
- 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 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 acquired 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, [redacted] 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.

Appendices

Appendix I Indicative Interests Plan

Cambridge Commercial Park | Indicative Interests Plan
October 2018

Appendix II **Third Party Site Acquisition Estimates: Summary Schedule**

CAMBRIDGE COMMERCIAL PARK | COWLEY ROAD CAMBRIDGE CB4 0DL

THIRD PARTY SITE ACQUISITION ESTIMATES | SUMMARY SCHEDULE

STRICTLY CONFIDENTIAL. CONTAINS FINANCIALLY SENSITIVE INFORMATION / FOI EXEMPT

DRAFT

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 Commerial 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 Pensin 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

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 of 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.

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.

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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
Recycling brownfield land for housing development	Success – target would be met.	Failure – target could not be met as CWRC land could not be recycled.	
Enabling rapid additional large-scale housing delivery	Success – target could be met.	Failure – target could not be met as no new housing would be enabled.	
Maximising social, economic and environmental benefits relative to costs	Success – benefit to cost ratio achievable.	Failure – no housing would likely be delivered.	Not applicable – nothing delivered and no cost incurred.
Maximising the number of dwellings delivered for the level of public investment	Success – cost-per-unit benchmark could be reached.	Failure – no housing would likely be delivered.	Not applicable – nothing delivered and no cost incurred.
Facilitating operational continuity of water recycling for Greater Cambridge	Success – provision of new CWRC facility.	Success – operational continuity of existing CWRC facility.	
Releasing a development opportunity that the private sector is able to deliver	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.	
Public funding requirement is focused specifically on the relocation/remediation of the CWRC	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.
Public funding is affordable from available sources of finance	Success – funding requirement is less than upper limit.	Failure – level of public funding would not achieve relocation.	Not applicable – no public funding deployed.
Deliverable by the partners involved	Success – capability exists to deliver.	Failure – partners could not deliver with the level of funding.	Not applicable – no change to existing CWRC arrangements
Private sector delivery capacity for housing	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

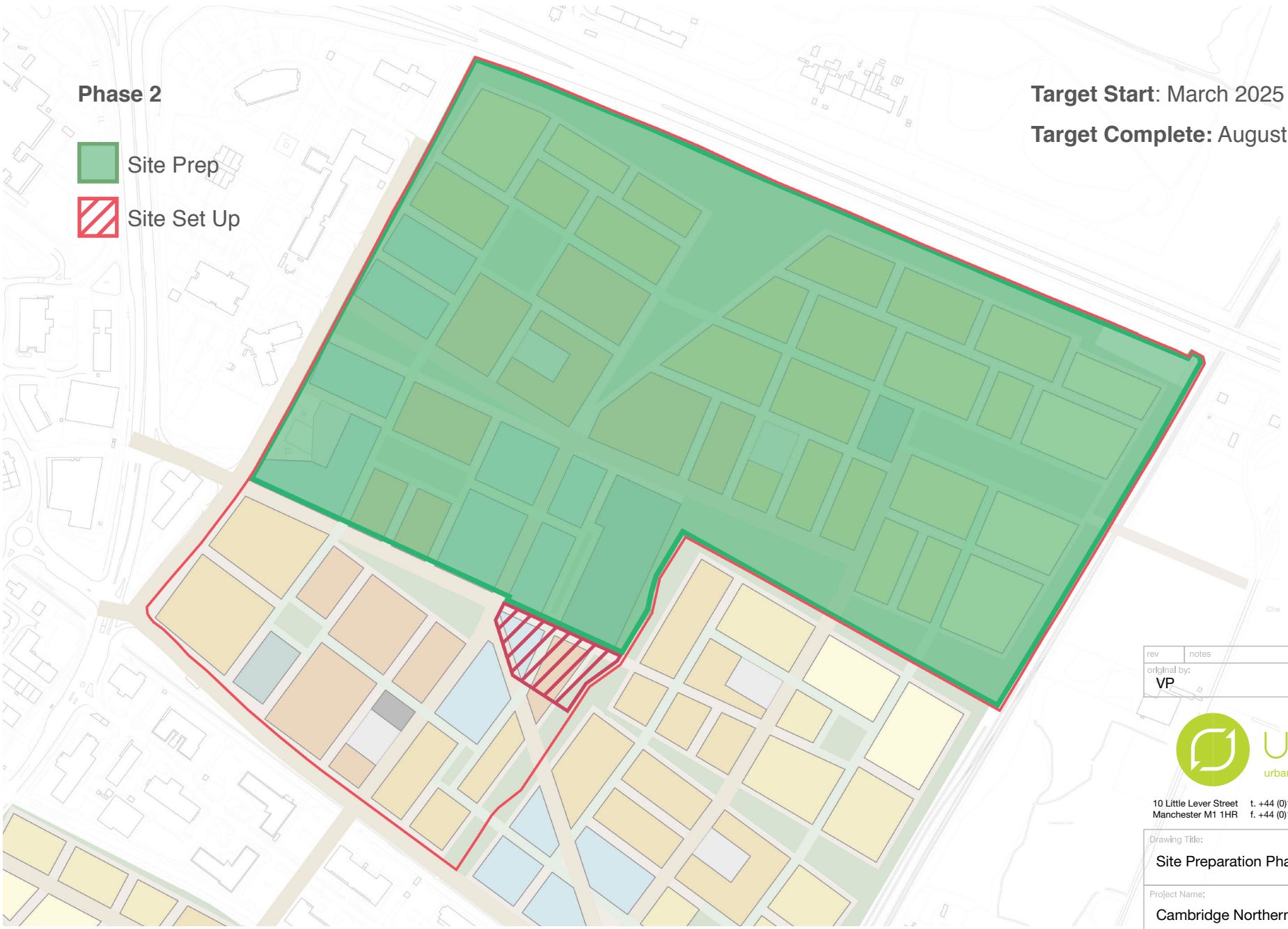
Core site Infrastructure Packages
Core site Development Packages

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	• Decommissioning of Anglian Water facilities • Demolitions • Site clearance • Remediation • Ground profiling • Acoustic berm • Remove redundant services	Specialist groundworks & remediation contractor	• 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	• 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	• 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	• 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: • 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	• 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	dr by	ap by
original by: VP		01-11-2018		

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Drawing Title:
Site Preparation Phasing

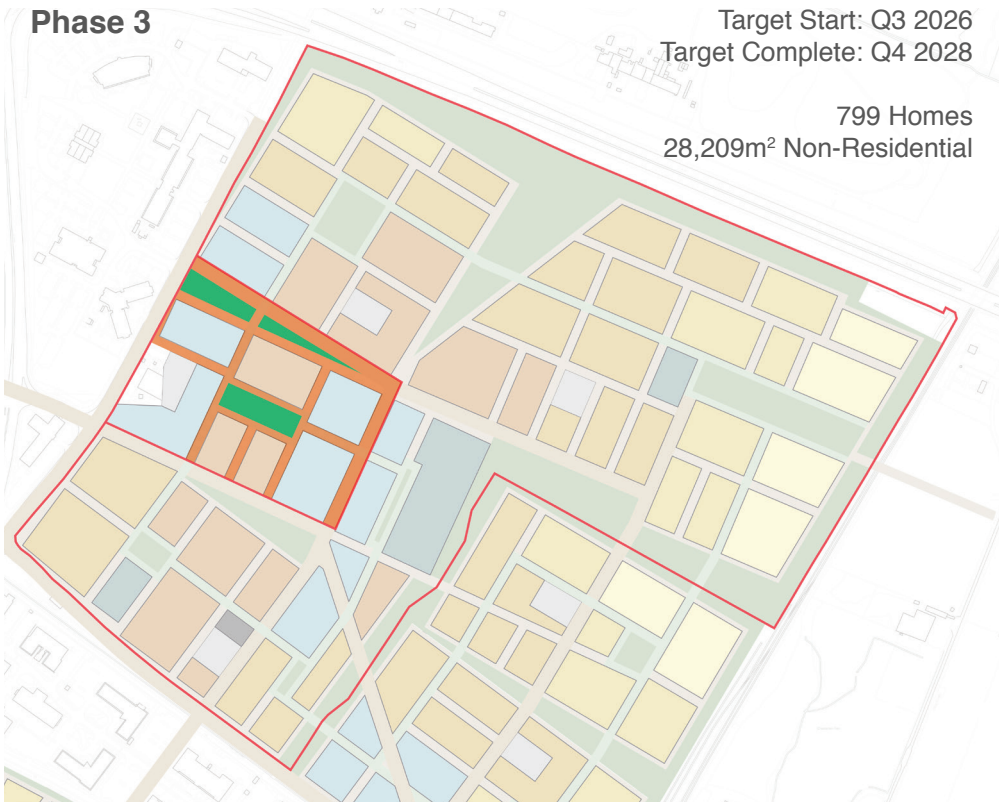
Project Name:
Cambridge Northern Fringe East (CNFE)

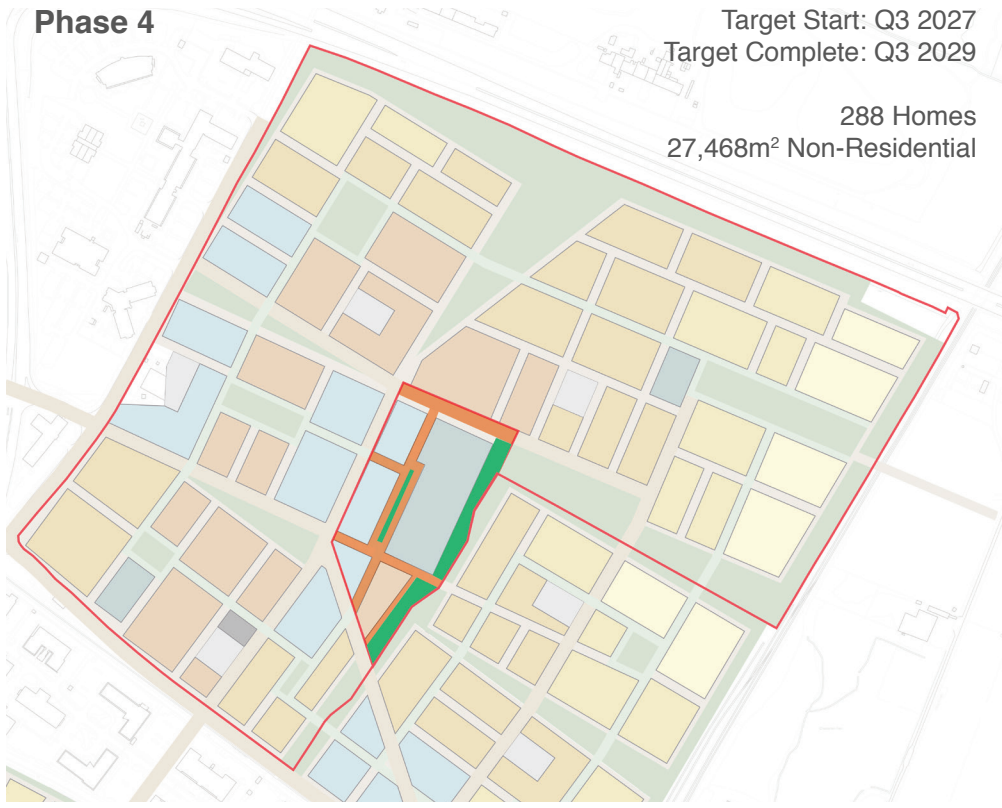
Client:
TOWN/ U+I

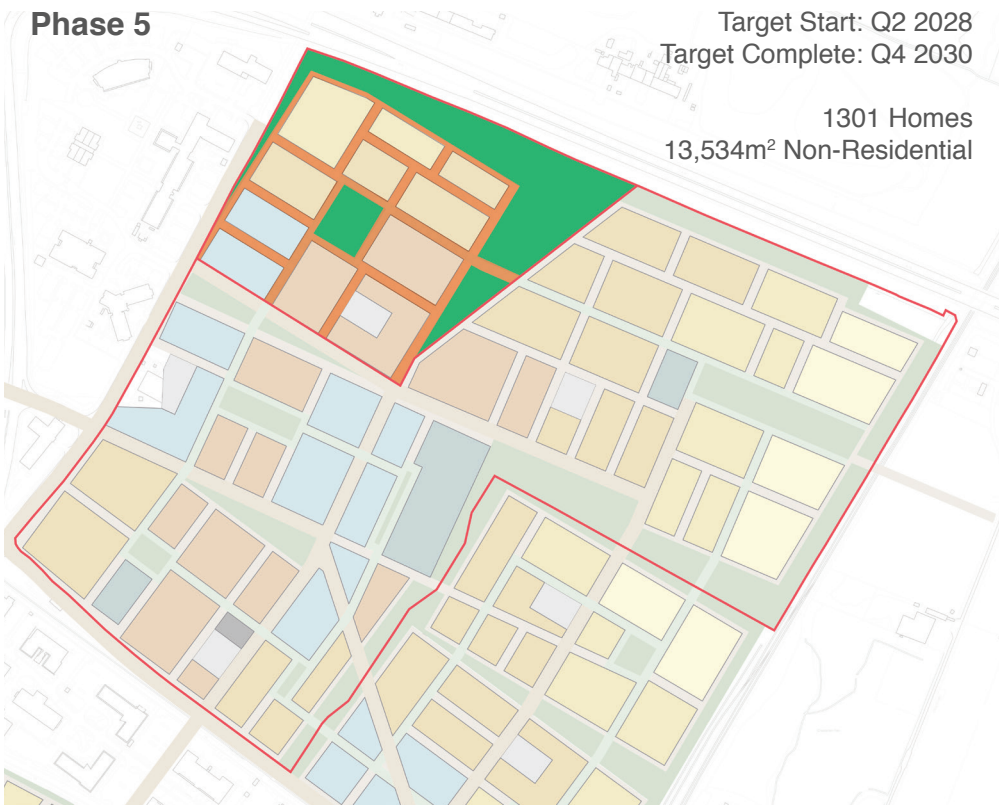
Project Number:	Issue Status:
1082	For Information

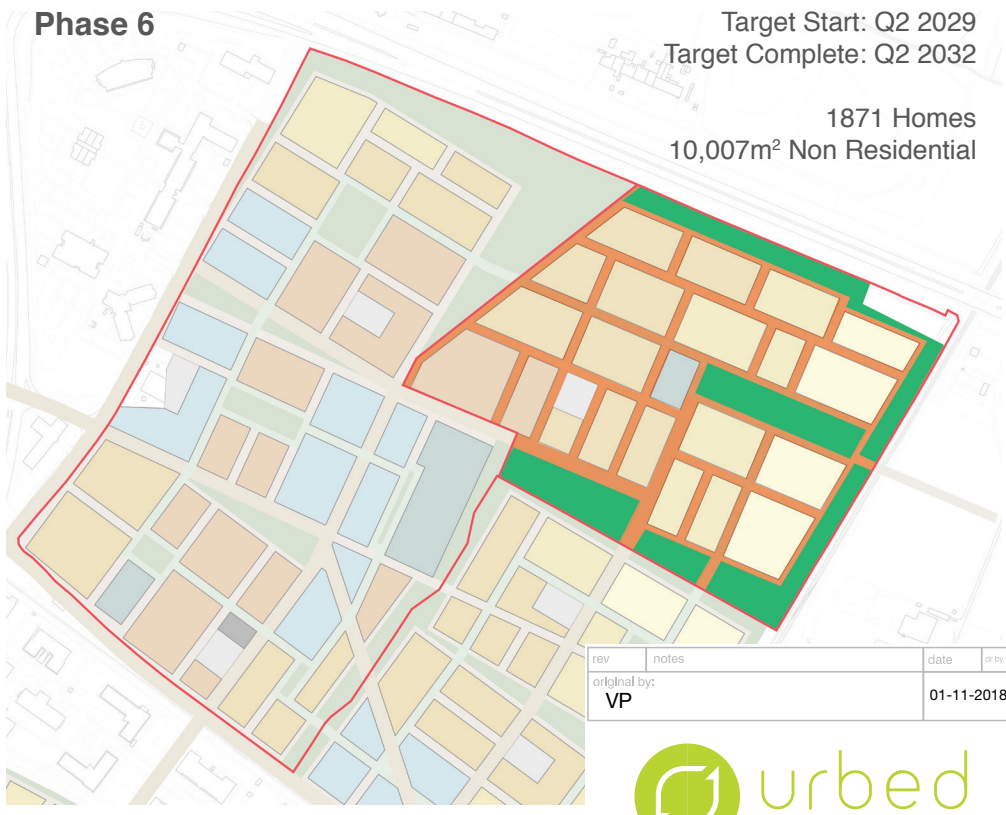
Drawing Number:	Rev:
1081-URB-Z0-00-DR-U-Site Prep	A

Scale:	Date:
NTS	01-11-2018









Strategic Infrastructure Phasing (Packages 4-6)

Green Space

Highways

rev	notes	date	dr by	ap by
original by: VP		01-11-2018		

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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

Cambrige 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.

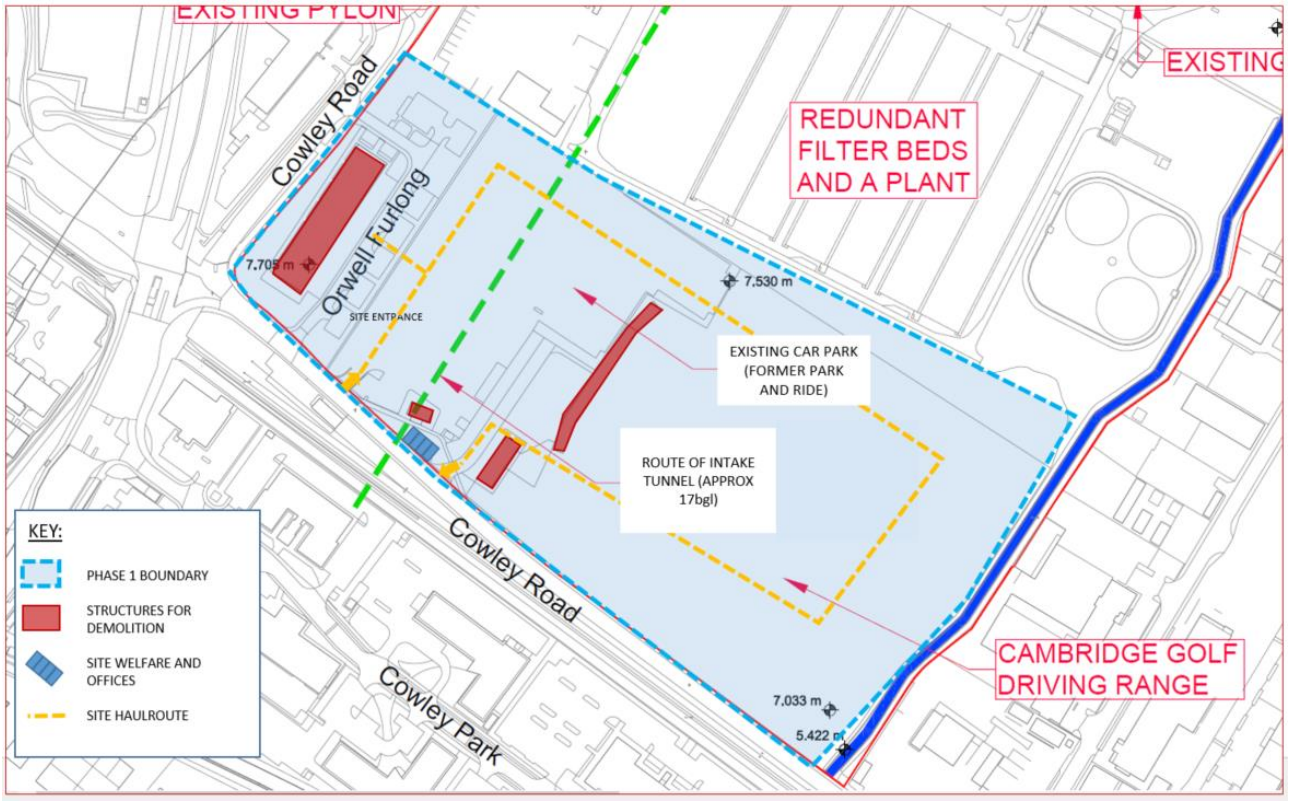
Logistics

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

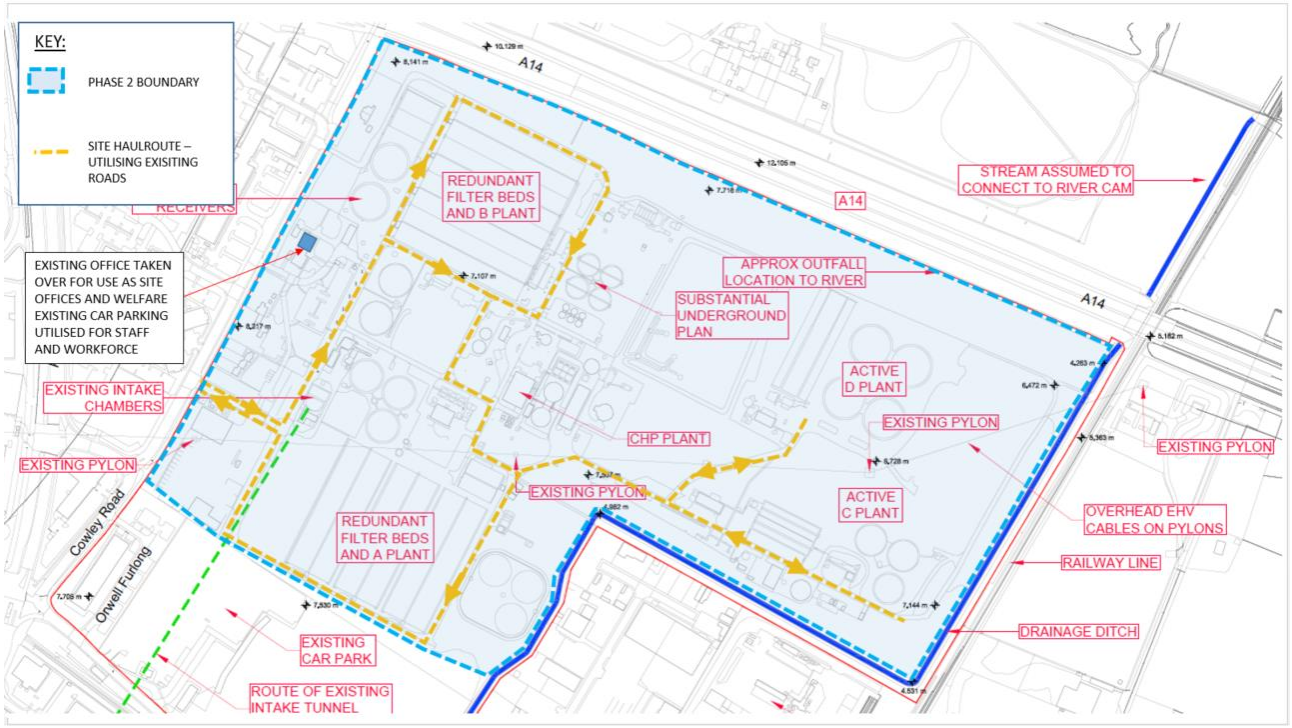
Phase 1

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.

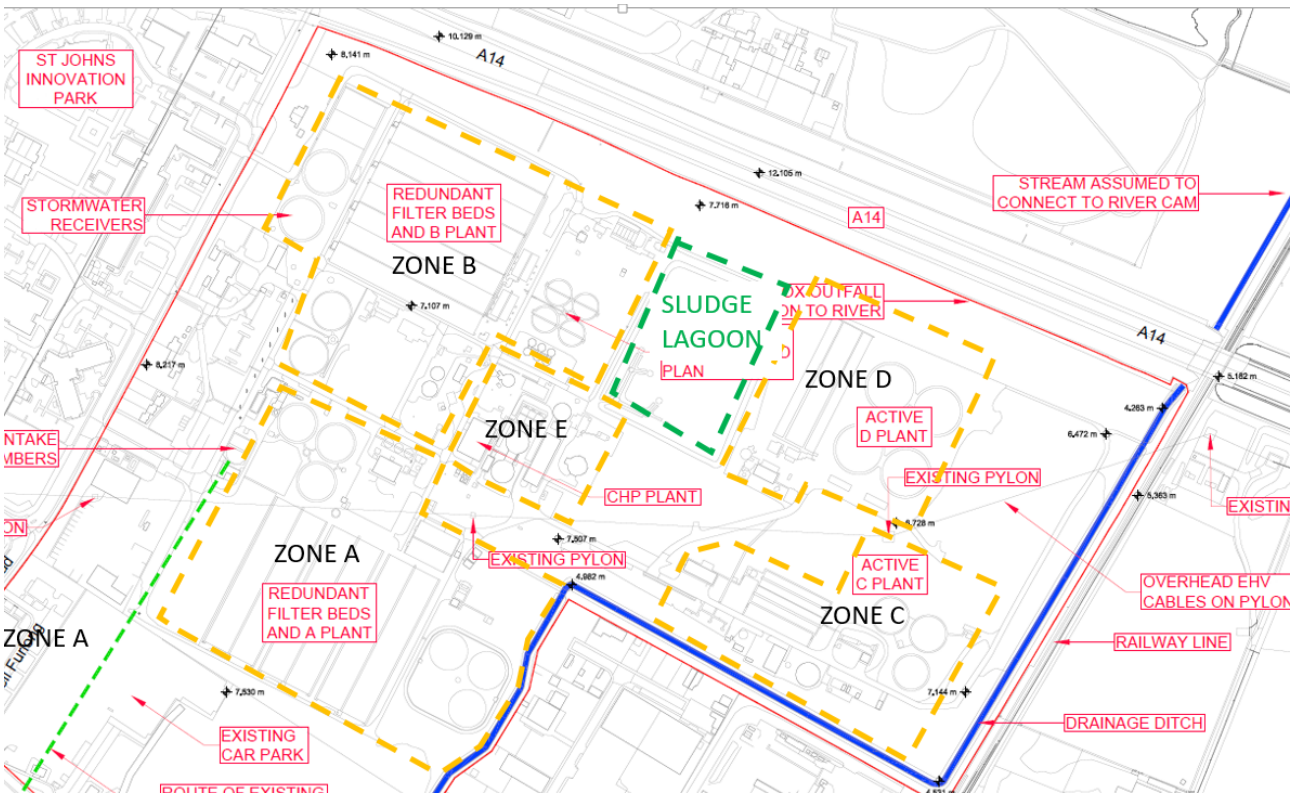
The outline durations for each activity are as follows

- Site establishment; [redacted]
- Demolition
    - Orwell House soft strip – [redacted]
    - 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

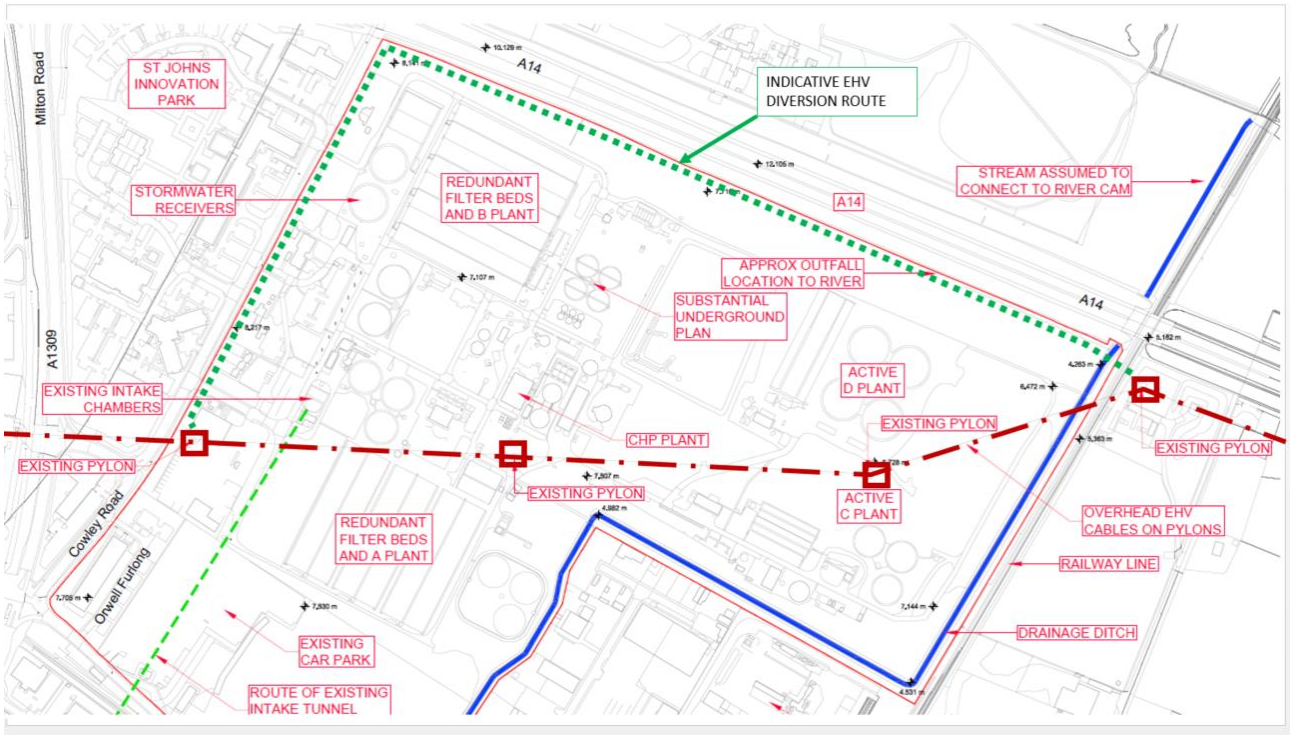
The advised programme for demolition and site remediation is [redacted] There is a significant amount of work to be carried out in a relatively short period of time, and three is a degree of uncertainty regarding the scope (based on the information provided to date). However, the layout of the site will 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 Diversiona

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. The 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

McGEE
340 - 342 Athlon Road
Middlesex, HA0 1BX

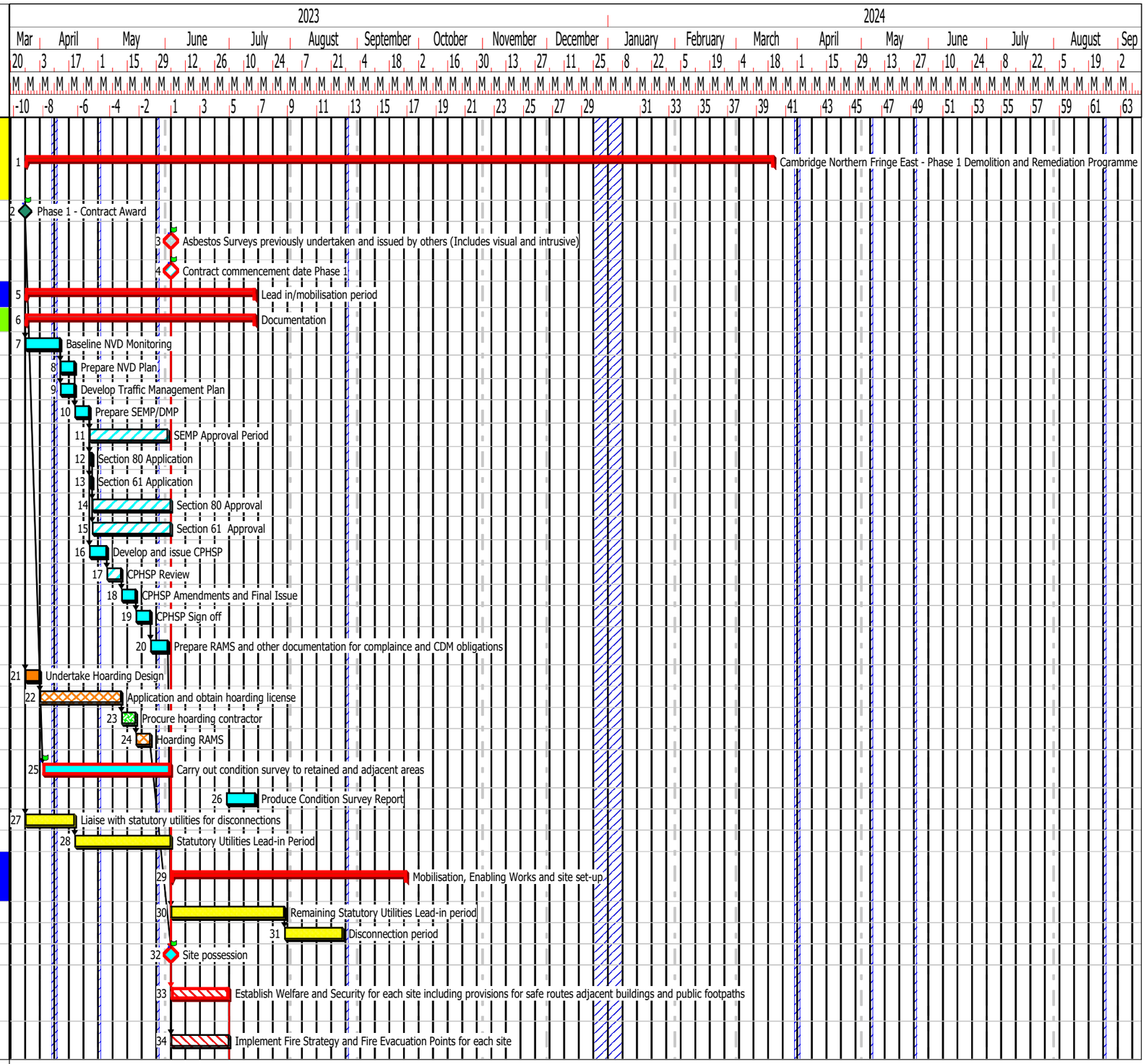
Cambridge North Fringe East Programme (INDICATIVE)

Project ID: 18182

Client: Faithful and Gould

Review Manager: [redacted]

Line	Name	Duration	Start	Finish
1	**Cambridge Northern Fringe East - Phase 1 Demolition and Remediation Programme**	**48w 2d**	**27 Mar 23**	**19 Mar 24**
2	Phase 1 - Contract Award		27 Mar 23	27 Mar 23
3	Asbestos Surveys previously undertaken and issued by others (Includes visual and intrusive)		05 Jun 23	05 Jun 23
4	Contract commencement date Phase 1		05 Jun 23	05 Jun 23
	Lead in/mobilisation period	**15w**	**27 Mar 23**	**13 Jul 23**
6	**Documentation**	**15w**	**27 Mar 23**	**13 Jul 23**
7	Baseline NVD Monitoring	2w	27 Mar 23	11 Apr 23
8	Prepare NVD Plan	1w	12 Apr 23	18 Apr 23
9	Develop Traffic Management Plan	1w	12 Apr 23	18 Apr 23
10	Prepare SEMP/DMP	1w	19 Apr 23	25 Apr 23
11	SEMP Approval Period	5w	26 Apr 23	01 Jun 23
12	Section 80 Application	1d	26 Apr 23	26 Apr 23
13	Section 61 Application	1d	26 Apr 23	26 Apr 23
14	Section 80 Approval	5w	27 Apr 23	02 Jun 23
15	Section 61 Approval	5w	27 Apr 23	02 Jun 23
16	Develop and issue CPHSP	1w	26 Apr 23	03 May 23
17	CPHSP Review	1w	04 May 23	10 May 23
18	CPHSP Amendments and Final Issue	1w	11 May 23	17 May 23
19	CPHSP Sign off	1w	18 May 23	24 May 23
20	Prepare RAMS and other documentation for complaince and CDM obligations	1w	25 May 23	01 Jun 23
21	Undertake Hoarding Design	1w	27 Mar 23	31 Mar 23
22	Application and obtain hoarding license	5w	03 Apr 23	10 May 23
23	Procure hoarding contractor	1w	11 May 23	17 May 23
24	Hoarding RAMS	1w	18 May 23	24 May 23
25	Carry out condition survey to retained and adjacent areas	8w	04 Apr 23	02 Jun 23
26	Produce Condition Survey Report	2w	30 Jun 23	13 Jul 23
27	Liaise with statutory utilities for disconnections	3w	27 Mar 23	18 Apr 23
28	Statutory Utilities Lead-in Period	6w 1d	19 Apr 23	02 Jun 23
	Mobilisation, Enabling Works and site set-up	**16w**	**05 Jun 23**	**25 Sep 23**
30	Remaining Statutory Utilities Lead-in period	7w 4d	05 Jun 23	27 Jul 23
31	Disconnection period	4w	28 Jul 23	24 Aug 23
32	Site possession		05 Jun 23	05 Jun 23
33	Establish Welfare and Security for each site including provisions for safe routes adjacent buildings and public footpaths	4w	05 Jun 23	30 Jun 23
34	Implement Fire Strategy and Fire Evacuation Points for each site	4w	05 Jun 23	30 Jun 23



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

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340 - 342 Athlon Road
Middlesex, HA0 1BX

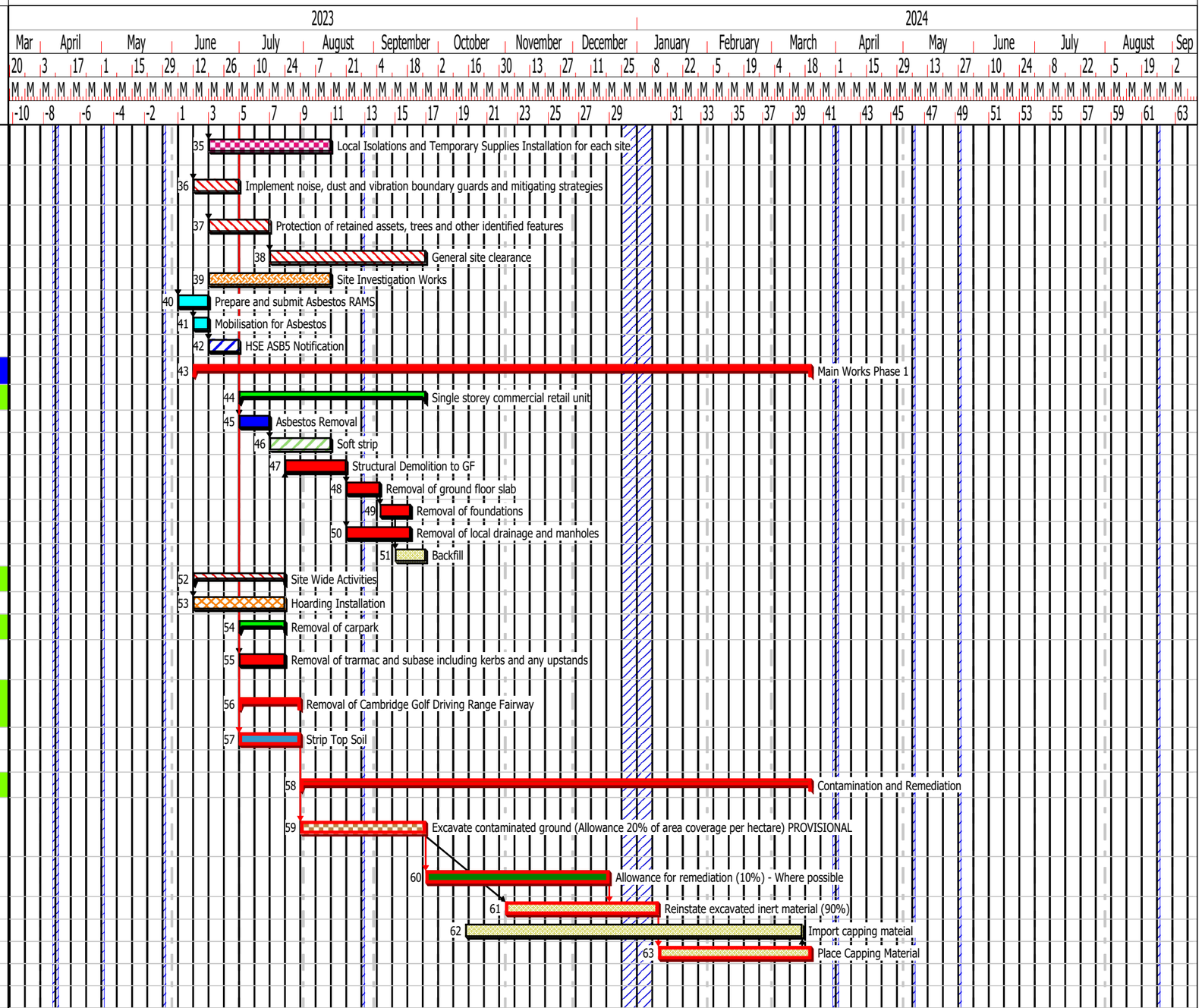
Cambridge North Fringe East Programme (INDICATIVE)

Project ID: 18182

Client: Faithful and Gould

Review Manager: [redacted]

Line	Name	Duration	Start	Finish
35	Local Isolations and Temporary Supplies Installation for each site	8w	19 Jun 23	11 Aug 23
36	Implement noise, dust and vibration boundary guards and mitigating strategies	3w	12 Jun 23	30 Jun 23
37	Protection of retained assets, trees and other identified features	4w	19 Jun 23	14 Jul 23
38	General site clearance	10w	17 Jul 23	25 Sep 23
39	Site Investigation Works	8w	19 Jun 23	11 Aug 23
40	Prepare and submit Asbestos RAMS	2w	05 Jun 23	16 Jun 23
41	Mobilisation for Asbestos	1w	12 Jun 23	16 Jun 23
42	HSE ASB5 Notification	2w	19 Jun 23	30 Jun 23
	Main Works Phase 1	**38w 1d**	**12 Jun 23**	**19 Mar 24**
44	**Single storey commercial retail unit**	**12w**	**03 Jul 23**	**25 Sep 23**
45	Asbestos Removal	2w	03 Jul 23	14 Jul 23
46	Soft strip	4w	17 Jul 23	11 Aug 23
47	Structural Demolition to GF	4w	24 Jul 23	18 Aug 23
48	Removal of ground floor slab	2w	21 Aug 23	04 Sep 23
49	Removal of foundations	2w	05 Sep 23	18 Sep 23
50	Removal of local drainage and manholes	4w	21 Aug 23	18 Sep 23
51	Backfill	2w	12 Sep 23	25 Sep 23
52	**Site Wide Activities**	**6w**	**12 Jun 23**	**21 Jul 23**
53	Hoarding Installation	6w	12 Jun 23	21 Jul 23
54	**Removal of carpark**	**3w**	**03 Jul 23**	**21 Jul 23**
55	Removal of trarmac and subase including kerbs and any upstands	3w	03 Jul 23	21 Jul 23
56	**Removal of Cambridge Golf Driving Range Fairway**	**4w**	**03 Jul 23**	**28 Jul 23**
57	Strip Top Soil	4w	03 Jul 23	28 Jul 23
58	**Contamination and Remediation**	**31w 1d**	**31 Jul 23**	**19 Mar 24**
59	Excavate contaminated ground (Allowance 20% of area coverage per hectare) PROVISIONAL	8w	31 Jul 23	25 Sep 23
60	Allowance for remediation (10%) - Where possible	12w	26 Sep 23	18 Dec 23
61	Reinstate excavated inert material (90%)	8w	01 Nov 23	09 Jan 24
62	Import capping mateial	20w	13 Oct 23	14 Mar 24
63	Place Capping Material	10w	10 Jan 24	19 Mar 24



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

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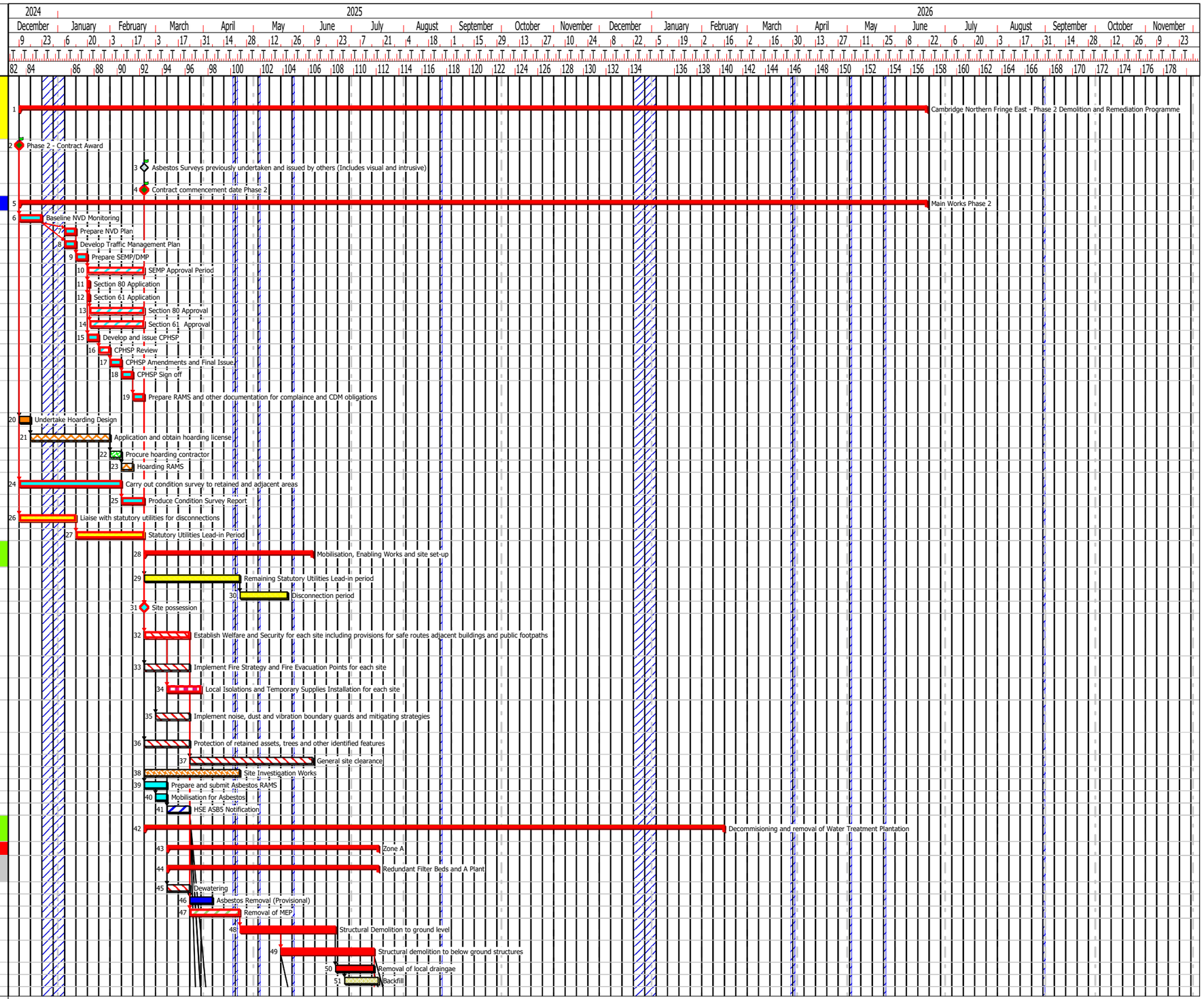
Cambridge North Fringe East Phase 2 Programme (INDICTIVE)

Project ID: 18182

Client: Faithful and Gould

Review Manager: [redacted]

Line	Name	Duration	Start	Finish
1	**Cambridge Northern Fringe East - Phase 2 Demolition and Remediation Programme**	**74w**	**09 Dec 24**	**18 Jun 26**
2	Phase 2 - Contract Award		09 Dec 24	09 Dec 24
3	Asbestos Surveys previously undertaken and issued by others (Includes visual and intrusive)		24 Feb 25	24 Feb 25
4	Contract commencement date Phase 2		24 Feb 25	24 Feb 25
5	**Main Works Phase 2**	**74w**	**09 Dec 24**	**18 Jun 26**
6	Baseline NVD Monitoring	2w	09 Dec 24	20 Dec 24
7	Prepare NVD Plan	1w	06 Jan 25	10 Jan 25
8	Develop Traffic Management Plan	1w	06 Jan 25	10 Jan 25
9	Prepare SEMP/DMP	1w	13 Jan 25	17 Jan 25
10	SEMP Approval Period	5w	20 Jan 25	21 Feb 25
11	Section 80 Application	1d	20 Jan 25	20 Jan 25
12	Section 61 Application	1d	20 Jan 25	20 Jan 25
13	Section 80 Approval	4w 4d	21 Jan 25	21 Feb 25
14	Section 61 Approval	4w 4d	21 Jan 25	21 Feb 25
15	Develop and issue CPHSP	1w	20 Jan 25	24 Jan 25
16	CPHSP Review	1w	27 Jan 25	31 Jan 25
17	CPHSP Amendments and Final Issue	1w	03 Feb 25	07 Feb 25
18	CPHSP Sign off	1w	10 Feb 25	14 Feb 25
19	Prepare RAMS and other documentation for complaince and CDM obligations	1w	17 Feb 25	21 Feb 25
20	Undertake Hoarding Design	1w	09 Dec 24	13 Dec 24
21	Application and obtain hoarding license	5w	16 Dec 24	31 Jan 25
22	Procure hoarding contractor	1w	03 Feb 25	07 Feb 25
23	Hoarding RAMS	1w	10 Feb 25	14 Feb 25
24	Carry out condition survey to retained and adjacent areas	7w	09 Dec 24	07 Feb 25
25	Produce Condition Survey Report	2w	10 Feb 25	21 Feb 25
26	Liaise with statutory utilities for disconnections	3w	09 Dec 24	10 Jan 25
27	Statutory Utilities Lead-in Period	6w	13 Jan 25	21 Feb 25
28	**Mobilisation, Enabling Works and site set-up**	**14w**	**24 Feb 25**	**05 Jun 25**
29	Remaining Statutory Utilities Lead-in period	8w	24 Feb 25	22 Apr 25
30	Disconnection period	4w	23 Apr 25	21 May 25
31	Site possession		24 Feb 25	24 Feb 25
32	Establish Welfare and Security for each site including provisions for safe routes adjacent buildings and public footpaths	4w	24 Feb 25	21 Mar 25
33	Implement Fire Strategy and Fire Evacuation Points for each site	4w	24 Feb 25	21 Mar 25
34	Local Isolations and Temporary Supplies Installation for each site	3w	10 Mar 25	28 Mar 25
35	Implement noise, dust and vibration boundary guards and mitigating strategies	3w	03 Mar 25	21 Mar 25
36	Protection of retained assets, trees and other identified features	4w	24 Feb 25	21 Mar 25
37	General site clearance	10w	24 Mar 25	05 Jun 25
38	Site Investigation Works	8w	24 Feb 25	22 Apr 25
39	Prepare and submit Asbestos RAMS	2w	24 Feb 25	07 Mar 25
40	Mobilisation for Asbestos	1w	03 Mar 25	07 Mar 25
41	HSE ASB5 Notification	2w	10 Mar 25	21 Mar 25
42	**Decommisioning and removal of Water Treatment Plantation**	**48w**	**24 Feb 25**	**13 Feb 26**
43	**Zone A**	**17w 4d**	**10 Mar 25**	**16 Jul 25**
44	**Redundant Filter Beds and A Plant**	**17w 4d**	**10 Mar 25**	**16 Jul 25**
45	Dewatering	2w	10 Mar 25	21 Mar 25
46	Asbestos Removal (Provisional)	2w	24 Mar 25	04 Apr 25
47	Removal of MEP	4w	24 Mar 25	22 Apr 25
48	Structural Demolition to ground level	8w	23 Apr 25	19 Jun 25
49	Structural demolition to below ground structures	8w	19 May 25	14 Jul 25
50	Removal of local draingae	3w 2d	20 Jun 25	14 Jul 25
51	Backfill	3w	26 Jun 25	16 Jul 25



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

McGEE
340 - 342 Athlon Road
Middlesex, HA0 1BX

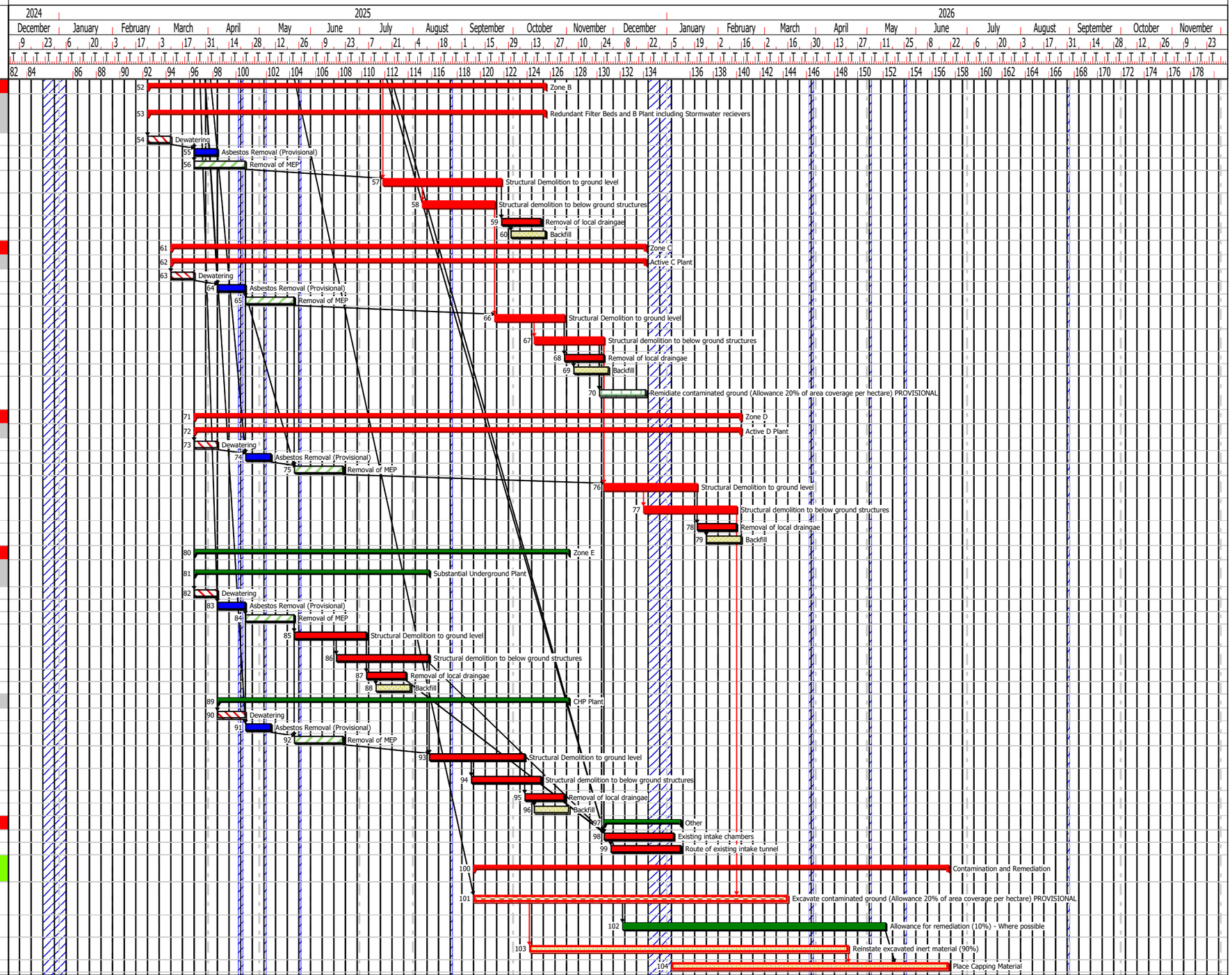
Cambridge North Fringe East Phase 2 Programme (INDICTIVE)

Project ID: 18182

Client: Faithful and Gould

Review Manager: [redacted]

Line	Name	Duration	Start	Finish
52	**Zone B**	**33w 1d**	**24 Feb 25**	**20 Oct 25**
53	**Redundant Filter Beds and B Plant including Stormwater recievers**	**33w 1d**	**24 Feb 25**	**20 Oct 25**
54	Dewatering	2w	24 Feb 25	07 Mar 25
55	Asbestos Removal (Provisional)	2w	24 Mar 25	04 Apr 25
56	Removal of MEP	4w	24 Mar 25	22 Apr 25
57	Structural Demolition to ground level	10w	15 Jul 25	23 Sep 25
58	Structural demolition to below ground structures	6w	07 Aug 25	18 Sep 25
59	Removal of local draingae	3w 2d	24 Sep 25	16 Oct 25
60	Backfill	3w	30 Sep 25	20 Oct 25
61	**Zone C**	**39w 4d**	**10 Mar 25**	**18 Dec 25**
62	**Active C Plant**	**39w 4d**	**10 Mar 25**	**18 Dec 25**
63	Dewatering	2w	10 Mar 25	21 Mar 25
64	Asbestos Removal (Provisional)	2w	07 Apr 25	22 Apr 25
65	Removal of MEP	4w	23 Apr 25	21 May 25
66	Structural Demolition to ground level	6w	19 Sep 25	30 Oct 25
67	Structural demolition to below ground structures	6w	14 Oct 25	24 Nov 25
68	Removal of local draingae	3w 2d	31 Oct 25	24 Nov 25
69	Backfill	3w	06 Nov 25	26 Nov 25
70	Remidiate contaminated ground (Allowance 20% of area coverage per hectare) PROVISIONAL	4w	21 Nov 25	18 Dec 25
71	**Zone D**	**44w**	**24 Mar 25**	**13 Feb 26**
72	**Active D Plant**	**44w**	**24 Mar 25**	**13 Feb 26**
73	Dewatering	2w	24 Mar 25	04 Apr 25
74	Asbestos Removal (Provisional)	2w	23 Apr 25	07 May 25
75	Removal of MEP	4w	22 May 25	19 Jun 25
76	Structural Demolition to ground level	6w	25 Nov 25	19 Jan 26
77	Structural demolition to below ground structures	6w	18 Dec 25	11 Feb 26
78	Removal of local draingae	3w 2d	20 Jan 26	11 Feb 26
79	Backfill	3w	26 Jan 26	13 Feb 26
80	**Zone E**	**31w 1d**	**24 Mar 25**	**03 Nov 25**
81	**Substantial Underground Plant**	**19w 2d**	**24 Mar 25**	**11 Aug 25**
82	Dewatering	2w	24 Mar 25	04 Apr 25
83	Asbestos Removal (Provisional)	2w	07 Apr 25	22 Apr 25
84	Removal of MEP	4w	23 Apr 25	21 May 25
85	Structural Demolition to ground level	6w	22 May 25	03 Jul 25
86	Structural demolition to below ground structures	8w	17 Jun 25	11 Aug 25
87	Removal of local draingae	3w 2d	04 Jul 25	28 Jul 25
88	Backfill	3w	10 Jul 25	30 Jul 25
89	**CHP Plant**	**29w 1d**	**07 Apr 25**	**03 Nov 25**
90	Dewatering	2w	07 Apr 25	22 Apr 25
91	Asbestos Removal (Provisional)	2w	23 Apr 25	07 May 25
92	Removal of MEP	4w	22 May 25	19 Jun 25
93	Structural Demolition to ground level	8w	12 Aug 25	07 Oct 25
94	Structural demolition to below ground structures	6w	05 Sep 25	16 Oct 25
95	Removal of local draingae	3w 2d	08 Oct 25	30 Oct 25
96	Backfill	3w	14 Oct 25	03 Nov 25
97	**Other**	**4w 3d**	**25 Nov 25**	**08 Jan 26**
98	Existing intake chambers	4w	25 Nov 25	05 Jan 26
99	Route of existing intake tunnel	4w	28 Nov 25	08 Jan 26
100	**Contamination and Remediation**	**38w**	**08 Sep 25**	**18 Jun 26**
101	Excavate contaminated ground (Allowance 20% of area coverage per hectare) PROVISIONAL	25w	08 Sep 25	13 Mar 26
102	Allowance for remediation (10%) - Where possible	20w	05 Dec 25	12 May 26
103	Reinstate excavated inert material (90%)	25w	10 Oct 25	20 Apr 26
104	Place Capping Material	23w	05 Jan 26	18 Jun 26



MGL Category

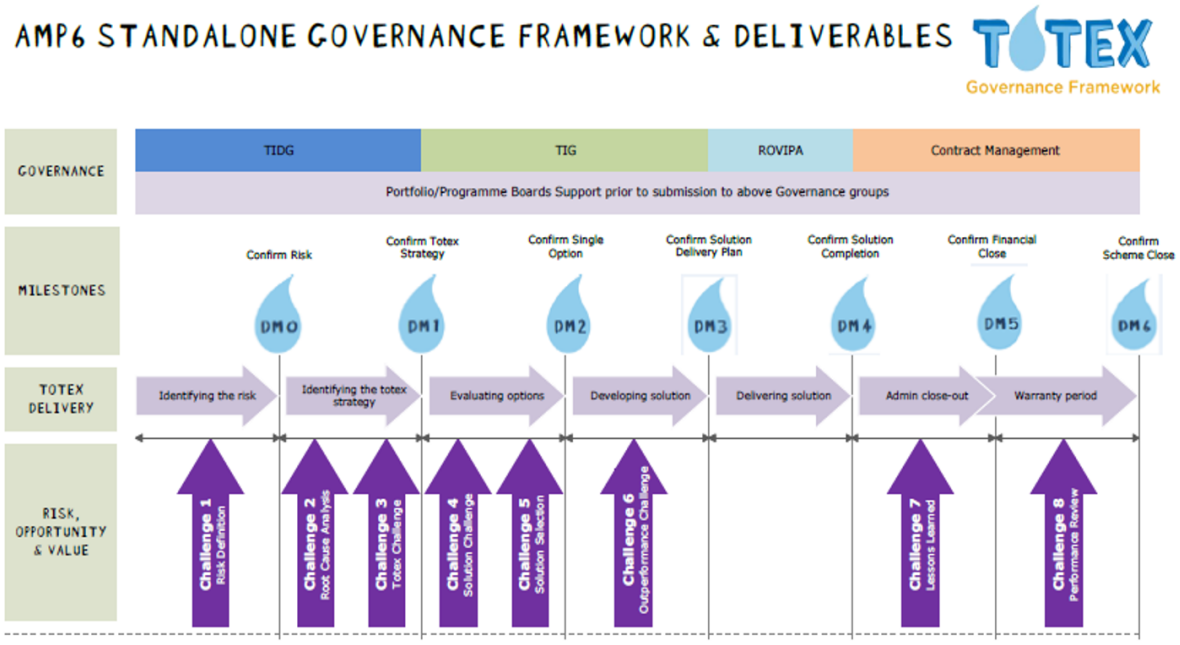
Preliminaries | Approval | Temporary Works | Hoarding | Procurement | Enabling Works | Temporary services | Investigation / Opening Up | Hazardous Material Approval | Hazardous Material Removal
Strip Out | Demolition | Backfill | Remediation | Excavation works | PDR Survey | Default | UKPN

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



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	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: 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 [redacted] 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.

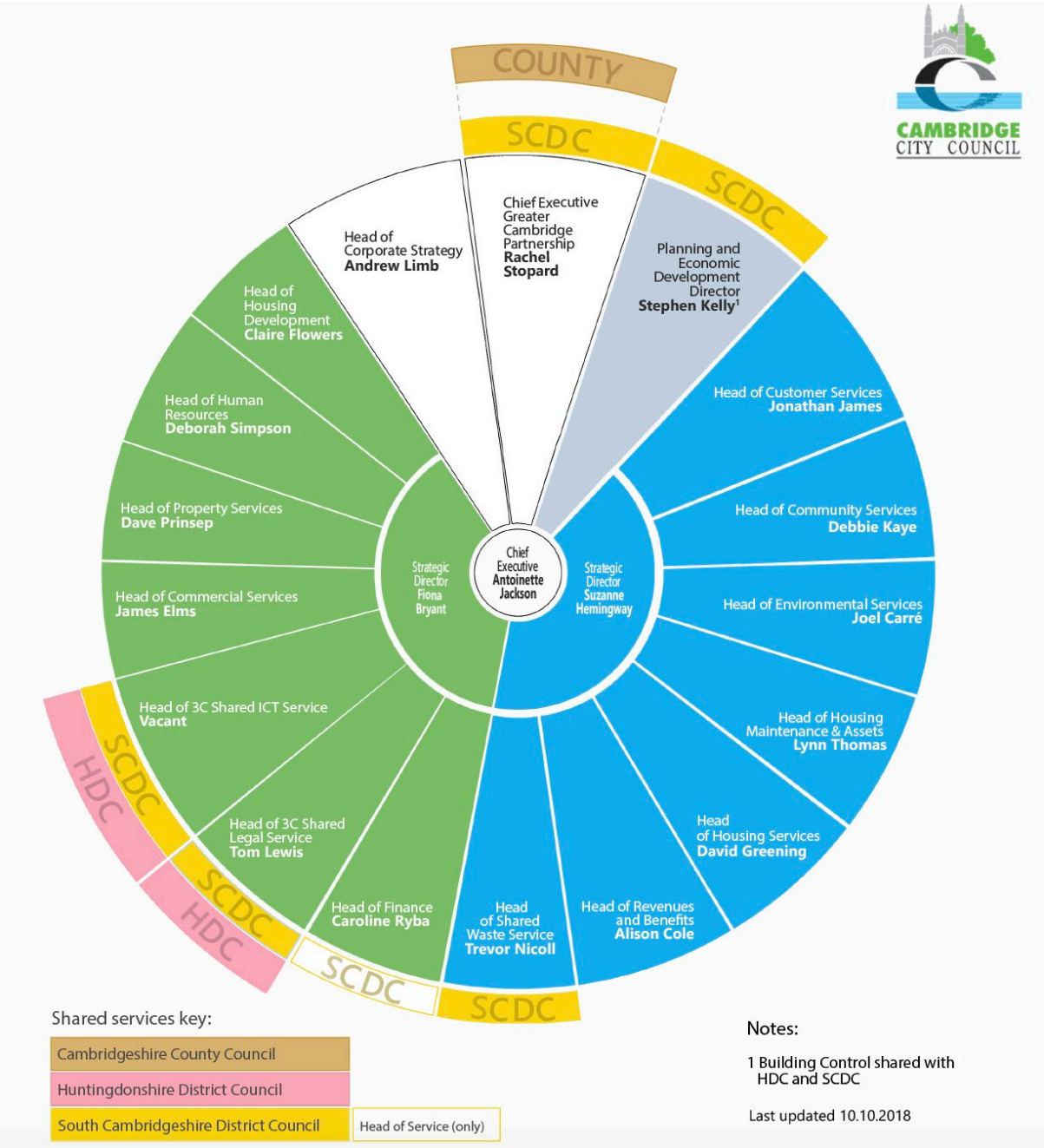
They also meet every two weeks as the Senior Leadership team (SLT) to oversee manage and monitor delivery of Council Services and performance in line with policy
The Senior Management Team meets monthly with the Senior Leadership team to ensure that services, performance and risks are effectively managed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



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	**Legal Advisors**	10%
Freeth's	**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)	**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)	**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						
		1	2	3	4	5	6	Total
Apartments	1 bed		[redacted]					
	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			

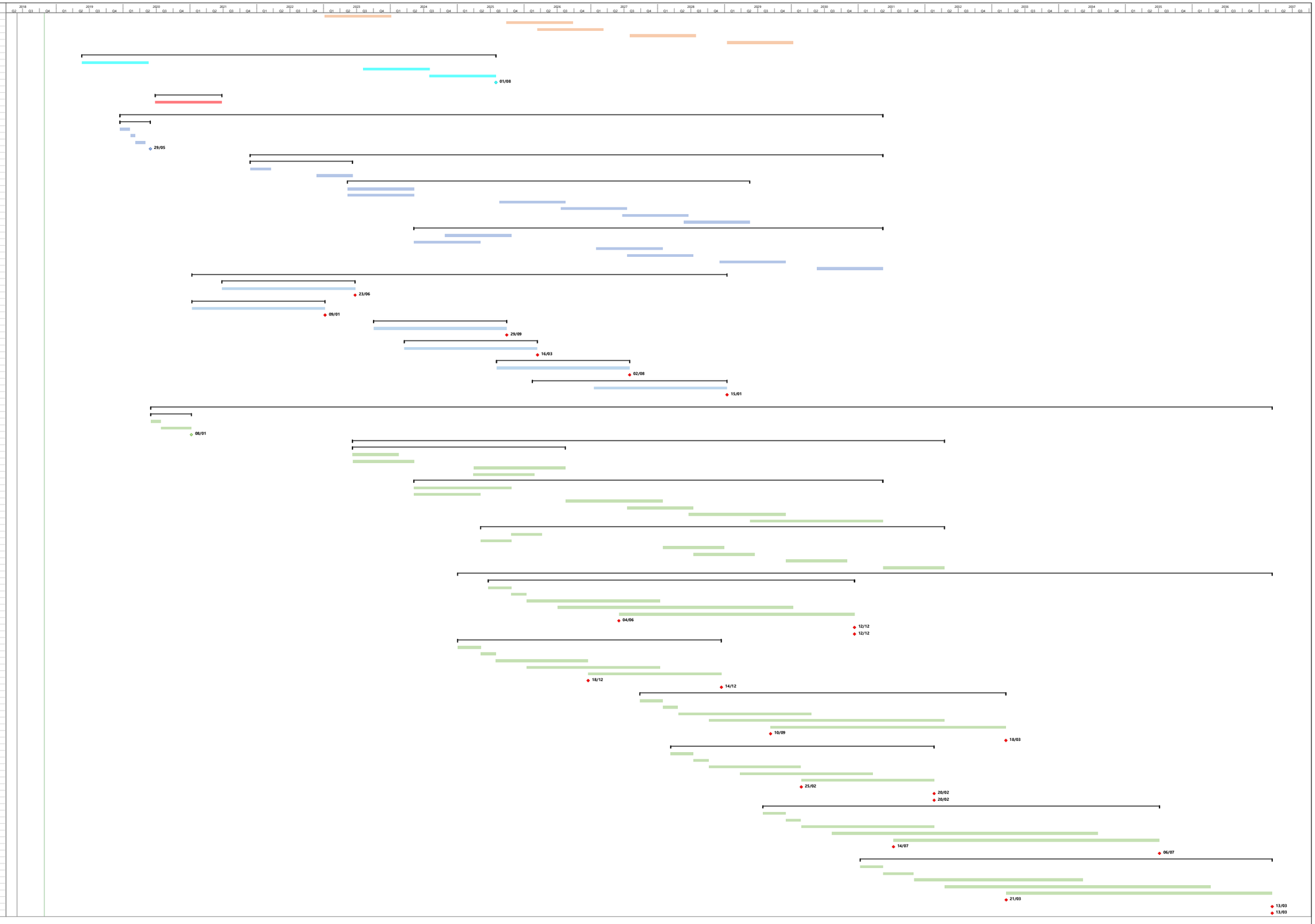
Development Package 5	Neighbourhood Development 5	N5 Plot A, N5 Plot B, N5 Plot C, etc			
Development Package 6	Neighbourhood Development 6	N6 Plot A, N6 Plot B, N6 Plot C, etc			

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.	[redacted]	Neighbourhoods 1 and 2
	Anglian Water	10% of Site 1A as shown on the site plan (an area immediately adjacent to the Site 1B).	[redacted]	Neighbourhoods 1 and 2
Site Area 2	Anglian Water	The remaining 90% of Site 1A as shown on the site plan.	[redacted]- 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

ID	Task Name	Duration	Start	Finish
1	**Master Development Agreement (MDA) and Business Plan**	**6600 days?**	**Mon 02/07/18**	**Fri 16/10/43**
2	Appointment of Master Developer under LOI	0 days	Mon 02/07/18	Mon 02/07/18
3	Execute Conditional MDA	0 days	Mon 19/11/18	Mon 19/11/18
4	Develop Business Plan	10 mons	Mon 19/11/18	Fri 23/08/19
5	Business Plan approved	0 days	Fri 23/08/19	Fri 23/08/19
6	Execute MDA (On approval of HIF Funding)	0 mons	Fri 23/08/19	Fri 23/08/19
7	**Overarching Longstop Dates**	**5220 days?**	**Mon 16/10/23**	**Fri 16/10/43**
8	Obtain satisfactory outline planning permission	0 days	Mon 16/10/23	Mon 16/10/23
9	Practical Completion of all development phases	0 days	Fri 16/10/43	Fri 16/10/43
10				
11	**Appoint Core Team**	**92 days?**	**Fri 13/07/18**	**Mon 19/11/18**
12	Shortlist preferred consultants	3 wks	Fri 13/07/18	Thu 02/08/18
13	Prepare and issue RFPs	2 wks	Fri 20/07/18	Thu 02/08/18
14	Tender period	6 days	Fri 03/08/18	Fri 10/08/18
15	Fee proposals submitted	0 days	Mon 13/08/18	Mon 13/08/18
16	Review bids and appoint consultants	2 wks	Tue 14/08/18	Mon 27/08/18
17	Finalise appointments	12 wks	Tue 28/08/18	Mon 19/11/18
18				
19	**Housing Infrastructure Fund (HIF) Application**	**1176 days?**	**Tue 28/08/18**	**Wed 01/03/23**
20	HIF Kick-Off Meeting	0 days	Tue 28/08/18	Tue 28/08/18
21	Prepare HIF application	12 wks	Tue 28/08/18	Mon 19/11/18
22	Review 1st draft response to questions	0 days	Thu 11/10/18	Thu 11/10/18
23	Workshops to review 1st draft	7 days	Thu 11/10/18	Fri 19/10/18
24	CCC & AW Client Review	1 day	Mon 22/10/18	Mon 22/10/18
25	Review 2nd draft response to questions	0 days	Thu 01/11/18	Thu 01/11/18
26	Workshops to review 2nd draft	7 days	Thu 01/11/18	Fri 09/11/18
27	Review final draft response to questions	0 days	Thu 15/11/18	Thu 15/11/18
28	Final review / client approvals	11 days	Mon 19/11/18	Mon 03/12/18
29	Submission of HIF Application to Homes England	0 days	Mon 03/12/18	Mon 03/12/18
30	Homes England review period	3 mons	Tue 04/12/18	Mon 25/02/19
31	Homes England approve HIF application	0 days	Mon 25/02/19	Mon 25/02/19
32	Develop HIF funding agreement	3 mons	Tue 26/02/19	Mon 20/05/19
33	Complete funding agreement - funding commences	0 days	Mon 20/05/19	Mon 20/05/19
34	HIF Drawdown Longstop Date	0 days	Wed 01/03/23	Wed 01/03/23
35				
36	**CWRC Planning & Relocation**	**1680 days?**	**Mon 22/10/18**	**Fri 28/03/25**
37	**NSIP DCO Process**	**640 days**	**Mon 22/10/18**	**Fri 02/04/21**
38	**Pre-Submission**	**348 days**	**Mon 22/10/18**	**Wed 19/02/20**
39	Prepare Section 35 application	3 mons	Mon 22/10/18	Fri 11/01/19
40	Submit Section 35 application (with preferred site)	0 days	Mon 14/01/19	Mon 14/01/19
41	Review by Secretary of State	28 days	Mon 14/01/19	Wed 20/02/19
42	Project approved as NSIP	0 days	Wed 20/02/19	Wed 20/02/19
43	Commence preparation of DCO	0 days	Wed 20/03/19	Wed 20/03/19
44	Prepare Development Consent Order (DCO)	12 mons	Thu 21/03/19	Wed 19/02/20
45	Final relocation site confirmed	0 days	Wed 26/06/19	Wed 26/06/19
46	Complete design works	12 mons	Thu 21/03/19	Wed 19/02/20
47	Environmental Impact Assessment	12 mons	Thu 21/03/19	Wed 19/02/20
48	**Submission & Acceptance to Proceed**	**28 days**	**Wed 19/02/20**	**Mon 30/03/20**
49	Submit DCO to Planning Inspectorate	0 days	Wed 19/02/20	Wed 19/02/20
50	Application assessed	28 days	Thu 20/02/20	Mon 30/03/20
51	Acceptance to proceed given	0 days	Mon 30/03/20	Mon 30/03/20
52	**Pre-Examination**	**28 days**	**Tue 31/03/20**	**Thu 07/05/20**
53	Preliminary meeting & agree examination timetable	28 days	Tue 31/03/20	Thu 07/05/20
54	**Examination**	**140 days**	**Mon 10/08/20**	**Fri 19/02/21**
55	Examination period	1 mon	Mon 10/08/20	Fri 04/09/20
56	Examination report by Planning Inspectorate	3 mons	Mon 07/09/20	Fri 27/11/20
57	Determination period	3 mons	Mon 30/11/20	Fri 19/02/21
58	**Decision**	**0 days**	**Fri 19/02/21**	**Fri 19/02/21**
59	Secretary of State decision to grant DCO development consent	0 days	Fri 19/02/21	Fri 19/02/21
60	**Post Decision**	**30 days**	**Mon 22/02/21**	**Fri 02/04/21**
61	Judicial Review period	6 wks	Mon 22/02/21	Fri 02/04/21
62	**Anglian Water Relocation**	**1040 days**	**Fri 02/04/21**	**Fri 28/03/25**
63	Judicial review period elapsed - planning consent to relocate	0 days	Fri 02/04/21	Fri 02/04/21
64	Anglian Water complete design and procure contract to build	0 days	Fri 02/04/21	Fri 02/04/21
65	Commence CWRC relocation	0 days	Fri 02/04/21	Fri 02/04/21
66	Relocation works	39 mons	Mon 05/04/21	Fri 29/03/24
67	Complete CWRC relocation	0 days	Fri 29/03/24	Fri 29/03/24
68	Decommissioning Period	13 mons	Mon 01/04/24	Fri 28/03/25
69	Complete decommissioning of existing CWRC	0 days	Fri 28/03/25	Fri 28/03/25
70				
71	**Land Acquisition (Vacant Possession of Sites)**	579 days?	Mon 09/01/23	Fri 28/03/25
72	**Cambridge City Council**	1 day?	Mon 09/01/23	Tue 10/01/23
73	VP for Meanwhile Use - TBC			
74	VP for Golf Driving Range	0 days	Mon 09/01/23	Mon 09/01/23
75	VP for Park and Ride	0 days	Mon 09/01/23	Mon 09/01/23
76	**CWRC**	579 days?	Mon 09/01/23	Fri 28/03/25
77	VP early access to 10% of Anglian Water site	0 days	Mon 09/01/23	Mon 09/01/23
78	VP of balance of Anglian Water site (90%)	0 days	Fri 28/03/25	Fri 28/03/25
79				
80	**Surveys & Investigations (for EIA & design)**	**600 days?**	**Tue 26/02/19**	**Mon 14/06/21**
81	**Desktop studies**	**240 days**	**Tue 26/02/19**	**Mon 27/01/20**
82	Agree scope of desktop studies	2 mons	Tue 26/02/19	Mon 22/04/19
83	Procure desktop studies	2 mons	Tue 23/04/19	Mon 17/06/19
84	Undertake desktop studies	8 mons	Tue 18/06/19	Mon 27/01/20
85	**EIA**	**291 days?**	**Mon 04/05/20**	**Mon 14/06/21**
86	Agree Scope of EIA	0 days	Mon 13/07/20	Mon 13/07/20
87	Seasonal Ecological Surveys (Protected species, etc)	3 mons	Mon 04/05/20	Fri 24/07/20
88	EPS Licence Application	3 mons	Mon 27/07/20	Fri 16/10/20
89	Ecology investigations	12 mons	Tue 14/07/20	Mon 14/06/21
90	Ground investigations	12 mons	Tue 14/07/20	Mon 14/06/21
91	Other Surveys (Acoustic/Air/Vibration)	12 mons	Tue 14/07/20	Mon 14/06/21
92				
93	**Planning for new Masterplan**	**3291 days?**	**Fri 01/06/18**	**Fri 10/01/31**
94	**Meanwhile Uses**	120 days	Mon 16/12/19	Fri 29/05/20
95	Prepare Meanwhile application	2 mons	Mon 16/12/19	Fri 07/02/20
96	Submit planning application for Meanwhile Use	0 days	Fri 07/02/20	Fri 07/02/20
97	Planning period	16 wks	Mon 10/02/20	Fri 29/05/20
98	Consent for Meanwhile Use	0 days	Fri 29/05/20	Fri 29/05/20
99	**CNFE Masterplan**	**3291 days?**	**Fri 01/06/18**	**Fri 10/01/31**
100	**Area Action Plan**	**1065 days**	**Fri 01/06/18**	**Fri 01/07/22**
101	Local Plan agreed by Full Council for adoption	0 days	Thu 18/10/18	Thu 18/10/18
102	Prepare Issues & Option Report	3 mons	Fri 01/06/18	Thu 23/08/18
103	Member process - agree for consultation	2 mons	Mon 03/12/18	Fri 25/01/19
104	Issues & Options 2 Consultation (REG 18)	3 mons	Fri 01/03/19	Thu 23/05/19
105	Draft AAP (REG 18)	7 mons	Fri 24/05/19	Thu 05/12/19
106	Member process - agree for consultation (DCO Submission Dependent on this)	2 mons	Fri 06/12/19	Thu 30/01/20
107	Draft AAP consultation (REG 18)	2 mons	Mon 23/03/20	Fri 15/05/20
108	Prepare Proposed Submission AAP	2 mons	Mon 18/05/20	Fri 10/07/20
109	Full Council Members Process - agree for consultation subject to DCO decision	1 mon	Mon 13/07/20	Fri 07/08/20
110	DCO Decision	0 days	Fri 19/02/21	Fri 19/02/21
111	JR Period	6 wks	Mon 22/02/21	Fri 02/04/21
112	Proposed Submission AAP consultation (REG 19)	2 mons	Mon 22/02/21	Fri 16/04/21
113	Member process	2 mons	Tue 01/06/21	Mon 26/07/21
114	Submit AAP (REG 22)	0 days	Mon 26/07/21	Mon 26/07/21
115	Examination of AAP	7 mons	Tue 27/07/21	Mon 07/02/22
116	Inspectors Report	4 mons	Tue 08/02/22	Mon 30/05/22
117	Adoption of AAP	0 days	Fri 01/07/22	Fri 01/07/22
118	**Hybrid Planning Application by Master Developer**	897 days	Fri 06/12/19	Mon 15/05/23
119	Evidence studies to underpin planning application, EIA & AAP	6 mons	Tue 28/01/20	Mon 13/07/20
120	Public and stakeholder consultation on Masterplan options	6 mons	Fri 06/12/19	Thu 21/05/20
121	Formal Pre-application consultation	6 mons	Fri 22/05/20	Thu 05/11/20
122	Produce hybrid planning application	10 mons	Tue 15/06/21	Mon 21/03/22
123	Submit hybrid planning application	0 days	Mon 21/03/22	Mon 21/03/22
124	Determination Period	9 mons	Tue 22/03/22	Mon 28/11/22
125	Outline Planning Consent granted	0 days	Mon 28/11/22	Mon 28/11/22
126	Risk of Judicial Review	6 wks	Tue 29/11/22	Mon 09/01/23
127	Discharge Pre-start Planning Conditions	6 mons	Tue 29/11/22	Mon 15/05/23
128	**Detailed Planning Applications by Plot Developers**	1831 days?	Fri 05/01/24	Fri 10/01/31
129	Neighbourhood 1 plot applications	13 mons	Fri 21/06/24	Thu 19/06/25
130	Detailed consents for neighbourhood 1 plots	0 days	Thu 19/06/25	Thu 19/06/25
131	Neighbourhood 2 plot applications	13 mons	Fri 05/01/24	Thu 02/01/25
132	Detailed consents for neighbourhood 2 plots	0 days	Thu 02/01/25	Thu 02/01/25
133	Neighbourhood 3 plot applications	13 mons	Mon 28/09/26	Fri 24/09/27
134	Detailed consents for neighbourhood 3 plots	0 days	Fri 24/09/27	Fri 24/09/27
135	Neighbourhood 4 plot applications	13 mons	Mon 15/03/27	Fri 10/03/28
136	Detailed consents for neighbourhood 4 plots	0 days	Fri 10/03/28	Fri 10/03/28
137	Neighbourhood 5 plot applications	13 mons	Mon 31/07/28	Fri 27/07/29
138	Detailed consents for neighbourhood 5 plots	0 days	Fri 27/07/29	Fri 27/07/29
139	Neighbourhood 6 plot applications	13 mons	Mon 14/01/30	Fri 10/01/31
140	Detailed consents for neighbourhood 6 plots	0 days	Fri 10/01/31	Fri 10/01/31
141				
142	**Design**	**2969 days?**	**Tue 28/08/18**	**Fri 11/01/30**
143	**MeanWhile Use**	**80 days**	**Mon 26/08/19**	**Fri 13/12/19**
144	Meanwhile Design for planning	4 mons	Mon 26/08/19	Fri 13/12/19
145	**Master Plan Design**	**2539 days**	**Tue 28/08/18**	**Fri 19/05/28**
146	Design for HIF	6 mons	Tue 28/08/18	Mon 11/02/19
147	Design for business plan	8 mons	Tue 12/02/19	Mon 23/09/19
148	Design progressed for hybrid planning submission	32 mons	Tue 08/10/19	Mon 21/03/22
149	**Design for strategic infrastructure contractor procurement**	**1571 days**	**Fri 13/05/22**	**Fri 19/05/28**
150	Neighbourhood 1	13 mons	Fri 13/05/22	Thu 11/05/23
151	Neighbourhood 2	13 mons	Fri 13/05/22	Thu 11/05/23
152	Neighbourhood 3	13 mons	Mon 19/08/24	Fri 15/08/25
153	Neighbourhood 4	13 mons	Mon 21/07/25	Fri 17/07/26
154	Neighbourhood 5	13 mons	Mon 22/06/26	Fri 18/06/27
155	Neighbourhood 6	13 mons	Mon 24/05/27	Fri 19/05/28
156	**Neighbourhood Plot Design (by individual plot developers)**	**1831 days?**	**Fri 06/01/23**	**Fri 11/01/30**
157	**Design to RIBA Stage 3+ for planning**	**1831 days?**	**Fri 06/01/23**	**Fri 11/01/30**
158	Neighbourhood 1	13 mons	Fri 23/06/23	Thu 20/06/24

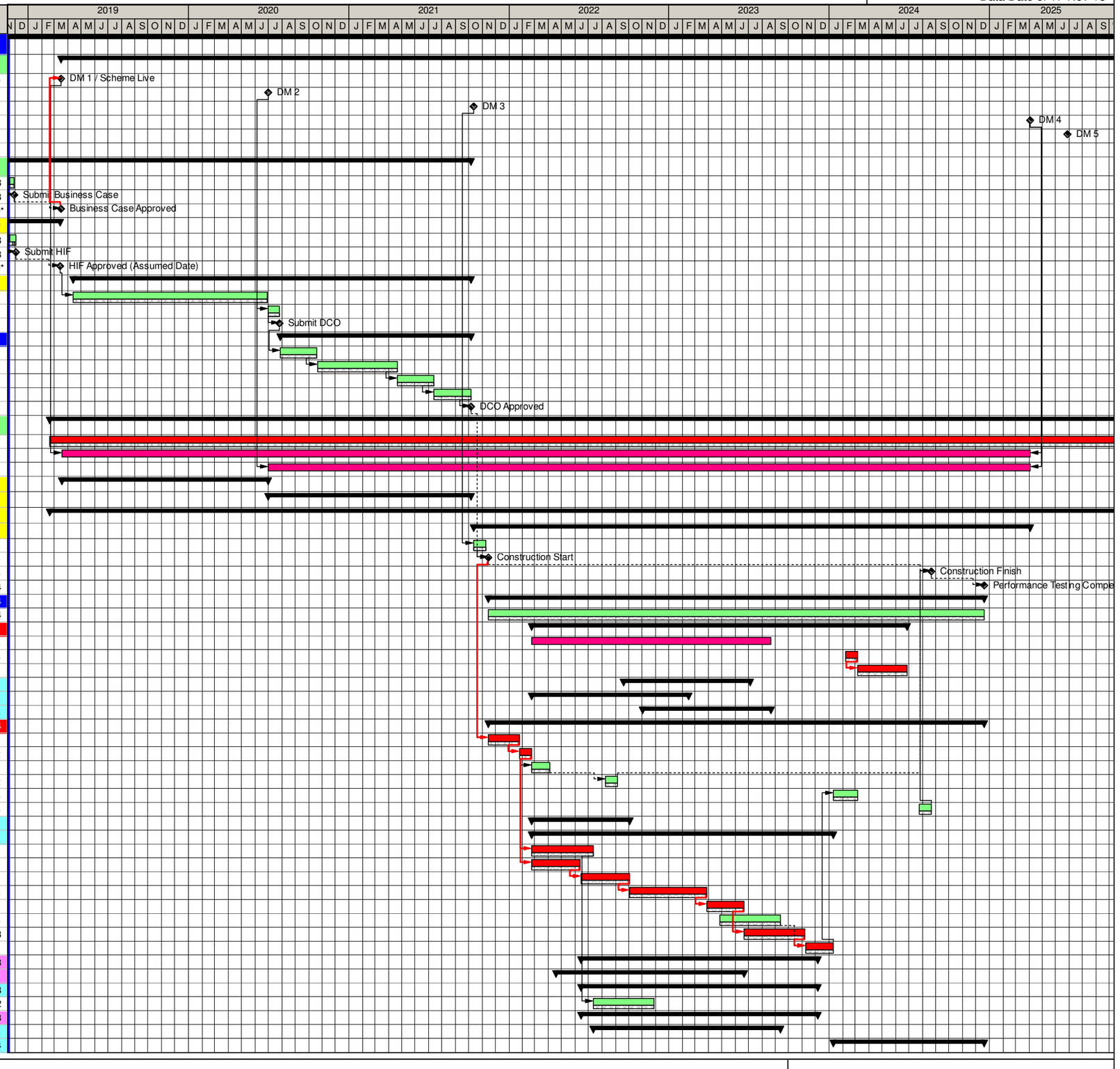
ID	Task Name	Duration	Start	Finish
159	Neighbourhood 2	13 mons	Fri 06/01/23	Thu 04/01/24
160	Neighbourhood 3	13 mons	Mon 29/09/25	Fri 25/09/26
161	Neighbourhood 4	13 mons	Mon 16/03/26	Fri 12/03/27
162	Neighbourhood 5	13 mons	Mon 02/08/27	Fri 28/07/28
163	Neighbourhood 6	13 mons	Mon 15/01/29	Fri 11/01/30
164				
165	**Estate Management**	1618 days?	Tue 21/05/19	Fri 01/08/25
166	Prepare outline estate strategy	13 mons	Tue 21/05/19	Mon 18/05/20
167	Develop and finalise estate management strategy	13 mons	Fri 04/08/23	Thu 01/08/24
168	Procure estate management	13 mons	Fri 02/08/24	Thu 31/07/25
169	Estate Management Company In Place	0 days	Fri 01/08/25	Fri 01/08/25
170				
171	**Marketing and Sales (Phased Plots)**	**260 days?**	**Fri 26/06/20**	**Thu 24/06/21**
172	Prepare marketing and sales strategy for plot disposal	13 mons	Fri 26/06/20	Thu 24/06/21
173				
174	**Procurement**	**2980 days?**	**Mon 16/12/19**	**Fri 16/05/31**
175	**Meanwhile Contractor**	**120 days**	**Mon 16/12/19**	**Fri 29/05/20**
176	Prepare tender documents	2 mons	Mon 16/12/19	Fri 07/02/20
177	Tender period	4 wks	Mon 10/02/20	Fri 06/03/20
178	Review tenders and agree contract	2 mons	Mon 09/03/20	Fri 01/05/20
179	Appoint contractor	0 days	Fri 29/05/20	Fri 29/05/20
180	**Strategic Infrastructure by Master Developer**	**2471 days**	**Fri 26/11/21**	**Fri 16/05/31**
181	**Site Preparation (demolition, remediation and site preparation)**	**400 days**	**Fri 26/11/21**	**Thu 08/06/23**
182	Prequalification	4 mons	Fri 26/11/21	Thu 17/03/22
183	Tender process	7 mons	Fri 25/11/22	Thu 08/06/23
184	**Primary Roads & Utilities**	**1571 days**	**Fri 12/05/23**	**Fri 18/05/29**
185	Neighbourhood 1 - prequalification and tender	13 mons	Fri 12/05/23	Thu 09/05/24
186	Neighbourhood 2 - prequalification and tender	13 mons	Fri 12/05/23	Thu 09/05/24
187	Neighbourhood 3 - prequalification and tender	13 mons	Mon 18/08/25	Fri 14/08/26
188	Neighbourhood 4 - prequalification and tender	13 mons	Mon 20/07/26	Fri 16/07/27
189	Neighbourhood 5 - prequalification and tender	13 mons	Mon 21/06/27	Fri 16/06/28
190	Neighbourhood 6 - prequalification and tender	13 mons	Mon 22/05/28	Fri 18/05/29
191	**Green Infrastructure**	**1831 days**	**Fri 10/05/24**	**Fri 16/05/31**
192	Neighbourhood 1 - prequalification and tender	13 mons	Fri 25/10/24	Thu 23/10/25
193	Neighbourhood 2 - prequalification and tender	13 mons	Fri 10/05/24	Thu 08/05/25
194	Neighbourhood 3 - prequalification and tender	13 mons	Mon 01/02/27	Fri 28/01/28
195	Neighbourhood 4 - prequalification and tender	13 mons	Mon 19/07/27	Fri 14/07/28
196	Neighbourhood 5 - prequalification and tender	13 mons	Mon 04/12/28	Fri 30/11/29
197	Neighbourhood 6 - prequalification and tender	13 mons	Mon 20/05/30	Fri 16/05/31
198	**Neighbourhood Plot Disposals**	**2089 days?**	**Tue 12/01/21**	**Mon 15/01/29**
199	**Neighbourhood 1**	**520 days**	**Fri 25/06/21**	**Fri 23/06/23**
200	Procure Developer(s)	26 mons	Fri 25/06/21	Thu 22/06/23
201	Agree Plot Conditions & Dispose	0 days	Fri 23/06/23	Fri 23/06/23
202	**Neighbourhood 2**	**520 days**	**Tue 12/01/21**	**Mon 09/01/23**
203	Procure Developer(s)	26 mons	Tue 12/01/21	Mon 09/01/23
204	Agree Plot Conditions & Dispose	0 days	Mon 09/01/23	Mon 09/01/23
205	**Neighbourhood 3**	**520 days**	**Mon 02/10/23**	**Mon 29/09/25**
206	Procure Developer(s)	26 mons	Mon 02/10/23	Fri 26/09/25
207	Agree Plot Conditions & Dispose	0 days	Mon 29/09/25	Mon 29/09/25
208	**Neighbourhood 4**	**520 days**	**Mon 18/03/24**	**Mon 16/03/26**
209	Procure Developer(s)	26 mons	Mon 18/03/24	Fri 13/03/26
210	Agree Plot Conditions & Dispose	0 days	Mon 16/03/26	Mon 16/03/26
211	**Neighbourhood 5**	**520 days**	**Mon 04/08/25**	**Mon 02/08/27**
212	Procure Developer(s)	26 mons	Mon 04/08/25	Fri 30/07/27
213	Agree Plot Conditions & Dispose	0 days	Mon 02/08/27	Mon 02/08/27
214	**Neighbourhood 6**	**760 days?**	**Mon 16/02/26**	**Mon 15/01/29**
215	Procure Developer(s)	26 mons	Mon 18/01/27	Fri 12/01/29
216	Agree Plot Conditions & Dispose	0 days	Mon 15/01/29	Mon 15/01/29
217				
218	**Construction**	**4380 days**	**Mon 01/06/20**	**Fri 13/03/37**
219	**Meanwhile Uses By Master Developer**	**160 days**	**Mon 01/06/20**	**Fri 08/01/21**
220	Mobilisation	8 wks	Mon 01/06/20	Fri 24/07/20
221	Construction	6 mons	Mon 27/07/20	Fri 08/01/21
222	Practical Completion - Meanwhile Uses	0 days	Fri 08/01/21	Fri 08/01/21
223	**Strategic Infrastructure by Master Developer**	**2311 days**	**Fri 09/06/23**	**Fri 16/04/32**
224	**Site Preparation (demolition, remediation and site preparation)**	**831 days**	**Fri 09/06/23**	**Fri 14/08/26**
225	Cambridge City Council land	9 mons	Fri 09/06/23	Thu 15/02/24
226	Anglian Water - early access area (10%)	12 mons	Fri 09/06/23	Thu 09/05/24
227	Anglian Water - balance of land (90%)	18 mons	Mon 31/03/25	Fri 14/08/26
228	Power cable diversions by National Grid	12 mons	Mon 31/03/25	Fri 27/02/26
229	**Primary Roads & Utilities**	**1831 days**	**Fri 10/05/24**	**Fri 16/05/31**
230	Neighbourhood 1	19 mons	Fri 10/05/24	Thu 23/10/25
231	Neighbourhood 2	13 mons	Fri 10/05/24	Thu 08/05/25
232	Neighbourhood 3	19 mons	Mon 17/08/26	Fri 28/01/28
233	Neighbourhood 4	13 mons	Mon 19/07/27	Fri 14/07/28
234	Neighbourhood 5	19 mons	Mon 19/06/28	Fri 30/11/29
235	Neighbourhood 6	26 mons	Mon 21/05/29	Fri 16/05/31
236	**Green Infrastructure**	**1811 days**	**Fri 09/05/25**	**Fri 16/04/32**
237	Neighbourhood 1	6 mons	Fri 24/10/25	Thu 09/04/26
238	Neighbourhood 2	6 mons	Fri 09/05/25	Thu 23/10/25
239	Neighbourhood 3	12 mons	Mon 31/01/28	Fri 29/12/28
240	Neighbourhood 4	12 mons	Mon 17/07/28	Fri 15/06/29
241	Neighbourhood 5	12 mons	Mon 03/12/29	Fri 01/11/30
242	Neighbourhood 6	12 mons	Mon 19/05/31	Fri 16/04/32
243	**Build Out Neighbourhoods by Plot Developers**	**3181 days**	**Fri 03/01/25**	**Fri 13/03/37**
244	**Neighbourhood 1 Build Out**	**1430 days**	**Fri 20/06/25**	**Thu 12/12/30**
245	Plot contractor procurement	18 wks	Fri 20/06/25	Thu 23/10/25
246	Mobilisation	12 wks	Fri 24/10/25	Thu 15/01/26
247	Construction - On Plot Infrastructure	26 mons	Fri 16/01/26	Thu 13/01/28
248	Construction - On Plot Buildings	46 mons	Fri 03/07/26	Thu 10/01/30
249	Sectional Completions / Phased Release	46 mons	Fri 04/06/27	Thu 12/12/30
250	First Neighbourhood 1 Home Complete	0 days	Fri 04/06/27	Fri 04/06/27
251	Final Neighbourhood 1 Home Complete	0 days	Thu 12/12/30	Thu 12/12/30
252	Primary School 1 Complete	0 days	Thu 12/12/30	Thu 12/12/30
253	**Neighbourhood 2 Build Out**	**1030 days**	**Fri 03/01/25**	**Thu 14/12/28**
254	Plot contractor procurement	18 wks	Fri 03/01/25	Thu 08/05/25
255	Mobilisation	12 wks	Fri 09/05/25	Thu 31/07/25
256	Construction - On Plot Infrastructure	18 mons	Fri 01/08/25	Thu 17/12/26
257	Construction - On Plot Buildings	26 mons	Fri 16/01/26	Thu 13/01/28
258	Sectional Completions / Phased Release	26 mons	Fri 18/12/26	Thu 14/12/28
259	First Neighbourhood 2 Home Complete	0 days	Fri 18/12/26	Fri 18/12/26
260	Final Neighbourhood 2 Home Complete	0 days	Thu 14/12/28	Thu 14/12/28
261	**Neighbourhood 3 Build Out**	**1430 days**	**Mon 27/09/27**	**Fri 18/03/33**
262	Plot contractor procurement	18 wks	Mon 27/09/27	Fri 28/01/28
263	Mobilisation	12 wks	Mon 31/01/28	Fri 21/04/28
264	Construction - On Plot Infrastructure	26 mons	Mon 24/04/28	Fri 19/04/30
265	Construction - On Plot Buildings	46 mons	Mon 09/10/28	Fri 16/04/32
266	Sectional Completions / Phased Release	46 mons	Mon 10/09/29	Fri 18/03/33
267	First Neighbourhood 3 Home Complete	0 days	Mon 10/09/29	Mon 10/09/29
268	Final Neighbourhood 3 Home Complete	0 days	Fri 18/03/33	Fri 18/03/33
269	**Neighbourhood 4 Build Out**	**1030 days**	**Mon 13/03/28**	**Fri 20/02/32**
270	Plot contractor procurement	18 wks	Mon 13/03/28	Fri 14/07/28
271	Mobilisation	12 wks	Mon 17/07/28	Fri 06/10/28
272	Construction - On Plot Infrastructure	18 mons	Mon 09/10/28	Fri 22/02/30
273	Construction - On Plot Buildings	26 mons	Mon 26/03/29	Fri 21/03/31
274	Sectional Completions / Phased Release	26 mons	Mon 25/02/30	Fri 20/02/32
275	First Neighbourhood 4 Home Complete	0 days	Mon 25/02/30	Mon 25/02/30
276	Final Neighbourhood 4 Home Complete	0 days	Fri 20/02/32	Fri 20/02/32
277	Secondary School Completed	0 days	Fri 20/02/32	Fri 20/02/32
278	**Neighbourhood 5 Build Out**	**1510 days**	**Mon 30/07/29**	**Fri 04/07/35**
279	Plot contractor procurement	18 wks	Mon 30/07/29	Fri 30/11/29
280	Mobilisation	12 wks	Mon 03/12/29	Fri 22/02/30
281	Construction - On Plot Infrastructure	26 mons	Mon 25/02/30	Fri 20/02/32
282	Construction - On Plot Buildings	52 mons	Mon 12/08/30	Fri 04/08/34
283	Sectional Completions / Phased Release	52 mons	Mon 14/07/31	Fri 06/07/35
284	First Neighbourhood 5 Home Complete	0 days	Mon 14/07/31	Mon 14/07/31
285	Final Neighbourhood 5 Home Complete	0 days	Fri 06/07/35	Fri 06/07/35
286	**Neighbourhood 6 Build Out**	**1610 days**	**Mon 13/01/31**	**Fri 13/03/37**
287	Plot contractor procurement	18 wks	Mon 13/01/31	Fri 16/05/31
288	Mobilisation	24 wks	Mon 19/05/31	Fri 31/10/31
289	Construction - On Plot Infrastructure	33 mons	Mon 03/11/31	Fri 12/05/34
290	Construction - On Plot Buildings	52 mons	Mon 19/04/32	Fri 11/04/36
291	Sectional Completions / Phased Release	52 mons	Mon 21/03/33	Fri 13/03/37
292	First Neighbourhood 6 Home Complete	0 days	Mon 21/03/33	Mon 21/03/33
293	Final Neighbourhood 6 Home Complete	0 days	Fri 13/03/37	Fri 13/03/37
294	Primary School 2 Complete	0 days	Fri 13/03/37	Fri 13/03/37



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
HIF Submission - DCO - Short		1850.00d	03-Sep-18 A	06-Apr-26
Milestones		1772.00d	15-Mar-19	06-Apr-26
D1120	DM 1 / Scheme Live	0.00d		15-Mar-19
D1130	DM 2	0.00d		30-Jun-20
D1140	DM 3	0.00d		12-Oct-21
D1150	DM 4	0.00d		04-Apr-25
D1160	DM 5	0.00d		27-Jun-25
D1170	DM 6	0.00d		06-Apr-26
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
A1600	Business Case Approved	0.00d		15-Mar-19*
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
A1410	HIF Approved (Assumed Date)	0.00d		15-Mar-19*
DCO		620.00d	12-Apr-19	05-Oct-21
A1400	Pre-application Work - Statements, EIA Scooping 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
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
Delivery Lead		1792.00d	18-Feb-19	06-Apr-26
P1010	Overall Project Duration	1792.00d	18-Feb-19	06-Apr-26
P1020	Overall Project Duration - Cost Loading	1521.00d	18-Mar-19	04-Apr-25
P1030	Overall Project Duration - Post DM2 Cost Loading	1201.00d	01-Jul-20	04-Apr-25
Stage 2		320.00d	18-Mar-19	30-Jun-20
Stage 3		320.00d	01-Jul-20	07-Oct-21
Enabling		1792.00d	18-Feb-19	06-Apr-26
Stage 4 - Assembly		878.00d	12-Oct-21	04-Apr-25
C1150	Mobilisation Period	20.00d	12-Oct-21	08-Nov-21
C1110	Construction Start	0.00d	15-Nov-21	
C1130	Construction Finish	0.00d		21-Aug-24
A1010	Performance Testing Complete	0.00d		20-Dec-24
Construction Work		787.00d	15-Nov-21	20-Dec-24
C1080	Construction Period	787.00d	15-Nov-21	20-Dec-24
Infra		600.00d	22-Feb-22	26-Jun-24
C1870	Prelims - Site Team	385.00d	22-Feb-22	22-Aug-23
C1020	Turn Flows (Partial)	20.00d	08-Feb-24	06-Mar-24
C2130	Divert Ex. Rising Mains	80.00d	07-Mar-24	26-Jun-24
Tunnel to New WRC Site		200.00d	20-Sep-22	04-Jul-23
Tunnel to New FE PS		250.00d	22-Feb-22	14-Feb-23
FE Outfall		205.00d	01-Nov-22	22-Aug-23
New WRC Site		787.00d	15-Nov-21	20-Dec-24
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	11-Jan-24	06-Mar-24
C2050	Demob Site	20.00d	25-Jul-24	21-Aug-24
Facilities		160.00d	22-Feb-22	03-Oct-22
Primary		480.00d	22-Feb-22	10-Jan-24
A1490	PS to Aeration Lane Splitter	100.00d	22-Feb-22	11-Jul-22
C1230	Inlet Works	80.00d	22-Feb-22	13-Jun-22
C2260	Primary Sludge Storeage	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
C2150	Convert Tunnel Drive Shaft to TPS	100.00d	26-Apr-23	12-Sep-23
A1510	Storm Tanks - 4no. 110m x 9m x 7m	100.00d	21-Jun-23	07-Nov-23
C1740	Pipework	40.00d	08-Nov-23	10-Jan-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		247.00d	11-Jan-24	20-Dec-24

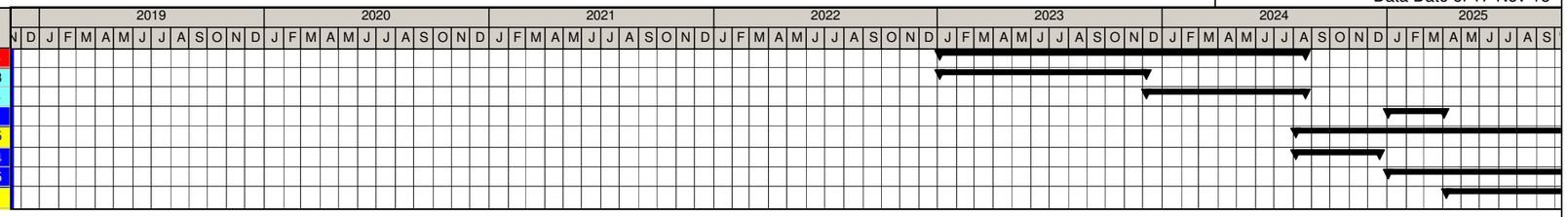


◆ Milestone ◇ Last Month MS | Progress | LoE | Activity | Critical Activity | Last Month | Summary

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

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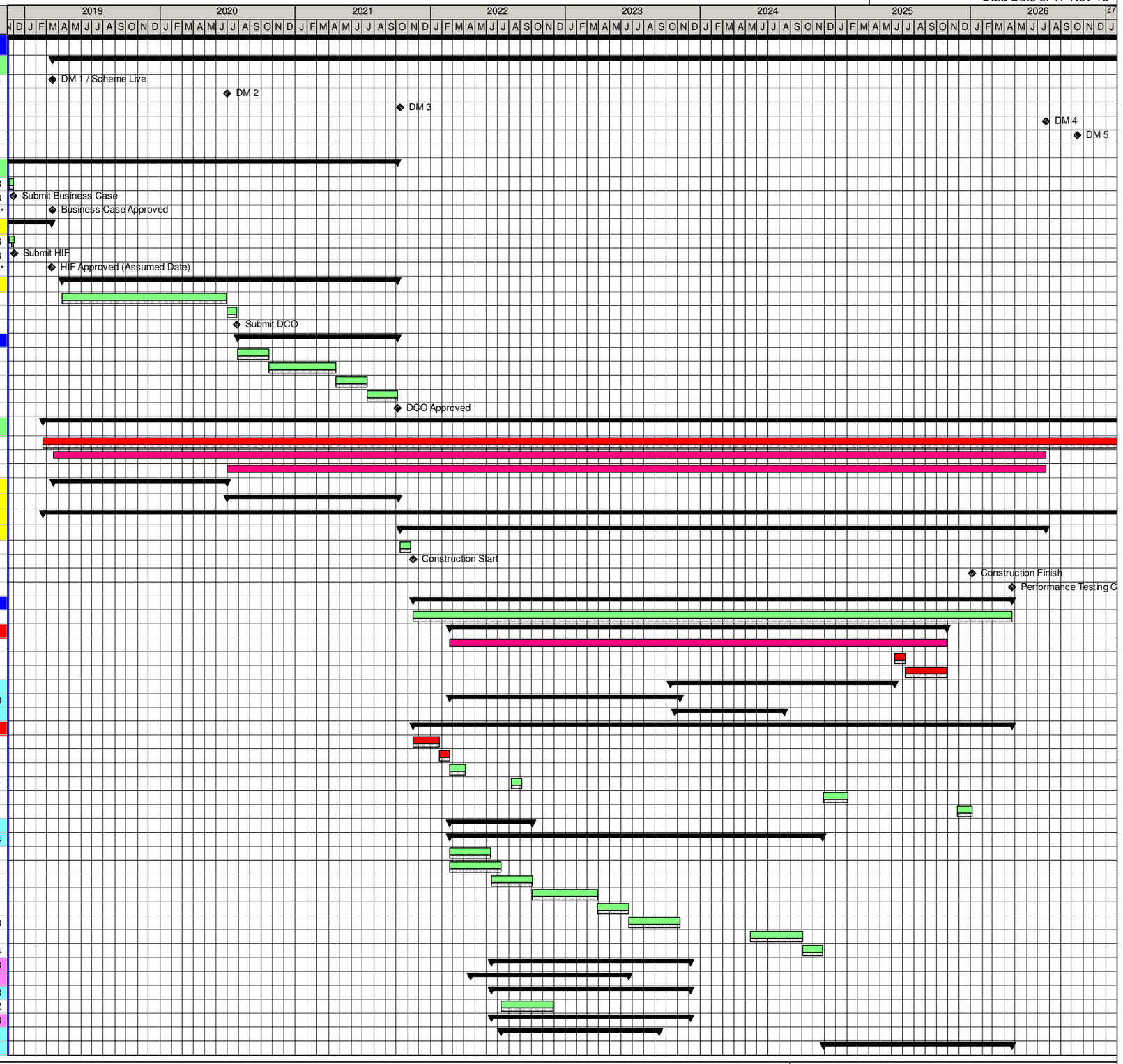
Activity ID	Activity Name	Remaining Dur.	Start	Finish
HIF Submission - DCO - Long		2190.00d	03-Sep-18 A	26-Jul-27
Milestones		2112.00d	15-Mar-19	26-Jul-27
D1120	DM 1 / Scheme Live	0.00d		15-Mar-19
D1130	DM 2	0.00d		30-Jun-20
D1140	DM 3	0.00d		12-Oct-21
D1150	DM 4	0.00d		24-Jul-26
D1160	DM 5	0.00d		16-Oct-26
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
A1600	Business Case Approved	0.00d		15-Mar-19*
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
A1410	HIF Approved (Assumed Date)	0.00d		15-Mar-19*
DCO		620.00d	12-Apr-19	05-Oct-21
A1400	Pre-application Work - Statements, EIA Scooping 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
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
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	
C1130	Construction Finish	0.00d		05-Jan-26
A1010	Performance Testing Complete	0.00d		22-Apr-26
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 Storeage	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 | LoE | Activity | Critical Activity | Last Month | Summary

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

Printed on 30-Nov-18 at
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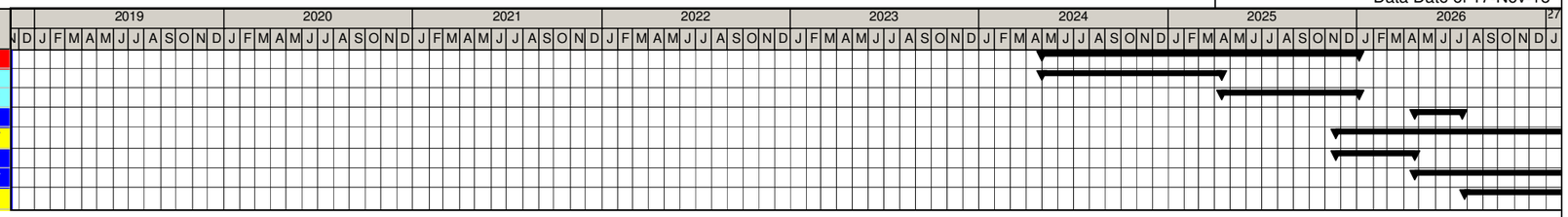
Activity ID	Activity Name	Remaining Dur.	Start	Finish
	Sludge Treatment Centre	420.00d	02-May-24	05-Jan-26
	Plant	240.00d	02-May-24	14-Apr-25
	Commissioning	180.00d	15-Apr-25	05-Jan-26
	Close Out	67.00d	23-Apr-26	24-Jul-26
	Decommissioning Milton WRC	340.00d	20-Nov-25	24-Mar-27
	Phase 1 - A& B	100.00d	20-Nov-25	22-Apr-26
	Phase 2 - C&D	240.00d	23-Apr-26	24-Mar-27
	Stage 5&6 - Close Out	261.00d	27-Jul-26	26-Jul-27



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

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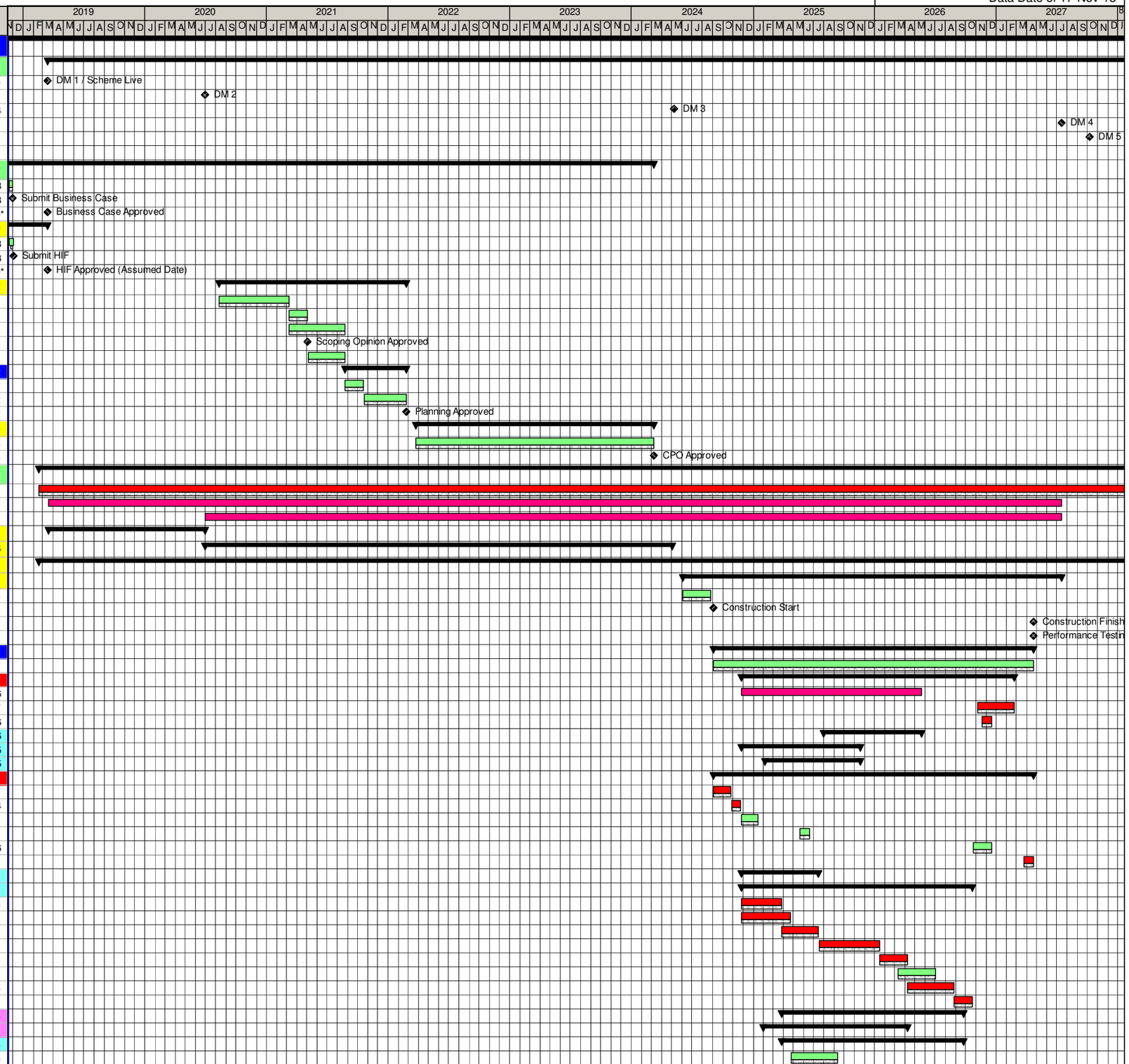
Activity ID	Activity Name	Remaining Dur.	Start	Finish
HIF Submission - EIA - Short		2432.00d	03-Sep-18 A	13-Jul-28
Milestones		2354.00d	15-Mar-19	13-Jul-28
D1120	DM 1 / Scheme Live	0.00d		15-Mar-19
D1130	DM 2	0.00d		30-Jun-20
D1140	DM 3	0.00d		07-May-24
D1150	DM 4	0.00d		14-Jul-27
D1160	DM 5	0.00d		06-Oct-27
D1170	DM 6	0.00d		13-Jul-28
Client Lead		1327.00d	03-Sep-18 A	08-Mar-24
A1580	Produce Business Case	10.00d	17-Sep-18 A	30-Nov-18
A1590	Submit Business Case	0.00d		30-Nov-18
A1600	Business Case Approved	0.00d		15-Mar-19*
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
A1410	HIF Approved (Assumed Date)	0.00d		15-Mar-19*
EIA Process		380.00d	11-Aug-20	23-Feb-22
A1400	Produce Scoping Opinion	140.00d	11-Aug-20	09-Mar-21
A3610	Scoping Opinion Approval Period	40.00d	10-Mar-21	04-May-21
A3720	PR and Public Consultation	120.00d	10-Mar-21	24-Aug-21
A3620	Scoping Opinion Approved	0.00d		04-May-21
A3630	Additional Work for Setout in Scoping Opinion	80.00d	05-May-21	24-Aug-21
Planning Approval		120.00d	25-Aug-21	23-Feb-22
A3640	Produce Planning Application	40.00d	25-Aug-21	19-Oct-21
A3660	Planning Approval Period	80.00d	20-Oct-21	23-Feb-22
A3670	Planning Approved	0.00d		23-Feb-22
CPO Process		500.00d	24-Mar-22	08-Mar-24
A3700	CPO Period	500.00d	24-Mar-22	08-Mar-24
A3710	CPO Approved	0.00d		08-Mar-24
Delivery Lead		2374.00d	18-Feb-19	13-Jul-28
P1010	Overall Project Duration	2374.00d	18-Feb-19	13-Jul-28
P1020	Overall Project Duration - Cost Loading	2104.00d	18-Mar-19	14-Jul-27
P1030	Overall Project Duration - Post DM2 Cost Loading	1784.00d	01-Jul-20	14-Jul-27
Stage 2		320.00d	18-Mar-19	30-Jun-20
Stage 3		969.00d	01-Jul-20	03-May-24
Enabling		2374.00d	18-Feb-19	13-Jul-28
Stage 4 - Assembly		794.00d	04-Jun-24	14-Jul-27
C1150	Mobilisation Period	60.00d	04-Jun-24	26-Aug-24
C1110	Construction Start	0.00d	02-Sep-24	
C1130	Construction Finish	0.00d		21-Apr-27
A1010	Performance Testing Complete	0.00d		21-Apr-27
Construction Work		670.00d	02-Sep-24	21-Apr-27
C1080	Construction Period	670.00d	02-Sep-24	21-Apr-27
Infra		570.00d	25-Nov-24	24-Feb-27
C1870	Prelims - Site Team	370.00d	25-Nov-24	20-May-26
C2130	Divert Ex. Rising Mains	80.00d	05-Nov-26	24-Feb-27
C1020	Turn Flows (Partial)	20.00d	19-Nov-26	16-Dec-26
Tunnel to New WRC Site		200.00d	31-Jul-25	20-May-26
Tunnel to New FE PS		250.00d	25-Nov-24	19-Nov-25
FE Outfall		205.00d	06-Feb-25	19-Nov-25
New WRC Site		670.00d	02-Sep-24	21-Apr-27
C1160	Construct Access Road to Site	40.00d	02-Sep-24	25-Oct-24
C1120	Setup Site	20.00d	28-Oct-24	22-Nov-24
C2310	Fencing	30.00d	25-Nov-24	15-Jan-25
C1800	Move into Mess Building	20.00d	22-May-25	18-Jun-25
C1310	Siteworks	40.00d	22-Oct-26	16-Dec-26
C2050	Demob Site	20.00d	25-Mar-27	21-Apr-27
Facilities		160.00d	25-Nov-24	16-Jul-25
Primary		480.00d	25-Nov-24	21-Oct-26
C1230	Inlet Works	80.00d	25-Nov-24	26-Mar-25
A1490	PS to Aeration Lane Splitter	100.00d	25-Nov-24	23-Apr-25
C2260	Primary Sludge Storeage	80.00d	27-Mar-25	16-Jul-25
C2270	SAS Thickening	120.00d	17-Jul-25	14-Jan-26
C2280	SAS Buffer Tank	60.00d	15-Jan-26	08-Apr-26
C2150	Convert Tunnel Drive Shaft to TPS	80.00d	12-Mar-26	01-Jul-26
A1510	Storm Tanks - 4no. 110m x 9m x 7m	100.00d	09-Apr-26	26-Aug-26
C1740	Pipework	40.00d	27-Aug-26	21-Oct-26
PST		380.00d	27-Mar-25	23-Sep-26
Aeration		300.00d	30-Jan-25	08-Apr-26
Secondary		380.00d	27-Mar-25	23-Sep-26
C1410	P Dosing Units	100.00d	24-Apr-25	10-Sep-25



◆ Milestone ◆ Milestone ▬ Progress ▬ Activity ▭ Last Month
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HIF Submission - EIA - Short - 17-Nov-18

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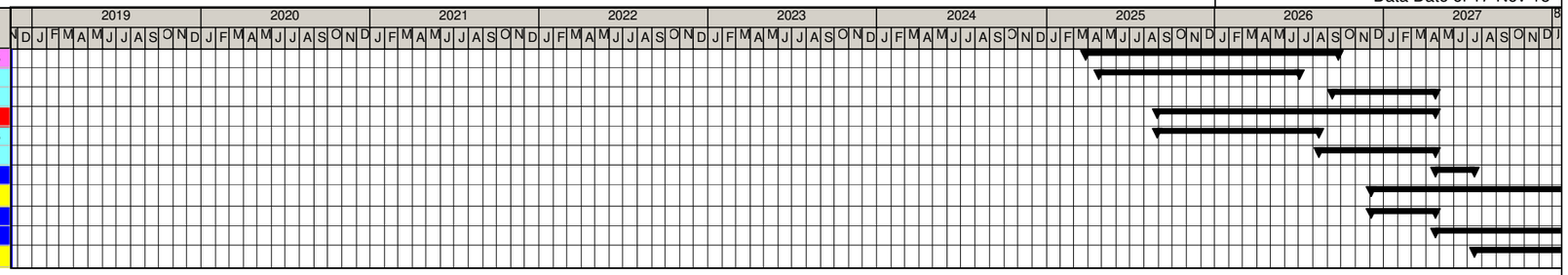
Activity ID	Activity Name	Remaining Dur.	Start	Finish
	FST	380.00d	27-Mar-25	23-Sep-26
	Tertiary	300.00d	24-Apr-25	01-Jul-26
	Elec & Commissioning	160.00d	10-Sep-26	21-Apr-27
	Sludge Treatment Centre	420.00d	28-Aug-25	21-Apr-27
	Plant	240.00d	28-Aug-25	12-Aug-26
	Commissioning	180.00d	13-Aug-26	21-Apr-27
	Close Out	60.00d	22-Apr-27	14-Jul-27
	Decommissioning Milton WRC	340.00d	03-Dec-26	06-Apr-28
	Phase 1 - A& B	100.00d	03-Dec-26	21-Apr-27
	Phase 2 - C&D	240.00d	22-Apr-27	06-Apr-28
	Stage 5&6 - Close Out	250.00d	15-Jul-27	13-Jul-28



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

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

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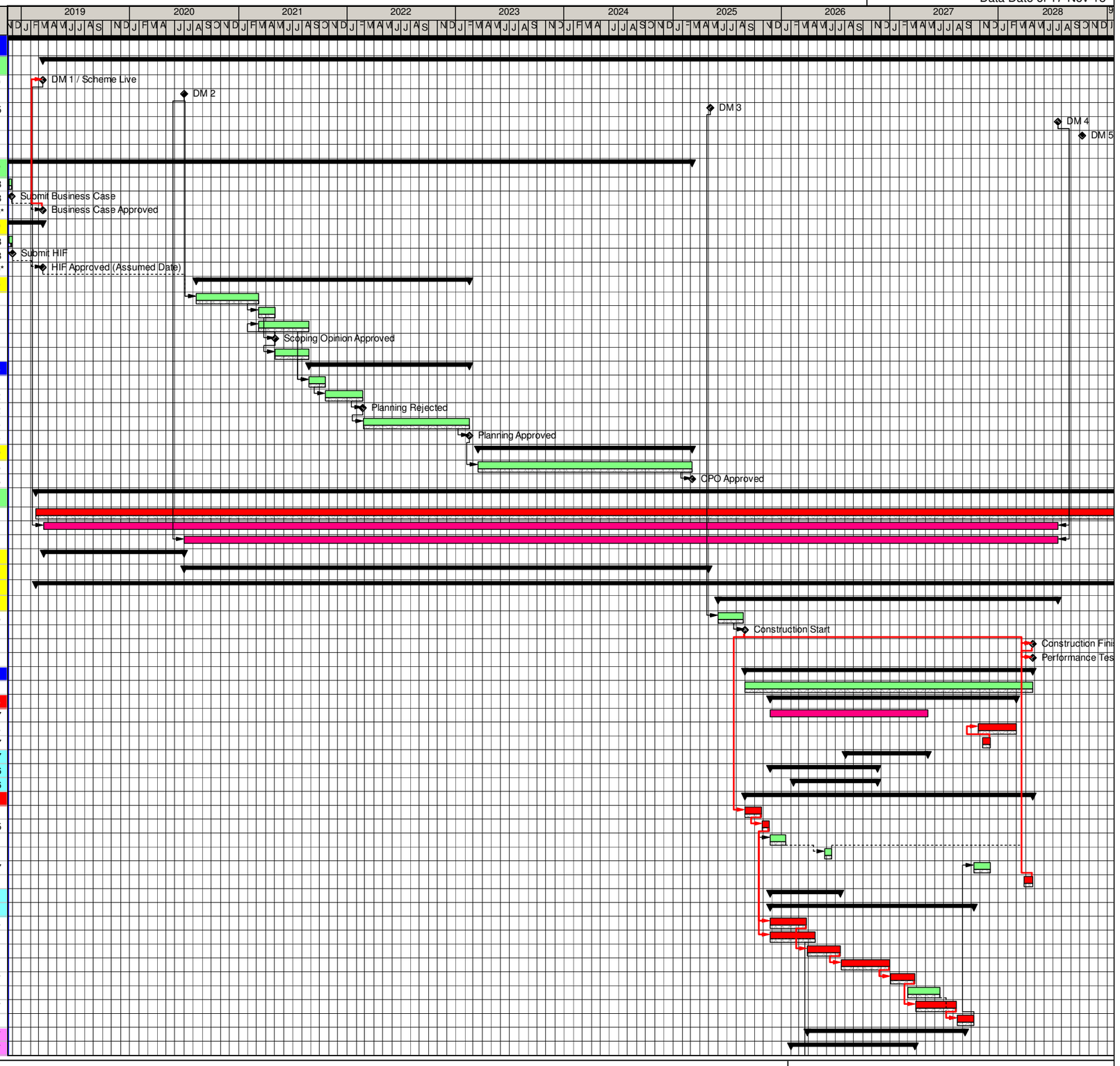
Activity ID	Activity Name	Remaining Dur.	Start	Finish
HIF Submission - EIA - Appeal - Short		2695.00d	03-Sep-18 A	17-Jul-29
Milestones		2617.00d	15-Mar-19	17-Jul-29
D1120	DM 1 / Scheme Live	0.00d		15-Mar-19
D1130	DM 2	0.00d		30-Jun-20
D1140	DM 3	0.00d		06-May-25
D1150	DM 4	0.00d		17-Jul-28
D1160	DM 5	0.00d		09-Oct-28
D1170	DM 6	0.00d		17-Jul-29
Client Lead		1577.00d	03-Sep-18 A	05-Mar-25
A1580	Produce Business Case	10.00d	17-Sep-18 A	30-Nov-18
A1590	Submit Business Case	0.00d		30-Nov-18
A1600	Business Case Approved	0.00d		15-Mar-19*
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
A1410	HIF Approved (Assumed Date)	0.00d		15-Mar-19*
EIA Process		630.00d	11-Aug-20	16-Feb-23
A1400	Produce Scoping Opinion	140.00d	11-Aug-20	09-Mar-21
A3610	Scoping Opinion Approval Period	40.00d	10-Mar-21	04-May-21
A3720	PR and Public Consultation	120.00d	10-Mar-21	24-Aug-21
A3620	Scoping Opinion Approved	0.00d		04-May-21
A3630	Additional Work for Setout in Scoping Opinion	80.00d	05-May-21	24-Aug-21
Planning Approval		370.00d	25-Aug-21	16-Feb-23
A3640	Produce Planning Application	40.00d	25-Aug-21	19-Oct-21
A3660	Planning Approval Period	80.00d	20-Oct-21	23-Feb-22
A3730	Planning Rejected	0.00d		23-Feb-22
A3740	Planning Appeal (1yr)	250.00d	24-Feb-22	16-Feb-23
A3670	Planning Approved	0.00d		16-Feb-23
CPO Process		500.00d	17-Mar-23	05-Mar-25
A3700	CPO Period	500.00d	17-Mar-23	05-Mar-25
A3710	CPO Approved	0.00d		05-Mar-25
Delivery Lead		2637.00d	18-Feb-19	17-Jul-29
P1010	Overall Project Duration	2637.00d	18-Feb-19	17-Jul-29
P1020	Overall Project Duration - Cost Loading	2356.00d	18-Mar-19	17-Jul-28
P1030	Overall Project Duration - Post DM2 Cost Loading	2036.00d	01-Jul-20	17-Jul-28
Stage 2		320.00d	18-Mar-19	30-Jun-20
Stage 3		1219.00d	01-Jul-20	30-Apr-25
Enabling		2637.00d	18-Feb-19	17-Jul-29
Stage 4 - Assembly		794.00d	03-Jun-25	17-Jul-28
C1150	Mobilisation Period	60.00d	03-Jun-25	25-Aug-25
C1110	Construction Start	0.00d	01-Sep-25	
C1130	Construction Finish	0.00d		24-Apr-28
A1010	Performance Testing Complete	0.00d		24-Apr-28
Construction Work		670.00d	01-Sep-25	24-Apr-28
C1080	Construction Period	670.00d	01-Sep-25	24-Apr-28
Infra		570.00d	24-Nov-25	28-Feb-28
C1870	Prelims - Site Team	370.00d	24-Nov-25	07-May-27
C2130	Divert Ex. Rising Mains	80.00d	25-Oct-27	28-Feb-28
C1020	Turn Flows (Partial)	20.00d	08-Nov-27	03-Dec-27
Tunnel to New WRC Site		200.00d	03-Aug-26	07-May-27
Tunnel to New FE PS		250.00d	24-Nov-25	20-Nov-26
FE Outfall		205.00d	09-Feb-26	20-Nov-26
New WRC Site		670.00d	01-Sep-25	24-Apr-28
C1160	Construct Access Road to Site	40.00d	01-Sep-25	24-Oct-25
C1120	Setup Site	20.00d	27-Oct-25	21-Nov-25
C2310	Fencing	30.00d	24-Nov-25	16-Jan-26
C1800	Move into Mess Building	20.00d	25-May-26	19-Jun-26
C1310	Siteworks	40.00d	11-Oct-27	03-Dec-27
C2050	Demob Site	20.00d	28-Mar-28	24-Apr-28
Facilities		160.00d	24-Nov-25	17-Jul-26
Primary		480.00d	24-Nov-25	08-Oct-27
C1230	Inlet Works	80.00d	24-Nov-25	27-Mar-26
A1490	PS to Aeration Lane Splitter	100.00d	24-Nov-25	24-Apr-26
C2260	Primary Sludge Storeage	80.00d	30-Mar-26	17-Jul-26
C2270	SAS Thickening	120.00d	20-Jul-26	01-Jan-27
C2280	SAS Buffer Tank	60.00d	04-Jan-27	26-Mar-27
C2150	Convert Tunnel Drive Shaft to TPS	80.00d	01-Mar-27	18-Jun-27
A1510	Storm Tanks - 4no. 110m x 9m x 7m	100.00d	29-Mar-27	13-Aug-27
C1740	Pipework	40.00d	16-Aug-27	08-Oct-27
PST		380.00d	30-Mar-26	10-Sep-27
Aeration		300.00d	02-Feb-26	26-Mar-27



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

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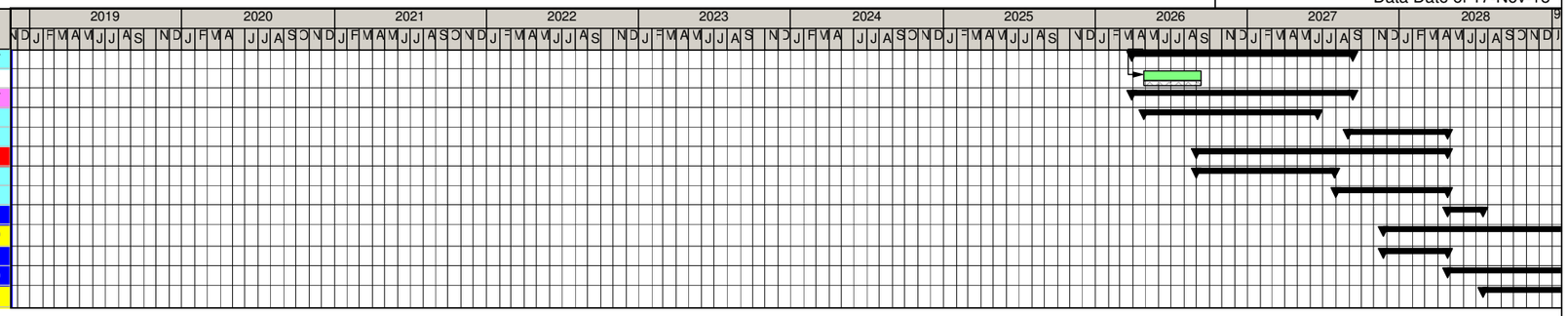
Activity ID	Activity Name	Remaining Dur.	Start	Finish
Secondary		380.00d	30-Mar-26	10-Sep-27
C1410	P Dosing Units	100.00d	27-Apr-26	11-Sep-26
FST		380.00d	30-Mar-26	10-Sep-27
Tertiary		300.00d	27-Apr-26	18-Jun-27
Elec & Commissioning		160.00d	30-Aug-27	24-Apr-28
Sludge Treatment Centre		420.00d	31-Aug-26	24-Apr-28
Plant		240.00d	31-Aug-26	30-Jul-27
Commissioning		180.00d	02-Aug-27	24-Apr-28
Close Out		60.00d	25-Apr-28	17-Jul-28
Decommissioning Milton WRC		340.00d	22-Nov-27	26-Mar-29
Phase 1 - A& B		100.00d	22-Nov-27	24-Apr-28
Phase 2 - C&D		240.00d	25-Apr-28	26-Mar-29
Stage 5&6 - Close Out		261.00d	18-Jul-28	17-Jul-29



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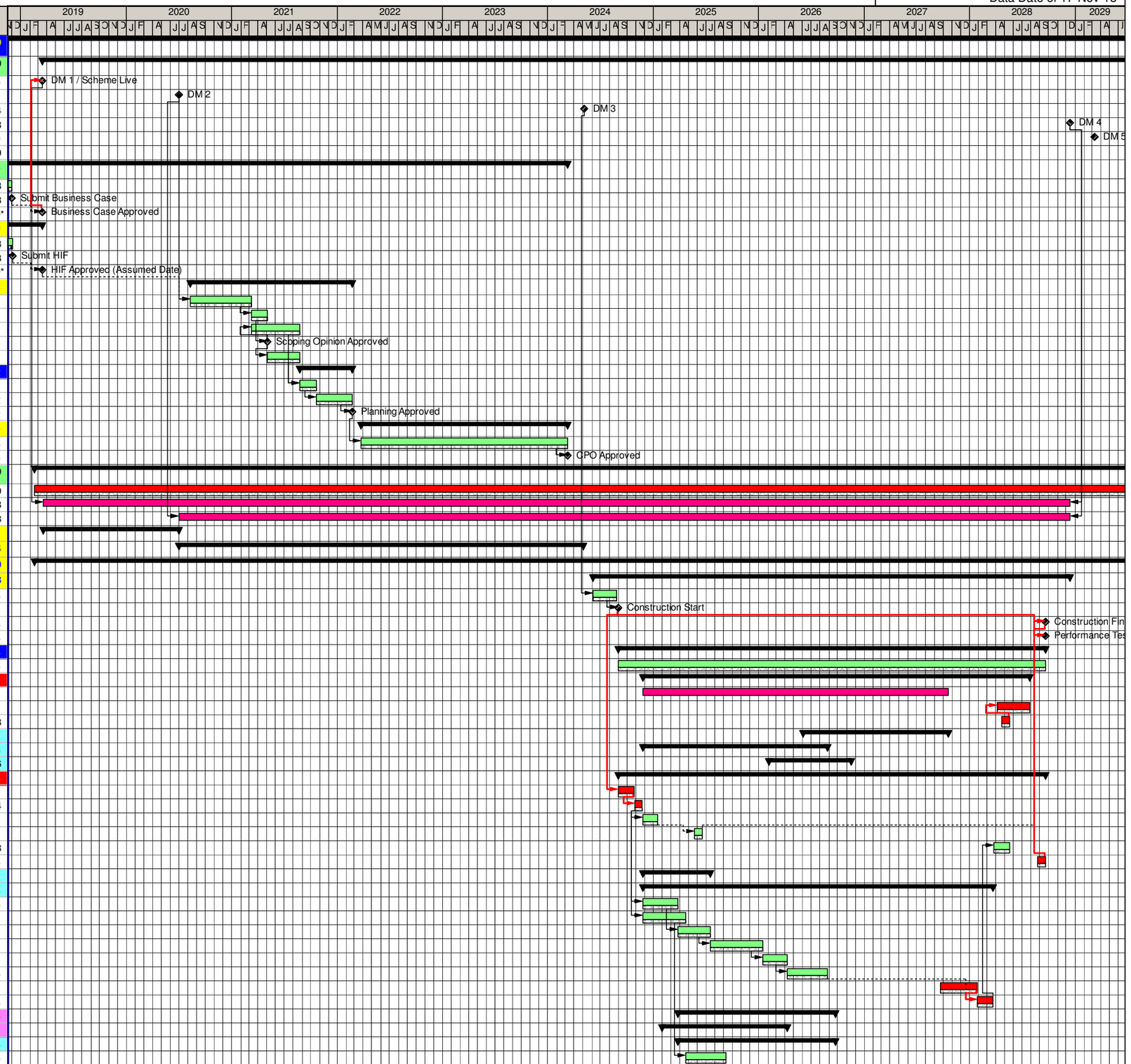
HIF Submission - EIA - Long - 17-Nov-18

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

Activity ID	Activity Name	Remaining Dur.	Start	Finish
HIF Submission - EIA - Long		2803.00d	03-Sep-18 A	14-Dec-29
Milestones		2725.00d	15-Mar-19	14-Dec-29
D1120	DM 1 / Scheme Live	0.00d		15-Mar-19
D1130	DM 2	0.00d		30-Jun-20
D1140	DM 3	0.00d		07-May-24
D1150	DM 4	0.00d		14-Dec-28
D1160	DM 5	0.00d		08-Mar-29
D1170	DM 6	0.00d		14-Dec-29
Client Lead		1327.00d	03-Sep-18 A	08-Mar-24
A1580	Produce Business Case	10.00d	17-Sep-18 A	30-Nov-18
A1590	Submit Business Case	0.00d		30-Nov-18
A1600	Business Case Approved	0.00d		15-Mar-19*
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
A1410	HIF Approved (Assumed Date)	0.00d		15-Mar-19*
EIA Process		380.00d	11-Aug-20	23-Feb-22
A1400	Produce Scoping Opinion	140.00d	11-Aug-20	09-Mar-21
A3610	Scoping Opinion Approval Period	40.00d	10-Mar-21	04-May-21
A3720	PR and Public Consultation	120.00d	10-Mar-21	24-Aug-21
A3620	Scoping Opinion Approved	0.00d		04-May-21
A3630	Additional Work for Setout in Scoping Opinion	80.00d	05-May-21	24-Aug-21
Planning Approval		120.00d	25-Aug-21	23-Feb-22
A3640	Produce Planning Application	40.00d	25-Aug-21	19-Oct-21
A3660	Planning Approval Period	80.00d	20-Oct-21	23-Feb-22
A3670	Planning Approved	0.00d		23-Feb-22
CPO Process		500.00d	24-Mar-22	08-Mar-24
A3700	CPO Period	500.00d	24-Mar-22	08-Mar-24
A3710	CPO Approved	0.00d		08-Mar-24
Delivery Lead		2745.00d	18-Feb-19	14-Dec-29
P1010	Overall Project Duration	2745.00d	18-Feb-19	14-Dec-29
P1020	Overall Project Duration - Cost Loading	2464.00d	18-Mar-19	14-Dec-28
P1030	Overall Project Duration - Post DM2 Cost Loading	2144.00d	01-Jul-20	14-Dec-28
Stage 2		320.00d	18-Mar-19	30-Jun-20
Stage 3		969.00d	01-Jul-20	03-May-24
Enabling		2745.00d	18-Feb-19	14-Dec-29
Stage 4 - Assembly		1154.00d	04-Jun-24	14-Dec-28
C1150	Mobilisation Period	60.00d	04-Jun-24	26-Aug-24
C1110	Construction Start	0.00d	02-Sep-24	
C1130	Construction Finish	0.00d		21-Sep-28
A1010	Performance Testing Complete	0.00d		21-Sep-28
Construction Work		1030.00d	02-Sep-24	21-Sep-28
C1080	Construction Period	1030.00d	02-Sep-24	21-Sep-28
Infra		930.00d	25-Nov-24	27-Jul-28
C1870	Prelims - Site Team	740.00d	25-Nov-24	20-Oct-27
C2130	Divert Ex. Rising Mains	80.00d	07-Apr-28	27-Jul-28
C1020	Turn Flows (Partial)	20.00d	21-Apr-28	18-May-28
Tunnel to New WRC Site		360.00d	04-Jun-26	20-Oct-27
Tunnel to New FE PS		440.00d	25-Nov-24	26-Aug-26
FE Outfall		205.00d	05-Feb-26	18-Nov-26
New WRC Site		1030.00d	02-Sep-24	21-Sep-28
C1160	Construct Access Road to Site	40.00d	02-Sep-24	25-Oct-24
C1120	Setup Site	20.00d	28-Oct-24	22-Nov-24
C2310	Fencing	30.00d	25-Nov-24	15-Jan-25
C1800	Move into Mess Building	20.00d	22-May-25	18-Jun-25
C1310	Siteworks	40.00d	24-Mar-28	18-May-28
C2050	Demob Site	20.00d	25-Aug-28	21-Sep-28
Facilities		160.00d	25-Nov-24	16-Jul-25
Primary		840.00d	25-Nov-24	23-Mar-28
C1230	Inlet Works	80.00d	25-Nov-24	26-Mar-25
A1490	PS to Aeration Lane Splitter	100.00d	25-Nov-24	23-Apr-25
C2260	Primary Sludge Storeage	80.00d	27-Mar-25	16-Jul-25
C2270	SAS Thickening	120.00d	17-Jul-25	14-Jan-26
C2280	SAS Buffer Tank	60.00d	15-Jan-26	08-Apr-26
A1510	Storm Tanks - 4no. 110m x 9m x 7m	100.00d	09-Apr-26	26-Aug-26
C2150	Convert Tunnel Drive Shaft to TPS	80.00d	23-Sep-27	27-Jan-28
C1740	Pipework	40.00d	28-Jan-28	23-Mar-28
PST		380.00d	27-Mar-25	23-Sep-26
Aeration		300.00d	30-Jan-25	08-Apr-26
Secondary		380.00d	27-Mar-25	23-Sep-26
C1410	P Dosing Units	100.00d	24-Apr-25	10-Sep-25

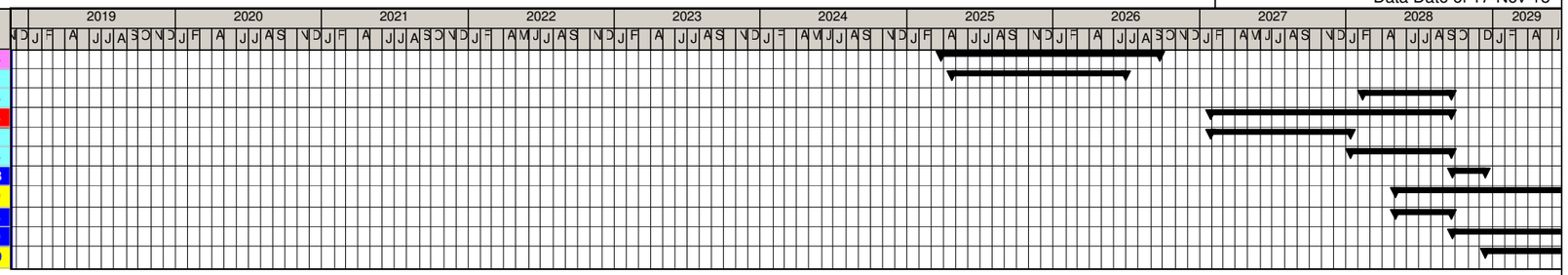


◆ Milestone ◇ Last Month MS | Progress | LoE | Activity | Critical Activity | Last Month | Summary

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

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

Activity ID	Activity Name	Remaining Dur.	Start	Finish
	FST	380.00d	27-Mar-25	23-Sep-26
	Tertiary	300.00d	24-Apr-25	01-Jul-26
	Elec & Commissioning	160.00d	11-Feb-28	21-Sep-28
	Sludge Treatment Centre	420.00d	28-Jan-27	21-Sep-28
	Plant	240.00d	28-Jan-27	13-Jan-28
	Commissioning	180.00d	14-Jan-28	21-Sep-28
	Close Out	60.00d	22-Sep-28	14-Dec-28
	Decommissioning Milton WRC	340.00d	05-May-28	23-Aug-29
	Phase 1 - A& B	100.00d	05-May-28	21-Sep-28
	Phase 2 - C&D	240.00d	22-Sep-28	23-Aug-29
	Stage 5&6 - Close Out	261.00d	15-Dec-28	14-Dec-29



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

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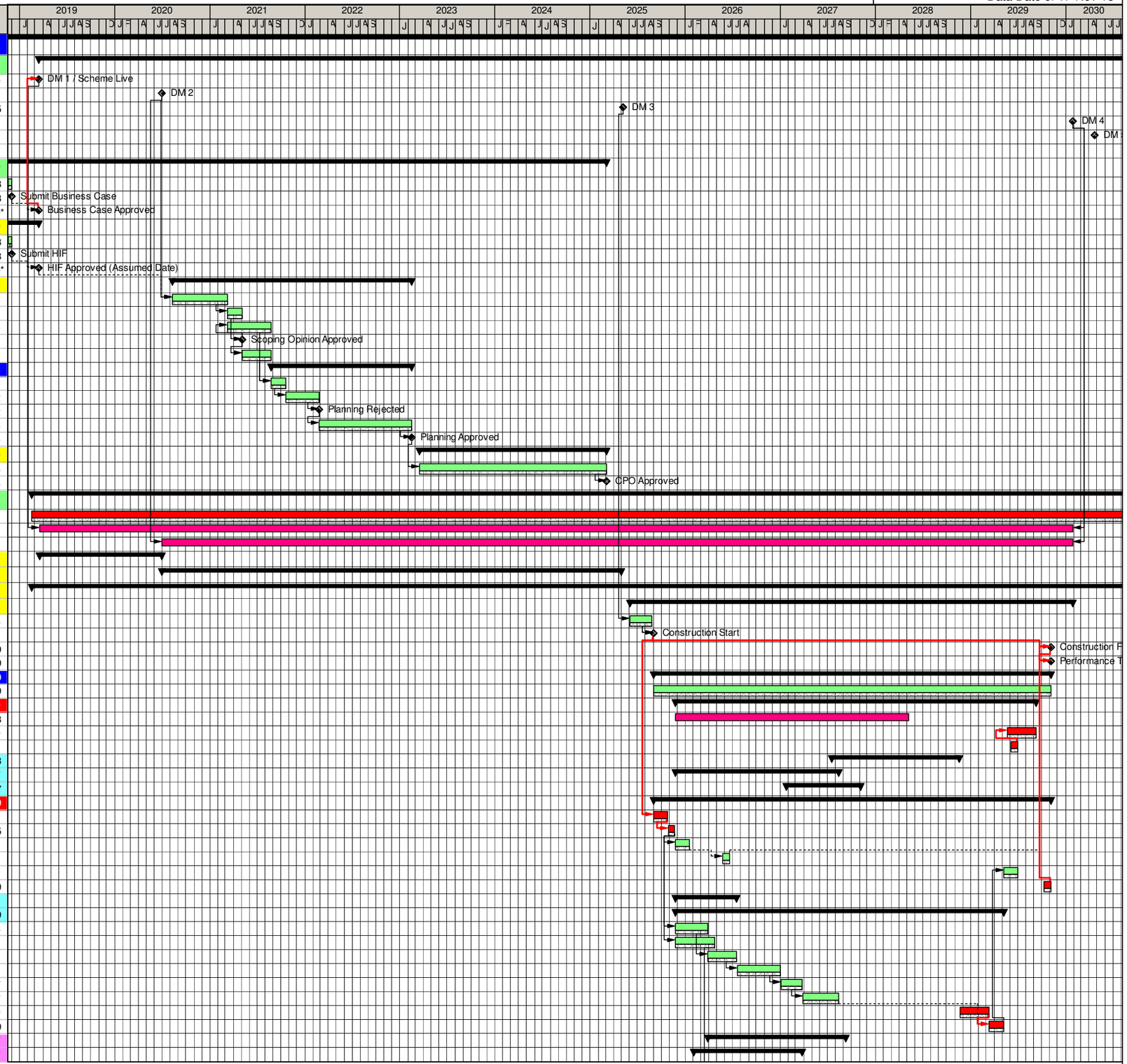
Activity ID	Activity Name	Remaining Dur.	Start	Finish
HIF Submission - EIA - Appeal - Long		3095.00d	03-Sep-18 A	28-Jan-31
Milestones		3017.00d	15-Mar-19	28-Jan-31
D1120	DM 1 / Scheme Live	0.00d		15-Mar-19
D1130	DM 2	0.00d		30-Jun-20
D1140	DM 3	0.00d		06-May-25
D1150	DM 4	0.00d		28-Jan-30
D1160	DM 5	0.00d		22-Apr-30
D1170	DM 6	0.00d		28-Jan-31
Client Lead		1577.00d	03-Sep-18 A	05-Mar-25
A1580	Produce Business Case	10.00d	17-Sep-18 A	30-Nov-18
A1590	Submit Business Case	0.00d		30-Nov-18
A1600	Business Case Approved	0.00d		15-Mar-19*
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
A1410	HIF Approved (Assumed Date)	0.00d		15-Mar-19*
EIA Process		630.00d	11-Aug-20	16-Feb-23
A1400	Produce Scoping Opinion	140.00d	11-Aug-20	09-Mar-21
A3610	Scoping Opinion Approval Period	40.00d	10-Mar-21	04-May-21
A3720	PR and Public Consultation	120.00d	10-Mar-21	24-Aug-21
A3620	Scoping Opinion Approved	0.00d		04-May-21
A3630	Additional Work for Setout in Scoping Opinion	80.00d	05-May-21	24-Aug-21
Planning Approval		370.00d	25-Aug-21	16-Feb-23
A3640	Produce Planning Application	40.00d	25-Aug-21	19-Oct-21
A3660	Planning Approval Period	80.00d	20-Oct-21	23-Feb-22
A3730	Planning Rejected	0.00d		23-Feb-22
A3740	Planning Appeal (1yr)	250.00d	24-Feb-22	16-Feb-23
A3670	Planning Approved	0.00d		16-Feb-23
CPO Process		500.00d	17-Mar-23	05-Mar-25
A3700	CPO Period	500.00d	17-Mar-23	05-Mar-25
A3710	CPO Approved	0.00d		05-Mar-25
Delivery Lead		3037.00d	18-Feb-19	28-Jan-31
P1010	Overall Project Duration	3037.00d	18-Feb-19	28-Jan-31
P1020	Overall Project Duration - Cost Loading	2756.00d	18-Mar-19	28-Jan-30
P1030	Overall Project Duration - Post DM2 Cost Loading	2436.00d	01-Jul-20	28-Jan-30
Stage 2		320.00d	18-Mar-19	30-Jun-20
Stage 3		1219.00d	01-Jul-20	30-Apr-25
Enabling		3037.00d	18-Feb-19	28-Jan-31
Stage 4 - Assembly		1194.00d	03-Jun-25	28-Jan-30
C1150	Mobilisation Period	60.00d	03-Jun-25	25-Aug-25
C1110	Construction Start	0.00d	01-Sep-25	
C1130	Construction Finish	0.00d		05-Nov-29
A1010	Performance Testing Complete	0.00d		05-Nov-29
Construction Work		1070.00d	01-Sep-25	05-Nov-29
C1080	Construction Period	1070.00d	01-Sep-25	05-Nov-29
Infra		970.00d	24-Nov-25	10-Sep-29
C1870	Prelims - Site Team	620.00d	24-Nov-25	08-May-28
C2130	Divert Ex. Rising Mains	80.00d	22-May-29	10-Sep-29
C1020	Turn Flows (Partial)	20.00d	05-Jun-29	02-Jul-29
Tunnel to New WRC Site		340.00d	19-Jul-27	20-Nov-28
Tunnel to New FE PS		440.00d	24-Nov-25	13-Aug-27
FE Outfall		205.00d	25-Jan-27	05-Nov-27
New WRC Site		1070.00d	01-Sep-25	05-Nov-29
C1160	Construct Access Road to Site	40.00d	01-Sep-25	24-Oct-25
C1120	Setup Site	20.00d	27-Oct-25	21-Nov-25
C2310	Fencing	30.00d	24-Nov-25	16-Jan-26
C1800	Move into Mess Building	20.00d	25-May-26	19-Jun-26
C1310	Siteworks	40.00d	08-May-29	02-Jul-29
C2050	Demob Site	20.00d	09-Oct-29	05-Nov-29
Facilities		160.00d	24-Nov-25	17-Jul-26
Primary		880.00d	24-Nov-25	07-May-29
C1230	Inlet Works	80.00d	24-Nov-25	27-Mar-26
A1490	PS to Aeration Lane Splitter	100.00d	24-Nov-25	24-Apr-26
C2260	Primary Sludge Storeage	80.00d	30-Mar-26	17-Jul-26
C2270	SAS Thickening	120.00d	20-Jul-26	01-Jan-27
C2280	SAS Buffer Tank	60.00d	04-Jan-27	26-Mar-27
A1510	Storm Tanks - 4no. 110m x 9m x 7m	100.00d	29-Mar-27	13-Aug-27
C2150	Convert Tunnel Drive Shaft to TPS	80.00d	21-Nov-28	12-Mar-29
C1740	Pipework	40.00d	13-Mar-29	07-May-29
PST		380.00d	30-Mar-26	10-Sep-27
Aeration		300.00d	02-Feb-26	26-Mar-27



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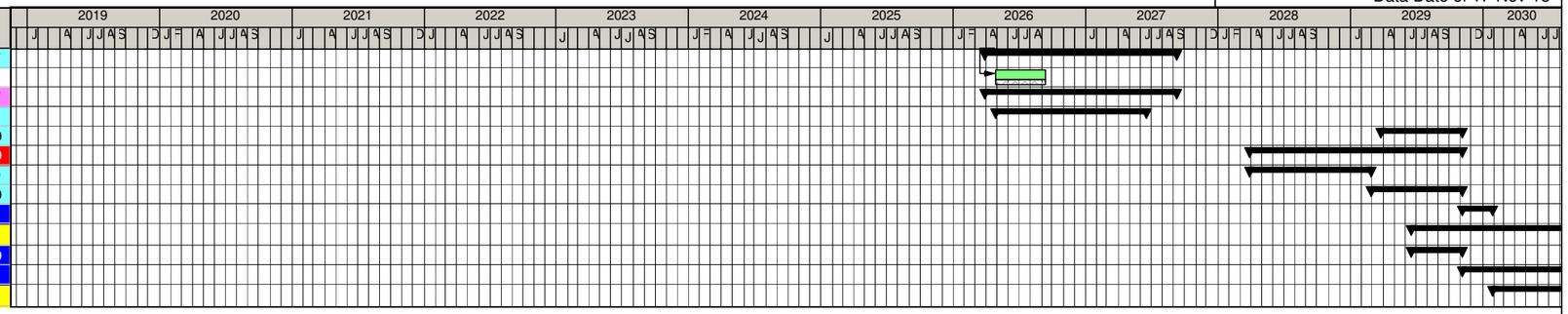
Activity ID	Activity Name	Remaining Dur.	Start	Finish
Secondary		380.00d	30-Mar-26	10-Sep-27
C1410	P Dosing Units	100.00d	27-Apr-26	11-Sep-26
FST		380.00d	30-Mar-26	10-Sep-27
Tertiary		300.00d	27-Apr-26	18-Jun-27
Elec & Commissioning		160.00d	27-Mar-29	05-Nov-29
Sludge Treatment Centre		420.00d	28-Mar-28	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



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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 1st 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	3rd 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 – [redacted] adjacent to CCC land	January 2023
Anglian Water site – remaining site part 1 (circa [redacted]%)	April 2025
Anglian Water site – remaining site part 2 (circa [redacted]%)	December 2025

NEW DEVELOPMENT	
Commence strategic infrastructure work to CCC & [redacted]% 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